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# 1992 PROJECT SEED SURVEY REPORT

American Chemical Society  
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## SUMMER I 1992 Project SEED Survey Report

### Purpose of Survey

The students participating in the 1992 Project SEED summer program were asked to respond to two questionnaires--one at the beginning of the project and one at the end of the project. The two questionnaires were designed to determine whether the students' future educational and occupational plans changed after participation in the Project SEED program. The first questionnaire asked demographic questions, questions about family composition and background, questions about the student's educational background, and questions relating to the student's expectations and aspirations for future education and employment. The second questionnaire repeated several items relating to the educational and occupational aspirations of the students and also asked the students to evaluate their experience in the Project SEED program. The information from both surveys is useful in determining whether Project SEED is serving its target population (disadvantaged youth) and whether it is achieving its goal (to stimulate knowledge about, and interest in, science).

### Results

All of the 284 participants in the 1992 Project SEED Summer I program returned initial questionnaires and 272 (96%) returned follow-up questionnaires.

The results of this survey, indicate that the participants in Project SEED are, for the most part, disadvantaged youth. Most of the students come from low-income families in which the parents have relatively little education and work in blue-collar and service occupations. Most are of minority racial or ethnic background and two-fifths live in mother-headed families.



### *Demographic Characteristics.*

The following are highlights of the demographic characteristics of the participants in the 1992 Project SEED program:

#### Gender, Race, and Age.

- As was the case last year, the students in this year's program were predominantly female (Table 1). Almost 60% were female and 40% were male.
- The students are primarily of minority racial or ethnic background (Table 2). Blacks are 38% of the students, Hispanics, 21%, whites 22%, Asians 15%, and American Indians 3%. One student indicated "other" racial or ethnic background.
- A little less than half of the students are 17 years old and almost a third are 16 years old (Table 3). The ages ranged from 14 to 22.

#### Family background.

- A little more than half of the students live in two-parent households (Table 4). About forty percent live in mother-headed households. Five percent live in father-headed households.
- Respondents are most likely to be the oldest child in the family (almost 40%). About 20% each are the youngest, middle, or the only child in the family (Table 5).
- More than half of the students are from small families (only one or two children). Twenty-three percent are the only child in the family (Table 6), and about the same percent are from large families (four or more children).
- About 20% of the mothers and fathers of the students did not graduate from high school, another one-fourth have high school diplomas, but 5% of the mothers and 10% of the fathers have graduate degrees (Tables 7 and 8).



- Close to one-third of the mothers and 13% of the fathers do not work (Tables 9 and 10). The most prevalent mother's occupations were clerical work (20%), service work (21%), and semi- or unskilled labor (10%). An additional 8% are in professional occupations, 3% are technicians, 6% are owners, managers, or administrators, and 3% are "other."
- The fathers are most likely to work in semi- or unskilled occupations (26%), in professional occupations (18%), or as service workers (15%). An additional 2% are technicians, 8% are owners, managers, or administrators, 5% work in clerical or sales occupations, 5% are skilled craftsmen, and 7% are "other."
- The family incomes of the students are mostly low. Close to thirty percent have incomes below \$12,000 (Table 11). More than half have incomes below \$20,000. Only 2% (5 students) have family incomes of \$38,000 or more.

#### Educational background.

- Most (72%) are in the 12th grade (Table 12), another 19% are in the 11th grade, and 9% are high school graduates. Almost all have taken Algebra 1 and Geometry. Eighty-one percent have taken Algebra 2, 39% have taken computer courses, and only 26% have taken Calculus (Table 13). In science, almost all have taken Biology and Chemistry, 47% have taken Physical Science, 34% have taken Earth Science, and only 28% have taken Physics (Table 14).
- Few had laboratory components associated with their math or computer courses (Table 15). More than 80% of the students who took biology, chemistry, earth science, or physics had labs associated with the course (Table 16). Ninety percent of the students who took chemistry had labs.
- More than half of the students had average grades of A+, A, or A- (Table 17). Most of the rest are B students. Only 7% are C students. About 55% have mostly As in English or in Math, and about 63% have mostly As in Science or in Social Studies (see Tables 18 to 21).



### *Educational and Occupational Aspirations.*

To determine whether and how the students' aspirations changed as a result of Project SEED, some items on the questionnaire were asked on both the initial survey and the followup survey.

The students initially had high aspirations for educational and occupational attainment. They expected to go to graduate school, expected to major in biology/life science, health professions, engineering, or chemistry, and they thought it likely they would be scientists, engineers, or mathematicians. Of those who responded to the initial questionnaire, 63% expected to go to graduate or professional school, more than 70% planned to major in natural science or engineering (15% plan to major in chemistry), and 62% thought there is a very good chance they will become a scientist, engineer, or mathematician in the future.

After participation in Project SEED, the students' aspirations for educational and occupational attainment were somewhat higher than they were prior to participation in Project SEED. The proportion of students expecting to attend graduate school increased, and the proportion planning to be scientists increased. The change in aspirations can best be seen by looking only at those who responded to both the initial and the follow-up questionnaire. Among those who responded to both questionnaires, 63% thought they would attend graduate school at the beginning of the summer and 70% thought so at the end of the summer (Table 34). Sixty-two percent initially thought they would become scientists, and 66% thought so at the end of the summer (Table 35). The proportion expecting to major in chemistry (14%) did not change over the summer (Table 36).

### *Respondents' Evaluations of Project SEED*

Respondents were asked whether they agreed with, were neutral toward, or disagreed with several statements describing how Project SEED helped them. The primary benefits of the program are helping the students to understand the purpose of scientific research, to discover their own skills and abilities, and to develop responsibility (Table 32). Less than half of the students agree that Project SEED helped them choose a college major and decide to pursue a scientific career.

Overall, most (65%) thought their experience in the Project SEED program was great (Table 23). Another 32% said it was pretty good. Only 3% thought it was not bad, and one thought it was pretty bad.



PROJECT SEED SUMMER I  
Initial Student Survey  
Summer 1992

Table 1.

	Frequency	Percent
Sex		
Female	168	59.2%
Male	116	40.8%
TOTAL	284	100.0%

Table 2.

	Frequency	Percent
Racial/Ethnic Group		
American Indian/Alaskan Native	9	3.2%
Asian or Pacific Islander	43	15.2%
Black (Nonhispanic)	108	38.2%
Hispanic	60	21.2%
White (Nonhispanic)	62	21.9%
Other	1	.4%
TOTAL	283	100.0%

Table 3.

	Frequency	Percent
Age at last birthday		
14	4	1.4%
15	24	8.5%
16	90	31.8%
17	134	47.3%
18	26	9.2%
19	2	.7%
20	1	.4%
22	2	.7%
TOTAL	283	100.0%

Table 4.

	Frequency	Percent
Who Do You Live With		
Mother Only	112	40.7%
Father Only	13	4.7%
Mother and Father	150	54.5%
TOTAL	275	100.0%

Table 5.

	Frequency	Percent
Do You Have-		
No brothers or sisters	66	23.2%
Older brothers or sisters	53	18.7%
Younger brother or sister	107	37.7%
Twin brother or sister	2	.7%
Older and Younger (or twin) brothers or sisters	56	19.7%
TOTAL	284	100.0%

Table 6.

	Frequency	Percent
Number of Siblings		
None	66	23.2%
One	95	33.5%
Two	60	21.1%
Three	30	10.6%
Four	12	4.2%
Five	9	3.2%
Six	6	2.1%
Seven	3	1.1%
Eight	1	.4%
Nine	2	.7%
TOTAL	284	100.0%



Table 7.

	Frequency	Percent
Mother's highest level of education		
No high school	47	17.5%
HS Grad/GED	69	25.7%
2-yr college-no degree	35	13.0%
2-yr college degree	26	9.7%
College-no degree	32	11.9%
Bachelor's	37	13.8%
Master's	12	4.5%
PhD, MD, other	2	.7%
Don't know	9	3.3%
TOTAL	269	100.0%

Table 8.

	Frequency	Percent
Father's highest level of education		
No high school	50	19.9%
HS Grad/GED	58	23.1%
2-yr college-no degree	18	7.2%
2-yr college degree	28	11.2%
College-no degree	20	8.0%
Bachelor's	28	11.2%
Master's	15	6.0%
PhD, MD, other	11	4.4%
Don't know	23	9.2%
TOTAL	251	100.0%

Table 9.

	Frequency	Percent
Mother's job title		
Teacher	11	4.6%
Scientist	1	.4%
Medical professional	2	.8%
Other professional	4	1.7%
Technician	7	2.9%
Owner/mgr/admn	14	5.8%
Clerical/sales	47	19.6%
Semiskilled/unskilled	24	10.0%
Service worker	50	20.8%
Other	7	2.9%
Not employed	63	26.3%
Disabled	9	3.8%
Don't know	1	.4%
TOTAL	240	100.0%

Table 10.

	Frequency	Percent
Father's job title		
Teacher	3	2.0%
Scientist	2	1.3%
Engineer	5	3.4%
Medical professional	1	.7%
Other professional	16	10.7%
Technician	3	2.0%
Owner/mgr/admn	12	8.1%
Clerical/sales	7	4.7%
Skilled crafts	7	4.7%
Semiskilled/unskilled	39	26.2%
Service worker	22	14.8%
Other	11	7.4%
Not employed	12	8.1%
Disabled	7	4.7%
Don't know	2	1.3%
TOTAL	149	100.0%



Table 11.

	Frequency	Percent
Family Income		
\$6,999 or less	33	12.1%
\$7,000 to 11,999	45	16.5%
\$12,000 to 15,999	40	14.7%
\$16,000 to 19,999	28	10.3%
\$20,000 to 24,999	53	19.5%
\$25,000 to 37,999	68	25.0%
\$38,000 or more	5	1.8%
TOTAL	272	100.0%

Table 12.

	Frequency	Percent
Grade in Sept 92		
10th	1	.4%
11th	53	18.7%
12th	204	71.8%
High school graduate	26	9.2%
TOTAL	284	100.0%

Table 13.

	Frequency	Percent
Math Courses		
General math	67	23.9%
Prealgebra	139	49.6%
Algebra 1	261	93.2%
Algebra 2	226	80.7%
Geometry	262	93.6%
Calculus	73	26.1%
Computers	109	38.9%
TOTAL	280	100.0%

Table 14.

	Frequency	Percent
Science Courses		
Biology	254	91.7%
Chemistry	259	93.5%
Physics	79	28.5%
Physical Science	131	47.3%
Earth science	95	34.3%
TOTAL	277	100.0%

Table 15.

	Frequency	Percent
Math Lab		
General math lab	4	6.0%
Prealgebra lab	4	2.9%
Algebra 1 lab	6	2.3%
Algebra 2 lab	6	2.7%
Geometry lab	7	2.7%
Calculus lab	5	6.8%
Computer lab	29	26.6%

Table 16.

	Frequency	Percent
Science Labs		
Biology lab	212	83.5%
Chemistry lab	232	89.6%
Physics lab	63	79.7%
Earth science lab	40	58.0%
Physical Science Lab	76	42.1%



Table 17.

	Frequency	Percent
Grade point average		
A+	34	12.4%
A	70	25.5%
A-	43	15.6%
B+	47	17.1%
B	47	17.1%
B-	14	5.1%
C+	13	4.7%
C	6	2.2%
C-	1	.4%
TOTAL	275	100.0%

Table 18.

	Frequency	Percent
English grades		
Mostly As	151	54.7%
Mostly Bs	114	41.3%
Mostly Cs	9	3.3%
Mostly Ds	2	.7%
TOTAL	276	100.0%

Table 19.

	Frequency	Percent
Math grades		
Mostly As	148	53.6%
Mostly Bs	97	35.1%
Mostly Cs	28	10.1%
Mostly Ds	3	1.1%
TOTAL	276	100.0%

Table 20.

	Frequency	Percent
Science grades		
Mostly As	172	62.3%
Mostly Bs	95	34.4%
Mostly Cs	9	3.3%
TOTAL	276	100.0%

Table 21.

	Frequency	Percent
Social studies grades		
Mostly As	173	63.8%
Mostly Bs	84	31.0%
Mostly Cs	14	5.2%
TOTAL	271	100.0%

Table 22.

	Frequency	Percent
Student's expected educ		
Vocational/business school	1	.4%
Some college	1	.4%
2-year college	2	.7%
4-year college	97	35.1%
Graduate/prof school	175	63.4%
TOTAL	276	100.0%



Table 23.

	Frequency	Percent
First choice college major		
Architecture	5	1.8%
Biological/Life Science	40	14.4%
Business/Commerce	8	2.9%
Communications	4	1.4%
Computer science	12	4.3%
Education	3	1.1%
Engineering	62	22.3%
Foreign/Classical Languages	1	.4%
Health Professions	49	17.6%
Mathematics	4	1.4%
Military Science	2	.7%
Philosophy	2	.7%
Astronomy	2	.7%
Chemistry	41	14.7%
Earth Science	1	.4%
Physics	4	1.4%
Social Science	9	3.2%
Other	29	10.4%
TOTAL	278	100.0%

Table 24.

	Frequency	Percent
Second choice college major		
Agriculture	4	1.5%
Architecture	7	2.5%
Biological/Life Science	41	14.9%
Business/Commerce	13	4.7%
Communications	2	.7%
Computer science	19	6.9%
Education	8	2.9%
Engineering	29	10.5%
Foreign/Classical Languages	5	1.8%
Health Professions	29	10.5%
Language and Literature	1	.4%
Mathematics	25	9.1%
Philosophy	3	1.1%
Astronomy	3	1.1%
Chemistry	49	17.8%
Earth Science	3	1.1%
Physics	10	3.6%
Social Science	8	2.9%
Technical/Vocational	2	.7%
Other	14	5.1%
TOTAL	275	100.0%

Table 25.

	Frequency	Percent
Third choice college major		
Agriculture	11	4.3%
Architecture	4	1.6%
Biological/Life Science	24	9.4%
Business/Commerce	16	6.3%
Communications	7	2.7%
Computer science	18	7.1%
Education	10	3.9%
Engineering	14	5.5%
Foreign/Classical Languages	11	4.3%
Health Professions	10	3.9%
Language and Literature	4	1.6%
Library Science	1	.4%
Mathematics	24	9.4%
Philosophy	3	1.2%
Astronomy	5	2.0%
Chemistry	37	14.5%
Earth Science	9	3.5%
Physics	15	5.9%
Social Science	14	5.5%
Technical/Vocational	1	.4%
Other	17	6.7%
TOTAL	255	100.0%

Table 26.

	Frequency	Percent
Likelihood of being a scientist		
Very good chance	174	61.9%
Even chance	94	33.5%
Not a very good chance	13	4.6%
TOTAL	281	100.0%



PROJECT SEED SUMMER I  
Follow-Up Student Survey  
Summer 1992

Table 27.

	Frequency	Percent
Highest Education Expected		
Some High School	2	.7%
High School Graduate	3	1.1%
Some College	1	.4%
4-year College Graduate	74	27.2%
Graduate or Professional School	192	70.6%
TOTAL	272	100.0%

Table 28.

	Frequency	Percent
First Choice Major		
Agriculture/Natural Resources	3	1.1%
Architecture/Environmental Design	5	1.8%
Biological/Life Science	47	17.3%
Business and Commerce	13	4.8%
Communications	2	.7%
Computer/Info Sciences	13	4.8%
Education	1	.4%
Engineering/Engineering Technologies	53	19.6%
Health Professions	47	17.3%
Mathematics	8	3.0%
Philosophy, Religion, Technology	3	1.1%
Astronomy	1	.4%
Chemistry	38	14.0%
Earth Science & Geology	1	.4%
Physics	2	.7%
Social Science	8	3.0%
Other	26	9.6%
TOTAL	271	100.0%

Table 29.

	Frequency	Percent
Second Choice Major		
Agriculture/Natural Resources	4	1.5%
Architecture/Environmental Design	4	1.5%
Biological/Life Sciences	31	11.5%
Business and Commerce	10	3.7%
Communications	3	1.1%
Computer and Info Sciences	19	7.1%
Education	11	4.1%
Engineering/Engineering Technologies	34	12.6%
Foreign/Classical Languages	6	2.2%
Health Professions	25	9.3%
Language and Literature	1	.4%
Mathematics	15	5.6%
Military Science	2	.7%
Philosophy, Religion, Technology	1	.4%
Astronomy	4	1.5%
Chemistry	66	24.5%
Earth Science & Geology	2	.7%
Physics	12	4.5%
Social Science	7	2.6%
Other	12	4.5%
TOTAL	269	100.0%



Table 30.

	Frequency	Percent
Third Choice Major		
Agriculture/Natural Resources	5	1.9%
Architecture/Environmental Design	3	1.1%
Biological/Life Sciences	21	7.9%
Business and Commerce	18	6.8%
Communications	7	2.6%
Computer and Info Sciences	21	7.9%
Education	12	4.5%
Engineering/Engineering Technologies	15	5.6%
Foreign/Classical Languages	3	1.1%
Health Professions	18	6.8%
Language and Literature	3	1.1%
Mathematics	18	6.8%
Philosophy, Religion, Technology	4	1.5%
Astronomy	6	2.3%
Chemistry	52	19.5%
Earth Science & Geology	11	4.1%
Physics	15	5.6%
Social Science	13	4.9%
Technical & Vocational	4	1.5%
Other	17	6.4%
TOTAL	266	100.0%

Table 31.

	Frequency	Percent
Future S/E Plans		
A very good chance	177	66.8%
Even chance	71	26.8%
Not a very good chance	17	6.4%
TOTAL	265	100.0%

Table 32. Project SEED helped me:

	Agree	Neutral	Disagree	Total
Discover skills and abilities	223 85.1%	34 13.0%	5 1.9%	262 100.0%
Develop self-confidence	187 70.8%	67 25.4%	10 3.8%	264 100.0%
Develop responsibility	221 84.0%	38 14.4%	4 1.5%	263 100.0%
Learn what advanced study is like	210 79.2%	46 17.4%	9 3.4%	265 100.0%
Understand the purpose of scientific research	236 89.4%	24 9.1%	4 1.5%	264 100.0%
Understand the ethical behavior of scientists	198 75.3%	60 22.8%	5 1.9%	263 100.0%
Develop greater interest in scientific/technical areas	194 73.8%	60 22.8%	9 3.4%	263 100.0%
Decide to continue my education after high school	144 54.3%	78 29.4%	43 16.2%	265 100.0%
Choose a college major	116 43.9%	115 43.6%	33 12.5%	264 100.0%
Learn about employment opportunities	204 77.0%	50 18.9%	11 4.2%	265 100.0%
Decide to pursue a scientific career	122 46.2%	115 43.6%	27 10.2%	264 100.0%

Table 33.

	Frequency	Percent
Project SEED Rating		
Great	176	65.4%
Pretty Good	85	31.6%
Not Bad	7	2.6%
Pretty Bad	1	.4%
TOTAL	269	100.0%



## Comparison of Initial Survey and Followup Survey Results\*

Table 34.

	Initial	Followup
Educational expectations		
High school or less		1.5%
Vocational/business	.4%	---
Some college	.4%	.4%
2 yr college	.7%	---
4 yr college	34.8%	27.0%
Graduate/prof school	63.3%	70.4%
Number of responses	267	267

Table 35.

	Initial	Followup
Likelihood of being a scientist		
Very good chance	61.7%	65.8%
Even chance	33.8%	26.7%
Not a very good chance	4.5%	6.4%
Number of responses	266	266

Table 36.

	Initial	Followup
First choice major		
Chemistry	14.5%	13.8%
Engineering	22.7%	19.3%
Health professions	17.8%	17.5%
Biology/Life science	14.1%	17.5%
Other science, math	12.2%	13.4%
Other	18.7%	18.5%
Number of responses	269	269

\*only those who responded to both surveys

## COMMENTS

Working closely with graduate students I was given a new perspective on graduate school.

Project SEED helped me learn a lot about myself and allowed me to get a feel for scientific research.

It was very beneficial!

Closer, more direct relationship should be developed with professor/mentor. Hardly saw professor during the program.

It was an honor to participate in the Project SEED. I've learned quite a lot. Thank you for giving me such an opportunity.

I really like to work with a team that finds always what it wants, like the one that I was working at.

I felt your "Program" helped me understand the concept of my research and also give me a taste of how college will be.

The program has shown many doors into my path. I would like to continue with this program because it interests me.

Was the best time I had doing educational work. Opened the field of science up to me.

I enjoyed the Project SEED Program because it offered me an opportunity to receive hands on experience.

Through the Bio-Medical group of the Project SEED Program, I learned a lot of important things about therapies.

There was so many things I didn't even think mattered in chemistry. But through the SEED program, I surely found it all.

I've learned to be punctual, how other people feel, but I also think that like this program there is no other.

Project SEED program was a wonderful experience for me, and I would recommend that everyone could get the opportunity.

I really enjoyed working under Prof Sidebotham and with some very talented students. It was a memorable experience.

I learned a lot of techniques and gained a lot of information in a short amount of time.



Project SEED program gave me extreme confidence in my lab skills and research abilities.

Project SEED really helped me to appreciate all the hard work that goes into solving biological questions.

I personally loved the experience and think all college bound juniors or seniors should experience this.

This was my best summer experience I had so far. I'd like very much to continue this exciting research. I learned a lot.

This was a good experience. I have learned a lot about organic chemistry and general chemistry.

I feel that this program has really enhanced me in the fields of chemistry. It gives you an opportunity to see what the job would be like if you were to major in it.

My experience in the project SEED Program has been very rewarding. I have been exposed to many different instruments.

The Project SEED Program was a great experience that helped me narrow my choices for a career goal.

I always thought that participating in a research project would be an interesting way to spend the summer.

A great way to either (make or break) someones attitude towards chemistry and all the other aspects of chemistry.

I feel that the SEED program at Toyota helped me decide what I wanted my college major to be.

I was taught the relationship between the development of the earth and the inhabitants.

This has been a good-learning experience and has really opened my eyes to what chemists do.

I really feel that the SEED Program has helped me a great deal. It has helped me to see a future of myself as an engineer.

My experience in the Project SEED Program gave me an opportunity to work with scientists and co-employees.

I have consumed a tremendous amount of knowledge by participating in this SEED Project.

The project SEED program was great and very influential in my college decision in chemical engineering.

It was a great learning experience. It was fun and interesting; an experience I will never forget.

The program was great! There should be a technical writing class. It was kind of hard for me to find housing since I was out of state.

My experience at PSW Forest Service has been pretty good. It was really nice getting to work on projects with scientists.

I would just like to thank everyone who contributed to help me have this opportunity. I believe I benefited from this experience.

Project SEED is a pretty good program. I was really interested in learning what it was like to be a research scientist.

I'd like to thank the project SEED program for giving me the opportunity to work at a job like this. I've learned a lot.

Well, for me SEED program had given me a very far step toward my goal as an engineering major.

I really enjoyed it. It was very fun and worth my summer vacation. Thank you for this great opportunity.

Project seed was a very useful experience for me. I found out that even small experiments take a lot of work.

I had a good experience in the SEED program. I just wish that more students could've had this experience.

Project SEED is a good program and I'm going to encourage my friends and classmates to get more involved with science.

I was very happy to have been in the SEGA program this year. I had a great time here.

I think that this program is wonderful and should be continued next year.

This is best summer research experience I had so far and I would very much like to continue this exciting research.

Through the work I did this summer, I discovered the self confidence to pursue a career in scientific research.

I enjoyed myself very much this summer. It was a fun and fulfilling learning experiences.

The SEED program helped me to understand the different fields in science. I loved the program.



I feel the college experience that was given me during the summer were experiences I would never have been exposed to otherwise.

My experiences this summer have enabled me to grasp aspects of chemistry that I've never been introduced to as a high school student.

I am most thankful that doctor Peter Engbert of SJSU has sponsored me for the Project SEED I program.

I believe this summer was the most exciting, educational, interesting and fun summer I have ever experienced.

It was very enjoyable and you learned about college life at the same time.

It is a great opportunity to learn much more about science and other fields that it has.

I didn't like it. The SEED program combined with summer school and other activities forced me to be jumping all over the place trying to juggle and balance my schedules.

I enjoyed this program and I am sure that it will have a positive effect on my future career goals.

It was my one of the best experience in the lab. Whatever I have learned here, I will never forget and I hope to continue my research.

I really enjoyed my project seed program. I learned many things about chemistry and machinery.

A wonderful experience and fun as well is what Project SEED brought me and hopefully other young students will share the same opportunities.

I think that project SEED is a great program. I learned a lot and gained a lot of experience.

My experience in the project SEED program was great. I have never had a great educational working experience.

I have experienced in the Project SEED Program how to do different types of experiments.

I enjoyed working with project SEED during the summer. I will continue working with the NMSU Cage Dept. through December.

I enjoyed the Project SEED Program I had the chance to work with a lot of people who were very nice and friendly.

This is an excellent program, especially for people who don't really know what to go into. It also will help me in college.

When I was at work, I wasn't always showed something to do. I usually read about chemistry. After a while that gets boring.

This summer I felt lost in lab. While I was in lab I don't think I had one goal to accomplish except finish the program.

I enjoyed my summer working with Project SEED very much. I learned a lot about nutritional science and research.

My time this summer that I have spent has been a fruitful success. I have gained insight far beyond what I had expected.

I enjoyed doing this job but otherwise than working it teaches you also about how to do research how to interview and it also taught me a lot about HIV and AIDS and ways to prevents STDs.

I do not particularly like writing reports, but theres a necessity. Otherwise, I enjoyed my experience of being able to work in a lab.

I really appreciated the help I received from other people in finishing my research.

It helps financially for the education of students who could not afford it otherwise.

In my opinion, the SEED program is really great it gave me a big opportunity to work to learn many useful knowledge.

Project SEED is a wonderful program that opened my eyes to a great many things. I am very grateful that I was able to be part of it.

Even though I do not want to continue my research I feel that Project SEED did very good to me. It helped me understand more about chemistry.

I found this program at Stevens extremely useful and helpful in having a feel for what is in store for the future in college.

I feel we the students should have a greater choice of what project we want to undertake. Personally speaking I love astronomy and wind tunnel work.

Project SEED gives many opportunities to urban area teenagers that will be useful in the future.

Project SEED Program is a very good program and very effective if utilized to the maximum. I thank you sincerely for the opportunity.

My experience in the Project SEED Program was the most wonderful experience at a job site that I have ever had.

I had a delightful and learning experience in this program. I urge preceptors and directors of such programs to continually encourage students.

I think that I may not have been the best candidate for this project because I've always known I was going to college.

Sometimes I was very confused. But overall, I enjoyed it. I'll never be a chemist.

Nonlinear optics was unknown to me before I participated in this program. I found the program, therefore, enlightening.

I think is a good program that encourages students to keep on studying and shows how important is to be a scientist.

I would like to recommend that this is the best summer program and gave the choice of living for the students.

Project SEED was great. If I didn't have an interest in science I do now. It was a great learning experience.

Excellent Program.

It was an excellent experience.

I'm very glad I got involved in this program this summer. I've learned a lot about the scientific field.

Overall I felt the project was pretty good, but underpaid.

It was a great experience I did not want it to end. I would encourage anybody I know to go into the project.

The Project SEED Program was very interesting while I was there. I was able to learn many new things. My studies were very fulfilling.

I enjoyed the experience greatly because of the camaraderie developed between other participants, students, and professors.

It would benefit the participants of the programs if a specific outline including dates was to be followed for course of action.

I would like to thank Project SEED for letting me develop skills and abilities, and to know that science it's not just what you see in high school.

The Project SEED Program was a very good experience for me. I not only enjoyed what I did, but acquired additional job skills.

I would like to say that not only did project SEED plant me in a forest, but in the forest of Wisdom.



I really enjoyed working at the center this summer. All of my co-workers were very friendly and willing to help me.

It was a terrific program; it taught me so much and it is an experience that I will never forget.

The Project SEED Program was a great program all the people were nice, and I would really like to continue this program next year.

I learned a lot though this summer experience that not many young people get the chance to learn. Thank you.

Project SEED was a wonderful experience with a wonderful coordinator who was understanding and lovable.

Good! I learned a lot, not only from experiments but also what it's like to work in a lab environment.

I enjoyed it very much & I thank Stan Johnston for everything! He's wonderful.

The overall experience was great and I had a wonderful time. Thanks to ACS.

This is best summer research experience I have had. I would like to continue next summer in research.

I really enjoyed the experience of working in a serious scientific endeavour. The people that I worked with were all very helpful.

Although my project didn't work like I wished it would, project SEED that taught me that with science perfection isn't always possible.

It would be nice if we could get to know some SEED project students before the poster session.

It was a great learning experience. I would recommend this type of program to anyone who is interested.

This is a very rewarding experience. I got first hand basis on what it is like to work in a chemistry lab.

My teachers had a very great knowledge in organic chemistry. I hope they keep working hard and help others.

It was the better summer from the rest of the ones that I have come here.

The Summer of 1992, thanks to the Project SEED program and Phillis Crow's group, has been a great learning and growing experience.

This program has helped me by giving me a feel of what Science is really about.

Dr. Church was always willing to explain things and let me learn.

I feel that through this research I have done in Project SEED it has helped me to choose a college major.

I really enjoyed myself at Project SEED this summer. I learned a lot and I gained a lot of confidence in myself.

Before this summer, I had never heard of spectroscopy. I will leave knowing that I have gained knowledge in spectroscopy,

I am interested in continuing my research in lab 727 next summer. I really enjoyed this program.

A truly good experience in learning.

This program was a great experience.

The thing I am most excited about is the techniques I learned in the lab, and the head start they will give me in college.

The people I worked with was great. I would like to work in the same lab next year.

The SEED program is a very good way to obtain the hands-on experience needed for future decisions to be made.

I feel that there should be more programs like Project SEED available for teenagers.

I feel Project SEED was not only good experience in the science field but also gave me a sense of responsibility.

I think that this was an experience I will never forget. Thanks a lot for letting me in the Project SEED summer program.

The Project SEED Program left a lasting impression on me because it not only exposed me to the scientific world, but also stimulated personal growth.

Because of the time period, I was not able to do greater, in-depth research on my project this Summer. I really hope to continue.

I liked working with real professors.

I had a great time. My lab partners were great and I learned much concerning environmental chemistry.

Project SEED opened an understanding of what complex chemistry is like and why its like that. It helped me learn new techniques.

I really enjoyed observing the different color changes after adding acid and base to chemicals.

Project SEED was a well spent summer. I learned a lot from the program and the people that I worked with.

The project SEED program was a very good experience for me because of the research skills it helped me to develop this summer.

How many questionnaires do you need? I enjoyed my experiences and also learned a lot.

This summer was a great experience, but I feel more SEED students would actually go into a field of science if some of their interests in schools and careers are combined in scholarships and financial help.

I must insert that Project SEED is one of the most interest-provoking and rewarding programs I've ever been in.

I enjoyed this summer very much. It was worth it.

I feel that the SEED Program was a very good experience for me because and I've always been drawn to the scientific fields.

Although, I doubt that I will pursue a career in the sciences. Project SEED did teach me to appreciate science and chemistry.

I really enjoyed staying at the University of Minnesota. It was a great experience for me being out-of-state.

Being in the project SEED Program made me realize what chemistry is all about. It's not just doing "NEAT" experiments.

I would like to continue more research with the same preceptor next summer because I am quite familiar with the equipment.

The Project SEED Program was fun and a great learning experience. I just wish the summer was longer so I could do more experiments.

I feel really great about this experience in summer. I learned how to work in a lab, with my mentors and other lab mates.

Project SEED program gives me many experiences and opportunities to discover about other fields and careers in sciences.

Higher pay would be nice for the hard work. More social events, gatherings. Good on limited size of program. Late paycheck.



I feel that my work was a very positive experience for me. My knowledge of chemistry was greatly increased through my research.

I enjoyed the project that I did. I am glad that I entered Project SEED and was accepted because I have learned and received a lot of information about science.

This year Project SEED was a experience for me cause I never took chemistry. I learned how to do chemical equations and experiments.

It had been a great experience and I have learned much more than what I have expected.

I found that it was an excellent program that allowed me to explore the area of scientific research and get paid for it.

Another two weeks would have been great to wrap things up, but still, the program was great!

I had a great time working in the UAPB Research Center. I learned more about science & scientific research than I even knew.

I really enjoyed this summer working at DuPont. It was a very good practical science experience, I met a lot of people.

Thank you, for providing me with the opportunity to participate in your program. I am looking forward to participating next year.

This summer has been a life time experience for me because it opened a lot of doors for me and other students.

Project SEED helped me experience graduate work. By talking to people who are working on their PhD, it also allowed me to consider the degree I want.

I am glad project SEED gave me the opportunities to work in a scientific field this summer. I learned a lot from the program.

Although I only participated in SEED program for a month, my exposure to some of the practices of chemists has helped me.

The project SEED program was a wonderful experience. I enjoyed the work and I feel more comfortable in a lab.

As a student of ACS project SEED program, I believe that it is a very educational program. I had enjoyed my work.

I thoroughly enjoyed myself although I was the only high-school student in the chemical engineering department.

Being in the SEED program was very enjoyable. It helped me set my priorities straight while getting a taste of the real world.

I believe that the Project SEED Program has allowed me to view how a scientific lab operates in a manner which high school could not have provided.

I think this is a worthwhile program. I have learned many things and I think this opportunity should be made available to more students.

I liked the Project SEED program very much. It helped me to get more interested on science and also it aided me in choosing a major.

Although I did learn a lot this summer I am not interested in participated in the SUMMER II program because I do not plan to pursue a scientific career.

I think this program is very good for students who plan to go into the science field.

In this Project SEED program I learned and experienced many new things. I became more experienced with real world encounters.

I think that this program is really good for people like me. This was a chance of a lifetime.

I feel that project SEED is a wonderful opportunity for "would be" scientist. This project teaches a person important skills.

Project SEED was a little disorganized at first. I didn't know where I'd be working or how to dress.

During the time I spent in Project SEED I learned a lot of things in many areas, like how to make a research paper.

The project SEED program is a great experience for high school level students in both scientific and social aspects.

In acknowledging the mentors about what the summer program is, make sure the mentors have a pre project before the start of the program.

The students and doctors I worked with at the Nuclear Research and Structures Lab taught me a lot.

It was a wonderful learning experience that opened many doors for me.

## SUMMER II 1992 Project SEED Survey Report

### Purpose of Survey

The students participating in the 1992 Project SEED Summer II program were asked to respond to two questionnaires--one at the beginning of the project and one at the end of the project--as they were in 1991. The two questionnaires were designed to determine whether the students' future educational and occupational plans changed after participation in the Project SEED program. The information from this year's survey, in comparison with the information from last year's survey, is useful in determining the effects of a second year in the program.

### Results

All 54 of the participants in the 1992 Project SEED Summer II program returned initial questionnaires and 52 (96%) returned follow-up questionnaires.

The results of this survey, indicate that the participants in the Project SEED Summer II program, like the participants in the Summer I program, are, for the most part, disadvantaged youth. Most of the students come from low-income families in which the parents have relatively little education and work in blue-collar and service occupations. Most are of minority racial or ethnic background and about two-fifths live in single-parent families.

#### *Demographic Characteristics.*

The following are highlights of the demographic characteristics of the participants in the 1992 Project SEED Summer II program:

#### Gender, Race, and Age.

- Unlike the Summer I students, and unlike the Summer I students last year, from which the Summer II students were selected, the students in this year's program were predominantly male (Table 1).



Almost 60% were male and 40% were female, a reversal of the proportions in last year's Summer I program.

- The students are primarily of minority racial or ethnic background (Table 2). Blacks are 32% of the students, Hispanics, 30%, whites 17%, and Asians 18%. One student was American Indian and one student indicated "other" racial or ethnic background.
- A little less than half of the students are 18 years old and almost a third are 17 years old (Table 3). The ages ranged from 15 to 19.

#### Family background.

- Almost two-thirds of the students live in two-parent households (Table 4) and 38% live in mother-headed households.
- Almost half of the students are the oldest child in the family.
- The students are least likely to be the youngest child (9%). Eighteen percent are only children, and 24% are the middle child (Table 5).
- About half of the students are from small families (only one or two children). Twenty-four percent are from large families (four or more children).
- About 40% of the mothers and fathers of the students have a high school education or less. About one-fourth of the mothers and one-third of the fathers have at least a college diploma (Tables 7 and 8).
- Of those mothers and fathers who live with the respondent, close to 30% of the mothers and 33% of the fathers do not work (Tables 9 and 10). The most prevalent mother's occupations were clerical or sales work (25%), and service work (18%). An additional 8% are teachers, 6% are scientists or medical professionals, 2% are in skilled crafts, 10% are in semiskilled occupations, and 2% are in unknown occupations.
- The fathers are most likely to work as service workers (18%) or as owners or managers (15%). An additional 3% are technicians, 9% are professionals, 9% are in clerical or sales work, 9% are semiskilled workers, and 3% are in skilled crafts.

- The family incomes of the students are mostly low. Thirty percent have incomes below \$12,000 (Table 11). More than half have incomes below \$20,000. Only 4% (2 students) have family incomes of \$38,000 or more.

#### Educational background.

- Most (72%) are now high school graduates (Table 12). Almost all of the rest are high school seniors.
- Virtually all have taken Algebra 1, Algebra 2, and Geometry. Almost three-fourths have taken Calculus, and about have taken computer courses.
- In science, almost all have taken Biology and Chemistry, three-fourths have taken Physics, two-thirds have taken Physical Science, and more than half have taken Earth Science. (Table 14). These are substantially higher than last year's Summer I results, indicating that most took science and math courses in the last year.
- More than half had laboratory components associated with their computer courses, but few had laboratory components associated with their math courses (Table 15). On the other hand, almost all of the students who took Biology, Chemistry, or Physics had labs associated with the course (Table 16). Eighty-eight percent of the students who took Chemistry had labs.
- More than half of the students had average grades of A+, A, or A- (Table 17). Most of the rest are B students. Only 4% (2 students) are C students.
- About half have mostly As in English and 60% or more have mostly As in Math, Science, or in Social Studies (see Tables 18 to 21).

#### *Educational and Occupational Aspirations.*

To determine whether and how the students' aspirations changed as a result of Project SEED, some items on the questionnaire were asked on both the initial survey and the follow-up survey.

The students as a whole have high aspirations for educational and occupational attainment. They expect to go to graduate school, expect to major in biology/life science, health professions, engineering, or chemistry, and they expect to be scientists, engineers, or mathematicians in the future. Of those who responded to the initial questionnaire, 80% expect to go to graduate or professional school, more than one-third plan to major in chemistry, and 80% think there is a very good chance they will become a scientist, engineer, or mathematician in the future.

After participation in the Summer II Program, the students' aspirations for educational and occupational attainment were little changed from what they were prior to participation in Summer II Program. The change in aspirations can best be seen by looking only at those who responded to both the initial and the follow-up questionnaire. The proportion of students expecting to attend graduate school remained the same (79%), the proportion planning to be scientists increased slightly from 79% to 83%, and the percent who planned to major in chemistry decreased slightly from 31% to 27% (Table 34 to 36).

The students' aspirations did, however, change dramatically from what they had been at the end of last year's Summer I Program. At the end of the Summer II Program, 79% planned to attend graduate school, compared to only 62% of the same students who thought so at the end of last year's Summer I Program. At the end of the summer, eighty-two percent of the Summer II students said it's a very good chance they will become a scientist, compared to only 53% of the same students at the end of last year. The proportion planning chemistry majors increased only slightly to 28% at the end of Summer II, from 26% at the end of Summer I (Table 38).

#### *Respondents' Evaluations of Project SEED*

Respondents were asked whether they agreed with, were neutral toward, or disagreed with several statements describing how Project SEED helped them. The primary benefits of the program are helping the students to discover their own skills and abilities, to understand the purpose of research, to learn what advanced study is like, to develop responsibility, and to learn about employment opportunities. (Table 32). Only about half agreed that Project SEED helped them to decide to continue their education after high school, to choose a college major, or to decide to pursue a career in a scientific field. This is consistent with the findings above, that the educational expectations, occupational aspirations, and planned college majors of the students did not change much after



planned college majors of the students did not change much after participation in the Summer II program.

Overall, most (77%) thought their experience in the Project SEED program was great (Table 23). Another 19% said it was pretty good. Only 4% (2 students) thought it was not bad.

PROJECT SEED SUMMER II  
Initial Student Survey  
Summer 1992

Table 1.

	Frequency	Percent
Sex		
Female	22	40.7%
Male	32	59.3%
TOTAL	54	100.0%

Table 2.

	Frequency	Percent
Race		
American Indian	1	1.9%
Asian	10	18.5%
Black	17	31.5%
Hispanic	16	29.6%
White	9	16.7%
Other	1	1.9%
TOTAL	54	100.0%

Table 3.

	Frequency	Percent
Age		
15	1	1.9%
16	5	9.3%
17	18	33.3%
18	26	48.1%
19	4	7.4%
TOTAL	54	100.0%

Table 4.

	Frequency	Percent
Who Do You Live With		
Mother Only	20	37.7%
Mother and Father	33	62.3%
TOTAL	53	100.0%

Table 5.

	Frequency	Percent
Do You Have-		
No brothers or sisters	10	18.5%
Older brothers or sisters	5	9.3%
Younger brother or sister	26	48.1%
Older and Younger (or twin) brothers or sisters	13	24.1%
TOTAL	54	100.0%

Table 6.

	Frequency	Percent
Number of Siblings		
None	10	18.5%
One	16	29.6%
Two	15	27.8%
Three	5	9.3%
Four	7	13.0%
Seven	1	1.9%
TOTAL	54	100.0%



Table 7.

	Frequency	Percent
Mothers education		
Some high school	11	20.4%
High school graduate	11	20.4%
Attended vocational	6	11.1%
Graduated vocational	5	9.3%
Some college	6	11.1%
College degree	9	16.7%
Master's degree	3	5.6%
Doctoral degree	1	1.9%
Don't know	2	3.7%
TOTAL	54	100.0%

Table 8.

	Frequency	Percent
Fathers education		
Some high school	7	13.5%
High school graduate	12	23.1%
Attended vocational	4	7.7%
Graduated vocational	9	17.3%
College degree	11	21.2%
Master's degree	5	9.6%
Doctoral degree	1	1.9%
Don't know	3	5.8%
TOTAL	52	100.0%

Table 9.

	Frequency	Percent
Mothers job		
Teacher	4	7.8%
Scientist	1	2.0%
Medical prof	2	3.9%
Technician	1	2.0%
Clerical/sales	13	25.5%
Skilled crafts	1	2.0%
Semiskilled	5	9.8%
Service	9	17.6%
Not employed	13	25.5%
Disabled	1	2.0%
Don't know	1	2.0%
TOTAL	51	100.0%

Table 10.

	Frequency	Percent
Fathers job		
Teacher	1	3.0%
Other prof	2	6.1%
Technician	1	3.0%
Owner/manager	5	15.2%
Clerical/sales	3	9.1%
Skilled crafts	1	3.0%
Semiskilled	3	9.1%
Service	6	18.2%
Not employed	10	30.3%
Disabled	1	3.0%
TOTAL	33	100.0%

Table 11.

	Frequency	Percent
Family income		
\$6,999 or less	9	17.0%
\$7,000 to \$11,999	7	13.2%
\$23,000 to \$15,999	7	13.2%
\$16,000 to \$19,999	9	17.0%
\$20,000 to \$24,999	11	20.8%
\$25,000 to \$37,999	8	15.1%
\$38,000 or more	2	3.8%
TOTAL	53	100.0%

Table 12.

	Frequency	Percent
Grade in school		
11th	1	1.9%
12th	14	25.9%
High school graduate	39	72.2%
TOTAL	54	100.0%

Table 13.

	Frequency	Percent
Math Courses		
Remedial math	12	22.2%
Pre algebra	37	68.5%
Algebra 1	52	96.3%
Algebra 2	52	96.3%
Geometry	54	100.0%
Calculus	39	72.2%
Computers	26	48.1%
TOTAL	54	100.0%

Table 14.

	Frequency	Percent
Science Courses		
Biology	51	96.2%
Chemistry	51	96.2%
Physics	39	73.6%
Physical science	35	66.0%
Earth science	29	54.7%
TOTAL	53	100.0%



Table 15.

	Frequency	Percent
Math Lab		
Remedial lab	1	8.3%
Pre algebra lab	3	8.1%
Algebra 1 lab	3	5.8%
Algebra 2 lab	5	9.6%
Geometry lab	7	13.0%
Calculus lab	8	20.5%
Computer lab	17	65.4%

Table 16.

	Frequency	Percent
Science Labs		
Biology lab	42	82.4%
Chemistry lab	45	88.2%
Physics lab	35	89.7%
Phys science lab	16	45.7%
Earth science lab	13	44.8%

Table 17.

	Frequency	Percent
Grade point average		
A+	8	14.8%
A	12	22.2%
A-	10	18.5%
B+	10	18.5%
B	5	9.3%
B-	7	13.0%
C	2	3.7%
TOTAL	54	100.0%

Table 18.

	Frequency	Percent
Grades in English		
Mostly As	26	48.1%
Mostly Bs	22	40.7%
Mostly Cs	6	11.1%
TOTAL	54	100.0%

Table 19.

	Frequency	Percent
Grades in Math		
Mostly As	36	66.7%
Mostly Bs	15	27.8%
Mostly Cs	3	5.6%
TOTAL	54	100.0%

Table 20.

	Frequency	Percent
Grades in Science		
Mostly As	38	70.4%
Mostly Bs	12	22.2%
Mostly Cs	4	7.4%
TOTAL	54	100.0%

Table 21.

	Frequency	Percent
Grades in Social Studies		
Mostly As	32	59.3%
Mostly Bs	15	27.8%
Mostly Cs	6	11.1%
Mostly Ds	1	1.9%
TOTAL	54	100.0%

Table 22.

	Frequency	Percent
How much education do you expect to complete		
Some college	1	1.9%
4 yr college	10	18.5%
Graduate school	43	79.6%
TOTAL	54	100.0%

Table 23.

	Frequency	Percent
First choice major		
Agriculture	1	1.9%
Architecture	1	1.9%
Biological Science	4	7.4%
Education	1	1.9%
Engineering	7	13.0%
Health Professions	9	16.7%
Mathematics	2	3.7%
Chemistry	18	33.3%
Physics	4	7.4%
Social Science	2	3.7%
Other	5	9.3%
TOTAL	54	100.0%



Table 24.

	Frequency	Percent
Second choice major		
Architecture	1	1.9%
Biological Science	10	19.2%
Business	1	1.9%
Computer Science	4	7.7%
Education	2	3.8%
Engineering	9	17.3%
Languages	1	1.9%
Health Professions	6	11.5%
Mathematics	4	7.7%
Astronomy	1	1.9%
Chemistry	9	17.3%
Physics	2	3.8%
Social Science	1	1.9%
Other	1	1.9%
TOTAL	52	100.0%

Table 25.

	Frequency	Percent
Third choice major		
Biological Science	6	12.0%
Business	3	6.0%
Communications	2	4.0%
Computer Science	4	8.0%
Engineering	5	10.0%
Languages	1	2.0%
Health Professions	6	12.0%
Mathematics	4	8.0%
Military Science	1	2.0%
Astronomy	2	4.0%
Chemistry	6	12.0%
Earth Science	2	4.0%
Physics	5	10.0%
Social Science	2	4.0%
Other	1	2.0%
TOTAL	50	100.0%

Table 26.

	Frequency	Percent
How likely is it that you will become a scientist		
Very good chance	43	79.6%
Even chance	10	18.5%
Not a very good chance	1	1.9%
TOTAL	54	100.0%

PROJECT SEED SUMMER II  
Follow-Up Student Survey  
Summer 1992

Table 27.

	Frequency	Percent
How much education do you expect to complete		
High school graduate	1	1.9%
4 yr college	10	19.2%
Graduate school	41	78.8%
TOTAL	52	100.0%

Table 28.

	Frequency	Percent
First choice major		
Architecture	1	1.9%
Biological Science	7	13.5%
Communications	1	1.9%
Engineering	10	19.2%
Health Professions	8	15.4%
Mathematics	1	1.9%
Astronomy	1	1.9%
Chemistry	14	26.9%
Earth Sciences	1	1.9%
Physics	3	5.8%
Other	5	9.6%
TOTAL	52	100.0%



Table 29.

	Frequency	Percent
Second choice major		
Architecture	1	2.0%
Biological Science	13	26.0%
Computer Science	2	4.0%
Education	2	4.0%
Engineering	5	10.0%
Languages	1	2.0%
Health Professions	4	8.0%
Mathematics	2	4.0%
Astronomy	2	4.0%
Chemistry	14	28.0%
Earth Sciences	1	2.0%
Physics	1	2.0%
Social Science	1	2.0%
Other	1	2.0%
TOTAL	50	100.0%

Table 30.

	Frequency	Percent
Third choice major		
Agriculture	1	2.1%
Biological Science	4	8.3%
Business	2	4.2%
Communications	1	2.1%
Computer Science	4	8.3%
Education	2	4.2%
Engineering	1	2.1%
Languages	3	6.3%
Health Professions	8	16.7%
Home Economics	1	2.1%
Literature	1	2.1%
Mathematics	3	6.3%
Astronomy	1	2.1%
Chemistry	7	14.6%
Physics	5	10.4%
Social Science	3	6.3%
Other	1	2.1%
TOTAL	48	100.0%

Table 31.

	Frequency	Percent
How likely is it that you will become a scientist		
A very good chance	43	82.7%
Even chance	8	15.4%
Not a very good chance	1	1.9%
TOTAL	52	100.0%

Table 32. Project SEED helped me:

	Agree	Neutral	Disagree	Total
Discover skills and abilities	47 90.4%	5 9.6%	0 0.0%	52 100.0%
Develop self-confidence	37 71.2%	14 26.9%	1 1.9%	52 100.0%
Develop responsibility	42 80.8%	10 19.2%	0 0.0%	52 100.0%
Learn what advanced study is like	45 86.5%	7 13.5%	0 0.0%	52 100.0%
Understand the purpose of scientific research	46 88.5%	6 11.5%	0 0.0%	52 100.0%
Understand the ethical behavior of chemists	41 78.8%	11 21.2%	0 0.0%	52 100.0%
Develop greater interest in scientific/technical areas	41 78.8%	10 19.2%	1 1.9%	52 100.0%
Decide to continue my education after high school	26 50.0%	23 44.2%	3 5.8%	52 100.0%
Choose a college major	28 53.8%	21 40.4%	3 5.8%	52 100.0%
Learn about employment opportunities	42 80.8%	9 17.3%	1 1.9%	52 100.0%
Decide to pursue a career in a scientific/technical field	27 51.9%	21 40.4%	4 7.7%	52 100.0%

Table 33.

	Frequency	Percent
How would you rate your Project SEED Summer II program?		
Great	40	76.9%
Pretty good	10	19.2%
Not bad	2	3.8%
TOTAL	52	100.0%



## Comparison of Initial Survey and Followup Survey Results\*

Table 34.

	Initial	Followup
Educational expectations		
High school graduate	---	1.9%
Some college	1.9%	---
4 yr college	19.2%	19.2%
Graduate/prof school	78.8%	78.8%
Number of responses	52	52

Table 35.

	Initial	Followup
Likelihood of being a scientist		
Very good chance	78.8%	82.7%
Even chance	19.2%	15.4%
Not a very good chance	1.9%	1.9%
Number of responses	52	52

Table 36.

	Initial	Followup
First choice major		
Chemistry	30.8%	26.9%
Engineering	13.5%	19.2%
Health professions	17.3%	15.4%
Biology/Life science	7.7%	13.5%
Other science, math	15.3%	11.5%
Other	15.3%	13.4%
Number of responses	52	52

\*only those who responded to both surveys

## CHANGE IN ASPIRATIONS FROM SUMMER I PROGRAM TO SUMMER II PROGRAM

	End of Summer I	End of Summer II
Percent planning to attend graduate school	61.5	78.8
Percent saying its a very good chance they will become a scientist	53.1	81.6
Percent planning chemistry major (1st choice major)	25.5	27.5
Percent planning chemistry major (2nd choice)	26.5	26.5
Percent planning chemistry major (3rd choice)	8.5	14.9
Percent agreeing that Project SEED helped them:		
Discover skills and abilities	83.7	89.8
Develop self-confidence	69.4	73.5
Develop responsibility	81.6	81.6
Learn what advance study is like	87.8	89.8
Understand the purpose of scientific research	87.8	83.7
Understand ethical behavior	79.6	83.7
Develop greater interest in scientific/technical areas	73.5	77.6
Decide to continue education	63.3	51.0
Choose a college major	53.1	44.9
Learn about employment opportunities	79.6	71.4
Decide to pursue a career in a scientific/technical field	51.0	46.9

(Based on 52 respondents who responded to both the post Summer I and post Summer II surveys.)

## COMMENTS

I'm really glad that there's a program like Project SEED & glad ACS gave me this great opportunity.

Without SEED I probably wouldn't have gotten into the college of my choice.

This was a great experience for me & I learned a lot this summer with my mentor.

My SEED experiences have given me a better insight into the field of chemistry.

My favorite part of the program is I got to do my project on my own & if I needed help I got it.

My second year was better because I knew what was going on & I could understand the concepts.

I think that SEED is an incredible program that allows each student to become more aware of science.

Working in SEED for the past two years has been invaluable.

The Program should be extended for a longer period.

I've wanted to become a doctor since the age of 12, now I want to be a surgeon & a scientist.

I feel that SEED is an excellent way to obtain a scientific education before entering college.

I think SEED is great, but it would be nice if we got more recognition.

This had been a great opportunity for me.

It was a very valuable experience because SEED helped me to realize the importance of science.

I am grateful to be a part of SEED-ACS program.

Project SEED helped me decide on what I want to major in and also what I would devote my career to.

I would like to thank the SEED program for giving me the opportunity to study in this field.



I have experienced a lot through the program, I'm glad I had the opportunity to do high tech research.

The Project SEED program enabled me to experience the work site of a technical job.

The Program should not only emphasize chemistry & should give a broader range of fields in science.

My instructor was very helpful & understanding about me, she helped me to understand science.

The program, I consider is a turning point of my life. I knew what I wanted but it was a dream.

I am hoping to participate in a Summer III program.

I enjoyed working here & am extremely grateful for being given the chance.

Project SEED Program has really been great & had an impact upon me.

I feel that the SEED program is a very good program & offers a variety of things in science.

It would be nice if the preceptor were to explain in more detail what the procedures mean.

I truly believe I gain more by learning scientific/tech. methods and techniques at Agrisense.

My second summer in the program has taught me many new lab. skills & reinforced my decision to pursue a career in biochemistry.

The SEED program enabled me to see & participate in scientific research.

I really enjoyed my summer and I learned a lot. I think that others will also benefit by it.

I enjoyed Project SEED Summer II Program. I hope that there can be a possible SEED III.

This year was a good learning experience for me. I enjoyed learning more about research.

I suggest that many students should be included in this program.

I felt that the research opportunity was phenomenal, both years.

It was a great experience, I won't forget this opportunity you gave me.

The Project SEED Program is a very good program. I really appreciate the opportunity

that this program gave me.

I'm really interested in returning as a freshman. The experience you earn is the best part.

I learned the art of doing organic synthesis in this gastrointestinal research lab.

I feel that this is a great experience and am proud to have been a part of it.

My experiences in the SEED program have been innovative, inspiring, and memorable.

It was because of this and past experiences that allowed me to realize where my talents & goals were.



**PROJECT SEED. SUMMER I  
INITIAL STUDENT SURVEY  
SUMMER 1992**

Please complete this form as you apply to the Project SEED program in your area. This survey along with the Follow-Up Student Survey, serves as the basis for information to determine the impact and scope of the Project SEED program. These surveys (Initial Student and Follow-Up Student) and the Student Report Form must be completed and sent to the Project SEED office in Washington, DC in order to receive your final \$200 educational award at the end of the summer.

This sheet will be separated from the rest of your questionnaire so that your answers will be kept confidential. All sheets will be destroyed after the information is coded into the computer. The aggregate information received from all the SEED participants nationwide will be used to help the Committee on Project SEED improve the program in future summers. Thank you for your time and commitment to scientific research and for your honest answers to the survey questions. Have a great summer!

DATE \_\_\_\_\_

NAME \_\_\_\_\_

HOME ADDRESS \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

HOME TELEPHONE \_\_\_\_\_

(area code)

**PLEASE RETURN THE COMPLETED SURVEY IN THE ATTACHED  
ENVELOPE WITHIN THE FIRST FIVE DAYS OF YOUR PROJECT SEED  
PROGRAM.**



PROJECT SEED INITIAL STUDENT SURVEY

1. Are you:

<sub>1</sub> Female

<sub>2</sub> Male

2. To which racial or ethnic group do you belong?

<sub>1</sub> American Indian or Alaskan Native

<sub>2</sub> Asian or Pacific Islander

<sub>3</sub> Black (non-Hispanic)

<sub>4</sub> Hispanic

<sub>5</sub> White (non-Hispanic)

<sub>6</sub> Other racial or ethnic group

3. How old were you on your last birthday?

\_\_\_\_\_ years old.

4. Who do you live with? Check all the boxes that apply.

Mother, step-mother or female guardian

Father, step-father or male guardian

Older brother or sisters

Younger brothers or sisters

Twin brother or sister

How many? \_\_\_\_\_

How many? \_\_\_\_\_

8. **Family income:** Check the box of the group that comes closest to the amount of money your family makes in a year.

- 1 \$6,999 or less
- 2 \$7,000 to \$11,999
- 3 \$12,000 to \$15,999
- 4 \$16,000 to \$19,999
- 5 \$20,000 to \$24,999
- 6 \$25,000 to \$37,999
- 7 \$38,000 or more

9. **What grade will you enter in September 1992?**

- 1 10th
- 2 11th
- 3 12th
- 4 High school graduate

10. **Which of the following subjects have you taken?**  
If you have not taken mathematics or science in the last three years, check here:

**MATHEMATICS/COMPUTER SCIENCE**  
(check all that apply)

Check here  
If there was a  
Lab component

- |                          |   |                          |
|--------------------------|---|--------------------------|
| <input type="checkbox"/> | Remedial, business, consumer, or<br>general mathematics | <input type="checkbox"/> |
| <input type="checkbox"/> | Pre-algebra   | <input type="checkbox"/> |
| <input type="checkbox"/> | Algebra, 1st year                                       | <input type="checkbox"/> |
| <input type="checkbox"/> | Algebra, 2nd year                                       | <input type="checkbox"/> |
| <input type="checkbox"/> | Geometry  | <input type="checkbox"/> |
| <input type="checkbox"/> | Calculus, advanced mathematics                          | <input type="checkbox"/> |
| <input type="checkbox"/> | Computer literacy, programming                          | <input type="checkbox"/> |

**SCIENCE**  
(check all that apply)

Check here  
If there was a  
Lab component

- |                          |                                       |                          |
|--------------------------|---------------------------------------|--------------------------|
| <input type="checkbox"/> | Biology, environmental, life sciences | <input type="checkbox"/> |
| <input type="checkbox"/> | Chemistry                             | <input type="checkbox"/> |
| <input type="checkbox"/> | Physics                               | <input type="checkbox"/> |
| <input type="checkbox"/> | Physical science                      | <input type="checkbox"/> |
| <input type="checkbox"/> | Earth/space sciences                  | <input type="checkbox"/> |

14. If you plan to go to college, list your choice of majors. (See list below)

First Choice -

Second Choice -

Third Choice -

- |   |   |
|---|---|
| 01 - Agriculture and Natural Resources            | 13 - Library Science                            |
| 02 - Architecture and Environmental Design        | 14 - Mathematics                                |
| 03 - Biological and Life Science                  | 15 - Military Sciences                          |
| 04 - Business and Commerce                        | 16 - Philosophy, Religion, and Technology       |
| 05 - Communications (Advertising, Business, etc.) | 17 - Astronomy                                  |
| 06 - Computer and Information Sciences            | 18 - Chemistry                                  |
| 07 - Education                                    | 19 - Earth Sciences and Geology                 |
| 08 - Engineering and Engineering Technologies     | 20 - Physics                                    |
| 09 - Foreign Languages and Classical Languages    | 21 - Social Sciences, History, & Public Affairs |
| 10 - Health Professions                           | 22 - Technical and Vocational                   |
| 11 - Home Economics                               | 23 - Other, specify _____                       |
| 12 - Language and Literature                      |   |
- 

15. How likely is it that you will become a scientist, engineer or mathematician in the future?  
(Check one)

- <sub>1</sub> A very good chance (better than 50%)
- <sub>2</sub> Even chance (50%)
- <sub>3</sub> Not a very good chance (less than 50%)

**PLEASE RETURN THE COMPLETED SURVEY IN THE ATTACHED ENVELOPE  
WITHIN THE FIRST FIVE DAYS OF YOUR PROJECT SEED PROGRAM.**



**Project SEED Summer I  
Follow-Up Student Survey  
Summer 1992**

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**NAME AND ADDRESS OF A PERSON WHO  
WILL ALWAYS KNOW WHERE YOU LIVE**

NAME \_\_\_\_\_

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

ADDRESS \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

HOME TELEPHONE \_\_\_\_\_  
(area code)

HOME TELEPHONE \_\_\_\_\_  
(area code)

PRECEPTOR \_\_\_\_\_

INSTITUTION \_\_\_\_\_

## PROJECT SEED FOLLOW-UP STUDENT SURVEY

1. How much education do you expect to complete?

- 1 Some high school
- 2 High school graduate
- 3 Vocational, trade, or business school
- 4 Some college
- 5 2 - year college graduate
- 6 4 - year college graduate
- 7 Graduate or professional school

2. If you plan to go to college, list your choice of majors. (See list below)

First Choice -

Second Choice -

Third Choice -

- |   |   |
|---|---|
| 01 - Agriculture and Natural Resources            | 13 - Library Science                            |
| 02 - Architecture and Environmental Design        | 14 - Mathematics                                |
| 03 - Biological and Life Sciences                 | 15 - Military Sciences                          |
| 04 - Business and Commerce                        | 16 - Philosophy, Religion, and Technology       |
| 05 - Communications (Advertising, Business, etc.) | 17 - Astronomy                                  |
| 06 - Computer and Information Sciences            | 18 - Chemistry                                  |
| 07 - Education                                    | 19 - Earth Sciences and Geology                 |
| 08 - Engineering and Engineering Technologies     | 20 - Physics                                    |
| 09 - Foreign Languages and Classical Languages    | 21 - Social Sciences, History, & Public Affairs |
| 10 - Health Professions                           | 22 - Technical and Vocational                   |
| 11 - Home Economics                               | 23 - Other, specify _____                       |
| 12 - Language and Literature                      |   |
-

5. Overall, how would you rate your Project SEED program? (Please check only one box.)

- <sub>1</sub> Great
- <sub>2</sub> Pretty good
- <sub>3</sub> Not bad
- <sub>4</sub> Pretty bad
- <sub>5</sub> Awful

6. Are you interested in continuing your research or starting a new research project next summer through the Project SEED Summer II program?

- <sub>1</sub> Yes
- <sub>2</sub> No

7. Other comments. Please feel free to make additional comments about your experiences in the Project SEED Program.

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**THIS COMPLETES THE QUESTIONNAIRE. THANK YOU FOR YOUR COOPERATION.**

**PLEASE RETURN THE COMPLETED SURVEY IN THE ATTACHED ENVELOPE WITHIN FIVE DAYS OF THE CONCLUSION OF YOUR PROGRAM.**





**PROJECT SEED, SUMMER II  
INITIAL STUDENT SURVEY  
SUMMER 1992**

Please complete this form as you apply to the Project SEED program in your area. This survey along with the Follow-Up Student Survey, serves as the basis for information to determine the impact and scope of the Project SEED program. These surveys (Initial Student and Follow-Up Student) and the Student Report Form must be completed and sent to the Project SEED office in Washington, DC in order to receive your final \$200 educational award at the end of the summer.

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DATE \_\_\_\_\_

NAME \_\_\_\_\_

HOME ADDRESS \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

HOME TELEPHONE \_\_\_\_\_  
(area code)

**PLEASE RETURN THE COMPLETED SURVEY IN THE ATTACHED  
ENVELOPE WITHIN THE FIRST FIVE DAYS OF YOUR PROJECT SEED  
PROGRAM.**

**PROJECT SEED INITIAL STUDENT SURVEY**

**1. Are you:**

<sub>1</sub> Female

<sub>2</sub> Male

**2. To which racial or ethnic group do you belong?**

<sub>1</sub> American Indian or Alaskan Native

<sub>2</sub> Asian or Pacific Islander

<sub>3</sub> Black (non-Hispanic)

<sub>4</sub> Hispanic

<sub>5</sub> White (non-Hispanic)

<sub>6</sub> Other racial or ethnic group

**3. How old were you on your last birthday?**

\_\_\_\_\_ years old.

**4. Who do you live with? Check all the boxes that apply.**

Mother, step-mother or female guardian

Father, step-father or male guardian

Older brother or sisters

Younger brothers or sisters

Twin brother or sister

How many? \_\_\_\_\_

How many? \_\_\_\_\_

5. What is the highest level of schooling completed by your parents or guardians?  
ANSWER FOR BOTH A AND B BELOW.

A Father (or male guardian) (Check one)	B Mother (or female guardian) (Check one)	
<input type="checkbox"/> 1	<input type="checkbox"/> 1	Did not finish high school
<input type="checkbox"/> 2	<input type="checkbox"/> 2	Graduated from high school or equivalent (GED)
<input type="checkbox"/> 3	<input type="checkbox"/> 3	After graduating from high school, attended a vocational school, a junior college, a community college, or another type of two-year school but did not complete a degree
<input type="checkbox"/> 4	<input type="checkbox"/> 4	Graduated from a vocational school, a junior college, a community college, or another type of two-year school
<input type="checkbox"/> 5	<input type="checkbox"/> 5	After graduating from high school, went to college but did not complete a four-year degree
<input type="checkbox"/> 6	<input type="checkbox"/> 6	Graduated from college with a bachelor's degree
<input type="checkbox"/> 7	<input type="checkbox"/> 7	Master's degree or equivalent
<input type="checkbox"/> 8	<input type="checkbox"/> 8	Ph.D., M.D., or other advanced professional degree
<input type="checkbox"/> 9	<input type="checkbox"/> 9	Don't know

6. What is your mother's (or female guardian's) job title?

---

7. What is your father's (or male guardian's) job title?

---



8. **Family income: Check the box of the group that comes closest to the amount of money your family makes in a year.**

- <sub>1</sub> \$6,999 or less
- <sub>2</sub> \$7,000 to \$11,999
- <sub>3</sub> \$12,000 to \$15,999
- <sub>4</sub> \$16,000 to \$19,999
- <sub>5</sub> \$20,000 to \$24,999
- <sub>6</sub> \$25,000 to \$37,999
- <sub>7</sub> \$38,000 or more

9. **What grade will you enter in September 1992?**

- <sub>1</sub> 10th
- <sub>2</sub> 11th
- <sub>3</sub> 12th
- <sub>4</sub> High school graduate

10. **Which of the following subjects have you taken?**

**If you have not taken mathematics or science in the last three years, check here:**

**MATHEMATICS/COMPUTER SCIENCE**  
(check all that apply)

**Check here**  
**If there was a**  
**Lab component**

- |                          |   |                          |
|--------------------------|---|--------------------------|
| <input type="checkbox"/> | Remedial, business, consumer, or<br>general mathematics | <input type="checkbox"/> |
| <input type="checkbox"/> | Pre-algebra   | <input type="checkbox"/> |
| <input type="checkbox"/> | Algebra, 1st year                                       | <input type="checkbox"/> |
| <input type="checkbox"/> | Algebra, 2nd year                                       | <input type="checkbox"/> |
| <input type="checkbox"/> | Geometry  | <input type="checkbox"/> |
| <input type="checkbox"/> | Calculus, advanced mathematics                          | <input type="checkbox"/> |
| <input type="checkbox"/> | Computer literacy, programming                          | <input type="checkbox"/> |

**SCIENCE**  
(check all that apply)

**Check here**  
**If there was a**  
**Lab component**

- |                          |                                       |                          |
|--------------------------|---------------------------------------|--------------------------|
| <input type="checkbox"/> | Biology, environmental, life sciences | <input type="checkbox"/> |
| <input type="checkbox"/> | Chemistry                             | <input type="checkbox"/> |
| <input type="checkbox"/> | Physics                               | <input type="checkbox"/> |
| <input type="checkbox"/> | Physical science                      | <input type="checkbox"/> |
| <input type="checkbox"/> | Earth/space sciences                  | <input type="checkbox"/> |

11. What is your approximate grade point average overall?

(Check one)

A+	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E/F
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9	<input type="checkbox"/> 10	<input type="checkbox"/> 11	<input type="checkbox"/> 12	<input type="checkbox"/> 13

12. For each of the school subjects listed below, mark the statement that best describes your grades in high school.

	ENGLISH	MATHEMATICS	SCIENCE	SOCIAL STUDIES
Mostly A's (a numerical average of 90-100)	<input type="checkbox"/> 1	<input type="checkbox"/> 1	<input type="checkbox"/> 1	<input type="checkbox"/> 1
Mostly B's (80-89)	<input type="checkbox"/> 2	<input type="checkbox"/> 2	<input type="checkbox"/> 2	<input type="checkbox"/> 2
Mostly C's (70-79)	<input type="checkbox"/> 3	<input type="checkbox"/> 3	<input type="checkbox"/> 3	<input type="checkbox"/> 3
Mostly D's (60-69)	<input type="checkbox"/> 4	<input type="checkbox"/> 4	<input type="checkbox"/> 4	<input type="checkbox"/> 4
Does not apply to me - my classes are not graded	<input type="checkbox"/> 5	<input type="checkbox"/> 5	<input type="checkbox"/> 5	<input type="checkbox"/> 5

13. How much education do you expect to complete?

- 1 Some high school
- 2 High school graduate
- 3 Vocational, trade, or business school
- 4 Some college
- 5 2 - year college graduate
- 6 4 - year college graduate
- 7 Graduate or professional school

14. If you plan to go to college, list your choice of majors. (See list below)

First Choice -

Second Choice -

Third Choice -

- |   |   |
|---|---|
| 01 - Agriculture and Natural Resources            | 13 - Library Science                            |
| 02 - Architecture and Environmental Design        | 14 - Mathematics                                |
| 03 - Biological and Life Science                  | 15 - Military Sciences                          |
| 04 - Business and Commerce                        | 16 - Philosophy, Religion, and Technology       |
| 05 - Communications (Advertising, Business, etc.) | 17 - Astronomy                                  |
| 06 - Computer and Information Sciences            | 18 - Chemistry                                  |
| 07 - Education                                    | 19 - Earth Sciences and Geology                 |
| 08 - Engineering and Engineering Technologies     | 20 - Physics                                    |
| 09 - Foreign Languages and Classical Languages    | 21 - Social Sciences, History, & Public Affairs |
| 10 - Health Professions                           | 22 - Technical and Vocational                   |
| 11 - Home Economics                               | 23 - Other, specify _____                       |
| 12 - Language and Literature                      |   |
- 

15. How likely is it that you will become a scientist, engineer or mathematician in the future?  
(Check one)

- <sub>1</sub> A very good chance (better than 50%)
- <sub>2</sub> Even chance (50%)
- <sub>3</sub> Not a very good chance (less than 50%)

**PLEASE RETURN THE COMPLETED SURVEY IN THE ATTACHED ENVELOPE  
WITHIN THE FIRST FIVE DAYS OF YOUR PROJECT SEED PROGRAM.**



**Project SEED Summer II  
Follow-Up Student Survey  
Summer 1992**

Please complete this form as you complete your Project SEED Summer II experience. This survey, along with the Initial Student Survey, serves as the basis for information to determine the impact and scope of the Project SEED program. **These surveys (Initial Student and Follow-up Student) and the Student Report Form must be completed and sent to the Project SEED office in Washington, DC in order to receive your final \$200 educational award at the end of the summer.**

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**NAME AND ADDRESS OF A PERSON WHO  
WILL ALWAYS KNOW WHERE YOU LIVE**

NAME \_\_\_\_\_

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

ADDRESS \_\_\_\_\_

HOME TELEPHONE \_\_\_\_\_  
(area code)

HOME TELEPHONE \_\_\_\_\_  
(area code)

PRECEPTOR \_\_\_\_\_

INSTITUTION \_\_\_\_\_

## PROJECT SEED FOLLOW-UP STUDENT SURVEY

1. How much education do you expect to complete?

- <sub>1</sub> Some high school
- <sub>2</sub> High school graduate
- <sub>3</sub> Vocational, trade, or business school
- <sub>4</sub> Some college
- <sub>5</sub> 2 - year college graduate
- <sub>6</sub> 4 - year college graduate
- <sub>7</sub> Graduate or professional school

2. If you plan to attend college, where will you enroll?

Name of institution \_\_\_\_\_

Address \_\_\_\_\_

3. If you plan to go to college, list your choice of majors. (See list below)

First Choice -

Second Choice -

Third Choice -

- |   |   |
|---|---|
| 01 - Agriculture and Natural Resources            | 13 - Library Science                            |
| 02 - Architecture and Environmental Design        | 14 - Mathematics                                |
| 03 - Biological and Life Sciences                 | 15 - Military Sciences                          |
| 04 - Business and Commerce                        | 16 - Philosophy, Religion, and Technology       |
| 05 - Communications (Advertising, Business, etc.) | 17 - Astronomy                                  |
| 06 - Computer and Information Sciences            | 18 - Chemistry                                  |
| 07 - Education                                    | 19 - Earth Sciences and Geology                 |
| 08 - Engineering and Engineering Technologies     | 20 - Physics                                    |
| 09 - Foreign Languages and Classical Languages    | 21 - Social Sciences, History, & Public Affairs |
| 10 - Health Professions                           | 22 - Technical and Vocational                   |
| 11 - Home Economics                               | 23 - Other, specify _____                       |
| 12 - Language and Literature                      |   |

6. Overall, how would you rate your Project SEED Summer II program? (Please check only one box.)

- \_1 Great
- \_2 Pretty good
- \_3 Not bad
- \_4 Pretty bad
- \_5 Awful

7. Other comments. Please feel free to make additional comments about your experiences in the Project SEED Program.

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**THIS COMPLETES THE QUESTIONNAIRE. THANK YOU FOR YOUR COOPERATION.**

**PLEASE RETURN THE COMPLETED SURVEY IN THE ATTACHED ENVELOPE WITHIN FIVE DAYS OF THE CONCLUSION OF YOUR PROGRAM.**

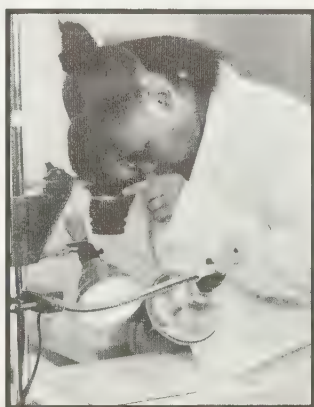


**Project SEED: 1968 - 1993**

***“Opening Doors  
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American University, DC  
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EXPERIENCE FOR THE

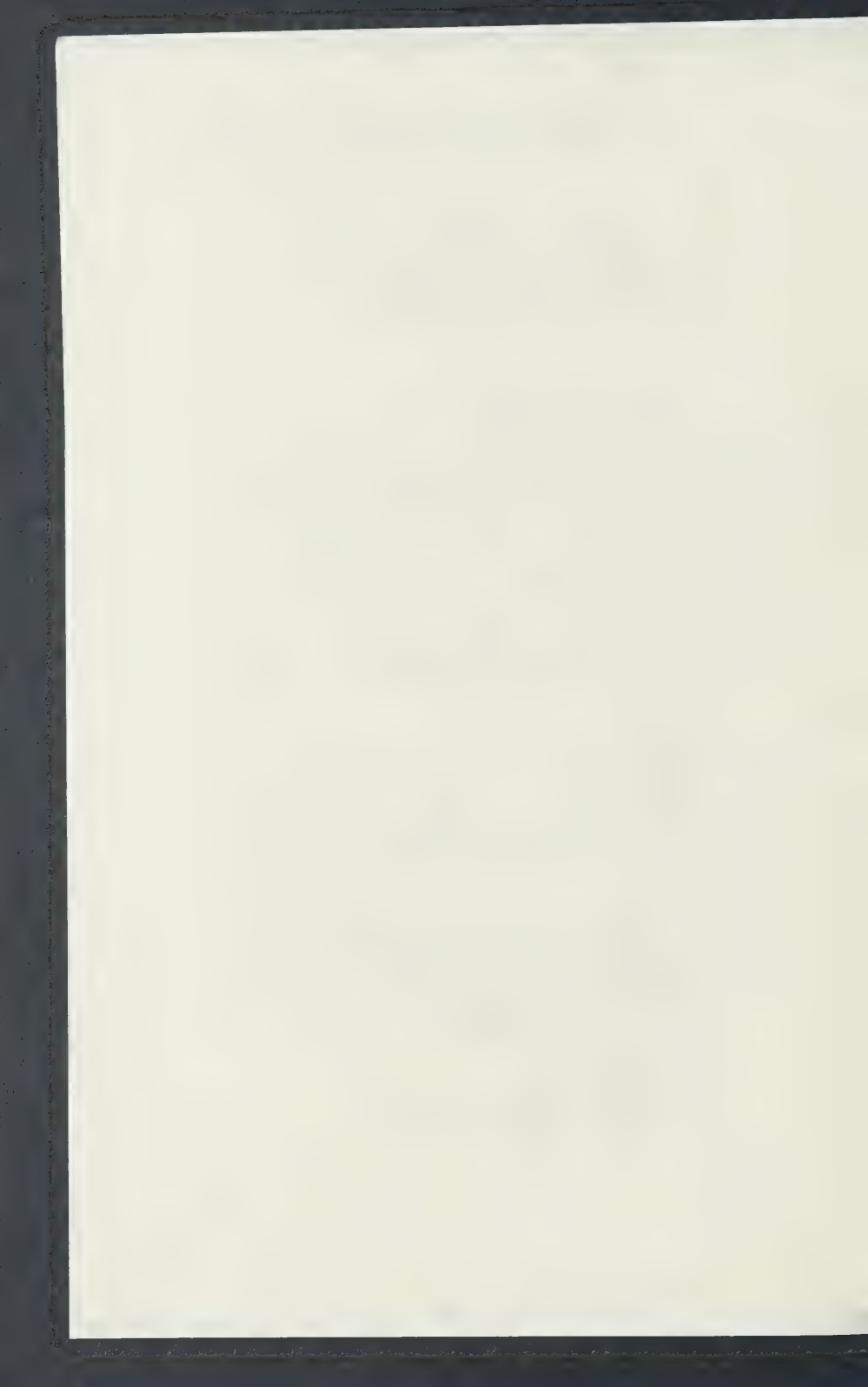
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**Major Contributors  
to the Campaign for Chemistry  
Designated to Project SEED**

Amoco Foundation, Inc.  
Ashland Chemical, Inc.  
AT&T Bell Laboratories  
Gerald Berkelhammer  
E. James and Monica Bradford  
Glenn and Jeanette Grasselli Brown  
Clayton Callis  
Kenneth Chapman  
The Coca-Cola Foundation  
Glenn and Jane Crosby  
Division of Chemical Education  
The Glaxo Foundation  
John Haas  
Edwin Harper  
Hoechst Celanese Foundation, Inc.  
J. Ivan Legg  
The Meno Lissauer Foundation, Inc.  
Milano Foundation, Inc.  
Miles Inc.  
Donald and Mildred Topp Othmer  
Stuart Rice  
Suzanne Roethel  
Rohm and Haas Company  
Henry and Linda Saxe  
The Selby Bequest  
United States Printing Ink Corp.  
The Xerox Foundation



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Amoco Foundation  
AT&T Foundation  
Bader Family  
Celanese Research Company

Chemical Society of Washington  
DuPont  
Mead Imaging  
McCormick & Company, Inc.  
National Science Foundation  
Pfizer, Inc.  
Philip Morris USA  
Polaroid Foundation  
Research Corporation  
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Warner Lambert/Parke Davis  
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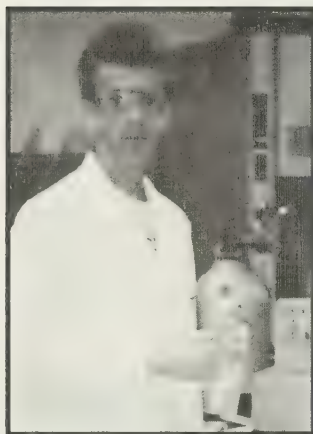
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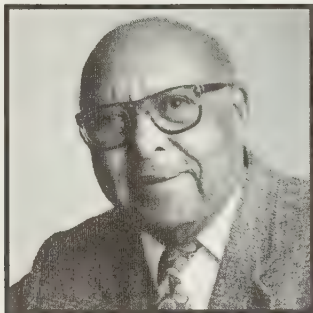
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***Milton H. Harris***  
***1906 - 1991***

Milton Harris, was Chairman of the ACS Board of Directors from 1966 to 1970. He received the Priestley Medal in 1980. In his Priestley address, he stated, "Certainly the future is filled with uncertainties, but in my experience, the optimists generally have been proven better realists than the pessimists." As a self-acknowledged "born optimist," his enthusiasm towards science and technology have left an everlasting impression on the science world.

Harris' experience with science began at the age of ten and continued through high school. He graduated from Oregon State University with a B.S. in chemistry in 1926 and earned his Ph.D. at Yale University in 1929.

Harris was well known for his work with fibers, which included the development of a shrink-proof process for wool fabrics. In 1931, he led a group of scientists at the former National Bureau of Standards in setting up an institute for studying the properties of textiles. In 1945, he founded Harris Research Laboratories, a consulting company that was purchased by Gillette in 1956. He joined Gillette as Director of Research and Vice President—positions that he held until his retirement in 1966.

As Chairman of the ACS Board of Directors in 1968, Harris continued to promote the future of science and technology by contributing the initial funding for Project Catalyst, known today as Project SEED. In the early years of the program he also served as a mentor.

His work was recognized by other societies. Among his awards were the Olney Medal from the American Association of Textile Chemists & Colorists in 1945, and the Perkin Medal from the Society of the Chemical Industry in 1970.

The Committee on Project SEED expresses its heartfelt sympathy to the families of W. Lincoln Hawkins and Milton H. Harris. We will miss these wise and generous mentors who contributed to guiding and shaping the careers of many.



The Committee on Project SEED offers sincere thanks to ACS members, industrial and foundation supporters, and all others who have made it possible to help economically disadvantaged youngsters realize their potential as productive citizens.

**A special thanks to the following for their support  
of the 25th Anniversary celebration of  
Project SEED**

ABBOTT LABORATORIES FUND

ACS CHICAGO SECTION

ACS CORPORATION ASSOCIATES

DUPONT



American Chemical Society  
Education Division

## Heavy element

Somebody must have had a cranky day at the National Research Council recently, and vented their feelings through an imaginative letter. It circulated through NRC Research Centre's fax machines.

It tells of the discovery of "the heaviest element known to science."

It's called "administratium." It has no protons or electrons and thus has an atomic number of 0. However, it does have one neutron, 125 assistant neutrons, 75 vice-neutrons, and 11 assistant vice-neutrons.

"These 312 particles are held together by a force that involves the continuous exchange of meson-like particles, called morons.

"Administratium has a half-life of three years, at which time it does not decay, but undergoes a reorganization. Neutrons and assistant neutrons exchange places. Atomic weight increases after each reorganization."

The contention is that this naturally occurring element tends to concentrate in government agencies and universities. They are in danger of sinking because of the growing atomic weight.

"Administratium is known to be toxic. It destroys productive reactions."

Attempts are being made to find some method of controlling this modern scourge. "Results to date are not promising."

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- Electronic multi-point injection

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powertrain OR  
**360**

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from

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David

**Project SEED: 1968 - 1993**

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American University, DC  
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**Monday, August 23, 1993  
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DuPont  
Mead Imaging  
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National Science Foundation  
Pfizer, Inc.  
Philip Morris USA  
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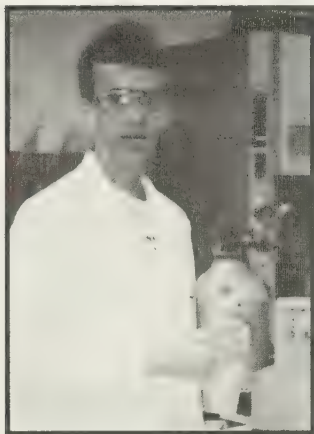
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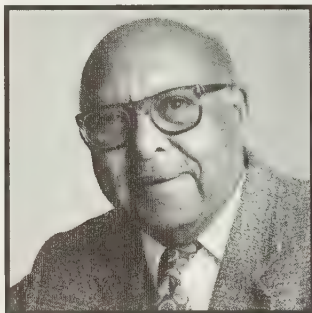
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W. Lincoln Hawkins received numerous awards—both national and international. He was elected to the New Jersey Inventors' Hall of Fame. He held four honorary doctoral degrees and published 55 scientific papers and three books.



***Milton H. Harris***  
***1906 - 1991***

Milton Harris, was Chairman of the ACS Board of Directors from 1966 to 1970. He received the Priestley Medal in 1980. In his Priestley address, he stated, "Certainly the future is filled with uncertainties, but in my experience, the optimists generally have been proven better realists than the pessimists." As a self-acknowledged "born optimist," his enthusiasm towards science and technology have left an everlasting impression on the science world.

Harris' experience with science began at the age of ten and continued through high school. He graduated from Oregon State University with a B.S. in chemistry in 1926 and earned his Ph.D. at Yale University in 1929.

Harris was well known for his work with fibers, which included the development of a shrink-proof process for wool fabrics. In 1931, he led a group of scientists at the former National Bureau of Standards in setting up an institute for studying the properties of textiles. In 1945, he founded Harris Research Laboratories, a consulting company that was purchased by Gillette in 1956. He joined Gillette as Director of Research and Vice President—positions that he held until his retirement in 1966.

As Chairman of the ACS Board of Directors in 1968, Harris continued to promote the future of science and technology by contributing the initial funding for Project Catalyst, known today as Project SEED. In the early years of the program he also served as a mentor.

His work was recognized by other societies. Among his awards were the Olney Medal from the American Association of Textile Chemists & Colorists in 1945, and the Perkin Medal from the Society of the Chemical Industry in 1970.

The Committee on Project SEED expresses its heartfelt sympathy to the families of W. Lincoln Hawkins and Milton H. Harris. We will miss these wise and generous mentors who contributed to guiding and shaping the careers of many.

The Committee on Project SEED offers sincere thanks to ACS members, industrial and foundation supporters, and all others who have made it possible to help economically disadvantaged youngsters realize their potential as productive citizens.

**A special thanks to the following for their support  
of the 25th Anniversary celebration of  
Project SEED**

ABBOTT LABORATORIES FUND

ACS CHICAGO SECTION

ACS CORPORATION ASSOCIATES

DUPONT



American Chemical Society  
Education Division

PROVIDENCE COLLEGE

PROVIDENCE, RHODE ISLAND 02918

Department of Chemistry

April 8, 1993

Dear Dr Bader:

I will arrange that two projectors be available for your use in Chicago as well as having your abstract corrected to reflect the date change.

Thank you for your paper.

Sincerely yours,

Martin D. Saltzman





April 21, 1993

Professor Martin Saltzman  
Department of Chemistry  
Providence College  
Providence, Rhode Island 02918

Dear Professor Saltzman:

As you perhaps know, my family and I have been involved with Project SEED, and there will be a Project SEED symposium on Monday, August 23rd, from 2:00--4:30 p.m.. Also, I have been asked to be the after luncheon speaker that day.

Of course, I hope that there will not be a conflict between that talk and the talk on Loschmidt, or if there is a conflict that at least the symposium and the talk on Loschmidt will not be too far apart, geographically. If there is a conflict, I would, of course, give the talk on Loschmidt and then come back to the Project SEED symposium.

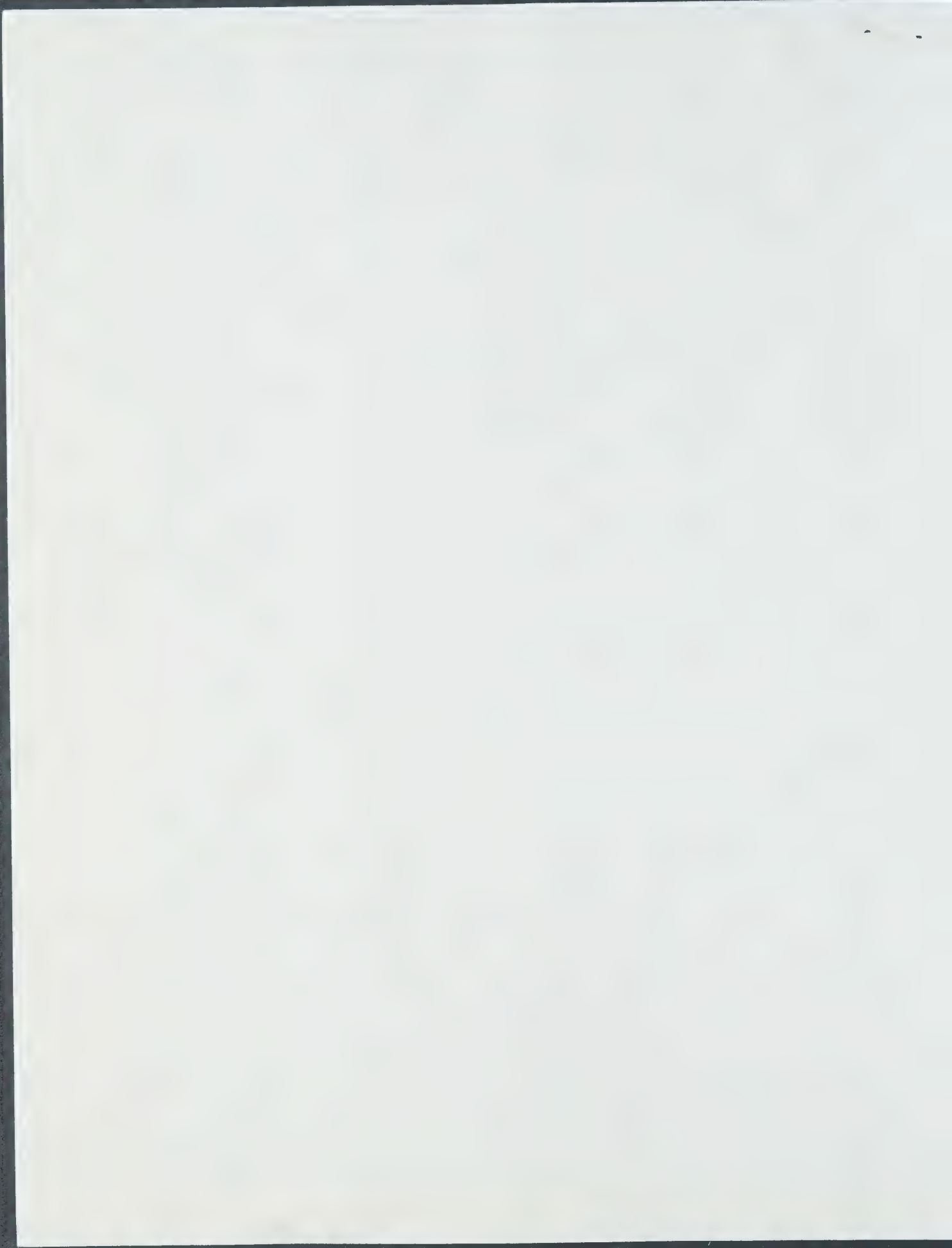
In any case, could you please let me know exactly when Professor Wotiz's and my talks will be.

I am sure that you will understand my concern.

Many thanks for your help.

Sincerely,

Enclosure





**CAMPAIGN  
FOR  
CHEMISTRY**

April 12, 1993

Mr. Daniel J. Bader  
President  
Helen Bader Foundation  
777 East Wisconsin Avenue  
Suite 3275  
Milwaukee, WI 53202

Dear Mr. Bader:

This will acknowledge the \$50,000.00 payment received in our office on April 8, 1993 from the Helen Bader Charitable Trusts. This payment will count toward The Bader Family pledge of \$300,000.00 to the Campaign for Chemistry, designated to the Project SEED Second Year Program. To date, contributions totalling \$200,000.00 have been received by the American Chemical Society toward your pledge.

On behalf of the Campaign, I would like to thank you very much for your continued support and participation.

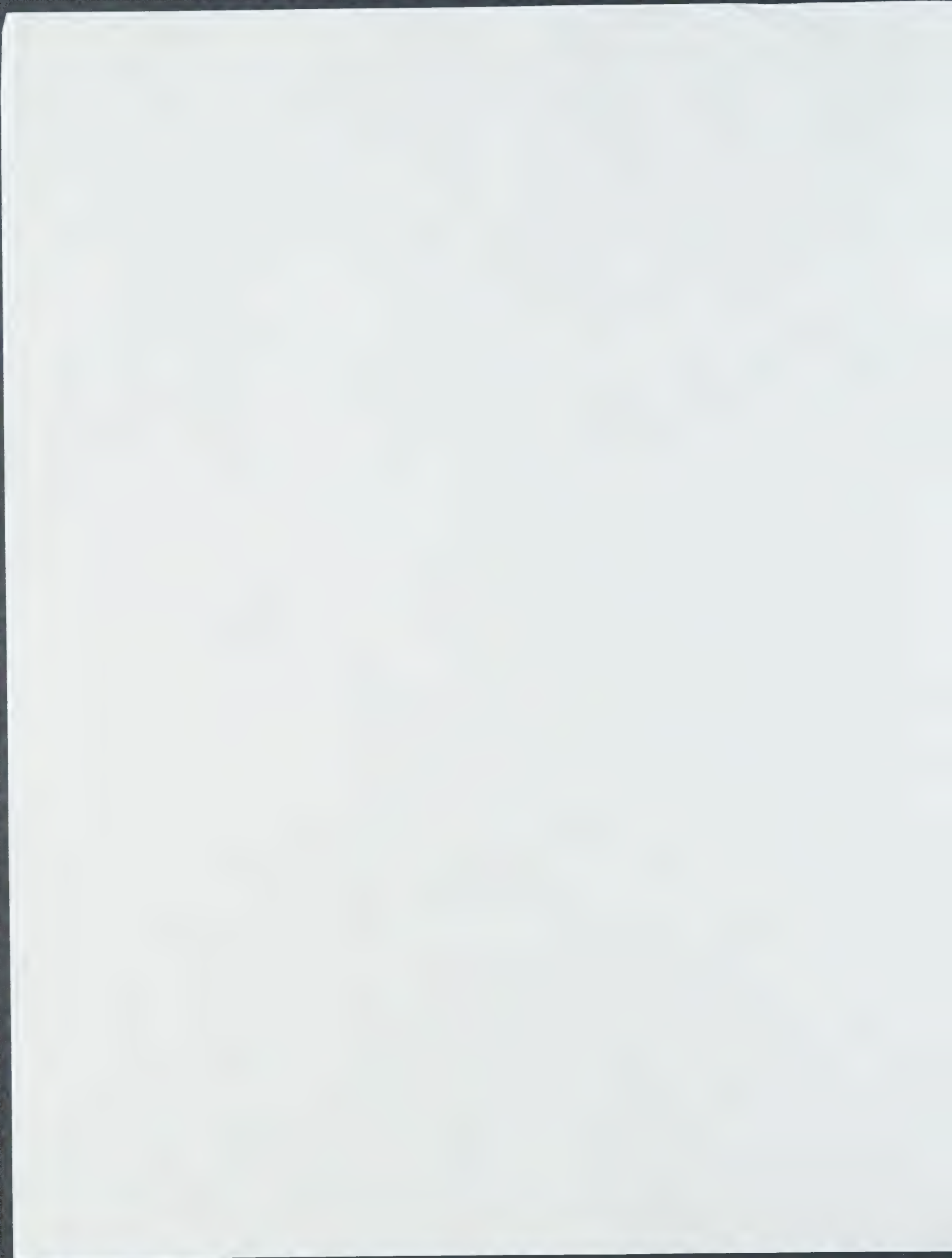
Sincerely,

Jennifer H. D'Elia  
Director of Development

JHD/cvm

cc: Dr. Alfred Bader  
Ms. Martha Turckes







## American Chemical Society

Dennis Chamot, *Chairman*

### COMMITTEE ON PROJECT SEED

1155 16th Street, N.W., Washington, D.C. 20036  
Staff Liaison (202) 872-4380

April 14, 1993

Dr. Alfred Bader  
2961 North Shepard Avenue  
Milwaukee, WI 53211

Dear Dr. Bader;

I would like to thank you for your contribution on February 1, 1993 of \$50,000 from the Isabel and Alfred Bader Foundation to the American Chemical Society's Project SEED program. I apologize for the delay in this letter; I recently joined the ACS staff, serving as the liaison to the Committee on Project SEED, and your letter was inadvertently set aside. Please accept my apologies for this oversight.

The Committee on Project SEED had its program selection meeting in March and approved 76 Summer II students at 50 institutions. These numbers represent a growth from the 50 students involved in the Summer II program last year. The Committee finds this growth very exciting since it indicates that the program is indeed benefiting the students.

I have enclosed a copy of the *1992 Project SEED Survey Report* that includes the statistics and comments from students of the 1992 Summer I and Summer II programs. The report is based upon the initial and final surveys each student is required to complete. The feedback supports the quality of the Project SEED programs.

Again, thank you for your generous support. I look forward to meeting you at the Project SEED 25th Anniversary celebration during the Chicago national meeting in August.

Sincerely,

A handwritten signature in cursive script that reads "Christine Berg Brennan".

Christine Berg Brennan, Staff Liaison  
Committee on Project SEED

cc: Dennis Chamot  
Jennifer D'Elia  
Paul Gassman  
Martha Turckes



# UNIVERSITY OF MINNESOTA

*Twin Cities Campus*

May 5, 1993

*Department of Chemistry  
Institute of Technology*

*Kolthoff and Smith Halls  
207 Pleasant Street S.E.  
Minneapolis, MN 55455-0431  
USA  
Fax: 612-626-7541*

Dr. Alfred Bader  
2961 North Shepard Avenue  
Milwaukee, WI 53211

Dear Dr. Bader:

Thank you so very much for your generous memorial to the Gassman Research Fund. I have forwarded your check to the University of Minnesota Foundation Office and passed your letter on to Mrs. Gassman. The funds that are included in the corpus of this fund will eventually be used to establish a Gassman Lectureship in Chemistry. I am hopeful that in 1994 the Department will be able to start this lectureship, which will consist of bringing three distinguished chemists to the department per academic year to present three lectures each during their week's stay. The Department is also hopeful that there will be enough money to establish a graduate student fellowship in Professor Gassman's name. I feel that both are fitting tributes to a man who contributed so much to this department and the chemical community at large.

Your support of Project SEED has been evident here at Minnesota. Professor Lou Pignolet has been very active in implementing this very worthwhile project and last summer a Project SEED student studied in Dr. Gassman's laboratory.

Thank you again for your donation in Professor Gassman's memory. He is sadly missed.

Sincerely,

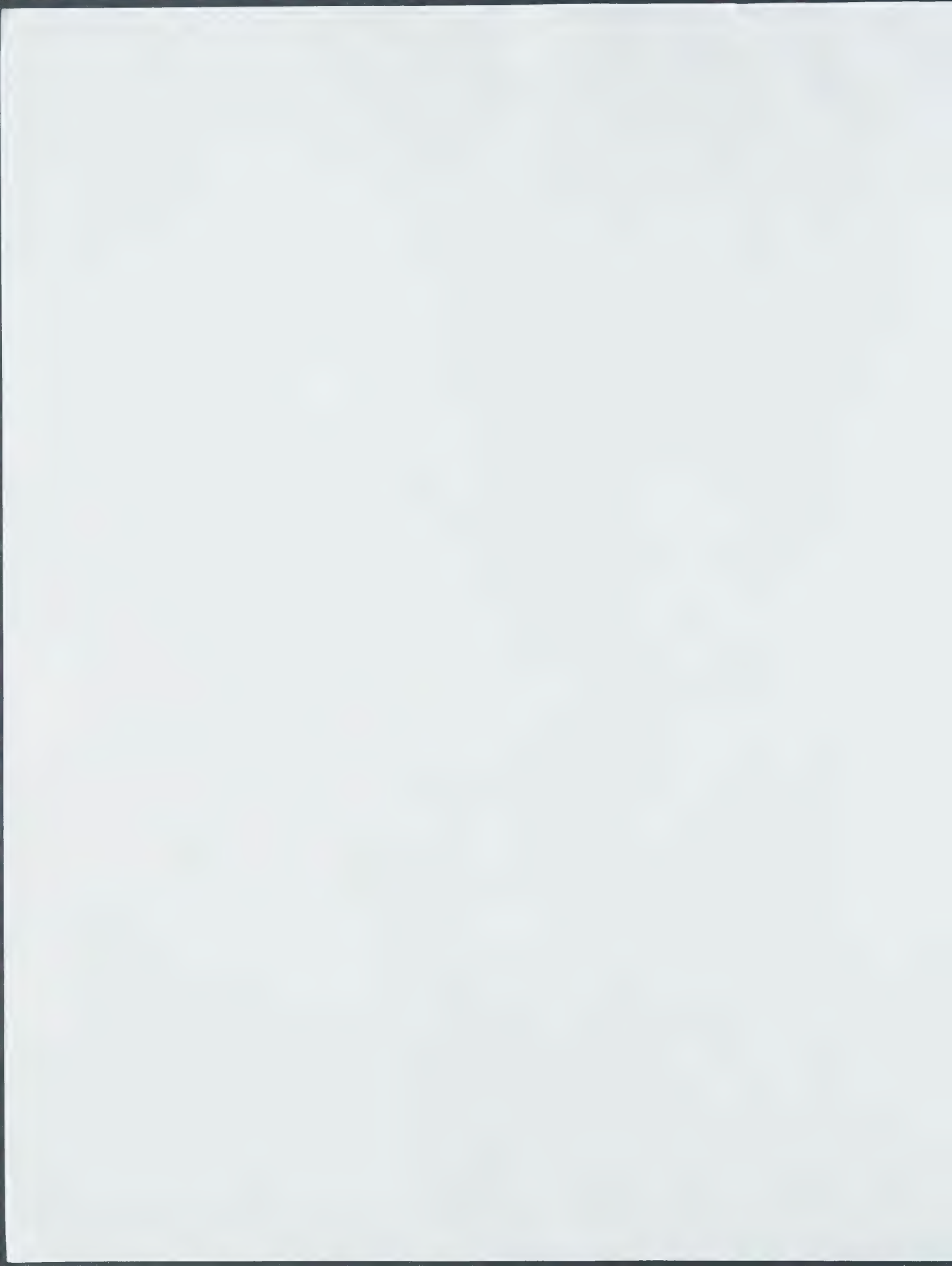


Christine M. Lundby  
Secretary to Professor Gassman

CML/tms

cc: Mrs. Gerda Gassman







1155 SIXTEENTH STREET, N.W.  
WASHINGTON, D.C. 20036  
(202) 872-4600  
FAX (202) 872-8727

May 5, 1993

Dr. Alfred R. Bader  
2961 North Shepard Avenue  
Milwaukee, Wisconsin 53211

Dear Dr. Bader:

Thank you for your letter. We will publish it in an early issue.

Sincerely,

A handwritten signature in black ink that reads "Michael Heylin". The signature is written in a cursive style with a long horizontal flourish at the end.

Michael Heylin  
Editor

MH/le



Dr. Alfred R. Bader  
2961 North Shepard Avenue  
Milwaukee, Wisconsin 53211

May 3, 1993

Mr. Michael Heylin, Editor  
Chemical & Engineering News  
American Chemical Society  
1155 - 16th Street, N.W.  
Washington, D.C. 20036

Dear Michael:

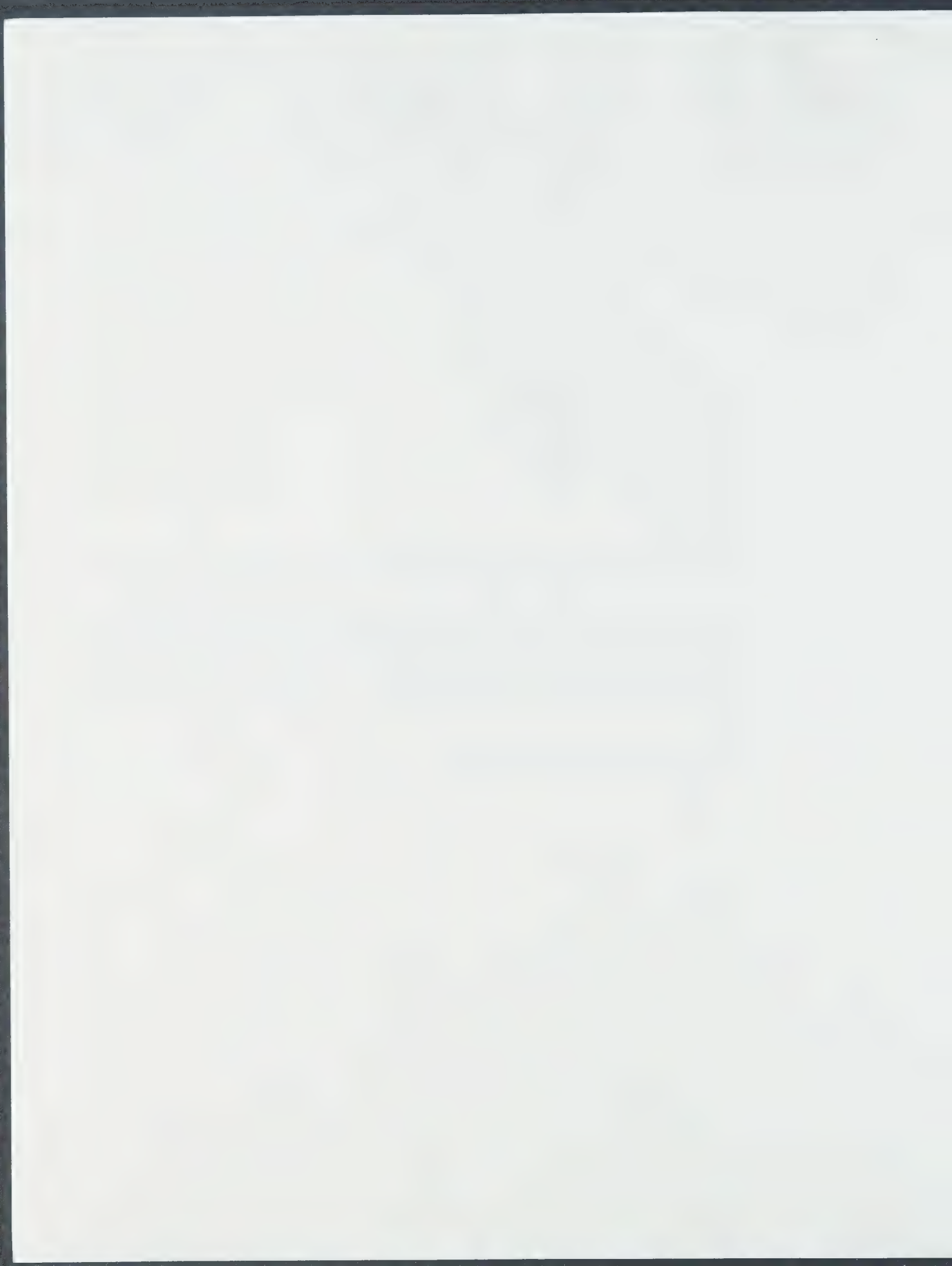
Thousands around the world will be saddened to learn of Paul Gassman's death.

What made Paul so special was his intense desire to help others. I remember his many suggestions made over more than thirty years, for new products at Aldrich, and our visits with him in Columbus and Minneapolis were among the high points of our trips. And it was Paul who suggested three years ago that my family get involved with Project SEED, and it was his thoughtfulness and enthusiasm that led to Project SEED.

The world seems emptier without him.

Sincerely,







Chemists Helping Chemists in Research and Industry

**aldrich chemical company, inc.**

May 5, 1993

Ms. Martha K. Turckes, Manager  
Office of High School Chemistry  
American Chemical Society  
1155 16th Street, NW  
Washington, DC 20036

Dear Ms. Turckes:

We refer to the American Chemical Society's project SEED.

To support this project we are making a one time cash contribution of \$25,000.00. However, we request you consider this an anonymous contribution and not acknowledge Aldrich Chemical Company, Inc. in any form. Please ensure our wishes are carried out.

Good luck with your role as coordinator of this project.

Sincerely,

David R. Harvey  
Executive Vice-President  
Sigma-Aldrich Corporation

c: Len Rochwerger



ALDRICH CHEMICAL COMPANY, INC.  
MILWAUKEE, WISCONSIN

REMITTANCE ADVICE  
DETACH BEFORE DEPOSITING

VENDOR NO.	OUR REF.	INVOICE NUMBER	INVOICE DATE	GROSS AMOUNT	DISCOUNT	NET AMOUNT
		ACSPS	05-05-93	\$25,000.00		\$25,000.00

REMITTANCE ADVICE: ATTACHED IS OUR CHECK IN FULL SETTLEMENT OF ITEMS SHOWN HEREON, IF NOT CORRECT PLEASE RETURN WITH EXPLANATION.



**aldrich chemical company, inc.**

P.O. Box 355, Milwaukee, Wisconsin 53201 USA

FIRST BANK LA CROSSE  
LA CROSSE, WISCONSIN

79-29  
918

(TWENTY FIVE THOUSAND DOLLARS AND 00/100 CENTS)

PAY  
TO THE  
ORDER  
OF

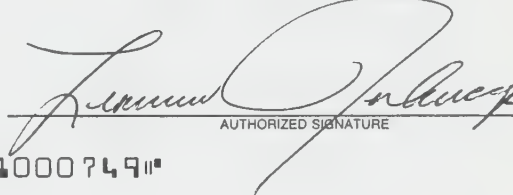
AMERICAN CHEMICAL SOCIETY PROJECT SEED

CHECK NO.  
62319

DATE  
05-05-93

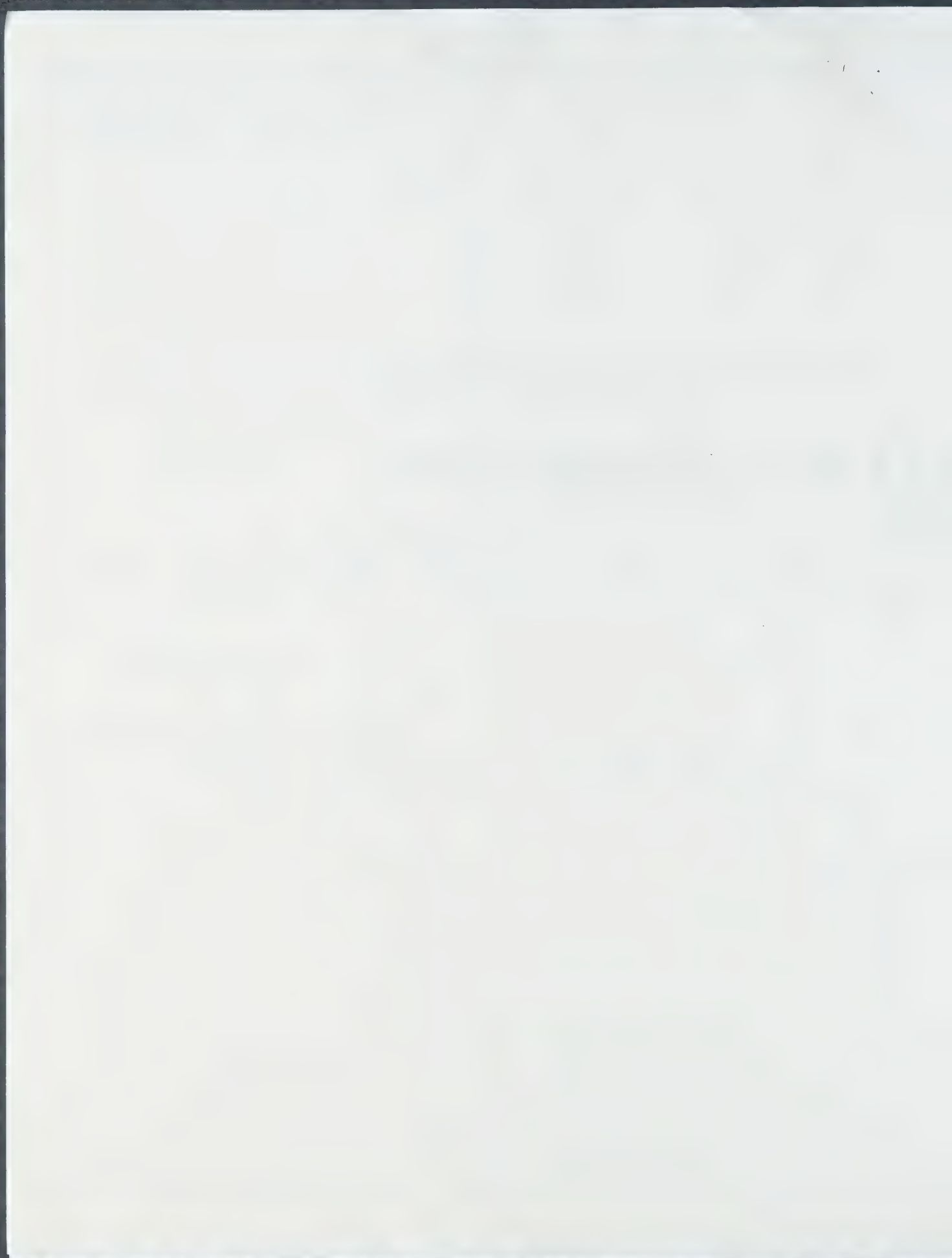
AMOUNT  
\$25,000.00\*\*\*

ALDRICH CHEMICAL COMPANY, INC.

  
AUTHORIZED SIGNATURE

⑈062319⑈ ⑆091800293⑆ ⑈8281000749⑈







*Chemists Helping Chemists in Research and Industry*

## **aldrich chemical company, inc.**

May 5, 1993

Dr. Alfred Bader  
2961 North Shepard Avenue  
Milwaukee, WI 53211

Dear Alfred,

I refer to our discussion of today. As agreed Aldrich Chemical Company is making a contribution to SEED. For this consideration you renounce any claim to ownership of books and other library materials in the possession of Aldrich Chemical Company.

Yours sincerely,

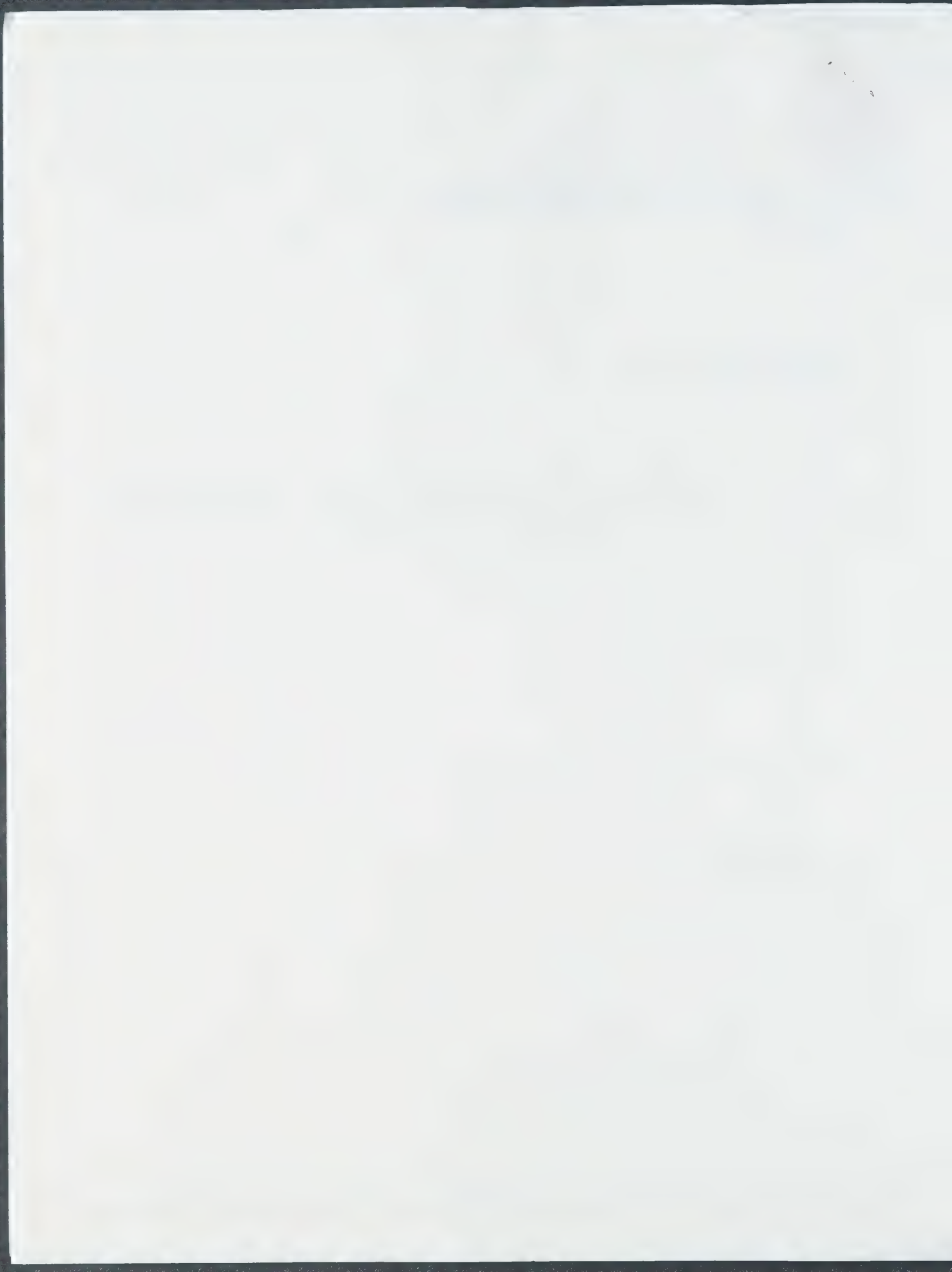
David R. Harvey

Acknowledgement:

Dr. Alfred R. Bader

Date

c: Len Rochwerger





## American Chemical Society

Dennis Chamot, *Chairman*

**COMMITTEE ON PROJECT SEED**

1155 16th Street, N.W., Washington, D.C. 20036  
Staff Liaison (202) 872-4380

June 9, 1993

Ms. Marilyn Hassmann  
Secretary to Dr. Alfred R. Bader  
2961 North Shepard Avenue  
Milwaukee, Wisconsin 53211

Dear Ms. Hassmann:

We are in receipt of your letter of June 1, regarding the donation of \$25,000 to Project SEED. Ordinarily, we immediately send thank you letters to contributors of Project SEED, but because the Aldrich Chemical Company requested this contribution be anonymous, we did not know how to respond.

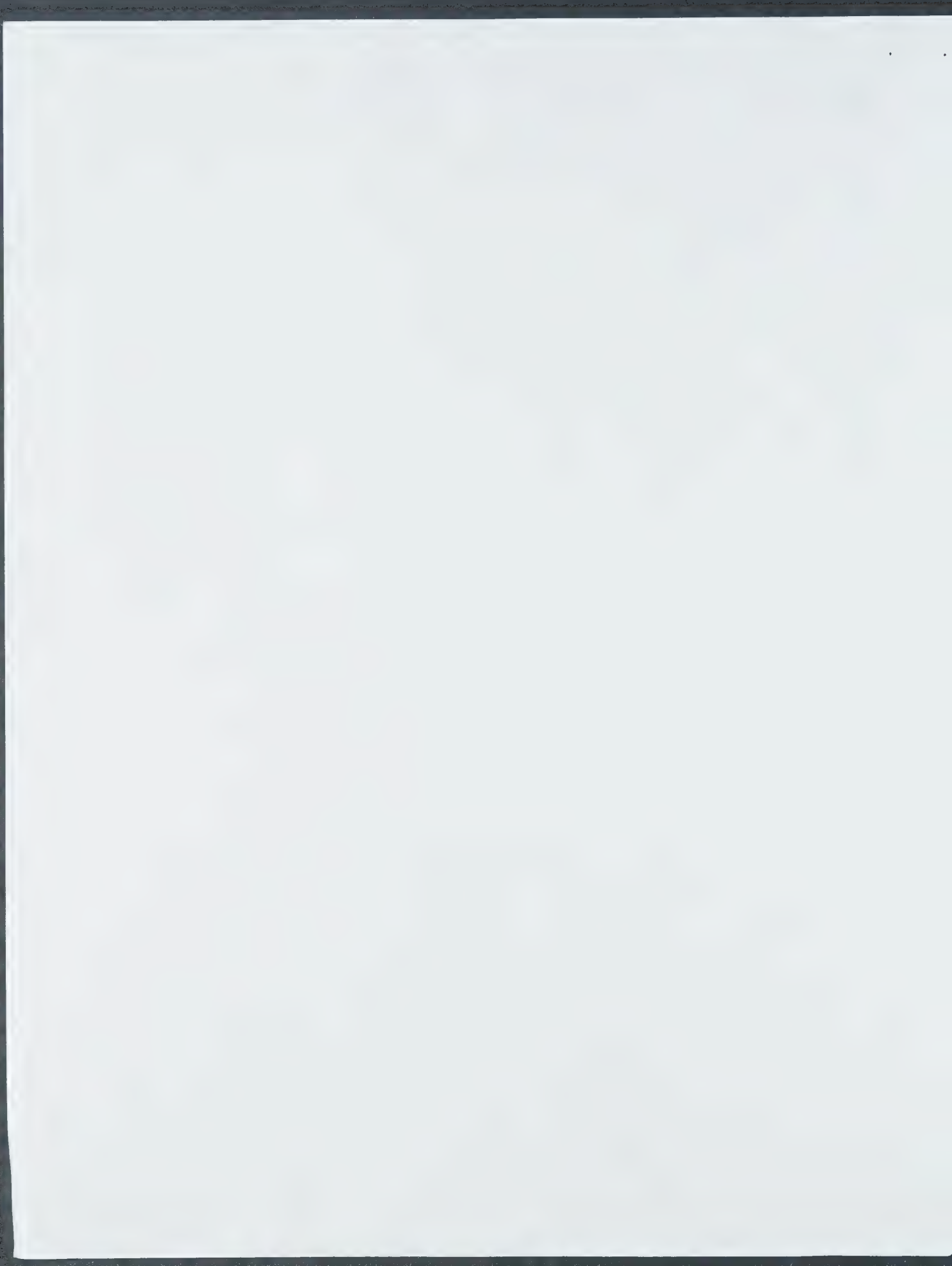
We received a letter from Aldrich Chemical Company, Inc., on May 13, (copy enclosed) making a one time contribution of \$25,000 to Project SEED. On behalf of the Committee on Project SEED, and over 3,500 students that have participated, please extend our gratitude to Dr. Bader for his continued support to this program.

If additional information is needed, please call me at (202) 872-4382. Again, we apologize for not acknowledging receipt of this donation.

Sincerely,

Martha K. Turckes, Manager  
Office of High School Chemistry







Chemists Helping Chemists in Research and Industry

## aldrich chemical company, inc.

May 5, 1993

Ms. Martha K. Turckes, Manager  
Office of High School Chemistry  
American Chemical Society  
1155 16th Street, NW  
Washington, DC 20036

Dear Ms. Turckes:

We refer to the American Chemical Society's project SEED.

To support this project we are making a one time cash contribution of \$25,000.00. However, we request you consider this an anonymous contribution and not acknowledge Aldrich Chemical Company, Inc. in any form. Please ensure our wishes are carried out.

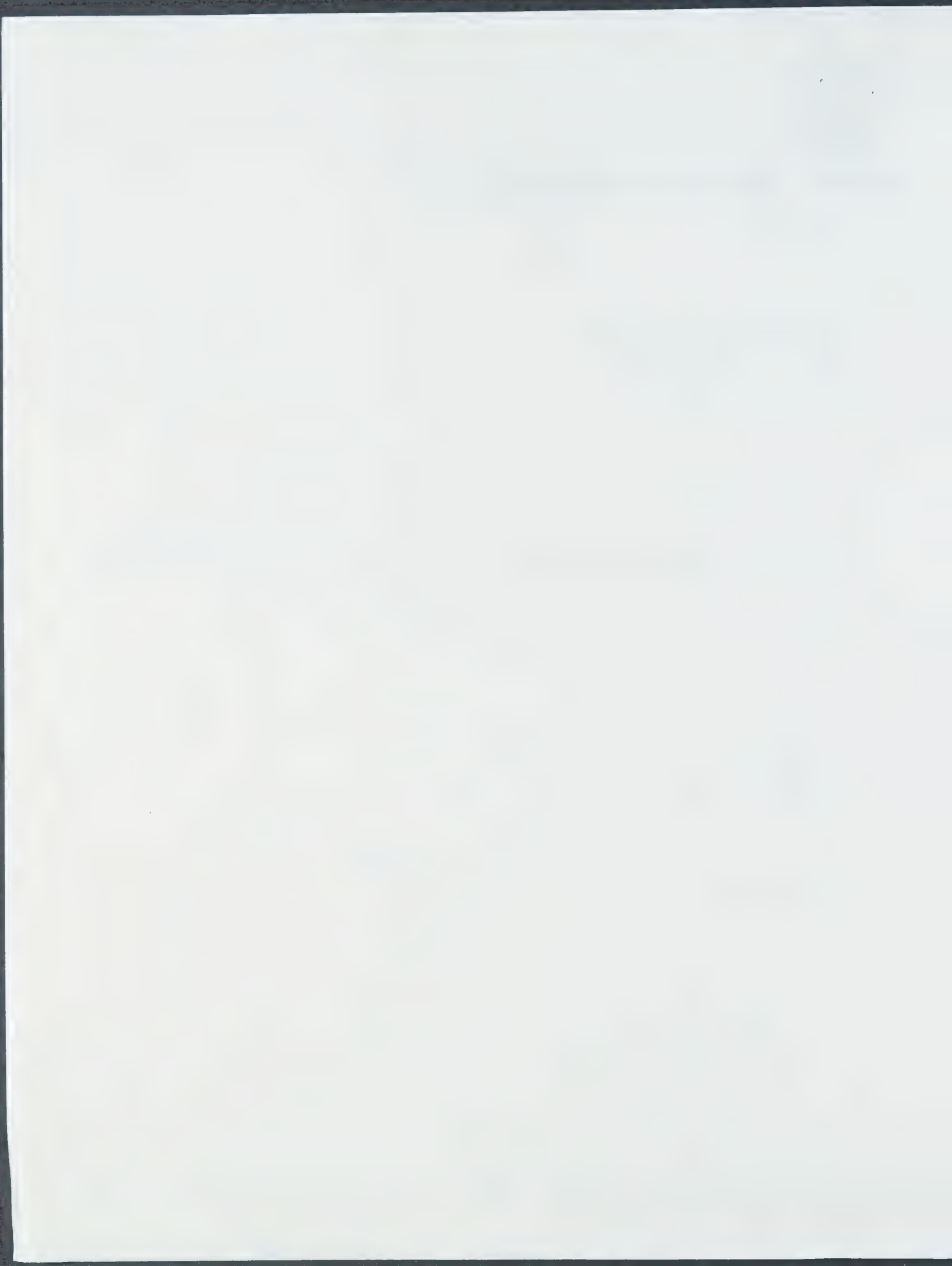
Good luck with your role as coordinator of this project.

Sincerely,

David R. Harvey  
Executive Vice-President  
Sigma-Aldrich Corporation

REC'D MAY 14 1993

c: Len Rochwerger



REC'D MAY 11 1993

ALDRICH CHEMICAL COMPANY, INC.  
MILWAUKEE, WISCONSIN

ALDRICH CHEMICAL COMPANY, INC.  
MILWAUKEE, WISCONSIN

VENDOR NO.	OUR REF.	INVOICE NUMBER	INVOICE DATE	GROSS AMOUNT	DISCOUNT	NET AMOUNT
		ACSPS	05-05-93	\$25,000.00		\$25,000.00

REMITTANCE ADVICE: ATTACHED IS OUR CHECK IN FULL SETTLEMENT OF ITEMS SHOWN HEREON, IF NOT CORRECT PLEASE RETURN WITH EXPLANATION.



# aldrich chemical company, inc.

P.O. Box 355, Milwaukee, Wisconsin 53201 USA

(TWENTY FIVE THOUSAND DOLLARS AND 00/100 CENTS)  
AMERICAN CHEMICAL SOCIETY PROJECT SEED

PAY  
TO THE  
ORDER  
OF

FIRST BANK LA CROSSE  
LA CROSSE, WISCONSIN

79-29  
918

CHECK NO. 62319  
DATE 05-05-93  
AMOUNT \$25,000.00\*\*\*

ALDRICH CHEMICAL COMPANY, INC.

MAY 10 1993

*[Signature]*  
AUTHORIZED SIGNATURE

⑆062319⑆ ⑆091800293⑆ ⑆8281000749⑆





Dr. Alfred R. Bader  
2961 North Shepard Avenue  
Milwaukee, Wisconsin 53211

June 28, 1993

Dr. Lewis Allen  
Committee on Project SEED  
American Chemical Society  
1155 - 16th Street, N.W.  
Washington, D.C. 20036

Dear Dr. Allen:

When we spoke on the telephone, I informed you that Dr. Bader is travelling in Europe until the end of July. A copy of your letter of June 15th was forwarded to Dr. Bader in England.

Dr. Bader has asked me to let you know that at the luncheon on August 23rd in Chicago, he will speak informally and briefly about the importance of Project SEED.

Cordially,

Marilyn Hassmann  
Secretary to Dr. Bader



## Project SEED's 25th Anniversary

As many of you know, Project SEED (Summer Education Experience for the Disadvantaged) is the American Chemical Society's primary social action program. It gives economically disadvantaged high school students a real-world introduction to chemistry by providing summer research experiences. Even in these times of chemist oversupply, we can all be proud of this wonderful program that is now 25 years old.

Let me explain that last statement. The SEED program this summer is about as large as it has ever been, with more than 300 students participating. One quarter are back for a second year, so there are fewer than 250 new students. Even if every one of these students went to college and became a professional chemist (which just does not happen), this is hardly enough to have a major impact on the overall supply-and-demand situation. More than 8000 bachelor's degrees in chemistry have been awarded this year.

The program does have a major impact on students' lives. This is reflected in the slogan chosen as the anniversary theme, "Opening Doors and Fulfilling Dreams." We have been gathering success stories from former SEED students, and the Chicago ACS national meeting

Dennis Chamot  
chairman  
Committee on  
Project SEED



will be the place to celebrate. We are planning an interesting and enjoyable set of activities for Monday, Aug. 23. I hope many of you will be able to join us.

We will begin with a luncheon featuring a talk by Alfred Bader, founder of Aldrich Chemical Co. Bader, always an interesting speaker, has been a primary supporter of the Project SEED Summer II program. We are particularly pleased that he will be joining us.

The luncheon will be followed by an afternoon symposium cosponsored by the ACS Division of Chemical Education that will feature several former SEED students. Also on the program is Alan Nixon, past president of ACS and one of the prime movers in getting this program started 25 years ago.

This is also an appropriate time to thank two key groups without whom this program would not be possible. First, the many ACS members who serve as research directors and mentors for the students. Our focus is often on the students, but the benefits they get out of their summer in the lab are directly related to the substantial time and effort contributed by our dedicated preceptors.

And we must thank the financial contributors, both corporations and you, the members of ACS. The society pays the salaries

of the hardworking and dedicated staff members who take care of the many administrative tasks involved with a program of this size and complexity, but every dollar paid as student stipends must be raised each year. The Campaign for Chemistry helps set up an endowment for Project SEED but that income funds only about one-third of the program. Just to maintain its present size, with no growth, requires substantial additional income each year.

Project SEED welcomes donations large and small, at any time. If you have contributed in the past, or if you will contribute in the future, let me thank you on behalf of the many young people who benefit.

### Bowen to be ACS secretary, other staff changes

At its meeting last month, the ACS Board of Directors approved the appointment of D. H. Michael Bowen as deputy executive director and secretary designate of the society. This appointment became effective July 1. Bowen, formerly director of the ACS Membership Division, will succeed ACS secretary Justin W. Collat when he retires later this year.

Government Relations & Science Policy, International Activities, and Public Outreach operations will report to Bowen

in his new position. These groups coordinate ACS activities that are targeted primarily toward groups other than ACS members.

The board also confirmed the appointment of Halley A. Merrell as acting director of the ACS Membership Division. Merrell will continue to serve as assistant to the executive director for governance affairs in addition to his new duties. Pamela J. Ayre, formerly head of the Department of Member & Professional

Services, was named Associate Director of the Membership Division.

Collat joined ACS in 1966. He was head of the grants and awards program before being appointed director of the Membership Division in 1982. He was named ACS secretary in 1989. Bowen joined the society's staff in 1967 and was named director of the Books & Journals Division in 1975. He became director of the Membership Division in 1988.

Merrell joined ACS staff in 1963 and has held various managerial positions. He began his tenure as assistant secretary of ACS in 1979 and also served a





PROJECT SEED - A.C.S.  
Chicago, Illinois  
August 23, 1993

MASTER

My Friends:

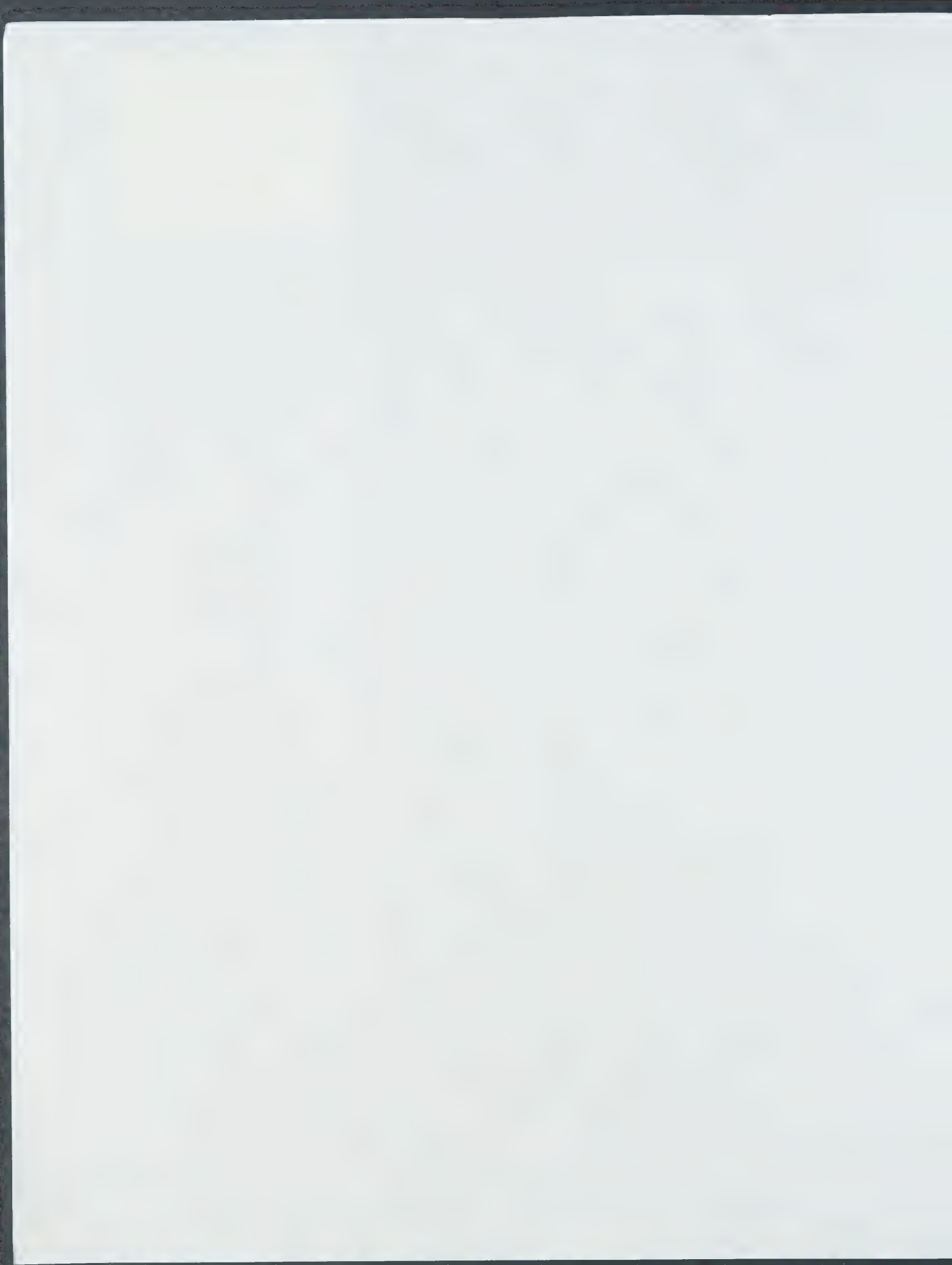
I wish that old friend, the late Professor Paul Gassman, could be with us today because it was Paul who first urged me to become involved in Project SEED.

Paul was a very old friend, and so, of course, I listened. But what did SEED mean? Summer--Educational--Experience--for the Disadvantaged. I knew what summer and education and experience meant, but who was really disadvantaged, or how can it be defined? I have just been studying the works of two of the world's greatest chemists, Michael Faraday and Josef Loschmidt. And one can probably say fairly that each as boys could have been defined as disadvantaged. In my own mind, the most disadvantaged kids might really be the children of very able and rich people who are so busy that they don't hug their kids. But that is another matter.

I like to think of Project SEED more in terms in what the word SEED really means--the SEED, the beginning of a really good life.

Allow me to share with you a little bit of my own personal philosophy.

The story was told recently in The New Yorker that an acquaintance of the late, great philosopher, Sir Bertrand Russell, once, late in his life, had lunch with him, and over soup asked him: Sir Bertrand, you are today not only one of the greatest philosophers and best known atheists, but also the oldest great atheist. What would you say if at the end of your day you find



that you are standing before the pearly gates and realize that you have been mistaken? Sir Russell replied without hesitation, "I would say, 'God, You did not give us enough evidence.'" --You did not give us enough evidence. You and I know that there are millions of good, intelligent atheists, just as there are millions of good and intelligent people who believe in God. But, my friends, please don't worry, I am not going to give you a talk on theology. Let me just say that I do believe, and that to me one of the most important sentences in the Bible is the sentence at the very beginning of Genesis, where the Bible tells us that God said, "Let Us make man in Our image." Please note that He did not say, "Let Us make a white man or a black man or a yellow man, a Christian, a Jew, a Muslim, in Our image" but that all of us are made in God's image. That is, there is some of God in each and every one of us, and to me it seems that this is the only rational basis for democracy. Clearly, some people are much smarter than others. Many of you could easily beat me up, some are very much stronger than others, and yet there is some of God in each of us. And that, of course, gives everyone, disadvantaged or not, the right to a good education. The right to equal opportunity.

But back to Project SEED--when I listened to Paul Gassman he explained that Project SEED gave opportunities to high school students for one summer. But then I thought back to my own days as a student, and I remembered how happy I was when a paint company in Montreal offered me a summer job. I really enjoyed it, and of course the fabulous salary of \$130/month. And, I was so happy when





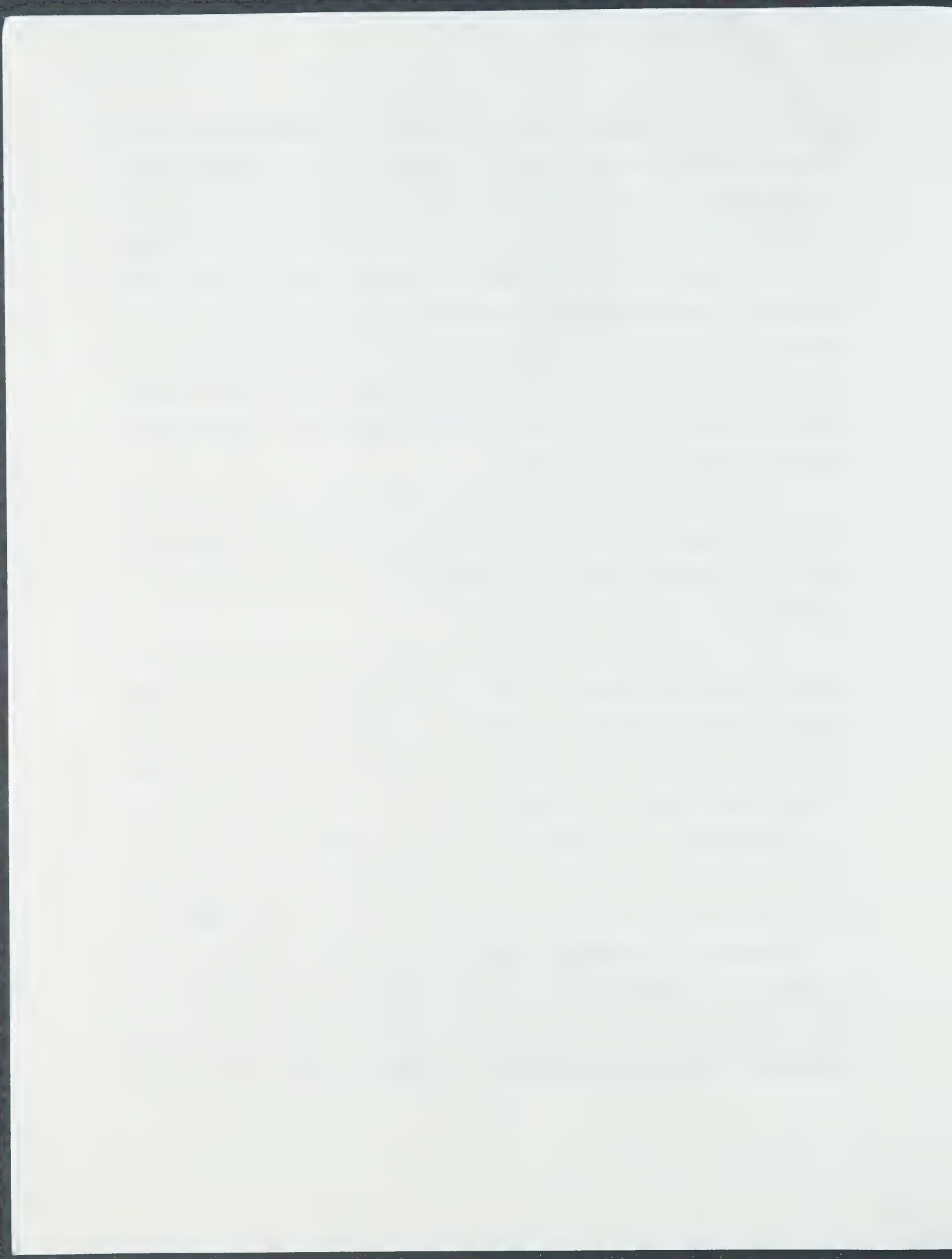
the Murphy Paint Company asked me to return to them during the next summer at no less than \$160/month. And during that second summer I learned so very much more and I could do so very much more than I had done in the first summer. In any first summer job, you spend a lot of time finding out where the beakers are and where the toilets are, and you can surely be far more productive in a second summer. And so my family and I offered to help Project SEED II on a three year trial basis, and I very much hope that all of you who have taken part in Project SEED II will agree that a second summer is more productive than a first.

But coming back to disadvantaged, the word applies not only to some youngsters, but also to one science, and that is chemistry. There is no question in my mind that today, chemistry is terribly disadvantaged. Allow me to explain.

When I was a student at Harvard in the 40's, the profession of chemistry was regarded very highly, and many of the ablest students wanted to become chemists. Ask the man on the street then what he associated with chemistry and his answer was likely to be "vitamins or new drugs, plastics, a better life."

Ask the man on the street today and his answer is likely to be "cancer" or "pollution." The reasons for this change are manifold and complex, and I would like to touch on just a few of these.

Cancer is on everybody's mind at least some of the time, and of course in a roundabout way chemical research is responsible for many deaths by cancer. For cancer is an illness of old age. Research in medicinal chemistry has helped to double our life span



in the last century, and so naturally many more people die of cancer.

Of course there are many other reasons for chemistry being so disadvantaged. One is that as a profession we have done a very poor job educating the public and the media. Let me give you an example taken at random from many that come to mind. Some time ago the Milwaukee Journal had bold headlines on the front page that 2 ppb of benzene had been found in the water of a well near a chemical company in Port Washington. Two parts per billion--I wonder what the editor would say if someone pointed out to him that gasoline contains 2% benzene, and 2% is 10 million times as much as 2 ppb! The Milwaukee Journal is a very responsible newspaper. It is we, the scientists, who have done a poor job in communicating with the media about the significance or insignificance of such findings as 2 ppb of benzene.

Here, of course, is yet another reason for the disrepute of chemists and chemicals: our analytical methods have gotten better and better and pretty soon we'll be able to show that everything is everywhere, at least in some amounts. Like 2 ppb.

Of course, yet another reason for the disrepute of chemistry is that some companies have been negligent and have polluted the environment, and it is almost comical to see some of these very companies trying to change their image by deleting the name "chemical" from their corporate names.

The reality of the matter is that chemists have contributed very heavily to the quality of life. But you will find that





because chemistry is associated today with cancer and pollution many fewer of the brilliant young students will enter chemistry, and the quality of chemical research will decline and so will the rate of improvement of the quality of life.

And so you will see why I believe that not only some of our youngsters are disadvantaged, but chemistry is truly disadvantaged.

If I may change the subject once again: you will see I have been jumping from subject to subject, from the Bible to disadvantaged to chemistry, these are all subjects truly close to my heart. But perhaps most important, I realize that I am speaking today to a number of youngsters to whom Project SEED can make a difference, and who can make a difference to chemistry. So, I have asked myself if I could pick one word of advice to anyone starting out in life, what would that advice be?

Perhaps nothing in life is as essential to success as the ability to express yourself clearly and succinctly. You wouldn't believe how many reports I have read by PhDs in chemistry in just awful English. There is such beauty in brevity, yet often technically well-educated people neither write nor speak well. And often they have no idea just how bad they are. Hence, learn to speak and write well.

My friends, my hope is that many of you in Project SEED will succeed as chemists, keeping in mind that chemists are truly the locksmiths to a better life and I hope that you will truly become able locksmiths. Thank you.

[The page contains extremely faint, illegible text, likely bleed-through from the reverse side of the document. The text is too light to transcribe accurately.]

Dr. Alfred Bader  
2961 North Shepard Avenue  
Milwaukee, Wisconsin 53211

August 24, 1993

Ms. Christine Berg Brennan  
Staff Liaison  
Committee on Project SEED  
American Chemical Society  
1155 - 16th Street, N.W.  
Washington, D.C. 20036

Dear Christine:

It was such a pleasure to meet you personally, yesterday. It is so rare to find someone as anxious to help and as gracious as you are.

All good wishes.

Sincerely,







## American Chemical Society

Dennis Chamot, *Chairman*

### COMMITTEE ON PROJECT SEED

1155 16th Street, N.W., Washington, D.C. 20036  
Staff Liaison (202) 872-4380

July 28, 1993

Dr. Alfred Bader  
2961 North Shepard Avenue  
Milwaukee, Wisconsin 53211

Dear Dr. Bader;

Thank you again for agreeing to participate in the Project SEED 25th anniversary celebration and to speak at our luncheon on August 23, 1993 at the ACS Chicago national meeting. With less than a month to go, plans for the events are almost complete. I have enclosed an invitation which lists the program for the celebration. Please note that the luncheon is followed by a symposium and a reception. In addition, we will have approximately 30 students presenting their research at Sci-Mix later that night. All these events will take place in the Sheraton Chicago, 301 East North Water Street, Chicago, 312-464-1000.

Since you are our featured speaker and such an important supporter of the Project SEED program, we have reserved a ticket for you and a guest for the luncheon. I ask that if you do not need the guest ticket, please notify the Project SEED program assistant, Raihanah Rasheed, at 202-872-4380.

If you have any other questions or concerns, please feel free to call me at 202-872-6169. I look forward to seeing you at the meeting.

Sincerely,

Christine Berg Brennan, Staff Liaison  
Committee on Project SEED

*Enclosure*

202 833 7732





## American Chemical Society

Dennis Chamot, *Chairman*

**COMMITTEE ON PROJECT SEED**

1155 16th Street, N.W., Washington, D.C. 20036  
Staff Liaison (202) 872-4380

September 24, 1993

Dr. Alfred R. Bader  
Suite 622  
924 East Juneau Avenue  
Milwaukee, Wisconsin 53202

Dear Dr. Bader;

On behalf of the Committee on Project SEED, I would like to thank you for your participation in the 25th Anniversary Celebration of Project SEED at the recent ACS national meeting in Chicago. I believe that you were key to the success of the luncheon, and everyone thoroughly enjoyed your talk. Personally, I enjoyed meeting you (again) and seeing you express your commitment to our program. My impression is that the students particularly enjoyed speaking with you.

I was wondering if you could send me the text of your speech. If you would allow it, I would like to include your speech in our newsletter *Chemunity News*. I have enclosed the most recent copy to show you the format of this publication.

Again, it has been my pleasure working with you. I look forward to our dealings in the future. If I can ever be of any service, please feel to call me at 202-872-6169. Send my regards to your wife.

Sincerely,

Christine Berg Brennan, Staff Liaison  
Committee on Project SEED

cc: Dennis Chamot  
Martha Turckes

*Enclosure*





Dr. Alfred R. Bader  
2961 North Shepard Avenue  
Milwaukee, Wisconsin 53211

September 28, 1993

Dr. Christine Berg Brennan  
Staff Liaison  
Committee on Project SEED  
American Chemical Society  
1155 - 16th Street, N.W.  
Washington, D.C. 20036

Dear Dr. Brennan:

Your gracious letter of September 24th reminded me of our happy meeting in Chicago.

As you requested, the text of my talk is enclosed.

Best wishes.

Sincerely,

Enclosure



Dr. Alfred R. Bader  
2961 North Shepard Avenue  
Milwaukee, Wisconsin 53211

September 29, 1993

Ms. Mary Jo Meisner  
Editor  
The Milwaukee Journal  
333 West State Street  
Milwaukee, Wisconsin 53233

Dear Ms. Meisner:

Last month I was asked to speak to Project SEED of the American Chemical Society, and the enclosed letter from Dr. Brennan relating thereto will be self-explanatory.

In my talk I refer to (page 4 of the manuscript) an article which the Milwaukee Journal had on its front page some years ago.

It has occurred to me that you might like to consider publishing the text of this talk.

Sincerely,

Enclosures





Dr. Alfred Bader  
2961 North Shepard Avenue  
Milwaukee, Wisconsin 53211

March 22, 1994

Ms. Martha K. Turkes  
Staff Liaison  
Committee on Project SEED  
American Chemical Society  
1155 - 16th Street, N.W.  
Washington, D.C. 20036

Dear Martha:

Enclosed, as promised, please find our third \$50,000 contribution for Project SEED II.

We were so happy to learn at the ACS meeting in Chicago last year how well Project SEED II is doing, and we very much hope that it will continue.

For the fourth year you have Aldrich's \$25,000 contribution, and I very much hope that additional funds from the American Chemical Society will continue Project SEED II.

Please do let me know after this next summer how the efforts have gone.

All good wishes.

Sincerely,

Enclosure  
c: Mr. Daniel Bader



# Chemunity

NEWS

*File! Send*



VOLUME 4, NUMBER 1 MARCH 1994  
A Publication of the ACS Education Division

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See pages 4, 15, and 23



## Yet Another International Comparison!

In October 1992, UNESCO sent out a survey on the contents of school science curricula to its member states and to the United States and the United Kingdom (not members at the time of writing). The purpose was to find out what is taught in science classes worldwide at the elementary, lower secondary, and upper secondary levels. One hundred and nineteen responses were received from 66 countries, including most European nations, Asian states such as Japan and Korea, countries in Africa, Canada, the United States, and Australia.

Questions on the survey were taken from a *Checklist for Science Curriculum Development* prepared by the UNESCO Science and Technology Unit. This checklist includes a modification of items found in the Third International Math and Science Study (TIMSS) Science Framework. Many U.S. students will be participating in the TIMSS — you may remember an uproar in the press concerning U.S. achievement in the Second International Science Study!

The survey highlighted some significant differences in the content of chemistry courses in this country as compared with the rest of the world. The definitions of elementary, lower, and upper secondary levels of instruction vary from country to

country; if you view lower secondary as being equivalent to junior high school you will be making a reasonable comparison. You should also assume that, generally, science is compulsory until the end of lower secondary schooling in many of the countries participating in the UNESCO survey. Students in the upper secondary years are more likely to be part of an elective, and elite, science stream.

I believe that two findings of special interest in the survey should be considered when undertaking curriculum reform in this country. First, a great deal of chemistry is introduced before upper secondary schooling in other countries and, second, a number of topics that do not appear in most traditional U.S. texts (but do appear in *ChemCom*) are widely taught in other parts of the world.

One topic that is considered an essential component of introductory chemistry at both the lower and upper secondary school levels is organic chemistry (see the table, p. 3). Although there is overlap among descriptors, and some of the numbers look a little strange, the majority of respondents expect some introduction to organic chemistry at the secondary level. This is confirmed by our experience with the International Chemistry Olympiad. Our students' lack of exposure to simple organic chemistry has put the U.S. team at a disadvantage each year. We always find that the team we prepare at the U.S. Air Force Academy study camp needs to concentrate heavily on organic chemistry to be competitive internationally.

Other countries also seem to place a greater emphasis on industrial chemistry than we do. Specific topics that are introduced at both the lower and upper secondary levels (in addition to those already shown in the table) include mining and mineral extraction, the aluminum industry and aluminum recycling, fertilizers and the fertilizer industry, the glass industry and glass recycling, fibers, iron and steel metallurgy, and ceramics. This list may look very much like the chemistry taught in the United States before the reforms of the 1960s. However, many of the countries that responded to the UNESCO survey also took part in those reforms but retained a reworked version of industrial chemistry in their new curricula.

A number of other topics are considered important introductory chemistry in other countries but not here (except in *ChemCom* classes). Radioactivity and nuclear chemistry are introduced in 19% of 56 countries at the lower secondary school level and in 79% at the upper secondary level. Environ-



### Chemunity NEWS

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## Editorial COMMENT

Subject	Lower secondary (%)	Upper (%) secondary (%)
Hydrocarbons, organic chemistry, biochemistry	30	77
Fermentation, fermentation reactions	33	74
Polymers, polymerization	33	80
Petroleum industry, petroleum products	18	55
Plastics, plastic processing	17	33

of the 66 countries responding. Gas laws are introduced in lower secondary level physics in 39%, and in upper secondary level physics in 83% of the responding countries.

The survey is particularly interesting in light of our current discussions in this country about curriculum reform. I frequently make the point that chemistry is not just a physical science—it is also a life science, an earth science, a materials science, and an environmental science. Clearly, in the view of much of the rest of the world this is an obvious point—not a revolution in perspective!

*Sylvia A. Ware*

*Items on the survey were taken from A Checklist for Science Curriculum Development, prepared by the UNESCO Science and Technology Unit. This checklist includes a modification of items found in the Third International Math and Science Study (TIMSS).*

mental chemistry, although not listed as part of the chemistry curriculum, is taught as part of environmental education at the primary (8% of 56 countries), lower secondary (35% of 56 countries), and upper secondary levels (53% of 56 countries).

Two topics that are not taught in chemistry classes in other countries are quantum theory/quantum electronics and gas laws. However, both topics are taught in physics. Quantum theory is introduced in upper secondary level physics in 67%

## Putting it into context...



In the past issue of *Chemunity News* (December 1993), we inadvertently printed this photo of the *Chemistry in Context* project team without identifying the members of the team or explaining why they were dressed for another era! The writing team includes, from left to right, Robert Silberman (SUNY College at Cortland), Arden Zipp (SUNY College at Cortland), Wilmer Stratton (Earlham College), Diane Bunce (The Catholic University of America), Conrad Stanitski (University of Central Arkansas), and Truman Schwartz (Macalester College). The team had a picnic in period costume on the shores of Onondaga Lake, which is featured in the book in a historical unit on the pollution of the lake. We apologize for printing the picture—out of context!



## Science Fair Guide...

Science fair season is just around the corner. Just as surely as papier-mâché volcanoes erupt at each spring's fair, teachers will soon be showered with questions from parents trying to help their children prepare science fair projects.

The ACS Office of Prehigh School Science's brand-new publication, *Science Fair Projects: A Guide for Grown-ups*, is available to help point the way to success. The guide is a handy, no-nonsense resource, with time-tested tips and ideas for projects.

For many parents, science fair projects require a delicate balancing act. They want to

For more information, call or write  
Office of Prehigh School Science  
American Chemical Society  
1155 Sixteenth Street, NW  
Washington, DC 20036  
(202) 452-2113



Be there to *guide*, not *do*. Many parents struggle each year with how much—or how little—to help their children with science fair projects.

help their child with the project, but they do not want to (and should not) actually do the work. An even more difficult obstacle is that parents often have no idea how to help their child get started with a topic or question.

The *Guide* helps parents with everything from the most basic questions about science fair projects to the fine points of guiding children in the preparation of displays.

Using a question-and-answer format, this colorful guide has all the practical information parents need to coach their children from start to finish. There are suggestions for motivating a child, helping the child choose a topic, designing the project, and locating materials and additional assistance.

### Science Fair Projects Guides

No. of Sets	Item	Price/set	Total
	Science Fair Projects Guides (25/set)	\$10.00	
			56313/2148/8999
	Tax (Canada, CA, DC, MD, OH)		
	Shipping/Handling		
	Total Remitted		98704/2143/8999

**Send to:**

Name \_\_\_\_\_

Address \_\_\_\_\_

City/State/ ZIP \_\_\_\_\_

Phone \_\_\_\_\_

**Payment Method**

- Check or money order enclosed  
(Make check out to the American Chemical Society)
- Charge my
  - VISA
  - MasterCard
  - American Express

Card number \_\_\_\_\_

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**Prepayment required for orders less than \$50**

**Mail with payment to:**

American Chemical Society  
1155 Sixteenth Street, NW  
Washington, DC 20036

Phone with credit card information to: (202) 452-2113  
Allow 3-5 weeks for delivery

## ...Tons of Timely Tips

The *Guide* also contains troubleshooting suggestions for dealing with the unexpected, tips on preparing for the judges' questions, and a list of the types of criteria on which projects are evaluated. In addition, the eight-page guide contains many thought-provoking ideas for science fair project questions. Here are just two examples:

*Can you train an earthworm to do something?*

*Which kind of sponge is better, natural or synthetic? (And how do you define better?)*

With proper guidance, a child benefits in many ways from doing a science fair project—and not only in terms of improved science knowledge. The *Guide* explains how the process offers children lessons in problem solving and communication, not to mention the satisfaction of a job well done.

Review copies of the *Guide* are available to *Chemunity News* readers. For a free copy, just write to *Guide*, American Chemical Society, Room 806, 1155 Sixteenth Street NW, Washington, DC 20036. Classroom sets of 25 are available at cost (\$10.00 per set plus postage and handling). Our supplies are limited, so act now!

## Cross-curricular Teaching

Cross-curricular teaching has been a way of life in elementary schools for many years. A theme is chosen (the seasons, the Chesapeake Bay, restau-

rants, Japan, etc.), and all subjects in a class for a period of time take on that particular focus. Science themes are wonderful as centers of cross-curricular units, and *WonderScience* magazine has been designed to take advantage of that approach.

Take *water*, for example. The theme of water can go in a variety of directions using what has already been developed for several issues of the magazine. In the 1989 issue on surface tension there are activities that allow children to experiment with surface tension via paper-clip "skiers," write limericks about water-striding insects, and play games such as "how many pennies can go into a cup filled with water?" Other water games, stories, and activities appear in the January 1993 issue, which focuses entirely on water.

Using *WonderScience* activities to generate discussions on water can lead to such activities as finding out how much water a school uses in a day. This sort of whole-class project brings in a great deal of measurement and, for older children, the concept of extrapolation. The social issues of water use also become more immediate if the children are examining their own use of water in school.

*Color* is another topic that lends itself to cross-curricular instruction. In addition to activities that explore the physics of color, children can separate color mixtures by use of chromatography and can make color mixtures by combining different food colors. The social aspects of color can be dealt with by asking children to study why certain countries use particular colors in their flags: What do those colors mean, and does the same color have different meanings in different countries? Children could then make up a flag either for their school or for themselves. Color moves into language arts with "Color

Haiku" (*WonderScience*, Nov. 1988). For this activity, children compose three-line poems (five syllables in the first line, seven in the second, and five again in the third) that use color words to evoke a strong image or sentiment. One of the color haiku poems from *WonderScience* is:

Red light stops your car  
Beside masses of roses.  
Look quickly! Green light!

Mathematics can also be woven into the color theme by having children use color chromatographs taken from candy dyes to make bar charts of the color mixtures. Older children (those who understand division) can measure and calculate rates of flow for the same chromatographs.

Sound is much more compelling as a topic of study if it is approached through music. The *WonderScience* issue on the physics of music has activities that encourage children to make a variety of instruments and explore how their sound changes as the instruments themselves change. A rubber-band guitar, for example, sounds quite different when its strings are short and thick from the way it does when its strings are long and thin. The history of musical instruments is a natural next step for children to investigate, perhaps through a "musical instrument timeline" done as a whole-class mural. Language arts can be woven in by composing different sets of lyrics for the same basic tune (all of which can be sung accompanied by the students' own homemade instruments). Mathematical relationships in music come to light when children see how the length of a vibrating string or column of air is related to tone.

These suggestions are just a few of the ways in which science themes can be used across the curriculum with the help of *WonderScience*. In fact, the children themselves could be the best gen-



erators of cross-curricular units by working in groups to take themes of their choosing into a variety of areas. These child-developed units could then be exchanged with other classes for field-testing and refinement.

## ***FACETS Assessment Development***

FACETS (Foundations and Challenges to Encourage Technology-based Science), a curriculum that provides an integrated science program for students in the seventh and eighth grades (funded by the National Science Foundation), is currently undergoing field-testing of the modules in a number of schools throughout the country. An important component of the program has been the challenge of providing an appropriate form of student assessment.

Most commonly accepted assessment tools do not effectively measure the higher order thinking skills that are the core of the FACETS curriculum. The FACETS development team was committed to the idea that the assessment, which is an important part of the curriculum, should be similar in form to the activities. For example, the use of a multiple-choice format would change the way teachers develop their lessons and would not be compatible with the FACETS curriculum. Furthermore, it would not adequately assess how/whether students are achieving the intended goals. It is important that the assessment encompass as many aspects of a FACETS module as possible, including the form of presentation.

The initial assessment package consisted of a short module that could be

completed in five class periods. Because the assessment was in the form of a small module, the students could solve a new problem while displaying their skills. This solution to the assessment problem seemed reasonable. When this proposal was presented to teachers the response was resoundingly negative. Spending five periods on an assessment exercise was too long for an already crowded schedule.

As a result, two assessment instruments were developed. Each one required one class period. Students' abilities to use the strategies sampled, thus leaving some strategies untested. Time constraints also meant that the students were limited to planning rather than implementing an approach to a problem. However, if raw data are supplied, in future versions some of the analytical and other skills can be tested, even though the students do not have the opportunity to collect data themselves.

The core strategies for the assessment follow:

- **Gather Relevant Information**  
Emphasize not just the gathering of information but also its evaluation to be sure that the data collected are relevant to the problem at hand. The information could take the form of data, for example, world population figures or higher order information such as concepts, principles, and definitions.
- **Generate Testable Questions**  
The core activity in any scientific endeavor.
- **Design Laboratory Experiments**  
Use appropriate controls, sample sizes, and analytical techniques to interpret the data collected.
- **Design Field Tests**  
Design and conduct field tests when it is not appropriate to test the question in the laboratory. Field

tests add to the complexity of assessment because the data must be analyzed.

- **Manage Data**  
Measure, record, and manipulate data to present it in an appropriate form for interpretation.
- **Interpret Results**  
Use the data to draw valid conclusions.
- **Apply Modeling and Simulation**  
Use models and simulations to answer some questions that are not amenable to being experimentally manipulated in the laboratory or the field test.
- **Solve Practical Problems**  
Propose practical solutions to applied science problems.
- **Logical Thinking**  
Develop the skills to use clear and logical arguments when trying to answer questions or resolve problems.

At the end of the 1992-93 academic year these instruments were tested with approximately 1,400 students around the country. Some students had never experienced the FACETS curriculum and others had varying degrees of experience, having worked on different FACETS modules. The results of this assessment are now being analyzed. We are verifying that the instruments are valid and reliable and are testing whether the students are improving their abilities to use the strategies as they gain more experience in the FACETS program.

As we wrestle with the question of assessment, we would appreciate your input. Please call or write us with your responses: (800) 227-5558 (press 0 for the operator and ask for John Sampson), or write to John Sampson, Education Division, American Chemical Society, 1155 Sixteenth Street, NW, Washington DC 20036.

For more information, call or write  
Office of High School Chemistry  
American Chemical Society  
1155 Sixteenth Street, NW  
Washington, DC 20036  
(202) 872-4590

## SEED Concludes 1993 Program

In its 25th year, Project SEED (Summer Educational Experience for the Disadvantaged) placed 249 students nationwide in its Summer I program at 107 institutions and 64 students in its Summer II program at 44 institutions. The Summer II program allows SEED alumni to return for a second summer of research. Preliminary survey results from the 1993 Summer I and II students indicate that 74% were from ethnic minority groups and 64% were female.

For the past 25 years, the SEED Summer I program has been extremely successful in contributing to the career development and educational growth of almost 4,000 disadvantaged students. The Summer II program has been successful in placing more than 100 students at 53 institutions over two years. This component of Project SEED is currently funded by a three-year grant from the Bader family.

Project SEED has been funded by a variety of sources including chemical companies, private foundations, ACS divisions, local sections, and members. This year, matching funds from the ACS local sections, universities, and corporations that sponsored the students during the summer provided a large portion of the monies to support the students' educational awards.

## 1993 Project SEED—Summer I and II

### Institutions

#### Alabama

Auburn U.  
U. of Montevallo

#### Arizona

Arizona State U.

#### Arkansas

U. of Arkansas, Little Rock

#### California

California State U., Fresno  
Lawrence Berkeley Laboratory  
San Jose State U.  
U.S. Department of Agriculture  
U. of California, Davis  
U. of California, Santa Cruz  
U. of San Diego  
U. of Southern California

#### Colorado

Fort Lewis College  
U. of Colorado, Colorado Springs

#### Delaware

DuPont Agricultural Products

DuPont Central Research

Hercules Inc.  
M-Cap Technologies

#### Florida

Florida International U.

#### Georgia

Georgia Southern U.  
Savannah State College  
Spelman College

#### Illinois

Chicago State U.  
Illinois Institute of Technology  
Lucas Meyer Inc.

#### Indiana

ACS Indiana Local Section

Reclaimed Energy Co., Inc.

#### Iowa

U. of Northern Iowa

#### Kansas

Kansas State U.

#### Kentucky

Toyota Motor Manufacturing, USA

#### Louisiana

Louisiana State U.

McNeese State U.

Southern U.

#### Maine

U. of Maine

#### Maryland

U.S. Customs Service  
U.S. Food and Drug Administration  
U. of Maryland Eastern Shore

#### Massachusetts

Boston U.  
Millipore Inc.

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Gian Gupta

Guildford Jones  
Dorothy Phillips

\* Hosted Summer I and Summer II students.  
\*\* Hosted Summer II students only.



## USNCO Announces 1994 Program

The U.S. National Chemistry Olympiad (USNCO) Subcommittee invites all interested high school teachers and their students to participate in the 1994 USNCO program. The USNCO is designed to stimulate interest and achievement in chemistry among young people across the United States and to recognize outstanding young chemistry students and their teachers. During the past ten years of participation in the International Chemistry Olympiad (IChO), the U.S. teams have developed lasting relationships with students from different cultures and earned national acclaim for their outstanding performances, including 13 bronze, 17 silver, and 6 gold medals.

In 1994, the USNCO Subcommittee hopes to increase the participation of students and teachers and to see a new record of local section involvement. For the first time, the USNCO national examination will contain a laboratory practical. (See the article "New Laboratory Practical," p. 10, for more information about the format of the 1994 national examination.)

The 26th IChO will be held in Oslo, Norway, July 3–11, 1994. Students and mentors from 40 countries are expected to attend the eight-day event. To find out how your students can participate in the U.S. program or its international counterpart, please call the Olympiad office at (202) 872-6328.

The final program schedule for the 1994 Olympiad events leading up to the competition in Oslo is listed on p. 9.

## 1993 Project SEED—Summer I and II (continued)

### Institutions

#### Michigan

ACS Kalamazoo Local Section  
Central Michigan U.

Cytec Industries  
Hercules, Inc.  
Kalsec, Inc.  
L. Perrigo Company  
Saginaw Valley State U.  
The Upjohn Company

Wayne State U.  
Western Michigan U.

X-Cel Laboratories

#### Minnesota

U. of Minnesota, CIE  
U. of Minnesota, Morris  
U. of Minnesota, St. Paul

#### Mississippi

Gulf Coast Research Laboratory

#### Missouri

U. of Missouri

#### Nebraska

U. of Nebraska, College of Pharmacy

#### Nevada

U. of Nevada

#### New Jersey

AT&T Bell Laboratories  
Environmental Occupational  
Health Science Inst.  
Hackensack Meadowlands  
Development  
Jersey City State College  
Liberty Science Center  
New Jersey Institute of Technology  
Princeton U.  
Rider College  
Rutgers College of Pharmacy  
Rutgers, The State U. of NJ, Newark

Rutgers, The State U. of NJ,  
New Brunswick  
Rutgers U., Camden  
Rutgers U., Piscataway

Seton Hall U.

Stevens Institute &  
Environmental Engineers  
Stevens Institute of Technology

UMDNJ-VA Medical Center  
UMDNJ-New Jersey Medical School  
UMDNJ-Robert Wood Johnson  
Medical School

#### New Mexico

Los Alamos National Laboratory

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Douglas Harper, James Guzinski\*\*  
Douglas Harper, Michele Tyler  
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Douglas Harper, Byung Lee, Karen Jodeilis,  
Michael Lajiness, Donald Harper\*  
Keith Williams, G. Reck, Joseph Francisco  
Douglas Harper, Alan Kehew, Michael Barcelona,  
Donald Schreiber, Susan Stapleton\*  
Douglas Harper, Carol McGinnis\*\*

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William Ganzlin, Emil Pfender\*

Julia Lytle

Suresh Tyagi

Warren Narducci

W. Berry Lyons

Lawrence Seibles\*  
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Christine Hobbles\*

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Sean McRea  
Norman Loney  
Maitland Jones  
John Sheats  
Deborah Laskin, Maureen McKenzie  
Elizabeth Wheeler, James Schlegel, Laszlo Zaborsky,  
E. Bond, Jennifer Swann, Zhen Wu  
Barbara Hannon, Susan Fried, Sue Shapses,  
Judith Storch, Malcolm Watford\*  
Georgia Arbuckle, Jing Li  
Judith Moroz, Gregory Heroz, Richard Riman,  
Victor Greenhut, Roger Jones, Ronald Levy\*  
Mary McBride, Melvin Daniel Burke,  
Richard Sheardy, W. Murphy, James Hanson  
George Korfiatis

M. Manhas, A. Bose, E. R. Malinowski,  
Traugott Fischer, D. Rothburg, David Smith  
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Ophelia Gona  
Ann Vaughan, William Mayle, Paul March

Huguette Sargent, Julie Wilson, Calvin Martell,  
Kurt Sickafus, David Chen, Kenneth Slacar,  
Ben Mattes, Roger Tennant, Michael Ebinger,  
Joel Williams, Mark Hoffbauer, Nigel Cockcroft,  
John Coodage, Bob Walker\*

\* Hosted Summer I and Summer II students.

\*\* Hosted Summer II students only.

## 1993 Project SEED—Summer I and II (continued)

### Institutions

New Mexico State U.  
New Mexico State U., WERC

### New York

City College of New York  
College of New Rochelle  
Cornell U.—Sidney High School  
Monroe Community College  
New York Academy of Sciences  
Polytechnic U.  
State U. of New York  
SUNY College of Environmental  
Science & Forestry

### North Carolina

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Local Section  
ACS North Carolina Local Section

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Penn State York Campus  
U. of Pittsburgh—Investing Now  
Charles  
U. of Pittsburgh—UCEP

### Puerto Rico

U. of Puerto Rico—Mayaguez Campus

### Rhode Island

U. of Rhode Island

### South Dakota

U. of South Dakota

### Tennessee

ACS Nashville Local Section  
Oak Ridge National Laboratory

### Texas

Tarleton State U.  
Texas Southern U.  
Texas Tech U.  
The U. of Texas Medical Branch  
U. of Texas at Dallas

### Washington

Seattle U.

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Ray Wilson\*  
Allan Hoadley  
David McAdoo, Richard Illes, B. Kaphalia, Phillip Lee\*  
Kenneth Balkus

Thomas Griffith

\* Hosted Summer I and Summer II students.  
\*\* Hosted Summer II students only.

## USNCO Final 1994 Program Schedule Released

### April 6

Begin mailing of national exams from ACS DivCHED Exams Institute to participating sections. Sections will receive the maximum number of tests allowed their section (determined by section size).

### April 12

Deadline for completed Nominee Response Form listing names and addresses of students nominated for the national exam (and their teachers) to the USNCO national office.

### April 21–24

National exam administered.

### April 27

Absolute deadline for receipt of national exams at ACS DivCHED Exams Institute for grading. Exam answer sheets should be sent by Federal Express or UPS overnight or two-day delivery. *Exams received after this deadline will not be graded.*

### May 6

National finalists announced. Local section coordinators of the 20 students chosen to attend the study camp will be contacted by telephone. Letters announcing these results mailed to other sections.

### June 12–26

Twenty students attend the study camp at the U.S. Air Force Academy in Colorado Springs, CO. Representatives to the IChO selected.

### July 3–11

26th International Chemistry Olympiad competition in Oslo, Norway.

### October

#### For 1995 Olympiad:

First mailing to local section chairs, chairs-elect, and previous years' Olympiad coordinators. Local sections identify Olympiad coordinators.



## New Laboratory Practical

A major concern of the USNCO Subcommittee over the past ten years has been the absence of a laboratory practical as part of the national examination. Laboratory proficiency is a critical component of the IChO, in which the five-hour laboratory practical counts as 40% of the student's total score. A laboratory component to the national exam will better identify students suited for the IChO because the 20 students who are chosen to attend the two-week study camp will enter the camp possessing a known balance of theoretical and laboratory expertise. In addition, use of a laboratory practical will help emphasize the importance of the laboratory in high school chemistry instruction.

The results of a spring 1992 survey to USNCO local section coordinators indicated a willingness to reduce the length of the multiple-choice portion of the national exam and to add a laboratory practical exercise. Last year the feasibility of this addition was field-tested by 12 local sections located throughout the country and varying in size. Because of the overwhelmingly positive results of the field test, a laboratory practical will officially be part of the 1994 USNCO national examination.

The laboratory practical will be an exercise in problem solving. The exercises will require simple equipment such as beakers, ring stands, wood splints, and test tubes. The local sections will be responsible for arranging proper facilities and providing this equipment. The laboratory practical will be an hour in length; the written portions of the national examination will be

shortened so that the total exam time will be four and one-half hours. Each section of the national exam is self-contained so that the local sections may arrange the multiple-choice, free-response, and laboratory practical sections in any order they wish. For more information about the laboratory practical, please telephone the USNCO office at (202) 872-6328.

## ACS Awards Travel Grants

Nine high school teachers have been awarded travel grants of up to \$500 each by the Office of High School Chemistry. The grant recipients are:

**Victoria Acquistapace**, Antioch High School, CA

**Jenelle Ball**, Chico Senior High School, CA

**Frank Cardulla**, Niles North High School, Skokie, IL

**Theresa Roebuck Corley**, Mountain Brook High School, Birmingham, AL

**Deborah Fancher**, Service High School, Anchorage, AK

**Britt Cutino Hammon**, Antioch High School, CA

**Millie McDowell**, Clayton High School, MO

**Sandra Mueller**, John Burroughs School, St. Louis, MO

**Connie Suttliiff**, Clayton High School, MO

The travel grants will support the awardees at either an ACS or National Science Teachers Association (NSTA) regional or national meeting in 1994. Each awardee is required to present a session on a program or product of the Office of High School Chemistry, such as Project SEED, the U.S. National Chemistry Olympiad, *ChemCom*, or career materials. These teachers have demonstrated a potential to contribute

to the success of the meeting. They will apply the experience and knowledge gained from the meeting in their future endeavors.

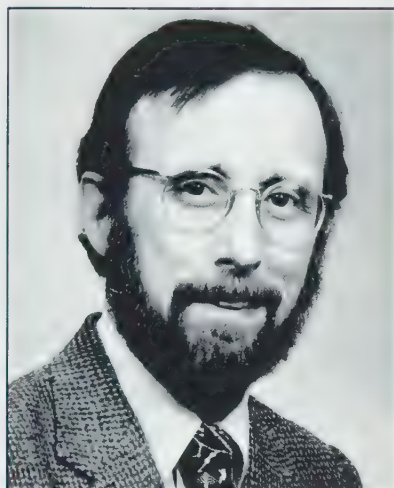
The maximum grant available is \$500, which can be used to cover expenses including mileage, airfare, hotel accommodations, food, and presentation supplies. The ACS will provide the grantees 75% of their award as a travel advance. The remaining 25% of the award will be provided on submission of a one-page summary report after attending the meeting.

The Office of High School Chemistry invites all interested applicants to apply for a travel grant to either an ACS or NSTA regional or national meeting in 1995. The application deadline is July 1, 1994. To obtain a travel grant application and a roster of 1994-95 ACS and NSTA meetings, contact the Office of High School Chemistry at (202) 872-6328.

## Marek Wins Conant Award

Congratulations to Lee Marek, chemistry teacher at Naperville North High School, IL, for receiving the 1994 James Bryant Conant Award for chemistry teaching. Known by many as a member of the "weird science" demonstration team, Marek spends much of his energy traveling around the United States sharing the wonder of science with large audiences. He and the three other teachers on the team have made more than 200 presentations to some 75,000 teachers, students, and members of the general public from coast to coast and in Canada. In addition to six appearances on "The David Letterman Show," he has also appeared on television in England.

## High School CHEMISTRY



Lee Marek

Marek has been teaching chemistry and advanced placement chemistry at Naperville North since it opened in 1974. He considers the accomplishments of his students to be his greatest achievement. One of his students was a national finalist in the Westinghouse Science Search. Another qualified as one of the 20 students who attended the 1993 U.S. National Chemistry Olympiad study camp. He and his stu-

dents have produced a video on polymers for a local cable television station. Some of his students even work on projects with him over the holidays and on weekends!

Marek feels a sense of accomplishment in his role as a teacher when students who have struggled through his course thank him for being their teacher and for making the class interesting. One student wrote, "...When I was in your class, I sort of took the interesting and fun way you had of presenting materials for granted. Just now I am realizing what a really great chemistry teacher you are. Keep up the enthusiasm so others will benefit as I have."

The James Bryant Conant Award was established in 1965 by DuPont to recognize, encourage, and stimulate outstanding teachers of high school chemistry in the United States at both the regional and national levels. The award was supported by DuPont from its inception until 1972. In 1973 and 1974, the award was financed by ACS, and for the next five years the CHEM (Chemical Education Materials) Study project at the Lawrence Hall of Science, Berkeley,

CA, was the sponsor. Since 1980, the award has been financed by the Ethyl Corporation. The 1994 Conant Award, consisting of a \$5,000 check and a certificate, was presented to Marek at the spring 1994 ACS national meeting in San Diego, CA.

Winners of ACS regional awards in high school chemistry teaching automatically become candidates for the James Bryant Conant Award in the following year and remain eligible for three successive years. Nominations for the regional awards are made only by local sections. Each local section may nominate only one candidate per year. A nominee must be actively engaged in the teaching of chemistry in a high school (grades 9-12) that is either in the territory of the nominating local section or in an adjacent, unassigned territory. If you know of an outstanding chemistry teacher in your school or school system, please notify your local section. The Office of Local Section Activities [(202) 872-4610] or the ACS Awards Office [(202) 872-4408] can assist you in finding the section nearest you.

**Career Video  
Available!**

### **People Who Took Chemistry, That's Who!**

This 15-minute videotape, intended for middle and high school audiences, promotes the value and importance of chemistry in our daily lives. Male and female professionals from different ethnic backgrounds describe their work in various disciplines in which chemistry plays a central role. The video features the chemistry involved in recycling plastics, analyzing environmental pollution, and producing compact discs, polyester fibers, and other high-technology products. A 52-page user's guide accompanies the video. This video is an excellent resource for high school teachers and guidance counselors as well as industrial chemists invited to visit classrooms on career day.

The exciting new video with user's guide costs only \$24.95 plus \$3.50 postage and handling. To place your order call (202) 452-2113 or write to American Chemical Society, Education Division, Room 806, 1155 Sixteenth Street, NW, Washington, DC 20036.

### **Thanks, New York Section!**

The Chemical Marketing and Economics Group of the ACS New York Local Section has honored William Copulsky with its first Award of Merit for his long service to both the local and national groups. Copulsky served as a vice-president of W. R. Grace & Company as well as a professor of business at Baruch College in New York. The Education Division thanks the New York Local Section for making a donation to the U.S. National Chemistry Olympiad program in honor of Copulsky's long service to the chemical profession and his ongoing interest in education at all levels.



## Laboratory Activity: Buffers

This laboratory activity is from Unit 7, Health: Your Risks and Choices. In this activity, students investigate the buffering ability of one of the body's two key buffer systems, the carbonic acid–hydrogen carbonate system. After making their own buffer solution, students test its effectiveness in neutralizing an acid and a base.

Buffering can be a difficult concept for students, and thus it is important that they be able to see buffers in action. Be sure to describe what a buffer solution contains and how it performs the desired reactions. It is also important to explain the use of molarity in defining the concentration of a solution.

### Materials

- (for a class of 24, working in pairs)
- 12 24-well microplates
  - 12 Beral pipets containing distilled water
  - 12 Beral pipets containing 0.1 M sodium hydrogen carbonate (1.7 g/200 mL solution)

### Data Table

Base	Indicator	Color	Approx. pH
1. Distilled water	+ Universal indicator	_____	_____
2. Buffer solution	+ Universal indicator	_____	_____
3. Distilled water	+ indicator + 5 drops NaOH	_____	_____
4. Number of drops required to match the color in the water well: _____			
Acid	Indicator	Color	Approx. pH
5. Distilled water	+ Universal indicator	_____	_____
6. Buffer solution	+ Universal indicator	_____	_____
7. Distilled water	+ indicator + 5 drops HCl	_____	_____
8. Number of drops required to match the color in the water well: _____			

## ChemCom LAB NOTES

ACS is publicizing small-scale versions of ChemCom laboratory activities. This issue of *Chemunity News* presents the eighth of these ChemCom small-scale labs.

- 12 Beral pipets containing 0.1 M NaOH (0.8 g/200 mL solution)
- 12 Beral pipets containing 0.1 M HCl (1.7 mL/200 mL solution)
- 12 Beral pipets containing universal indicator solution
- 12 Beral pipet tips (for micro-straws)
- Universal indicator color charts or tables

### Lab tips

All references to water in this activity are to distilled (or deionized) water.

Remind students not to share the straws used to blow air into the flask to prepare the carbonate buffer system. Used straws should be discarded.

Provide universal indicator color charts or tables so students can estimate the pH values of their solutions.

### Procedure

1. Add 20 drops of distilled water to one well of a 24-well plate. Add one drop of universal indicator and note its color.

2. Add 20 drops of 0.1 M sodium hydrogen carbonate to another well. Pull out the end of a clean Beral pipet, and cut it off so that you have a miniature straw about 10 cm long. Use this straw to gently blow into the NaHCO<sub>3</sub> well for 2–3 minutes: This is the buffer solution. Add one drop of universal indicator and note its color.
3. Add 5 drops of 0.1 M NaOH to the water well. Note the color produced.
4. Add 0.1 M NaOH to the buffered well until the color matches the water well color. Count the number of drops required. Record the number in your data table.
5. Repeat Steps 1 and 2 with clean, dry wells.
6. Add 5 drops of 0.1 M HCl to the water well. Note the color produced.
7. Add 0.1 M HCl to the buffered well until the color matches the water well color. Count the number of drops required. Record the number in your data table.

### Questions

1. a. Did your carbonate buffer solution actually perform as a buffer?  
b. What observations support this answer?
2. a. Compare the volumes of acid needed to reach the same pH when added to water and to the carbonate buffer.  
b. Do the same for the base.
3. Write an equation showing how the carbonate buffer would prevent the pH of the blood from rising if a small quantity of base (OH<sup>-</sup>) were added.
4. A buffer is a solution of a weak acid and its salt, or a weak base and its salt.
  - a. Classify each substance below as a strong or weak acid or base, or as the salt of a strong or weak acid or base.
    - (1) KCl and HCl
    - (2) NaOH and H<sub>2</sub>O
    - (3) NaNO<sub>3</sub> and HNO<sub>3</sub>
    - (4) NaC<sub>2</sub>H<sub>3</sub>O<sub>2</sub> and HC<sub>2</sub>H<sub>3</sub>O<sub>2</sub>

## ChemCom CAREERS

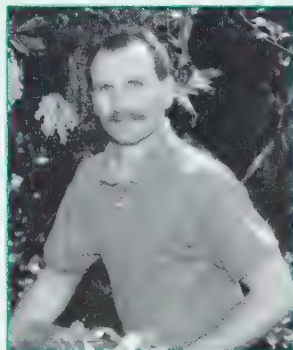
The ACS is developing nontraditional career materials for use with the ChemCom curriculum. This issue of Chemunity News presents the tenth of these ChemCom careers.

### Planting Seeds in the City

Cities can be harsh and depressing places in which to live. As urban centers expand, concrete structures replace the natural landscape. Air pollution and carbon dioxide levels may increase and foul the air. Overcrowding of inhabitants may add to their stress. However, by careful cultivation of plant life within the city, environmental as well as psychological pollution can be alleviated.

An urban horticulturist such as Brent Schmidt of Seattle, WA, can help city dwellers become more comfortable with their environment. Schmidt is nature's advocate. He helps preserve existing plant life in Seattle and suggests different types of flowers, fruits, vegetables, and ornamental plants that could be cultivated to replace lost plant life.

Schmidt, an urban horticulturist, is his own boss. As a consultant, Schmidt provides private individuals, corporations, and public agencies with information on plant and tree conditions, the impact of construction on plant life, and appropriate plant selections for the completion of a project. Schmidt also provides information on replacing current plantings with more aesthetically interesting plants and instructions on proper pruning techniques and general care. In fact, through public speaking engagements and demonstrations, he is involved in a plant "amnesty" program dedicated to improving plant conditions in the city.



Each day for Schmidt is different. Typically, he will conduct business on two or three small projects in a day. For example, one recent day involved three on-site inspections. He first stopped at a city park where a large tree branch was threatening an adjacent home. Schmidt carefully studied the tree to determine whether the branch was likely to fall on the house.

Next, Schmidt visited a highway embankment where the plant life had died. Schmidt collected soil samples to help him discover what had killed the foliage and sent these samples for laboratory analysis. He also catalogued the types of plant damage and identified possible causes.

Finally, Schmidt started a street survey for a small suburban community on the outskirts of Seattle. This job required a complete inventory of the trees located in

the public right-of-ways. Schmidt determined species composition, management needs, tree condition rating, and whether the trees interfered with power lines or damaged sidewalks or streets. Schmidt particularly noted hazard trees. These are trees that are so damaged as to be in danger of falling and destroying property or

lives. Schmidt prepared a presentation for the city council so that its members were aware of the value of the city's trees and future management needs.

Urban horticulturists need to be prepared in many different areas. They are trained in entomology, tree and shrub diseases, plant physiology, general chemistry, and human resource management. Their skill is in using this knowledge to preserve nature at its best and to develop pleasing urban environments for humans. To expand his career options, Schmidt is interested in becoming a zoological horticulturist. As such, he would be responsible for designing and helping to maintain the exotic plant habitats now found in a zoo. The ambiance of the modern zoo is opening up new career options for talented individuals such as Schmidt.

b. Now decide which one of these four pairs of substances would make the best buffer system.

#### Expected Results

In general, addition of acid or base to the buffered systems causes no observable pH change until the buffering capacity of the system is exceeded. Then, the pH drops or rises, approaching the pH of the added acid or base. Actual pH values will be somewhat variable.

#### Post-lab Discussion

Pool the class data so all students gain the benefit of the observations of all groups. Each group should be able to observe that the buffer system strongly resists pH change in comparison with water.

#### Answers to Questions:

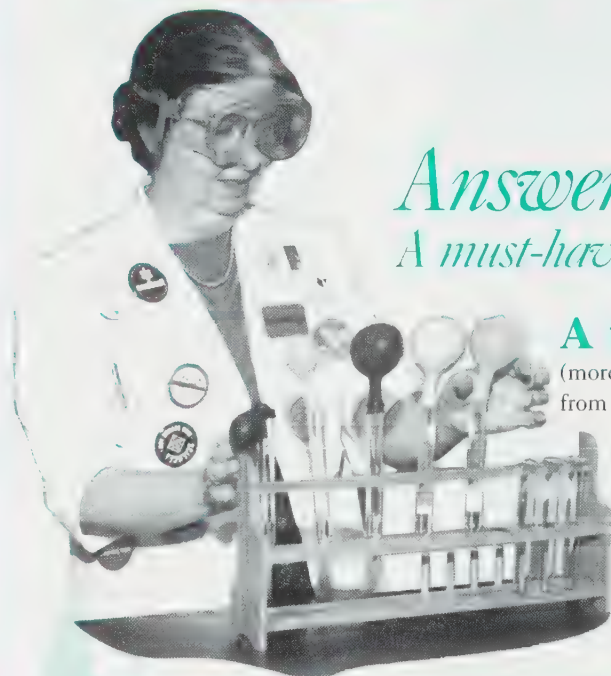
- 1.a. Yes.  
b. The buffer solution required much larger amounts of acid or base to change the pH.
- 2.a, b. In each case, more acid or base is needed with the carbonate buffer.
3.  $\text{HCO}_3^-(\text{aq}) + \text{OH}^-(\text{aq}) \longrightarrow \text{HCO}_3^{2-}(\text{aq}) + \text{H}_2\text{O}(\text{l})$
- 4.a. (1) Hydrochloric acid is a strong acid; potassium chloride (KCl) is the neutral salt of a strong acid (HCl) and a strong base (KOH).  
(2) NaOH is a strong base;  $\text{H}_2\text{O}$  is neutral.  
(3)  $\text{NaNO}_3$  is the neutral salt of a strong acid and strong base;  $\text{HNO}_3$  is a strong acid.  
(4)  $\text{NaC}_2\text{H}_3\text{O}_2$  is the salt of a weak acid, acetic acid  $\text{HC}_2\text{H}_3\text{O}_2$ .  
b. (1) This will not form a buffer in water solution.  
(2) This will not form a buffer.  
(3) This water solution will not form a buffer.  
(4) Because this pair represents a weak acid and a salt of the weak acid, it will make the best buffer system.



# Where

can I find

- a short unit on polymers, with lab activities?
- a demo to show how hot and cold packs work?
- a list of chemicals that are safe for use in high schools?
- scientific instruments for visually impaired students?
- a list of useful career information resources?



## Answer: SourceBook!

*A must-have resource for all chemistry teachers!*

### A four-volume collection

(more than 2000 pages) containing 36 modules on topics from the high school chemistry curriculum, including:

Acids and Bases	The Mole
Gases	Chemical Bonding
Organic Chemistry	Chemistry in Medicine
Electrochemistry	Polymers
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Stoichiometry	Instrumentation

### 17 supplementary modules discuss topics such as:

Chemical Pedagogy	Careers in Chemistry	Software and Audio-visuals
Computers in Chemistry	Chemical Safety	Library Resources
Teaching Chemistry to Persons with Disabilities		

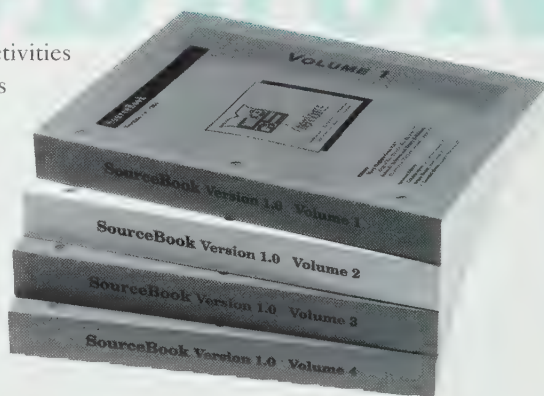
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All materials tested by high school teachers  
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ext. 2113 to place your order.



*Funded in part by the National Science Foundation*

## CiC: Decision-making Activities

*Chemistry in Context: Applying Chemistry to Society (CiC)* was conceived to provide a new focus on chemistry for a world increasingly shaped and affected by technology and science. The text invites undergraduate nonscience majors to consider some of the most important and difficult problems currently facing the planet's population.

*CiC* includes nontraditional decision-making activities that can be conducted as written homework assignments, small-group discussions, or full class discussions. The activities are designed to show how chemistry is intertwined with the ecological, economic, political, and social decisions of our lives and the world. Through these activities, students develop a better understanding of the application of chemistry to their lives.

The students involved in a course for nonscience majors are expected to

### Consider This

The text identifies three reactions to the problem of global warming: continue to study it, act to prevent it, or prepare for it. The most effective response will take place in the shortest amount of time if human and financial resources are directed toward a single unified plan. Carefully study these positions and their consequences. Then choose one of them and defend your choice. Your defense should be based on sound information, valid criteria, and logical argumentation.

For more information, call or write  
Office of College Chemistry  
American Chemical Society  
1155 Sixteenth Street, NW  
Washington, DC 20036  
(202) 872-4587

bring with them the background expertise, knowledge, and sophistication of analysis appropriate to their levels in their fields of study. These students make unique contributions to their chemistry studies because of, not in spite of, their major. Some activities draw on the special knowledge of a political science major, others on the background of economics or literature majors. For students using *CiC*, a variety of majors is a plus, not a minus.

The chemistry instructors are also expected to contribute their level of expertise in chemistry. Although instructors must plan the topics covered, as team members in the learning process they must allow for contributions from the others, making it a student-centered rather than a teacher-centered approach to learning. It is more difficult to predict the outcome of each class period, but with students and instructors working together as a team of specialists, the interaction of chemistry and the *real world* can be developed.

How do instructors incorporate meaningful input from students? It takes a bit of planning and some flexibility. A mind-set that welcomes the unexpected is a start, but that is not enough. Classes must still be planned, and the larger the class enrollment, the more planning is needed. This means that the instructor must spend more time outside of class orchestrating opportunities for meaningful student interaction during the class period.

*CiC* provides a chance to start with topics students read about or hear

about on the news—issues upon which they may have to vote. Once timely and frequently discussed topics such as acid rain, clean water, global warming, and nuclear power are introduced, students are then led from the topic to the relevant chemistry. Topics chosen for study serve not only to present specific scientific information but also to show how doing research helps students to understand a topic on a deeper scientific level.

### Types of Activities

The *CiC* decision-making activities entitled *Consider This* and *Sceptical Chymist* try to involve different personality types and students with a variety of majors in the study of chemistry.

These activities include the following:

- analyzing newspaper articles
- drafting letters to congressional representatives
- devising advertising campaigns for consumer products
- writing science fiction stories

### Consider This

Some industrialized nations have proposed a novel method of foreign aid—with some strings attached. The producers of nuclear waste would ship their radioactive residues to developing countries and pay them to dispose of it. Suppose you are the president of a developing nation that has just received such an offer. The foreigners are willing to pay handsomely, and your country desperately needs money for schools and medical care. You have called in your science advisor to help you decide what response would be in the best interest of your nation. What questions will you ask the science advisor?



- analyzing risks and benefits
- approaching issues from multidimensional viewpoints
- researching topics in popular and scientific literature and comparing the quality and quantity of information discovered
- exercising and applying skepticism

and knowledge by checking the accuracy and plausibility of assertions or calculations made by the news media.

### Benefits to the Students

The benefits of using decision-making activities in a chemistry course

designed for nonscience majors include the following:

- Chemistry is presented as a human endeavor in which students, as chemistry novices, can participate.
- Students can use previously acquired knowledge and skills in their study of chemistry-based issues.

### Express Yourself!

Make a definitive statement with the ACS Student Affiliates bumper sticker collection. These seven colorful slogans are designed to amaze, delight, and confound! For your car, dorm, classroom, or office, put your decorative imagination to work. Take advantage of the "Complete Set" discount.

Quantity	Item	Price/each	Total
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	Alkynes (CH/123)	\$1.00	
	Solutions (CH/124)	\$1.00	
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	Experiment (CH/127)	\$1.00	
	P-chem (CH/128)	\$1.00	
	Set of Bumper Stickers (CH/129)	\$5.00	
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Shipping/Handling			\$3.50
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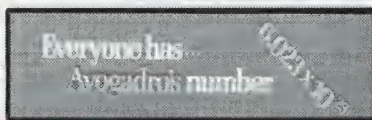
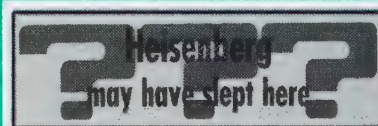
### Send to:

Name \_\_\_\_\_

Address \_\_\_\_\_

City/State/ZIP \_\_\_\_\_

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- Students are valued for the variety of expertise and are expected to use their expertise to enrich the learning team.
- Other students have a better opportunity to participate, not just the most scientifically knowledgeable or outgoing.
- Students are expected to take a stand on an issue and defend that position. These skills are useful in many other areas of their lives.

Some sample decision-making activities from *CiC* are given in the boxes on page 15.

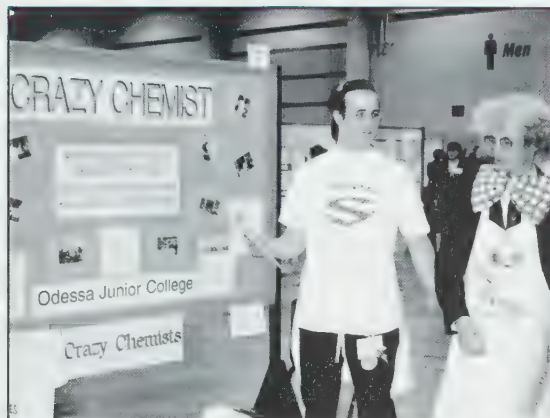
## Record Undergraduate Attendance

Some 200 papers were presented at the undergraduate research poster session at the national meeting in San Diego, CA, Monday, March 14, 1994. The Student Affiliates program thanks Anna Wilson, program chair of the Division of Chemical Education, for her help in organizing this session. According to Wilson, the poster

session was the largest research forum for undergraduates in the history of the Society.

In addition, 32 papers were presented at the Student Affiliates chapter poster session, which ran concurrently with the research poster session. The chapter session was organized by Patricia Samuel, Boston University. Approximately 300 students from more than 100 schools around the country participated in the two poster presentations.

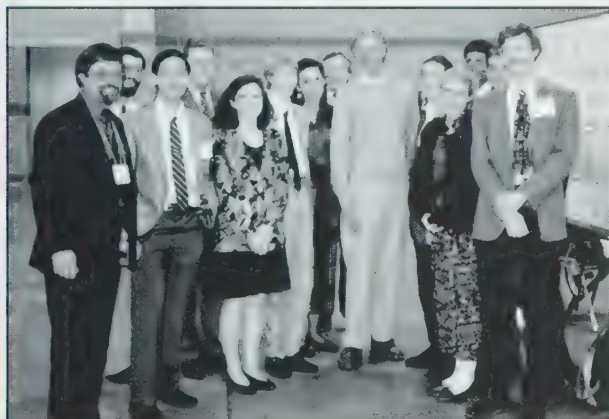
Ted Ichniowski, professor at Illinois State University and chair of the Society Committee on Education Task Force on National Meeting Programming for Undergraduates, jointly planned and coordinated the session, "Careers in Industry: An Interactive Discussion between Student Affiliates and Industrial Representatives," with ACS Corporation Associates. A panel of industrial chemists interacted with undergraduate students by discussing informally aspects of careers in industry. Some panelists provided short



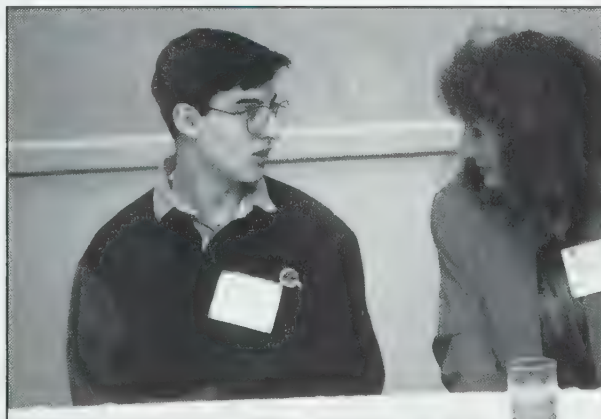
Professional meetings highlight the role of Student Affiliates chapters in community service and public education in the chemical sciences.

presentations as a means of catalyzing discussion. The session was held on Sunday, March 13, 1994. C. Gordon McCarty, research advisor and manager of university relations at Miles Inc. and chair of the ACS Committee on Corporation Associates, worked together with Ichniowski on this program.

ACS Corporation Associates also sponsored the Student Affiliates Awards Program and Reception on Sunday, March 13. This was the first annual national event to honor the Student Affiliates chapters that were recognized as



Professional meetings help undergraduates network with their future colleagues and meet eminent scientists involved in the state-of-the-art chemistry fields.



Student Affiliate and faculty advisor interactive sessions provide mechanisms for sharing information on how to improve the recruitment and retention of undergraduates in the chemical sciences.



outstanding and commendable for their work during the past year. Approximately 30 chapters recognized for their service were represented at this function. The event began with a reception for all undergraduate students, their advisors, members of ACS Corporation Associates and the Society Committee on Education. Task force members Marie Hankins, University of Southern Indiana, and Bill Henry, Mississippi State University, coordinated the awards program.

The San Diego program also featured symposia on marine chemistry and entrepreneurship



Professional meetings provide undergraduates with an opportunity to improve their presentation skills and to discuss their research projects.

in chemistry. The marine chemistry symposium was coordinated by Art Spivack, currently at the Scripps Institute of Oceanography. The entrepreneurship symposium was coordinated by consultant Ben Luberoff of the ConceptTeam, Inc., and was cosponsored by the divisions of Industrial and Engineering Chemistry, Small Chemical Business, and Business Management and Development. An ongoing goal of the SOCED Task Force is to spur the interactions between undergraduates attending national meetings and the various professional divisions of the ACS.

### Experience Opportunities Directory Available

The Office of College Chemistry has just released the *Directory of Experience Opportunities*, a compilation of summer work experiences, internship opportunities, fellowships, or co-op programs for undergraduate students. More than 125 experience opportunities are included in this book. In addition to the printed directory, the information is contained in a database to keep it current and easy to update. ACS Student Affiliates may obtain a copy of the book free of charge (you must indicate your Student Affiliate number on the order). Others may purchase the book for \$3.00 (plus \$3.50 shipping and handling). Orders must be prepaid. Please use the coupon below for orders.

Quantity	Item	Price/each	Total
	Opportunities Directory	\$3.00	
	Opportunities Directory	FREE <small>(to affiliates only)</small>	
			<small>56313/2143/8999</small>
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Shipping/Handling (No charge to Student Affiliates)			3.50
Total Remitted			<small>98704/2143/8999</small>

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*Allow 3-5 weeks for delivery. Credit card orders can be sent by facsimile to (202) 833-7732.  
 For rush orders, call (202) 452-2113; there will be a \$15 surcharge.*

## 1994 Regional Affiliates Programs

Congratulations and many thanks are extended to all Duquesne University (Pittsburgh, PA) Student Affiliates for their work in connection with the 25th ACS central regional meeting held in October 1993 in Pittsburgh, PA. Headed by faculty advisor Ted Weissman, Duquesne University, has established a tradition of programming for undergraduates in the central region that is a model for other regions around the country. The 1993 program featured a research poster session with more than 20 undergraduate participants and a Student-Mentor Interface Workshop chaired by Dan Ketcha of Wright State University (Dayton, OH). The program also included a welcome barbecue sponsored jointly by Duquesne and Wright State universities. Approximately 70 people, including faculty advisors, Student Affiliates, and local section officers, attended.

Special thanks also are extended to Sofia Pappatheodorou, faculty advisor at California State University at Dominguez Hills, and Eleanor Siebert, chair of the chemistry department at Mount St. Mary's College (Los Angeles, CA), for their efforts in making the western regional meeting program, held in October 1993 in Pasadena, CA, more meaningful to undergraduate students. The western meeting featured a symposium on careers for bachelor's-level chemists, a three-panel mentoring workshop chaired by Pappatheodorou, and an undergraduate research poster session with more than 20 student participants. Approximately 60 undergraduate students attended last October's western regional meeting.

The Student Affiliates program appreciates the help from the advisors who

chaired the Student-Mentor Interface Workshops this past year at the ACS regional meetings:  
Stephanie Miller, University of Minnesota at Minneapolis  
Patricia Samuel, Boston University (MA)  
George Pfeffer, University of Nebraska at Omaha  
Mary Coakley, Georgian Court College (NJ)  
Dan Ketcha, Wright State University (OH)  
Sofia Pappatheodorou, California State University at Dominguez Hills  
Jeff Wardeska, East Tennessee State University  
Darrell Watson, University of Mary-Hardin Baylor (TX)

The Student Affiliates workshops provide discussion forums for those involved in mentoring undergraduate students and give them a chance to identify and discuss successful intervention activities that bridge the relationship between the students and their mentors. These activities also touch on information about careers in the chemical sciences and allow for brainstorming of joint projects and problem solving.

The ACS Student Affiliates program encourages the participation of students at professional meetings as a successful strategy for retaining students in chemistry. Developing undergraduate programming at regional meetings has the benefit of making ACS professional services and activities more accessible to students, including those at two-year colleges and those at predominantly minority colleges and universities.

In 1994, Student Affiliates chapters will be responsible for developing undergraduate programming in their respective regions similar to the activities offered at national meetings. Those activities may include Student-Mentor Interface Workshops, undergraduate research poster sessions, career workshops, short courses, social events for networking with mentors and students, the design of commemorative products, and events providing awards

and recognition to students and mentors.

The following is a list of Student Affiliates chapters that have agreed to coordinate the undergraduate programs for their respective regional meetings in 1994. The meeting dates and locations, and the respective chapters' faculty advisors (with phone numbers) who are planning the undergraduate program, are also listed.

**Middle Atlantic Regional Meeting (RM)**  
(Baltimore, MD, May 25-27). Morgan State University, MD: Louise Hellwig, (410) 319-3214; Maurice Iwunze, (410) 319-3634.

**Joint Central/Great Lakes RM** (Ann Arbor, MI, June 1-3). University of Michigan, Dearborn: Richard Potts, (313) 593-5374; Duquesne University, PA: Ted Weissman, (412) 396-5824.

**Northwest RM** (Anchorage, AK, June 17-19). University of Northern Colorado: Lynn James, (303) 351-1285.

**Northeast RM** (Burlington, VT, June 19-22). Boston University, MA: Patricia Samuel, (617) 353-2124; Mort Hoffman (617) 353-2494.

**Southeastern RM** (Birmingham, AL, Oct. 16-19). East Tennessee State University: Jeff Wardeska, (615) 929-4453.

**Western RM** (Sacramento, CA, Oct. 18-22). San Jose State University, CA: Steve Branz, (408) 924-4999.

**Midwest RM** (Kansas City, MO, Nov. 2-5). University of Nebraska at Omaha: George Pfeffer, (402) 554-3640.

**Southwest RM** (Fort Worth, TX, Nov. 13-16). Odessa College, TX: Jeanne Russell, (915) 335-6596; Tarleton State University, TX: Howard Nance and Arthur Low, (817) 968-9143.

For more information about undergraduate programming at ACS regional meetings, contact the above chapter representatives or call the Student Affiliates program at (800) 227-5558 (press zero for the ACS operator).



# Undergraduate Program

208th ACS National Meeting, Washington, DC, August 20–26, 1994

## Saturday, August 20

**4:00–5:00 pm**  
How to Use ACS Career Services to Your Advantage.\*

**7:00–9:00 pm**  
Student Kick-off Social.\*

## Sunday, August 21

**8:30 am–4:30 pm**  
Mock Interview Sessions (Sponsored by the Office of Professional Services). On-site registration begins at 8:00 am.

**9:00 am–noon**  
Patent Law Short Course.\*

**10:00–11:00 am**  
General Interactive Session for Student Affiliates Advisors and officers.\*

**11:00 am–noon**  
Roundtable Discussion. Student Affiliates, Local Sections, and National Chemistry Week Activities: Turning the Public on to Chemistry\* (Sponsored by the Office of Local Section Activities, the Office of Public Outreach, and the National Chemistry Week Task Force).

**1:30–3:00 pm**  
Social Debate: Ethical Considerations for Chemistry Professionals.\*

**3:30–5:00 pm**  
Careers in Industry\* (Sponsored by ACS Corporation Associates).

**4:00–4:30 pm**  
Career Planning Seminar.\* (T. Ichniowski, Illinois State University).

**4:30–6:00 pm**  
Graduate School Fair.\*

**5:00–5:30 pm**  
Graduate School Preparation Seminar\* (M. Hoffman, Boston University).

**7:30–10:00 pm**  
ACS Presidential Event.

## Monday, August 22

**9:00–10:30 am**  
Symposium on Chemistry and the Arts\* (Sponsored by the Division of Chemical Education).

**10:30 am–noon**  
Professional Experiences for Undergraduates.\*

**Noon–1:00 pm**  
Informal Discussion with an Eminent Scientist.\*

**1:30–2:30 pm**  
Eminent Scientist Lecture for Undergraduates.\*

**3:00–4:30 pm**  
Undergraduate Research Poster Session\* (Sponsored by the Division of Chemical Education).

**3:00–4:30 pm**  
Poster Session: Outreach Activities of Student Affiliates Chapters\* (Sponsored by the Division of Chemical Education).

**8:00–10:30 pm**  
Sci-Mix Interdivisional Poster Session/Mixer.



## Tuesday, August 23

**9:00–10:30 am**  
Symposium: Inorganic Chemistry.\*

**10:30 am–noon**  
Forum: Getting a First Job (Sponsored by the Younger Chemists Committee).

**Noon–1:30 pm**  
Help Plan ACS National Meeting Undergraduate Programs.\*

**1:30–4:30 pm**  
Workshop: How to Jump-start Your Career\* (Sponsored by the Office of Professional Services). Preregistration with the Student Affiliates Program required (a limit of 30 students).

**1:30–2:30 pm**  
Symposium on Chemical Education\* (D. Bunce, The Catholic University of America).

**2:30–4:30 pm**  
What They Didn't Tell You about Working in Chemistry.\*

**3:00–4:30 pm**  
Workshop: How to Do Demonstrations for Elementary Students with WonderScience.\*

**5:00–6:30 pm**  
The Younger Chemists Committee Reception (Sponsored by the NALCO Chemical Company).

## Student Affiliates Hospitality Center

An on-site ACS Student Affiliates Hospitality Center\* will be open 8:30 am–5:00 pm, August 21–23. For further information, contact the Student Affiliates Program, American Chemical Society, 1155 Sixteenth Street, NW, Washington, DC 20036; phone, (800) 227-5558 (press zero for operator assistance and ask for extension 4480); facsimile, (202) 833-7732.

\*Sponsored or cosponsored by the Society Committee on Education.

## Chemical Educators Tune In

"Very worthwhile for chemistry teachers. It has increased my enthusiasm for the teaching of chemistry."

—A high school chemistry department chair in Ohio

This was a typical response to the first nationwide chemical education inservice program that was broadcast live via satellite television on November 8 to an audience spanning the United States and Canada. More than 4,200 educators from high schools, colleges, and universities enrolled to participate in this special two-hour event. The audience was about evenly split between high school and university and college-level faculty.

Some viewers in relatively isolated rural locations were sitting comfortably alone at home or in a classroom, while others gathered in groups of 20 to 80 people to watch the program at convenient central locations. There were about 400 viewing locations for the program, with many sponsored by ACS local sections as part of their celebration of National Chemistry Week.

More than 80% of the participants rated the program very good to excellent. They particularly

appreciated the demonstrations and classroom and laboratory activities shown during the presentation. Participants also liked the 208-page book received as part of their registration. As a teacher from Texas commented, "The materials are very comprehensive. They allow you to walk out with materials the

teacher can use and give sources for additional information." The book contains extensive background material on the topics covered in the program and complete instructions for carrying out the demonstrations and other activities shown. The topics included in the program were reports on national standards for science education, chemical



Julie Ealy performs demonstration during Teaching Introductory Chemistry Satellite TV Seminar.

demonstrations, news briefs, using small-scale chemistry in the teaching laboratory, mobile laboratories, "Chemistry IS Everywhere!", and small-group learning.

### Schedule of Satellite TV Seminars for 1994

March 29	Molecular Modeling: The Small-Molecule Approach
June 21	Implementation of Good Laboratory Practices
November 7	Teaching Chemistry, 1994

The varying interests of the participants were reflected in the numerous questions and comments received during the interactive telephone call-in segments of the program. Many of the questions related to finding alternative, economical sources of chemicals and supplies for their schools. Some callers

asked questions or made specific suggestions about how to implement the activities shown in the program in their own classrooms.

The comments from an education graduate student in Massachusetts aptly summed up the feelings of many participants at the end of the program: "Overall, I found it enthralling and exciting. I left the course wanting to run out and teach a class using everything I had just learned."

A two-hour tape of the complete broadcast is available from ACS for \$100 (catalog number V-6200, Teaching Introductory Chemistry). Copies of the seminar book are \$25 each (catalog number V-620S). When ordering the tape, you should also order one copy of the book for each person who will view the tape. Orders should be sent to the ACS Distribution Office, P.O. Box 57136 West End Station, NW, Washington, DC 20037, Fax (202) 872-6067, or phone (800) 227-5558 (toll free) or (202) 872-4363.

The Department of Continuing Education plans to conduct another seminar on teaching chemistry on November 7, 1994, during National Chemistry Week. The hundreds of evaluation forms that have been returned to ACS

for the 1993 seminar contain a multitude of suggestions for the next one. One request that recurs frequently is to cover in detail various techniques for teaching a specific topic or

topics. Selection of the topic or topics to include will be challenging, and we need your help.

If you would like to offer a suggestion, please send it to Cyrelle Gerson at ACS, 1155 Sixteenth Street, NW, Washington, DC 20036, Fax (202) 872-6336, or Internet ckg97@acs.org.



## Passer Education Fund

The Division of Chemical Education (DivCHED) is soliciting proposals for awards to support the participation of faculty in some form of continuing education that will positively affect classroom teaching. Eligibility is limited to faculty at two- and four-year institutions without a graduate degree in the chemical sciences. It is anticipated that most of the faculty who have a project for development will plan it for the summer, either during the ACS meeting or at another meeting. The proposal should include a brief statement about your institution, a description of your faculty development plan, what your investment in the plan is to be, and the level of support you are seeking. Note that the Passer Fund is not designed to support sabbatical leaves or provide large

amounts of funds because the income available is somewhat limited. All proposals should be sent to Donald E. Jones, Department of Chemistry, Western Maryland College, Westminster, MD 21157.

### DivCHED Executive Committee—1994

**Adrienne Koslowski, chair**  
Central Connecticut University  
New Britain, CT

**Ron Perkins, chair-elect**  
Greenwich High School  
Greenwich, CT

**Donald E. Jones, past chair**  
Western Maryland College  
Westminster, MD

**Jerry L. Sarquis, secretary**  
Miami University  
Oxford, OH

**Mary Virginia Orna, O.S.U., treasurer**  
College of New Rochelle  
New Rochelle, NY

**Diane M. Bunce, member-at-large**  
Catholic University  
Washington, DC

### The Committee on Chemistry in the Two-Year Colleges 1994

**Wendell Massey, chair**  
Florida Community College  
Jacksonville, FL

**David W. Klein, past chair**  
Kansas City Kansas  
Community College  
Kansas City, KS

**Ann Cartwright, chair-elect**  
San Jacinto College Central  
Pasadena, TX

**Duane Sell, treasurer/college sponsor**  
Wm. Rainey Harper College  
Palatine, IL

**Robert Kirkley, newsletter editor**  
San Jacinto College Central  
Pasadena, TX

**Richard F. Jones, membership chair**  
Sinclair Community College  
Dayton, OH

**Carol L. White, industrial sponsors chair**  
Athens Area Technical Institute  
Athens, GA

## Application for Membership

Introduce a friend, a colleague, or a student to the Division of Chemical Education.

I wish to join DivCHED as:

a member, \$10 (ACS members only)

an affiliate, \$10 (non-ACS members)

(Affiliates have all membership privileges except voting and holding elective office.)

Your Name: \_\_\_\_\_

Home Address: \_\_\_\_\_

Work/Mailing Address: \_\_\_\_\_

Send Newsletter to  Home  Work

Send ACS Member form

Check the committees and/or task forces listed below about which you want more information or in whose activities you might wish to participate:

#### Task Forces:

- College Chemistry Consultants
- Project ChemLab
- Chemical Education Research
- High School Guidelines
- Prehigh School Chemistry
- General Chemistry

#### Publications:

- CHED Newsletter
- Journal of Chemical Education\*
- JCE: Software\*  
(\*by subscription)

#### Activities/Meetings:

- ACS DivCHED Examinations Institute
- Biennial Conferences on Chemical Education
- Symposia at National, Regional, and International Meetings

#### Committees:

- Executive Program
- High School Chemistry
- Meetings and Conferences
- Board of Publication
- Chemistry in Two-Year Colleges
- Personnel and Nominations
- Membership
- Health Professions
- Finance
- International Activities
- Long-Range Planning

Return this form to: Sr. Mary Virginia Orna, OSU, Treasurer, Division of Chemical Education, Department of Chemistry, College of New Rochelle, New Rochelle, NY 10801. Include a check or money order\* for \$10, payable to the Division of Chemical Education. (\*Check or money order must be in U.S. dollars against a U.S. bank. We cannot accept purchase orders.)

# FYI

## TEACHING GENERAL CHEMISTRY: A MATERIALS SCIENCE COMPANION

The ACS Publications Division has recently published a volume that helps teachers bring solids into the mainstream of the chemistry curriculum. The *Materials Science Companion* has been written to demystify materials chemistry and to show that materials—minerals, metals, semiconductors, or superconductors—are a natural vehicle for introducing chemical principles. This resource volume, which includes more than 50 demonstrations, 125 laboratory experiments, text, and exercises, can help refresh and enliven chemistry courses while providing a firm foundation for understanding the burgeoning field of materials chemistry. Copies of the book may be obtained for \$29.95 from the ACS by calling (800) 227-5558, option 1.

## 13th INTERNATIONAL CONFERENCE ON CHEMICAL EDUCATION

The 13th International Conference on Chemical Education (ICCE) will be held at Inter American University of Puerto Rico, Metropolitan Campus, August 8–12, 1994. It will be the first time that an ICCE meeting will be held in the Caribbean. The objective is to bring together chemists and precollege and college chemistry teachers to share their ideas and learn from one another about the frontiers of chemistry and innovations in teaching and learning. Chemists and chemistry educators from more than 60 countries are expected to attend. For more information, contact Ram S. Lamba, Chair, 13th ICCE, Universidad Interamericana de Puerto Rico, Inc., Recinto Metropolitano, P.O. Box 191293, San Juan, PR 00919-1293; phone (809) 250-8379; facsimile (809) 765-2055.

## ***New and Improved!!***

It is difficult to imagine that a winning publication such as *Chem Matters* can be improved, but that is exactly what happened with the 1993–94 subscription year! If you haven't seen the redesigned and now-colorful magazine for high school students, you may receive your own free review copy (and a complementary Classroom Guide) by phoning (800) 227-5558, ext. 4590, with your name and address. If you already know that you want to subscribe, phone (800) 333-9511 to place your order (\$3.75 per subscription, plus postage and handling).

## 1994 MICROSCALE LABORATORY WORKSHOPS IN ORGANIC, GENERAL, AND INORGANIC CHEMISTRY

Three one-week Microscale Laboratory Workshops will be held this summer at the National Microscale Chemistry Center (NMC<sup>2</sup>) at Merrimack College, North Andover, MA. Individual workshops will cover the areas of organic, general, and inorganic chemistry. These workshops are designed to introduce microscale chemistry concepts and techniques by means of lectures, demonstrations, and active hands-on participation in the laboratory. Participants will be selected from the full range of higher educational institutions: community colleges, four-year colleges, and universities. Industrial chemists and those employed in government laboratories are encouraged to apply. For more information, contact the National Microscale Chemistry Center, Merrimack College, North Andover, MA 01845; phone (508) 837-5137; facsimile (508) 837-5222; e-mail ZSZA.FRAN@Merrimack.edu.

## NATIONAL INSTITUTES OF HEALTH SUMMER INTERNSHIP PROGRAM IN BIOMEDICAL RESEARCH

The National Institutes of Health (NIH) is the world's largest biomedical research institution and is home to the Warren Grant Magnuson Clinical Center, which contains 50% of the clinical research beds in the United States. Through a variety of programs and initiatives, the NIH is committed to providing opportunities for young people to consider careers in biomedical research. The Summer Internship Program in Biomedical Research is intended to provide students with exciting research experiences in our intramural research laboratories in Bethesda, MD, and selected off-campus locations. Students work side by side with some of the leading scientists and researchers in the world. For more information about these internship programs and a copy of NIH's 1994 Summer Internship Catalog, contact Deborah Cohen at (301) 402-2176.

## **New Videotape Available**

***Inventing the Future: African-American Contributions to Scientific Discovery and Invention*, a videotape and teacher's guide package, is now available for \$10 plus shipping and handling. Telephone 1-800-227-5558 ext. 2113 for more information.**



# Chemunity NEWS CALENDAR

## March 30–April 2

National Science Teachers Association  
National Meeting, Anaheim, CA

## April

Southeast Region Student Affiliates  
Meeting-in-Miniature at Middle  
Tennessee State University;  
Murfreesboro, TN; Contact: James  
Hutchinson, (615) 898-2956  
Central Region Student Affiliates  
Meeting-in-Miniature; Duquesne  
University, Pittsburgh, PA; Contact:  
Ted Weissman, (412) 396-5824

## April 4–8

National Organization for the  
Professional Advancement of Black  
Chemists and Chemical Engineers  
Annual Meeting; Atlantic City, NJ;  
Contact: Victor McCrary, NOBCChE,  
P.O. Box 1425, Plainfield, NJ 07061

## April 15–16

127th Two-Year College Chemistry  
Conference (midwestern region);  
Theme: "Community Outreach in  
Chemistry"; Metropolitan Technical  
College, Omaha, NE; Contact: John  
Mangini, (402) 449-8360

## May 8–14

International Science and Engineering  
Fair, Birmingham, AL

## May 25–27

28th Middle Atlantic Regional Meeting;  
University of Maryland, Baltimore

County; Contact: C. Rowell, (410)  
267-3304

## June 1–3

Joint 26th ACS Central/27th Great  
Lakes Regional Meeting; Ann Arbor,  
MI; Contact: H. Griffin, University of  
Michigan, Ann Arbor, MI 48109

## June 16–19

49th ACS Northeast Regional Meeting;  
Burlington, VT; Contact: W. R.  
Leenstra, Department of Chemistry,  
University of Vermont, Burlington,  
VT 05405

## June 27–30

Third Annual Workshop on Chemical  
Instrumentation, University of  
Dayton, OH

## July 31–August 4

DivCHED 13th Biennial; Bucknell  
University, Lewisburg, PA; Contact:  
Marj Kastner, (717) 524-1141;  
bitnet, BCCE@BUCKNELL.EDU  
128th Two-Year College Chemistry  
Conference (13th Biennial);  
Bucknell University, Lewisburg, PA;  
Contact: Michaelleen Lee, (215) 968-  
8350

## August 8–12

International Conference on Chemical  
Education; Inter American University  
of Puerto Rico, Metropolitan  
Campus

## August 21–26

ACS National Meeting, Washington, DC

## October 7–8

129th Two-Year College Chemistry  
Conference (eastern region);  
Monroe Community College,  
Rochester, NY; Theme: "Liberal Arts  
Chemistry"; Contact: Gerald  
Nobiling, (716) 292-2000, ext. 5158;  
facsimile, (716) 427-2749

## October 13–15

NSTA Regional Convention, Portland,  
OR; Contact: NSTA Convention  
Office, 1742 Connecticut Avenue,  
NW, Washington, DC 20009

## November 3–5

NSTA Regional Convention,  
Minneapolis, MN; Contact: NSTA  
Convention Office, 1742 Connecticut  
Avenue, NW, Washington, DC 20009

## November 13–14

130th Two-Year College Chemistry  
Conference (southern region);  
Location: Isothermal Community  
College—Kent Center, Spindale, NC;  
Contact: Peter Golden, (704) 286-  
3636

## December 15–17

NSTA Regional Convention, Las Vegas,  
NV; Contact: NSTA Convention  
Office, 1742 Connecticut Avenue,  
NW, Washington, DC 20009



American Chemical Society  
Education Division  
1155 Sixteenth Street, NW  
Washington, DC 20036



Dr. Alfred Bader  
Sigma-Adrich  
P.O. Box 355  
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## STN INTERNATIONAL

CAS and its associates in Japan and Germany added 26 databases to the STN International online network, including the Derwent World Patents Index and Biotechnology Abstracts databases, the full text of *Chemical & Engineering News*, the ABI-INFORM business information file, Dissertation Abstracts, the JP News English-language news database from Japan, and several pharmaceutical and health-care news databases. Databases offered on the network now total more than 180.

A number of new features were introduced on STN, including STNindex, by which all databases in the network can be quickly scanned to determine which contain answers to a specific search query; SmartSELECT, an automatic crossover feature; CASLINK, by which a searcher can conduct multistep structure and bibliographic searches in five CAS files by entering a single search query; and electronic mail delivery of search results to Internet mailboxes.

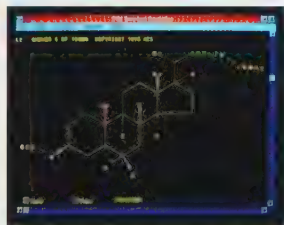
STN International continued to offer an 80% reduction in search charges for selected databases to users in the formerly Communist-controlled countries of Central and Eastern Europe and the republics of the former Soviet Union.

## Education

The ACS Education Division carries out the Society's activities in support of elementary, middle school, high school, college, and continuing education.

### PREHIGH SCHOOL SCIENCE

ACS entered into a partnership with *USA Today* to produce a biweekly family science half-page using activities from *WonderScience* magazine. The column, "Explorations: Fun Activities for All Ages," encourages adults and children to do hands-on science activities together.



Polymer class terms and stereo search capabilities that make it possible to retrieve specific stereoisomers of interest were added to the CAS Registry file on STN International.

Eight issues of *WonderScience* magazine were produced in partnership with the American Institute of Physics.

The FACETS (Foundations and Challenges to Encourage Technology-based Science) 7th- and 8th-grade curriculum project finished its second year of field testing in 1993. This National Science Foundation (NSF)-funded curriculum has been used by more than 10,000 middle school students and 160 teachers across the United States.

Operation Chemistry: Phase II was funded by the NSF to begin November 1, 1993. The three-year grant of \$2.75 million is the largest single NSF grant received to date by the Education Division. The project will equip 36 teams of teacher trainers each year to increase the chemistry content knowledge of upper elementary school teachers.

### HIGH SCHOOL CHEMISTRY

Two hundred forty-nine Project SEED Summer I students, 20 of whom were funded by the fourth year of a five-year grant from the U.S. Department of Energy, Office of Transportation Materials, were placed at 107 institutions. Sixty-four returning SEED students were given research opportunities at 44 institutions under the Summer II program funded by the Bader family.

Four issues of *Chem Matters* magazine were published for high school students and teachers. These issues highlighted topics such as aspirin, ink, electric cars, recycling of paper, memory metal, insect arsenals, carnivorous plants, risk assessment, 3M Post-it<sup>™</sup> notes, and microwave chemistry. Now in its 11th year of publication, the magazine was redesigned to provide more color and a more flexible format.

Minigrants were awarded to nine high school chemistry teachers for travel to an ACS or National Science Teachers Association national or regional meeting

File: Seed

in 1994. Winners are required to present a talk at the meeting on how they use an ACS product or program in their classroom.

ACS signed an agreement with Addison-Wesley Iberoamericana in Mexico City to translate *ChemCom* into Spanish.

"Chemistry and Your Career: Questions & Answers," a redesign of a popular high school brochure "Chemistry and You: Questions and Answers," was published. This new edition uses bright colors and a flashy design to appeal to students as it presents thumbnail sketches of the many career opportunities that a background in chemistry has to offer. It answers the questions about careers in chemistry asked most often by high school students.

Approximately 450 students in the Washington, DC, metropolitan area attended the two-day Minorities in Science and Technology (MIST) Network's career fair held at George Washington University. This annual event is geared to middle and high school students and their teachers. The MIST Network, initiated in 1989 by ACS staff, is now composed of 30 science and education organizations in the Washington area.

### COLLEGE CHEMISTRY

"Chemical Careers in Brief" is a new series that was first published in 1993 and will continue in 1994. Each two-page brief covers the employment outlook of a particular chemistry career specialty.

Four issues of *Chemunity News*, the newsletter of the Education Division, were produced in 1993. In addition, more than 1000 names were added to the database of readers, bringing the total distribution to 20,000.

*in Chemistry*, the magazine for Student Affiliates and faculty advisors, was published five times in 1993. This preprofessional development magazine provides



Four Project SEED scholarships were presented. Rachel Wakefield, Plainville, IN, was named winner of the Popoff Scholarship. David Chavez, Ranchos de Taos, NM (shown here with Helen Free); Felicia Griffin, Chicago, IL; and Hope Perry, Pocatello, ID, received the Miles Inc. Scholarships.



information about careers in chemistry, graduate school preparation, new areas in chemistry, chapter activities, and services offered by the Society.

- The 1993 Faculty Advisor Invitational Workshop was the fifth annual meeting of its kind. In 1993, workshop participants tackled the issue of how the Student Affiliates program could tailor its resources to meet the needs of two-year colleges. Faculty from urban and rural two-year colleges with majority and minority student enrollments, in every geographic region, developed recommendations to assist the Society in reaching out to two-year college students and their mentors.

- The report of the 1992 Faculty Advisor Invitational Workshop, "Growth through Interaction: A Primer for Student Affiliates and Local Section Cooperation," was published. The report addresses how local sections and Student Affiliates can work together to make both groups stronger.

- The largest ever undergraduate research poster session, with approximately 150 papers, highlighted the undergraduate program at the ACS national meeting in Denver. More than 500 undergraduates attended activities, including a 3M-sponsored short course on technical presentations, a symposium cosponsored by PolyEd and the Divisions of Polymer Chemistry and Polymeric Materials Science and Engineering, an eminent scientist lecture by Nobel laureate Thomas Cech, and a Younger Chemists Committee reception sponsored by the Nalco Chemical Company.

- More than 300 undergraduates attended the ACS national meeting in Chicago. The undergraduate program included a Procter & Gamble-sponsored workshop on analytical chemistry, a Joint Graduate School and Career Awareness Fair sponsored by ACS Corporation Associates with approximately 75 graduate schools and 20 chemical companies, a

symposium cosponsored with the Division of Chemical Education featuring Nobel laureate Glenn Seaborg, and a symposium sponsored by the Division of Environmental Chemistry.

- Corporation Associates funded a \$12,000 pilot "Community Interaction-Student Affiliates" (CISA—pronounced "see-saw") program. This new program provides minigrants to Student Affiliates chapters to promote the scientific education and mentoring of youngsters in minority communities.

- The ACS Society Committee on Education (SOCED) selected 31 outstanding and 23 commendable Student Affiliates chapters for the 1992-93 academic year. These 54 chapters, out of a total of 860 across the nation, were chosen for special recognition on the basis of the programs and activities described in their annual reports. SOCED also awarded 18 Innovative Activity Grants to as many chapters to conduct various projects and research programs.

#### OTHER

- A \$550,000 grant for 18 months was received from the U.S. Department of Education for a collaborative project with organizations involved in the Chemical Process Industries (CPI) of the United States. The project's goal is to develop voluntary industry standards for CPI technical workers. The principal product of the project will be a booklet presenting a draft version of voluntary standards.

- A \$93,000 grant was received from the NSF to support a workshop entitled "Critical Issues in Science and Engineering Technician Education," which was held in July.

#### CONTINUING EDUCATION

- Three satellite television seminars were conducted in 1993: "Molecular Modeling in the Discovery of New Drugs,"

hosted by ACS President Helen Free; "Meeting ISO 9000 Standards: A Briefing for Chemical Laboratories"; and "Teaching Introductory Chemistry." Total participation in satellite TV seminars was about 8000 individuals.

- A new video course, "Introduction to Mass Spectrometry," and a new audio course, "Pathophysiology for Chemists," were released.

- Fifty-one in-house and 170 public Short Courses, attended by more than 4500 chemical scientists, engineers, and technicians, were held.

- New Short Courses on chiral separations, quality management/quality assurance, creative problem solving, innovation in R&D, emulsion polymerization, FT-IR, light scattering and the characterization of polymers, and multidimensional gas chromatography were offered.

#### PROFESSIONAL TRAINING

- The 1993 ACS *Directory of Graduate Research* was published.

- An industry roundtable meeting for Committee on Professional Training members and industrial chemists was arranged to discuss the relevance of ACS guidelines for approved undergraduate chemistry programs to the needs of industrial employers.

- The proposed ACS-approved environmental chemistry option was revised in response to comments received from chemistry faculty in preparation for final adoption by CPT.

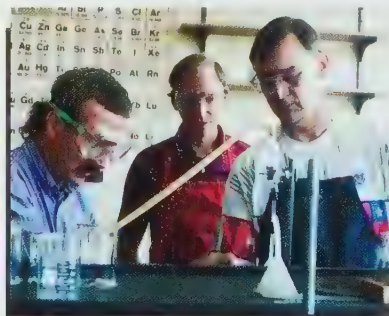
- The results of the undergraduate chemistry enrollment trends survey were reported at a Division of Chemical Education symposium.

#### Industry Relations

The ACS Office of Industry Relations is responsible for developing, expanding, and promoting programs and services of



The United States placed third out of 39 nations at the 25th International Chemistry Olympiad (Italy) in its best finish ever. Medal winners were (l-r) Daniel Katz (gold), David Hutz (silver), Christopher Herzog (gold), and Robert West (silver).

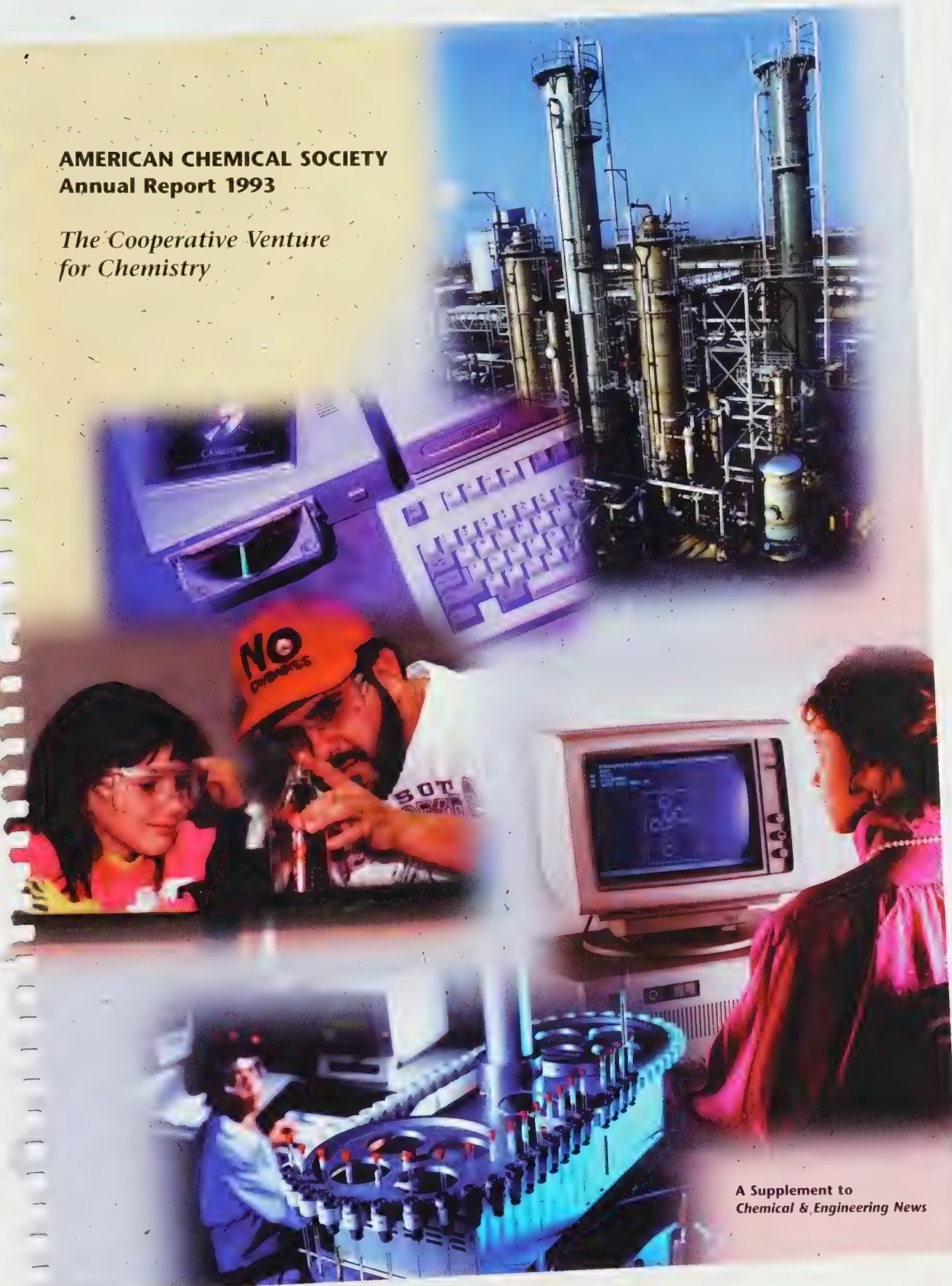


ACS hosted 11 ChemCom five-day teacher training workshops during the summer and trained 220 teachers. To date, 152,421 copies of the first edition of the textbook and 85,222 copies of the second edition have been sold.



**AMERICAN CHEMICAL SOCIETY  
Annual Report 1993**

*The Cooperative Venture  
for Chemistry*



**A Supplement to  
Chemical & Engineering News**



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server "was developed as a kind of generic spacecraft to explore the solid planets." NASA purchased many spare components, envisioning the spacecraft as the first in a series of observer missions to different planets. One possibility under study is reconstituting much of Mars Observer from these components.

Richard Seltzer

## Three inorganic firms fused into new company

D. George Harris, one-time president of SCM Chemicals, is forming a new chemical holding company with nearly half a billion dollars in annual revenues from salt, soda ash, boron, and potassium sulfate.

The new inorganic chemical firm, Harris Chemical Group, would rank as the 80th largest U.S. chemical producer, between Ferro and Stepan, were it included in C&EN's 1992 ranking of the Top 100 producers (C&EN, June 28, page 50). The three companies that will make up the firm are North American Salt, Great Salt Lake Minerals, and North American Chemical.

Since 1988, Harris, 60, has headed a management buyout group, D. George Harris Associates, based in New York City. He explains, "We are bringing these companies together as the Harris Chemical Group in order to establish it as one of the world's major inorganic chemical companies." Once formation of the firm is complete next month, it will have corporate headquarters in New York City and operating headquarters in Overland Park, Kan.

The new company will start life with a heavy debt load: It will soon float \$635 million in bonds. Harris plans to use the money to "repay existing debt and make payments to stockholders." A spokesman will not say who holds outstanding debt, nor who the stockholders are.

With operations in the U.S. and Canada, North American Salt is composed of the former American Salt Co., Carey Salt, and the Sifto Salt division of Domtar. Great Salt Lake Minerals, Ogden, Utah, is the largest U.S. producer of potassium sulfate, with a capacity of 240,000 tons, more than half of total U.S. capacity. Its competitors include its new sister company, North American Chemical, and IMC Fertilizer.

North American Chemical, based in

Searles Valley, Calif., is the former Kerr-McGee Soda Products division, which Harris Associates acquired in 1990 for \$210 million. It is the only U.S. producer of soda ash from brine, with 1.3 million tons of capacity—roughly 11% of total U.S. capacity. Major competitors include FMC, Rhône-Poulenc, and Solvay—all of them larger than North American Chemical—who produce soda ash from trona. It is also one of three U.S. boric acid producers, with 44,080 tons of capacity, 23% of total U.S. capacity. Competitors for this product are U.S. Borax and In-Cide Technologies.

Marc Reisch

## From Chicago

### Project SEED celebrates 25 years of student aid

"Opening doors and fulfilling dreams" was the theme as the American Chemical Society celebrated the 25th anniversary of its social action program, Project SEED, at its meeting last week.

Project SEED (Summer Educational Experience for the Disadvantaged) gives talented high school students from low-income families the opportunity to spend eight to 10 weeks during the summer conducting research in academic, industrial, and government laboratories. Almost 4000 students have participated.

Students work under the supervision of research scientists and receive an educational award of \$1500 at the end of the summer. The funds for these awards

come from contributions by ACS members, corporations, and foundations, and from an endowment established by the Campaign for Chemistry.

Project SEED's founding was spearheaded by former ACS president Alan Nixon and the ACS California Section. In 1968, Nixon urged ACS to become involved in what has become the society's only social action program.

Speaking at the anniversary symposium, James P. Shoffner, a retired researcher at Signal UOP Research Center, noted the important contributions of W. Lincoln Hawkins, one of the early benefactors of SEED and first chairman of the ACS Committee on Project SEED, and Milton H. Harris, chairman of the ACS Board from 1966 to 1970. Harris contributed the initial funding for Project Catalyst, which later became Project SEED. Harris died in 1991; Hawkins died last year.

The keynote speaker at a SEED luncheon, Alfred Bader, founder of Aldrich Chemical Co., discussed the significance of Project SEED II. Initiated in November 1991, SEED II allows participants to return for a second summer. Second-year students receive an educational award of \$1700. Support for SEED II is provided by the Bader family foundation.

Bader noted that he supports SEED because "when kids do not want to go into chemistry, the improvement of life will slow down." Chemists, he said, are "the locksmiths to a better life."

At the symposium, Theodore Goodson, associate senior organic chemist at Eli Lilly and an associate of the ACS Committee on Project SEED, presented a retro-



Project SEED students and teachers at luncheon celebrating 25th anniversary of SEED surround Alan Nixon, cofounder of Project SEED (eighth from left); Alfred Bader, major SEED contributor and luncheon speaker; Dennis Chamot, chairman of ACS's Committee on Project SEED; John Harris, son of the late Milton Harris, an early supporter of SEED and former ACS official; and Martha Turckes, staff liaison to Project SEED Committee

C&EN staff photo



## Reforms sought on rules for pesticides in food

The Clinton Administration will seek revision of current laws governing pesticide residues and food safety, and has provided the first details of its plans.

Central to the new policy would be replacement of the complete ban on cancer-causing residues in processed foods required by the 1958 Delaney amendment. The Administration would substitute a "negligible-risk" standard for cancer-causing pesticide residues in processed foods, but would leave intact the ban on other cancer-causing food additives.

In addition to establishing a negligible-risk standard for pesticide residues, the Administration's food safety package will:

- Promote development and registration of safer pest management alternatives.
- Move to eliminate cumbersome procedures for canceling pesticide registrations.
- Improve collection of data on pesticide use.
- Provide the Environmental Protection Agency and Food & Drug Administration with the tools needed to ensure pesticide laws are appropriately enforced.
- Prohibit export of pesticides whose registration has been canceled in the U.S. for health or safety reasons.
- Enhance EPA's ability to make re-registration decisions in a timely manner by increasing revenues for the pesticide program.

Revising the Delaney amendment is expected to be the most controversial part of the Administration policy. The amendment prohibits addition to food of any chemical found to cause cancer in animals or humans. Some pesticides cause cancer in laboratory animal tests, and minute residues of them are sometimes found in processed foods.

EPA has tried to regulate these residues on the basis of negligible risk—saying the concentration of pesticide was so small that the cancer risk is negligible. (To be considered negligible, the calculated risk must be less than one excess cancer death per 1 million people exposed over a 70-year lifetime.) But in February, the Supreme Court overturned that policy, ruling the Delaney amendment requires

an absolute ban on any such residues (C&EN, March 1, page 18).

The complete food safety reform package is still not finished, but the Administration's goals are now clear. They result from many groups—federal agencies, industry, farmers, and environmental and consumer organizations—working together to break the logjam that has delayed passage of a new food safety law in Congress for years. Agreement on the reforms required extensive cooperation between EPA, FDA, and the Department of Agriculture, each of which regulates some aspect of pesticides in foods.

Representatives of the Administration and regulatory agencies are expected to testify on the reform package on Sept. 9

before the House Subcommittee on Health & the Environment, chaired by Rep. Henry A. Waxman (D-Calif.). They will outline the completed food safety reform policy, but it is not yet known whether they will offer implementing legislation then or later.

Waxman has introduced a bill in this Congress, as he did in the previous one, to establish a negligible-risk policy for certain pesticide residues, and is expected to support the Administration. However, many environmental and consumer groups—while supporting other parts of the package—are expected to vehemently oppose any attempt to weaken Delaney.

*David Hanson*

## Mars probe loss would foil chemical data search

Total failure of the National Aeronautics & Space Administration's Mars Observer spacecraft—"lost in space" since Aug. 21, as the media describe it—would be a heavy blow not only to the embattled U.S. space program in general, but also to a planned intensive search for chemical information about Mars.

At press time, NASA was continuing aggressive activities to try to restore contact with the spacecraft and to move it into at least an initial orbit around Mars. But as project manager Glenn E. Cunningham of the Jet Propulsion Laboratory in Pasadena, Calif., puts it, "Every day without communications lessens our probability of success."

Launched last September (C&EN, Oct. 5, 1992, page 7) and slated to make the first visit by a U.S. spacecraft to the Red Planet since Viking 2 landed there in 1976, the spacecraft was to move by a series of adjustments into a nearly circular orbit by December, 234 miles above Mars' surface and near its poles. It was to begin global mapping of the entire Martian surface and atmosphere for a Martian year (687 Earth days), and to send back many times more data than did all previous missions to Mars.

Myriad observations were designed for the spacecraft's seven instruments by scientists from the U.S., Russia, Germany, France, and the U.K. There was special interest in two chemical areas—surface chemistry and atmospheric chemistry—NASA's program scientist, geochemist Bevan M. French, tells C&EN. Questions asked include: What is the chemical composition of Mars' surface,

and variations over the planet? What long-term atmospheric variations are there, especially in carbon dioxide and water vapor—the two volatile components in the Martian system? How do these components migrate from the polar caps to soil to the atmosphere? And if water once flowed on Mars, as suggested by much previous data, where is it now?

The spacecraft's gamma-ray spectrometer was to determine the chemical composition of the surface, element by element, by measuring the intensities of gamma rays emerging from the surface. These high-energy rays are created by natural decay of radioactive elements in surface materials, and by interaction of cosmic rays with the atmosphere and surface.

A thermal emission spectrometer (a Michelson interferometer) was to measure infrared thermal radiation emitted from the atmosphere and surface, determining the mineral content and thermal properties of the surface. It was also to study both the advance and retreat of the polar ice caps, and the distribution of atmospheric dust and clouds during the four seasons. And a pressure modulator infrared radiometer was to sound Mars' atmosphere by detecting infrared radiation, constructing a global model over the seasons of atmospheric pressure and carbon dioxide, water vapor, and dust content.

If Mars Observer is lost for good, French stresses that NASA is still committed to exploring Mars, and is forming a working group to promote international collaboration. And NASA may not have to start from scratch to send another mission, he reveals. Mars Ob-

to interact with fellow members and present papers—opportunities that otherwise would not be available.

As a result of the closing of a major hotel in St. Louis, the committee recommended to council and to the board of directors that the 215th national meeting be relocated from St. Louis to Dallas over the same dates—March 29 to April 3, 1998. Recommendations on locations for the national meetings in 2004 and 2005 will be made at the fall meeting in Washington, D.C.

Janan Hayes, *chairwoman*

### Membership Affairs

The previous member recruitment record was broken during 1993 with the addition of 14,178 new members, bringing total membership to 149,261 at the end of 1993. While the overall retention rate of members in ACS is remarkably high relative to other professional societies, the committee remains concerned about the dropout rates of our newer members. In a concerted effort, the committees on Local Section Activities' and on Divisional Activities' attention has been focused on the high-risk member groups, including graduate students and chemical scientists in applied areas of industrial research. A special retention issue was addressed during this meeting regarding dues relief for those members ceasing employment because of the need to care for family members. In addition, the committee is examining dues issues related to involuntarily unemployed members. The committee established an advisory board for ACSess, the newsletter distributed to all members and designed to increase member knowledge and awareness of ACS programs and activities.

Peter A. Christie, *chairman*

### Economic & Professional Affairs

The committee completed multiple termination investigations at five locations. A full report of these investigations should appear in C&EN before the Washington, D.C., national meeting. While the committee continues to investigate 23 other multiple termination situations, it decided to phase out the current program owing to the impression that multiple termination reports were not fairly reflecting the employment situation. The committee intends to replace this program with continuous monitoring of the marketplace and with reports and articles on employment conditions.

The committee considered three issues under the title of "Employment" for the ACS Federal Policy Agenda: pensions, immigration, and retraining.

It reviewed changes in the National Employment Clearing House; in the Career Consultant Program; and in publications, workshops, and services related to the professional and economic enhancement of ACS members. The committee noted that

workshops and services are available to regional and local section meetings and to graduate school programs.

Edward S. Kostiner, *chairman*

## Other Committees

### Project SEED

Project SEED (Summer Educational Experience for the Disadvantaged) provides low-income high school students with an opportunity to do hands-on scientific research. The committee has approved \$222,600 for 238 students at 95 institutions for the Summer I program and \$127,250 for 104 students at 52 institutions for the Summer II program. Local sources will provide an additional \$192,350 in matching funds.

Applications for the Miles Inc. college scholarships were accepted from past Project SEED participants who will begin college study in the fall. Two winners have been selected and are being notified. In addition, a third student was designated as the Mettler Toledo Scholar. Each of the scholarships will be one-year nonrenewable stipends to help the students in their transition from high school to college.

This year marks the final year of support from the Bader family for the Summer II program. The committee is actively seeking funds to continue the Summer II program and to maintain the current size of the Summer I program.

Dennis Chamot, *chairman*

### Technician Activities

The Florissant Valley Campus of the St. Louis Community College District became the second college to receive approval under the new ACS approval program for chemical technology programs.

Many Corporation Associates members have volunteered to participate in a comprehensive survey to develop a clearer understanding of the characteristics of currently employed chemical technicians. A comprehensive report from a Department of Education-funded project entitled "Voluntary Industry Standards for CPI Technical Workers," will be released in November.

The membership level for the probational Division of Chemical Technicians has passed that required for the new division to be removed from probationary status in August.

The committee is exploring mechanisms that would effectively and efficiently distribute technical information among technicians.

Robert Maleski, *chairman*

### Women Chemists

More than 40 women attended the committee breakfast in San Diego for women in industry, which addressed current is-

ues and identified means of reaching out to more women in the chemical sciences.

The committee hosted a luncheon in honor of Barbara Garrison, Garvan-Olin Award winner and chairwoman of the chemistry department at Pennsylvania State University.

The committee (WCC) also sponsored a symposium entitled "Women in Science: The Road to Success" attended by more than 100 people at each of the 12 sessions. Plans were presented for the next symposium, "Can Your Work Hurt Your Baby?," scheduled for the Washington, D.C., meeting.

In addition, the committee announced the awards for Eli Lilly travel grants and the increased allotment for those grants from Eli Lilly for the current year; reviewed the latest version of the *Women Chemists Newsletter*, which displays the newly phrased mission statement; and announced the forthcoming revision of a WCC brochure.

Mary E. Thompson, *chairwoman*

Your views on matters reported by committees will be welcomed by the respective chairmen. Letters sent in care of D. H. Michael Bowen, 1155—16th St., N.W., Washington, D.C. 20036, will be forwarded promptly.

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*A Special Opportunity  
To Help the SEED Grow.*

Dear Fellow ACS Member:

*I want to tell you a story without an end.*

Shelburne, Vermont, is so small it doesn't have its own high school. Instead, four towns came together to form Champlain Valley Union — Cow Valley High, as it is affectionately known in this dairy farming part of the state.

Cow Valley student Claire Tessier's crowd of friends weren't academically ambitious — a college degree was not a common aspiration.

In June 1970, 16-year-old Claire was ready to spend another summer as a chambermaid in a nearby hotel when she got a phone call that changed her life. Instead of cleaning hotel rooms, Claire was introduced to the world of academia in the chemistry laboratory at the University of Vermont.

Through Project SEED, she learned more than chemical purification techniques from her scientist mentor: she discovered what it takes to become a chemist, and that it was within her reach.

**Today, Dr. Claire Tessier is an associate professor of chemistry at the University of Akron.**

*But, the story doesn't end here.*

Dr. Tessier believes in giving back to the program that helped turn her life around. So, she became a mentor and a coordinator for Project SEED, helping to shape the lives of another generation of young people.

*Now, we need you to write the rest of the story.*

Without your support, Project SEED II — the second summer of research for high school students who are alumni of Project SEED I — cannot continue.

We have the Bader family to thank for getting Project SEED II off the ground. Dr. Alfred Bader, a successful scientist and entrepreneur, remembers fondly his "second summer" on the job in a paint factory. It was a happy, learning experience.

"A second summer can be even more productive than the first," he says. "I wanted to give students an opportunity to learn, to perform and to gain confidence in their ability to direct their own futures."

The Bader family's generous gift funded the program through its first three years — thanks to them more than 200 students have already benefited from this valuable experience.

- James, a gifted student from Delaware, is planning on a Ph.D. and a career in chemical engineering;
- Vycki, a Minneapolis native, shows enormous potential and is committed to a future of scientific study; and
- Youngstown Ohio student Christina is considering a medical degree with hopes of becoming a biomedical researcher.

These are <sup>some of</sup> the success stories of Project SEED II — young people who, like hundreds more, share a strong desire to succeed. Until Project SEED, the odds were against them. Now they are well on their way to productive, happy lives.

Yet, if Project SEED II is to continue, we need your support.

Each Project SEED II student receives a stipend of \$1,700. All of the funds raised for this program go to this stipend.

There are 215 Project SEED I students looking ahead to a second summer of research.

With <sup>Y</sup>our support, many will make it.

2

Won't you join me in becoming a Project SEED II sponsor? While we can't all serve as mentors in the laboratory, we can lend our financial support to be certain this valuable program continues to make a real difference in the lives of disadvantaged young people.

What could be more rewarding? What could be more worthwhile?


This is a program that works. It is a source of great pride to me and should be to all American Chemical Society members. Now you have a special opportunity to become a part of this endeavor by helping to sponsor a disadvantaged student.

Remember, each student receives a \$1,700 stipend. Your gift along with those of other ACS members can ensure that deserving students have an experience to shape a lifetime.

**No gift is too small — every donation is greatly appreciated.**

Thank you for writing a happy ending to this story.

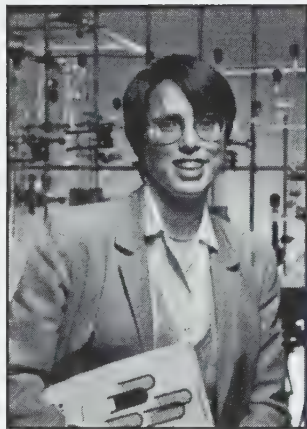
Sincerely,



Ned D. Heindel  
President

□ YES, I want to ensure that Project SEED II continues. I want to be certain young people from disadvantaged backgrounds have an opportunity to learn and grow. My donation is indicated on the inside of this reply card.

### A Special Opportunity to Help the SEED Grow.



### Meet Dr. Claire Tessier.

*Ph.D., teacher, mentor and Project SEED alumna, Claire Tessier understands what a difference a summer can make. Growing up in rural Vermont, there seemed little opportunity for a bright young woman with an interest in science and math. But Project SEED opened her eyes — and opened doors for Dr. Tessier, who today credits the program for redirecting her life toward a successful career in chemistry.*







*The Seed Has Been Planted ...*

*How It Will  
Grow Is In  
Your Hands.*

*N*urtured, a seed will develop,  
sprouting shoots,  
rooting itself in firm ground  
to create a life of its own.

For more than 25 years,  
Project SEED has been nurturing young people,  
giving them an opportunity to dream,  
and to believe that their dreams could come true.

Now, the American Chemical Society  
has embarked on Project SEED II...  
hoping dreams can be shaped into reality.





## Yesterday

Since 1968, more than 4,000 talented high school students from economically disadvantaged backgrounds in cities and towns across the country have conducted research in local academic, industrial and governmental research laboratories under the mentorship of a volunteer research scientist. This is Project SEED I — Summer Educational Experience for the Disadvantaged.

For many participants, the summer program introduced them for the first time to a world without limitations. Now, some are scientists, professors, chemical engineers, industry leaders.



*David Chavez's teachers and Project SEED II mentors have great expectations for this 20-year-old Taos, New Mexico native. A straight-A high school student, David is attending the California Institute of Technology after receiving offers from some of the country's most prestigious universities. But, David isn't losing sight of his ultimate goal — to become a scientist and explore the world of chemistry.*

# Today

*P*roject SEED II is a 10-week summer science experience for graduates of Project SEED I. Since 1992, more than 200 alumni have returned to participate in a second summer of research. Each student receives a stipend of \$1,700. With the help of their preceptor, they establish a meaningful research project which is completed by the end of the summer.

The heart of Project SEED II is the tremendous volunteer effort of local ACS section members who oversee the student selection process and placement in the laboratories, and of the volunteer scientists who give their time and energy to help shape a young person's future.

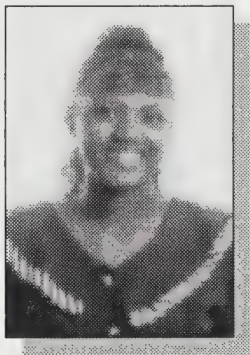
The goal of Project SEED II is to encourage those students who have a keen interest in science to further explore their career options. College scholarships are also available and eight have already been awarded.



# Tomorrow

*P*roject SEED II was initially made possible through a generous grant from the Bader family. Now, after three successful seasons, the future of this important program rests with ACS members.

Without donations — used solely to pay the student stipends —  
Project SEED II will wither... and along with it,  
the aspirations of hundreds of young men and women.  
This is an important investment in a future filled  
with possibility.



*Patrice Petty, just 18 years old, is grateful that a strong mentor helped guide her future. "I want to be a role model to other minority students," she says, "and show them how hard work and perseverance pay off." Now on her way to a degree in chemical engineering at Purdue University, this Project SEED II participant is already working to encourage other young people to take on the challenge of a career in science.*



*We have planted the seed,  
but how it will grow is in  
your hands.*



*“I wanted to give students an opportunity  
to learn, to perform, and to gain  
confidence in their ability to direct  
their own futures.”*

*—Dr. Alfred Bader*



American Chemical Society  
1155 Sixteenth Street, N.W.  
Washington, D.C. 20036  
(202) 872-4080



## American Chemical Society

Jennifer H. D'Elia  
Director of Development

1155 SIXTEENTH STREET, N.W.  
WASHINGTON, D.C. 20036  
Phone (202) 872-4080

September 20, 1994

Dr. Alfred Bader  
2961 North Shepard Avenue  
Milwaukee, WI 53211

Dear Dr. Bader:

Enclosed for your review is a mock-up of the annual solicitation. We are excited with how it looks--but the proof will be in what response we get!

Please look it over very carefully. Should you have any questions, please call me. We will send it to the printer as soon as we have your approval to proceed. Please respond no later than September 26.

Project SEED did very well during the August ACS Board Meeting. The Board approved funding for an evaluation of SEED. This has been needed for years and unfortunately we have been unable to find funding for it--at the same time we have been refused support because we did not have it. From a fundraising perspective, this will be of great help in securing support for SEED in future years.

*The Board also approved \$76,000 to support 42 SEED II students next year to ensure the continuation of this effort!* With the funding we already have and if the annual appeal has a response equal to last years, then more than 90 students will be able to participate in a 1995 SEED Summer II. Of course we still need to be concerned for 1996 and beyond and my efforts are now focused on establishing an endowment.

I look forward to getting your reaction to the appeal, and hopefully your approval. Thank you for your continued interest and help.

Sincerely,

Called 9/26  
for approx corrections

cc: Ned D. Heindel  
Christine Brennan



**1995 SEED II FUNDING**

Bader Family	15,000
Aldrich	25,000
Abbott	17,000
ACS	76,000
<u>Annual Appeal</u>	<u>50,000*</u>
<b>Total</b>	<b>183,000</b>

\* Assumes response to 1994 appeal will be equal to response to 1993 appeal





# Thank You!

The American Chemical Society appreciates the support it receives from members, corporations, foundations, and others involved in the chemical enterprise.

## Dues Check-Off

Thank you to the many members who supported the ACS programs through the dues check-off option in 2000. The following programs are helped by the donations

- **ACS General Endowment**
- **Membership Programs**  
(e.g., **National Chemistry Week**)
- **Project SEED**

## 2000 Support

ACS wishes to thank the following individuals, corporations, foundations, and organizations for their contributions during 2000

### Donors of \$50,000 or more

Alfred and Isabel Badler  
Buttroughs Wellcome Fund  
Rohm and Haas Company

### Donors of \$20,000–\$49,999

Anonymous  
AstraZeneca Pharmaceuticals LP  
Estate of Virginia Bauer  
Green Chemistry Institute  
(memorial gifts for Dr. Joseph Breen)  
Monsanto  
Estate of Vincent Sedlak  
Catherine T. Sigal

### Donors of \$2,500–\$19,999

Advanced Chemistry Development, Inc.  
Air Products and Chemicals, Inc.  
Lewis E. Allen  
Amgen Inc.  
Arch Chemicals, Inc.  
BASF Agricultural Products  
James T. Baxter  
Elizabeth and Stephen Bechtel, Jr. Foundation  
Chevron Products Company  
Dow Chemical Company  
Dow Chemical Company Foundation  
Dow Corning Corporation  
DuPont Washington Works  
FMC Corporation  
Susan Fahrenholtz  
Christine and Stephen Fisher  
Kathy M. Fleming  
Ford Research Laboratory  
W. H. Freeman and Company  
Fundacion Andes  
Geneva College  
Great Lakes Chemical Corporation  
Carlos G. Gutierrez  
Nancy B. Jackson  
Kelly Scientific Services  
Estate of Carroll T. Kirchner  
Steven and Michele Kirsch Foundation  
Robert L. Lichten  
Eli Lilly and Company

Lucent Technologies Foundation  
Saundra Y. McGuire  
Wilhe E. May  
Merck Research Laboratories  
Mexican Academy of Sciences  
Zaida C. Morales-Martinez  
New Jersey City University  
New York Local Section, ACS  
Nippon Paint Company  
Novartis Crop Protection, Inc.  
North Jersey Local Section, ACS  
OMNOVA Solutions Foundation  
Optima Chemical Group  
Organo Corporation  
Ortho Pharmaceutical  
PE Biosystems  
Mississippi State Foundation  
Pfizer Global Research Division  
Reilly Industries  
Roche Pharmaceuticals  
Royal Society of Chemistry  
Shell Chemical Company  
Shell Oil Company  
Social Science Research Council  
Society for Analytical Chemists of Pittsburgh  
Spectroscopy Society of Pittsburgh  
St. John's University — College of St. Benedict  
Strem Chemicals, Inc.  
Texas Instruments Incorporated  
Tripos, Inc.  
Unilever Research U.S., Inc.  
Union Carbide Corporation  
U.S. Mexico Foundation for Science  
Youngstown State University Foundation  
Wveth-Averst Research

## 2000 Payment

Bayer Corporation  
The Camille and Henry Dreyfus Foundation, Inc.  
Helen M. Free  
GlaxoWellcome Inc.  
Mallinckrodt Chemicals, Inc.  
Northeastern Local Section, ACS  
PPG Industries Foundation  
Procter & Gamble Company  
Catherine T. Sigal  
American Section, Société de Chimie Industrielle  
Xerox Corporation  
UNESCO, Basic Sciences Division

## ACS Matching Gift Program

Many of the gifts and payments listed were matched by the ACS Matching Gift Fund program. Established in 1994, the program provides ACS matching funds for contributions of \$2,500 or more to eligible programs. The following programs and endowments are eligible:

ACS 125th Anniversary Celebration  
ACS General Endowment  
International Endowment Fund  
National Chemistry Week/National Chemistry Week Endowment  
Project SEED/Project SEED Endowment  
Scholars Program  
Science & the Congress  
Teacher Training, Chemistry in the Community and Science in a Technical World  
U.S. National Chemistry Olympiad/Donald I. and Mildred Topp Othmer International Chemistry Olympiad Endowment  
World Reach Fund

## ACS Awards Sponsor

Air Products and Chemicals, Inc.  
Akzo Nobel Chemicals, Inc.  
Albemarle Corporation  
Aldrich Chemical Company, Inc.  
Alpha Chi Sigma Fraternity  
Alfred Badler  
Arthur C. Cope Fund  
Corporation Associates  
Dow Chemical Company  
Dow Chemical Company Foundation  
Dow Corning Corporation  
The Camille and Henry Dreyfus Foundation, Inc.  
E. I. du Pont de Nemours & Company  
ExxonMobil Chemical Company  
ExxonMobil Research and Engineering Company  
Fisher Scientific Company  
Francis P. Garvan — John M. Olin Medal Endowment  
The General Electric Foundation  
Givaudan  
The Gordon and Breach Publishing Group  
IBC Advanced Technologies, Inc.  
IBM Corporation  
Lancaster Synthesis, Inc.  
Mallinckrodt Baker Inc.  
Merck Research Laboratories  
Millipore Corporation  
Nakanishi Prize Endowment  
National Starch & Chemical Company  
Northeastern Section, ACS  
Occidental Petroleum Corporation  
George A. Olah Award Endowment  
Organic Reactions, Inc.  
Organic Syntheses, Inc.  
Phillips Petroleum Company  
Procter & Gamble Company  
Purdue Borane Research Fund  
Research Corporation  
Rohm and Haas Company  
Schering-Plough Corporation  
Shell Oil Company Foundation  
SmithKline Beecham  
Strem Chemicals, Inc.  
SUPELCO, Inc.  
Union Carbide Corporation



**American Chemical Society**

1155 16th Street, NW  
Washington, DC 20036

1-800-227-5558

[www.acs.org](http://www.acs.org)





Anita Hurtado  
Project SEED Bader Scholar  
March 13, 2005



FILE 87755. 04.07.05

**Tin Nguyen**  
**Project SEED Bader Scholar**  
**March 13, 2005**





**Bader Scholars and  
Project SEED Alumni  
March 13, 2005**



ALFRED BADER FINE ARTS

DR. ALFRED BADER

ESTABLISHED 1961

August 6, 2002

Dr. Sylvia Ware  
Director, Education Division  
American Chemical Society  
1155 16<sup>th</sup> Street, NW  
Washington, D.C. 20036

By fax to: 202-872-4435

Dear Sylvia,

In response to an inquiry from Stephen Watt, I would like to promise a contribution in 2003 for \$ 50,000 for the PROJECT SEED scholarships. I understand this action now will make ACS matching funds available.

I will send the payment on this promise in 2003, provided that the matching funds are in place.

I look forward to seeing you in Boston at the ACS meeting.

With best regards I remain

Yours sincerely,

Alfred Bader  
AB/az

*By Appointment Only*  
ASTOR HOTEL SUITE 622  
924 EAST JUNEAU AVENUE  
MILWAUKEE WISCONSIN USA 53202  
TEL 414 277-0730 FAX 414 277-0709  
E-mail: baderfa@execpc.com











AMERICAN CHEMICAL SOCIETY

1155 SIXTEENTH STREET, N.W.  
WASHINGTON, D.C. 20036  
(202) 872-4534

*Madeleine Jacobs*  
Executive Director & Chief Executive Officer

April 27, 2004

Dr. Alfred Bader  
2961 North Shepard Avenue  
Milwaukee, Wisconsin 53211

Dear Alfred:

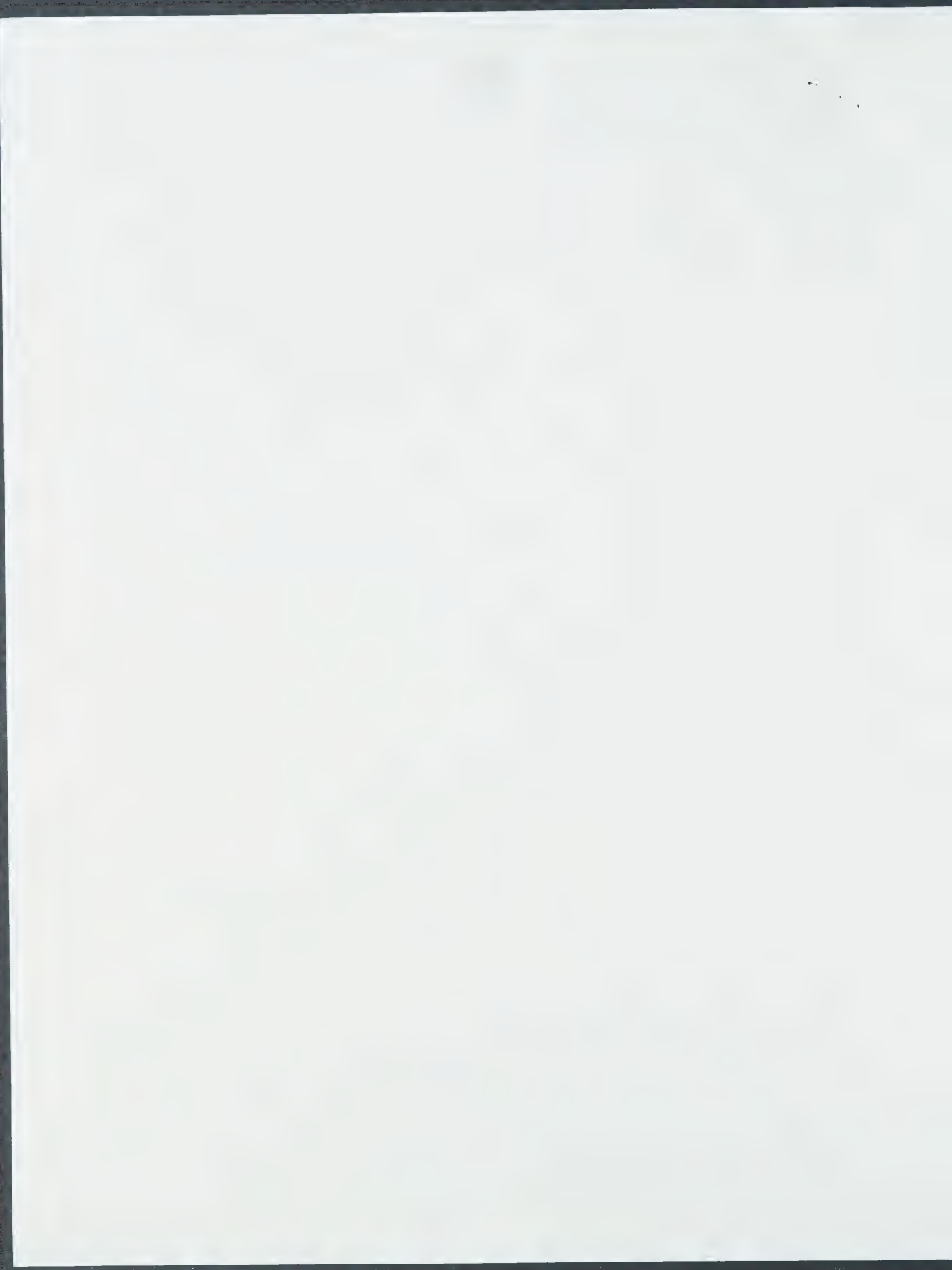
This is my "formal" letter of thanks for your generous gift of \$50,000 to Project SEED (Bader Scholars). As I mentioned to you, this gift will be matched 1:1 by the American Chemical Society: \$25,000 from the Matching Gift Fund and \$25,000 from my special Executive Director's Initiative Fund.

Over the years, your generosity to Project SEED and other ACS programs has been astonishing. As I mentioned to you, it is my opinion that Project SEED, in all its facets, is the most successful education program ACS has. It has changed the lives of hundreds of young people who would otherwise not have had the opportunity or the inclination to study chemistry.

Every time I meet a former SEED student, I am struck at how the small "seed" planted during their summer research experiences grew into a mighty oak. I love hearing their stories, and I know you must as well. I am committed to making sure that Project SEED continues to play this important role in the lives of our best and brightest who seek a career in the chemical sciences.

I mentioned to you that I want to increase the size of the SEED stipends for Summer I and Summer II. I'm also concerned that the SEED scholarships need to be larger, and renewable in nature. To accomplish this, the SEED endowment must reach at least \$10 million, and I'm going to send you a separate letter detailing how this might be achieved. The endowment is now hovering around \$4.5 million.

Until you receive that letter, here is a little food for thought: At \$10 million, the SEED endowment could provide about \$400,000 (or more) a year, nearly half the current cost of all the SEED programs. Such an endowment would undoubtedly attract other generous donors. And one of the modifications I want to make in the program is ensuring that once a year you and other generous donors have the opportunity to meet some of these young people whose lives you've changed. I can imagine ACS honoring you with an annual Isabel and Alfred Bader SEED dinner at which you could give a talk and meet some of these students. Think about it!



There are so few people in this world who can truly say they have made an impact on a young person's life. I know you must take great pride in the fact that you are one of those rare and remarkable people.

Joe and I are looking forward to seeing you and Isabel again soon, this time in England. We had a wonderful time with you in Milwaukee and appreciated your warmth and hospitality. I sent an e-mail to you noting that July 16 will work very well for us. We will take the 10:45 a.m. train to Polgate as you suggested!

Although I will be out of the country when Queens University fetes you on your 80<sup>th</sup> birthday, I have given the information to C&EN and someone will most definitely cover this festive event. My warmest wishes again for many more happy, productive years.

Warmest regards,

A handwritten signature in cursive script that reads "Madeleine" followed by a horizontal flourish.

Madeleine Jacobs  
Executive Director & CEO





**Subject:** RE: Scheduling of symposia  
**From:** Madeleine Jacobs <m\_jacobs@acs.org>  
**Date:** Thu, 23 Sep 2004 07:04:59 -0400  
**To:** "Alfred Bader Fine Arts" <baderfa@execpc.com>  
**CC:** Pamela Ayre <pja91@acs.org>, Brian Bernstein <b\_bernstein@acs.org>

Dear Alfred,  
This is just a brief note to confirm that we are definitely planning a dinner on Sunday night in your honor concerning PROJECT SEED. I am traveling this week, but will have more details shortly.  
Warmest regards,  
Madeleine

Madeleine Jacobs  
Executive Director and Chief Executive Officer  
American Chemical Society  
1155 16th Street NW  
Washington, D.C. 20036  
Phone: (202) 872-6310  
Fax: (202) 872-6055

-----Original Message-----

From: Alfred Bader Fine Arts [mailto:baderfa@execpc.com]  
Sent: Wednesday, September 22, 2004 3:29 PM  
To: P. V. Ramachandran  
Cc: Rob Larsen; 'Clint Lane'; Madeleine Jacobs  
Subject: Re: Scheduling of symposia

Dear Chandran,

As you perhaps know, Isabel and I have been most interested in PROJECT SEED and I believe that the ACS is planning a dinner for the Sunday evening of the San Diego meeting. Naturally I would very much like to attend both that dinner and the symposium in my honor.

Best wishes,  
Alfred Bader

P. V. Ramachandran wrote:

Rob:

The only reason why I requested Sunday PM/Monday AM is because our symposium is to honor Dr. Alfred Bader on his 80th birthday (He will be almost 81 by then). Professor H. C. Brown (92, almost 93) and Sarah Brown (90) wish to be there for the symposium to honor Alfred. I wanted to be considerate to these giants of chemistry and not force them to be in the room from morning till evening.

We are planning a symposium banquet on Sunday night and it might turn out to

be too hectic for them.

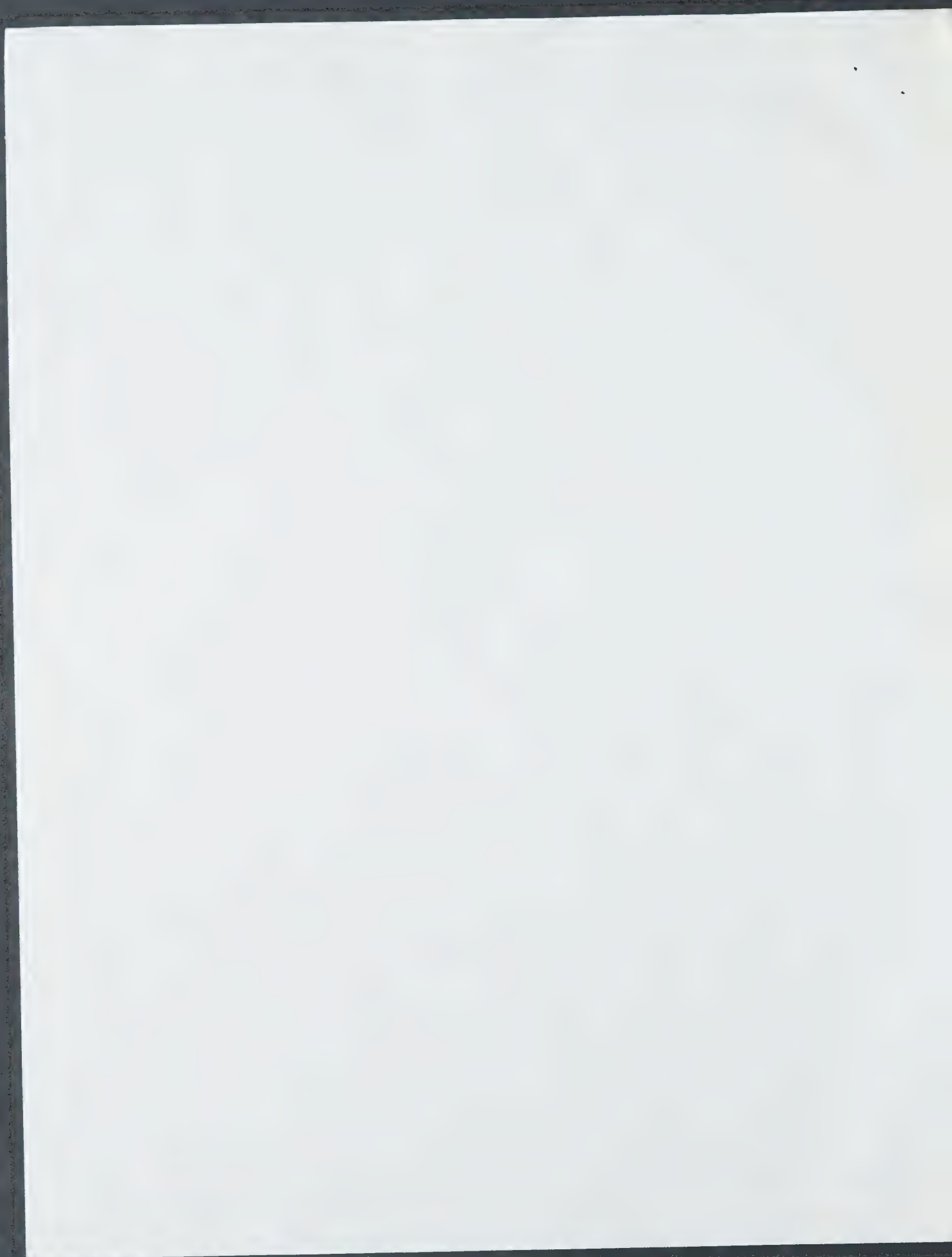
If there is no way that you can split the days, we will take Sunday AM/PM.

Thanks for your help.

Sincerely,  
Chandran

-----Original Message-----

From: Larsen, Rob [mailto:rlarsen@amgen.com]  
Sent: Wednesday, September 22, 2004 10:57 AM  
To: 'P. V. Ramachandran'  
Cc: Clint Lane; 'Larsen, Rob'



Subject: RE: Scheduling of symposia

Chandran,

Since there are two contributed symposia I cannot split the days like that. Martha Oakley and Laura Kiessling are organizing a Bioorganic symposia in honor of Dervan. I just heard from them that they would prefer Mon AM/PM for their two sessions. Is Sun AM/PM okay for you?

Thanks,

Rob

-----Original Message-----

From: P. V. Ramachandran [mailto:chandran@purdue.edu]  
Sent: Wednesday, September 22, 2004 8:52 AM  
To: 'Larsen, Rob'  
Cc: Clint Lane  
Subject: RE: Scheduling of symposia

Sunday PM and Monday AM is preferred.

Thanks  
Chandran

-----Original Message-----

From: Larsen, Rob [mailto:rlarsen@amgen.com]  
Sent: Wednesday, September 22, 2004 10:48 AM  
To: 'P. V. Ramachandran'  
Cc: Clint Lane; 'Larsen, Rob'  
Subject: RE: Scheduling of symposia

Any preference on Sun or Mon?

Thanks,

Rob

-----Original Message-----

From: P. V. Ramachandran [mailto:chandran@purdue.edu]  
Sent: Wednesday, September 22, 2004 8:27 AM  
To: 'Larsen, Rob'  
Cc: Clint Lane  
Subject: RE: Scheduling of symposia

Rob:

Thanks for your message.

The conflicts that we may have for our symposium is with Professor Sam Danishefsky who will be talking, apart from our symposium, also at three other symposia: Leadership Chem. Res. Management, Creative Award in Org. Synthesis, and Guenther Award.

Another potential conflict is Prof. Larry Overman talking at our symposium and Corey Award symposium.

Sincerely,  
Chandran

-----Original Message-----

From: Larsen, Rob [mailto:rlarsen@amgen.com]  
Sent: Wednesday, September 22, 2004 10:11 AM  
To: 'paevans@indiana.edu'; 'cmaryano@crdus.jnj.com';  
'Kathlyn.Parker@sunysb.edu'; 'mdoyle3@umd.edu';  
'ddrueckhamme@notes.cc.sunysb.edu'; 'johnkoh@udel.edu';  
'hdavies@acsu.buffalo.edu'; 'iojima@notes.cc.sunysb.edu';  
'rnapy@u.arizona.edu'; 'oakley@indiana.edu'; 'kiessling@chem.wisc.edu';





'chandran@purdue.edu'; 'clint.lane@nau.edu'; 'Kendall N. Houk'  
Cc: 'rlarsen@amgen.com'  
Subject: Scheduling of symposia

Dear Organizers:

I have had many requests to finalize the schedule for the San Diego meeting.

In response to this I will be scheduling the symposia over the next week.

I have not received the suggested speakers for the all the symposia as yet. I am sending the latest Excel spreadsheet of the symposia, awardees, suggested speakers, and organizers. If you wish to update the list please send me this information by the end of the day Thursday, Sept 23. I will send out the updated spreadsheet on Friday.

Please review for potential conflicts in speakers and notify me of scheduling issues. The scheduling will require a lot of feedback from the organizers as I have already been made aware of a number of potential conflicts. There are ten award symposia and two contributed symposia of two sessions each for fourteen sessions to schedule between Sunday and Wednesday. My preliminary plan is as follows:

<<San Diego symposia-V2.xls>> <<San Diego schedule.xls>>

Please get back to me soon so that I can get out a preliminary schedule by the end of next week.

Thanks,

Rob

---

This message scanned for viruses by CoreComm





August 12, 2005

Dear Alfred and Isabel,

I want to add my personal thanks for your most recent generous contribution to Project SEED. You have both inspired others with your generosity and commitment to youth in the Chemical Sciences.

Very Sincerely,

Mary Bet Dobson







February 15, 2013

Drs. Alfred and Isabel Bader  
2961 N Shepard Avenue  
Milwaukee, WI 53211-3435

Dear Alfred and Isabel,

I am pleased to enclose the 2012 Project SEED Program Summary. Your very generous support provided scholarships for the students listed on pages 24 and 25--- 2013 will mark the 15<sup>th</sup> year of the Bader Scholars--- WOW!

Project SEED mentor, Professor Bill Church received a heartwarming email from a former student thanking him. When thinking of your philanthropic efforts in 2013, please remember his student's words, "I learned so much in those two consecutive summers from you and I was so inspired by you that I spent the last two years of high school dreaming about becoming a chemist. Your leadership, knowledge, love of chemistry, and inquisitive mind, gave me a vision for what would become my future endeavors."

Sincerely,

A handwritten signature in blue ink that reads "Mary Bet Dobson".

Mary Bet Dobson  
Assistant Director





# Project SEED

## Program Summary

Hands-On Research for  
High School Students









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# Project SEED

## Executive Summary

For the past 44 years, the ACS Project SEED program has sponsored more than 9,000 high school students from economically disadvantaged families by giving them the opportunity to conduct hands-on research for 8–10 weeks during the summer in an academic, industrial, or governmental science research environment. Students work with volunteer scientists around the country on supervised chemistry-related science research projects in the Project SEED Summer I and Summer II programs. While in the program, students discover their ability to learn new skills, develop self-confidence, learn what advanced study is like, and develop a greater interest in scientific and technical areas. Individualized attention is guaranteed, as each mentor may supervise only one or two students. Annual evaluations indicate that the program continues to stimulate students' interest in science: 73% of the SEED students reported that the program helped them decide to pursue a career in science, 66% expected to complete a graduate degree, and 63% confirmed that Project SEED has influenced their career decisions.

This summer, more than 400 scientist volunteers mentored 338 students in the Summer I program and 93 students in the Summer II program in over 130 institutions in 33 states, as well as the District of Columbia and Puerto Rico. (See pages 3-22.) The total cost of the program was \$1,124,000, with stipends of \$2,500 to Summer I students and \$3,000 to students in the Summer II program. The student stipends were supported through investment revenues received from the ACS Project SEED Endowment, industries, private foundations, universities, ACS local sections, and ACS friends and members. (See pages 36-39.) ACS general operating revenue supports student stipends and administrative costs.

For the academic year 2012–2013, the Committee on Project SEED awarded 29 college scholarships to former SEED participants entering their freshman year in college who demonstrated a high potential to succeed in chemistry. The scholarships are one-year, nonrenewable, for up to \$5,000. The scholarships are designed to assist students with their transition from high school to college. In 2012, three alumni Project SEED college scholarship recipients entering their sophomore year and planning to major in a chemical science received a CIBA Specialty Chemicals Scholarship.

A new mentoring pilot component to the College Scholarship program was initiated this fall. Six freshmen were matched with Project SEED and ACS Scholar alumni at their respective universities to facilitate the students' adaptation to their new academic and university environments. The college scholarships totaled \$160,000. (See pages 23-26.) The funding for these scholarships was provided through the generosity of Alfred and Isabel Bader, Ashland Inc., the Bayer Foundation, the Ciba Foundation, the Russel J. Fosbinder Endowment, and the Glenn and Barbara Ulliyot Endowment.

The ACS Project SEED program attributes its 44 years of success to the continued commitment of donors, volunteer coordinators, and mentors who offer opportunities to a diverse generation of young people in the world of science. Thank you for your support and generosity.



# 2012 Project SEED Programs

## Mentors

## Institutions/Coordinator

## Students

### ALABAMA

#### Jacksonville State University, Nixon Mwebi

Jan Gryko  
Al-Nichols

#### Summer I

Charity Knight  
Kimberly McWilliams

#### Summer II

Ronald Whetstone

#### University of Alabama, Huntsville, Emanuel Waddell

Emanuel Waddell

#### Summer I

Jacqueline Johnson

### CALIFORNIA

#### California State University, Los Angeles, Linda Tunstad

Krishna Foster  
Raymond Garica  
Carlos Guterrez

#### Summer I

Javier Ramirez  
Richard Rycraw  
Alejandro Zunigo

#### Summer II

Cristina Perez

#### California State University, Los Angeles, Frank Gomez

Frank Gomez  
Alan McCurley  
Xin Oven  
Robert Vellanoweth

#### Summer I

Jacqueline Ledezma  
Zachary Perez  
Genecee Renteria  
Arianna Salinas-Garcia

#### Chevron Energy Technology Company, Elaine Yamaguchi

Gary Banuelos  
Jose Berrios  
Gennady Borinshteyn  
Jennifer Bragg  
Andrew Breksa  
Jianchi Chen  
Michael Cheng  
Luisa Cheng  
A. Deo  
Colleen Dong  
Kenneth Forbes  
Mara Guttman  
Ron Haff  
Xiaohua He

Aemtek, Inc.  
California State University, East Bay  
Chevron Energy and Technology Company  
Chevron Oronite Company LLC  
L&L Dental Ceramics  
Libby Laboratories, Inc  
Michael Freeling and Research Group  
San Francisco State University  
Smith-Emery Co.  
University of California, Merced  
University of the Pacific, School of Pharmacy  
USDA ARS Water Management Res. Lab.  
USDA Western Research Center

#### Summer I

Jahi Abimbola  
Verenize Alvarado  
Winnie Chan  
Peixin Chen  
Rahel Demissie  
Amy Fann  
Albert Garcia  
Evelyn Gomez  
Maria Gonzalez  
January Healy  
Ismael Herrera Millian  
Diep Huynh  
Trinh Huynh



# 2012 Project SEED Programs

## Mentors

## Institutions/Coordinator

## Students

### **Chevron Energy Technology Company, Elaine Yamaguchi (continued)**

Linnea Hoover

Mandy Hsia

Andrew Ichimura

Eric Jackson

Chl Kim

Damon Lisch

John Livesey

Andy LiWang

Patti LiWang

Mike Long

Mike McCallum

Erik Menke

David Morgan

Patrick Morrison

Ken Nelson

Jerry Oliveras

Jianhua Ren,

Larry Stanker

Sarah Thorne

Jerry Tsai

Chris Wallis

Spencer Walse

Dominic Wong

Maggie Woodhouse

Weiming Wu

Liang Xue

Jason Yee

Qinliang Zhao

Tsz Yan Kong

Jason Lay

Davis Le

Jazmonique Lea

Sidney Lin

Sami Nand

Lan Ngo

Juan Ramirez

Bryan Robles

Cathleen San Marcos

Quoc Thong Tu

Mary Tran

Michelle Tran

Vivian Tran

Eric Truong

Hau Truong

Kristy Verma

Shakyari Williams

Eileen Wu

Qianwen Zhang

Eddy Zheng

### Summer II

Melissa Galindo

Veronica Guzman

Papow Her

Ngoc Hoang

Tiffany Li

Vincent Li

Yuying Liu

Julie Nguyen

Houng Tran

Xiomara Urbina

Bap Xiong

### **Stanford University, Kaye Storm**

Krysta Biniek

Travis Walker

### Summer II

Alison Logia

Olgaby Martinez

# 2012 Project SEED Programs

## Mentors

## Institutions/Coordinator

## Students

### **The Scripps Research Institute, Marisela Chevez**

Denna Blackmond  
Jonathan Hart  
Pedro Serrano Navarro  
Beth Thomas  
Peter Thuy-Boun

### Summer I

David Huerta  
Brandon Hernandez  
Kasandra Shipley

### Summer II

Devin-Khang Dang  
Tuong Pham

### **University of California, Davis, Shota Atsumi**

Sheila David  
Annaliese Franz  
Kirill Kovnir  
Carlito Lebrilla

### Summer I

Maverick Bellard  
Van Vo

### Summer II

Andres Rosales  
Tracy Yang

## **DELAWARE**

### **University of Delaware, Michael Vaughan**

Karl Booksh  
Thomas Epps  
Tatyana Polenovs

### Summer I

Tahj Boston  
Aliyah Hodge  
Victoria Muir  
Markia Smith  
Riise Taylor

## **DISTRICT OF COLUMBIA**

### **Georgetown University, Ajay Mallia**

Daron Freedberg  
Travis Holman  
Kaveh Jorabchi  
Bahram Moasser  
Zhihong Nie  
Vladislav Sadtchenko  
Andrei Vedernikov  
Timothy Warren  
Richard Weiss

Center for Biologics Evaluation &  
Research, FDA  
Georgetown University  
University of Maryland

### Summer I

Kimberly Chopin  
Seong Jang  
Hun Sun Lee  
Vivian Mensah  
Mujuni Millanga  
Aayush Pathak  
Alejandra Torres-Diaz  
Diego Torres-Diaz

### Summer II

Hyae Seo

# 2012 Project SEED Programs

## Mentors

## Institutions/Coordinator

## Students

### FLORIDA

#### **Barry University, George Fisher**

John Berry  
Rajeev Prabhakar

Florida International University  
University of Miami

#### Summer I

Eyleen Izaguirre  
Karla Villalta

#### Summer II

David Pena

#### **The University of Tampa, Glenroy Martin**

Glenroy Martin

#### Summer II

Javier Narvaez

### GEORGIA

#### **Clark Atlanta University, Ishrat Khan**

Ishrat Khan  
James Reed  
Xiao-Qian Wang

#### Summer I

Caria Evans  
Clarisa Hernandez  
Best Uchehara

#### **Clayton State University, Jonathan Lyon**

Jonathan Lyon

#### Summer I

Minh-Thu Phan

#### **Georgia State University, Suri Iyer**

Al Baumstark  
Giovanni Gadda  
Donald Hamelberg  
Joan Mutanyatta  
Angela Navarro  
Shahab Shamsi  
Gangli Wang  
Hao Xu

#### Summer I

Christian Clark  
Jacqueline Hackett  
Cameron Jones  
Linwood Kennon  
Patience Lipede  
Keith Richard  
Alexandria Smith  
Monique Terrell

### IDAHO

#### **Idaho State University, Andrew Holland**

Carvyn Evilla  
Lisa Goss  
Andrew Holland

#### Summer I

Jacob Tennant  
Ashley Van Orden  
Tannessa Walker

# 2012 Project SEED Programs

## Mentors

## Institutions/Coordinator

## Students

### ILLINOIS

#### **Chicago Local Section, ACS, Tracey Braun**

Daniel Becker  
Richard Holz  
Dali Liu

Loyola University

#### Summer I

Kristen Alanis  
Hei Yu Chan  
Lyba Zia

#### **Illinois State University, David Cedeno**

David Cedeno  
Marjorie Jones  
Jun-Hyun Kim  
Brent Tisserat

Illinois State University  
USDA, ARS, National Center  
for Agricultural Utiliz

#### Summer I

Aaliyah Davidson  
Luis Garcia  
Xavier Holford  
Alexus Rusk

#### **Southern Illinois University, Gabriela Perez-Alvarado**

Michael Lydy  
Colleen Scott

#### Summer I

Brooke Nosovitsky  
Brian Suarez

### INDIANA

#### **Indianapolis Project SEED-Indiana Local Section-ACS, Elmer Sanders**

Chi-Kin Chow  
H. N. Jayaram  
Zhaoyan Jin  
Philip Johnson  
Anna Malkova  
James Marrs  
C. Subah Pacher  
Horia Petrache  
Jingzhi Pu  
Bruce Ray  
Robert Sammelson  
Rajesh Sardar  
Michael Statnick

Ball State University  
Eli Lilly & Co  
Indiana University School of Medicine  
IUPUI, Biology, Science, Physics, Chemistry  
VA Medical Center

#### Summer I

Lindsay Egan  
Sally England  
Daniel Hnin  
Nathan Kassab  
Mariah Keane  
Jacob Lucas  
Ryan Lucas  
Collin Nguyen  
Munajj Siddeeq  
Austin Stults  
Stephanie Tinsley  
Van Zi

#### Summer II

Susanna Adjei  
Charles Irving  
Hannah Kassab  
Biak Par  
Liliana Patino



---

# 2012 Project SEED Programs

## Mentors

## Institutions/Coordinator

## Students

### **Purdue University, Bryan Boudouris**

Stephen Beaudoin  
Bryan Boudouris  
Yue Wu  
Yu Xia

### Summer I

Aneli Carrillo  
Jennifer Pham  
Kimberly Rios  
Tania Sotero

### **University of Notre Dame, Mary Prorok**

Michelle Joyce  
Marya Lieberman

### Summer I

Brittney Joy  
Edgar Ocampo

## IOWA

### **Iowa State University, Javier Vela**

Malika Jeffries-El  
Emily Smith  
Javier Vela

### Summer I

Maria Andrade  
Luis Martinez-Patino

### Summer II

Jasmin Cisneros

## KANSAS

### **Wichita State University, Syed Taher**

Syed Taher

### Summer I

Keiley Bakhtiar  
Syed Shajril

## LOUISIANA

### **McNeese State University, Omar Christian**

Omar Christian  
Ron Darbeau

### Summer I

Zeadrick Williams

### Summer II

Rasheed Leath

### **Southeastern Louisiana University, Zhengrong Li**

Jean Fotie  
Zhengrong Li  
Phillip Voegel

### Summer I

Aisha Cook  
C'yonda Gayton  
Jordan McNeese  
Kali Thompson

## MARYLAND

### **John Hopkins University, Takashi Tsukamoto**

Takashi Tsukamoto

### Summer II

Elizabeth Hall-Travis

# 2012 Project SEED Programs

## Mentors

## Institutions/Coordinator

## Students

**University of Maryland Eastern Shore, Jennifer Hearne**  
Victoria Volkis

Summer I  
Brian Tran

## MASSACHUSETTS

**Northeastern University, Heather Clark**  
Heather Clark

Summer II  
Anne Georges

**Stonehill College, Cheryl Schnitzer**  
Louis Liotta  
Cheryl Schnitzer

Summer I  
Ladan Aden  
Christina Ball  
Joseph Maglio  
Joseph Sirois

## MICHIGAN

**Calvin College, Mark Muyskens**  
Eric Arnoys  
David Benson  
Mark Muyskens  
Chad Tatko  
Amy Wilstermann

Summer I  
Gabriela Alonzo-Villagomez  
Alexandra Bogner  
Sam Mudzingwa

Summer II  
Fabiola Enriquez  
Justice Mason

**Eastern Michigan University, Harriet Lindsay**  
Maria Milletti

Summer I  
Halle Thomas

**Henry Ford Community College, Keith Williams**  
Matthew Allen  
G. Andres Cisneros  
Wen Li  
Howard Matthew  
Caludio Verani

Summer I  
Farjana Alam  
Nadim Bari  
Al Tahbee Hassan  
Mumtahena Kadir  
Malaysha White

**Kalamazoo Local Section, ACS, Donald Schreiber**  
Ramakrishna Guda  
Sherine Obare

Summer I  
Mikayla Markus  
Tayler Martin

---

# 2012 Project SEED Programs

## Mentors

## Institutions/Coordinator

## Students

### **Michigan State University, Chrysolua Vasileiou**

Gregory Bocker  
Babak Borham  
Merlin Bruening  
James Geiger  
James Jackson  
R. Maleczka

### Summer I

Asha Abdulahi  
Basma Al-Masraf  
Elijah Broemer  
Rebecca Poole  
Han San  
Audrey Tappenden  
Gilliam Tappenden

### **Saginaw Valley State University, David Karpovich**

Stephanie Brouet  
Claire Hartmann-Thompson  
Anja Mueller

Central Michigan University  
Michigan Molecular Institute  
Saginaw Valley State University

### Summer I

Ashley Plank

### Summer II

Kevin Morris  
Demetrius Randolph

## **MINNESOTA**

### **University of Minnesota, Paul Boswell**

George Barany  
Paul Boswell  
Phillippe Buhlman  
Jerry Cohen  
Wayland Noland

### Summer I

Paula Lor  
Soua Thao  
Yingya Vang  
Zeng Vang  
Pang Yang  
Panhia Yang

## **MISSISSIPPI**

### **The University of Southern Mississippi, Douglas Masterson**

Doug Masterson  
Wujian Mia

### Summer I

Caleb Faulkner  
Su-Hwan Paul Lee

## **MISSOURI**

### **Kansas City Section ACS, Eckhard Hellmuth**

Xiaobo Chen  
James Darig  
Aron Fenton  
Lincoln Maina  
Nathan Oyler

University of Missouri Kansas City

### Summer I

Taylor Adair  
Sheree Dorsey  
Sang Lau  
Charles Paquet  
Thuong Nguyen

# 2012 Project SEED Programs

## Mentors

**University of Missouri - Saint Louis, Keith Stine**

Janet Wilking

## **MONTANA**

**University of Montana, Earle Adams**

Ed Rosenberg

## **NEBRASKA**

**The University of Nebraska Medical Center, Ashlie Nelson**

Matthew Kelso

R. Lee Mosley

Amarnath Natarajan

William Rizzo

## **NEW JERSEY**

**Bayonne High School, Marie Aloia**

Marie Aloia

New Jersey Institute of Technology

**Boonton High School, Mina Armani**

Bruce Bukiech

Svetlana Sukhishvili

New Jersey Institute of Technology

Stevens Institute of Technology

**East Orange Campus High School, Sherene Stephens**

Urs Jans

Cecilia Marzabadi

Donald Schafener

Nicholas Snow

Tracy Tran

Mark Whitener

City College of New York

Montclair State University

Rutgers University

Seton Hall University

**Fairleigh Dickinson University, Marion McClary**

Marion McClary

Fairleigh Dickinson University

## Students

### Summer I

Ashley Franks

### Summer I

Instan Tanner

### Summer I

Damian Catlin

Mauricio Davila

Arelica Guerrero

Marcus McKenzie

LaRae Mottl

An Nguyen

Salomon Ramirez

### Summer I

John Mankarious

Mina Shnoudah

### Summer I

Jet Gao

Edwin Ramirez

### Summer I

Mike Adarkwah

Anthony Arredando

Jamella Braithwaite

Jacqueline Chou

Edmund Korley

Judeline Noelvi

### Summer I

Sarah-Belle Elia

### Summer II

Mary Garah



# 2012 Project SEED Programs

## Mentors

## Institutions/Coordinator

## Students

### **Fordham University, Susan Fahrenholtz**

Bishambar Dayal  
Lisa Klein  
Jenny Lockard  
David Ribnicky  
George Yap

Columbia University  
New Jersey Institute of Technology  
Rutgers University  
UMDNJ-New Jersey Medical School

### Summer I

Wilssy Martinez  
Jironia Noelui  
Nanaama O'Hene  
Kripalben Patel

### Summer II

Houston Clerizier  
Daifalla Moumani  
Mina Youssef

### **High Tech High School, Nina Lavlinskaia**

Woo Young Lee  
Svetlana Sukhishvili

Stevens Institute of Technology

### Summer I

Erica Butts  
Antoinette Robustelli

### **New Brunswick Health Sciences and Technology**

#### **High School, Andre Bridgett**

Karl Matthews  
Lawrence Williams

Rutgers University, Food Science

### Summer I

Ana Santiago

### Summer II

Haja Sannoh

### **New Jersey City University, Kenneth Yamaguchi**

Deborah Freile  
Anh Truong  
Kenneth Yamaguchi

### Summer I

Christopher Quispe  
Gissela Vega  
Jimmy Villafuerte

### **New Jersey Institute of Technology, Reginald Tomkins**

Willis Hammond  
Michael Jaffee

### Summer I

Victor Chiliquinga

### Summer II

Billy Aguinaga  
Edwin Rivas

### **New Jersey Institute of Technology, Renee Crawley**

Rene Crawley  
N. M. Ravindra  
Gordon Thomas  
Tao Wi

### Summer I

Shirley Aramayo  
Shadai Cunningham  
Eric Gardner  
Nikki-Ann Moulton

### Summer II

Tabitha Noel

# 2012 Project SEED Programs

## Mentors

## Institutions/Coordinator

## Students

### **North Jersey Local Section, ACS, Bernice Feuer**

Gloria Anderel  
Luis Avila  
Marat Duru  
Thomas Hartman  
N. Ramasubbh  
Xiaojun Yu

Columbia University  
Fairleigh Dickinson Univ., Becton College  
Rutgers University  
Stevens Institute of Technology  
UMDNJ

### Summer I

Juan Cordero  
Hany El-Adle  
Joyce Elias  
Cesar Rodriguez

### Summer II

Syonna Alexander  
Jabriel Jaludi

### **North Jersey Local Section, ACS, Bobbi Gorman**

James White

Rutgers, State University of New Jersey

### Summer I

Concepcion Astudillo

### Summer II

Mara Olivares

### **Orange High School, Gail Van Ekeren**

Alexis Rodriguez  
Donald Schaffner

Rutgers University

### Summer II

Rachel Chatterpaul  
Cristi Santiago

### **Princeton University, Rodney Priestley**

Rodney Priestley

Princeton University

### Summer I

De'Andre Allen  
Barry Johnson

### **Ramapo College of New Jersey, Carol Frishberg**

Sarah Canberry  
Sandra Suarez

### Summer I

Mahruza Choudhury  
Luisanna Lugo  
Zakiy Muhammad  
Ruth Sanchez

### **Rider University, Danielle Jacobs**

Bruce Burnham  
Danelle Jacobs

### Summer I

Joseph Kparway  
Amparo Pozos-Gonzales  
Snivam Sabharwal

### **Rowan University, Gregory Caputo**

Timothy Vaden  
Lei Yu

### Summer I

Fredrick Perry III  
Eduardo Beltran

---

## 2012 Project SEED Programs

<u>Mentors</u>	<u>Institutions/Coordinator</u>	<u>Students</u>
<b>Rutgers University, Piscataway, Shaneika Nelson</b> John Brennan David Case Alan Goldman Ralf Warmuth Lawrence Williams		<b><u>Summer I</u></b> Lucero Arevalo Marjorie Castro Tomas Giraldo  <b><u>Summer II</u></b> Keoho Lim Misael Martinez
<b>Rutgers University, Newark, W. Huskey</b> Agostino Pictrangelo		<b><u>Summer I</u></b> Veronique Raczkiewicz
<b>Rutgers, The State University of NJ, Deborah Stalling</b> Yaoping Lu Nanjoo Suh Renping Zhou		<b><u>Summer I</u></b> Angelica Morales  <b><u>Summer II</u></b> Heidi DeLeon Karina Guaman
<b>Saint Peter's College, Wei-Dong Zhu</b> Weidong Zhu		<b><u>Summer II</u></b> Vania Durand Josselyn Gomez
<b>Science Park High School, Mridula Bajaj</b> George Collins Huixih He Trevor Tyson	New Jersey Institute of Technology Rutgers University	<b><u>Summer I</u></b> Ashley Hemnarine Josselyn Gomez Danielle Peact
<b>Seton Hall University, Cecilia Marzabadi</b> Cecilia Marzabadi Mehmet Sahiner Nicholas Snow John Sowa		<b><u>Summer I</u></b> Chelsie Riche Chiamaka Udoye Nnedinma Udoye  <b><u>Summer II</u></b> Glendy Soriano Diborah Yimer

# 2012 Project SEED Programs

## Mentors

## Institutions/Coordinator

## Students

### **UMDNJ Foundation, Yaakov Saturen**

Rinki Chauhan  
Tongbao Liu  
John Mavrianos  
Ayiasha Pratt  
Gloria Rodriguez  
James Theis

Public Health Research Institute

### Summer I

Deseree Anderson  
Ysamerlyn Gonzalez  
Mufasa Johnson  
Shante Larry  
Afia Obeng  
Stephanie Njeru  
Kabine Traore

### **UMDNJ-Medical School, Allene Johnson**

Daniel Bunker  
Murat Duru  
David Ribnicky  
Alexander Sobolevsky

Columbia University  
New Jersey Institute of Technology  
Rutgers University

### Summer I

Elizabeth Ceballos  
Young Hun Kim  
Yanet Marroquin  
Al-Lisa Murray

### Summer II

Joshua Parrales

## **NEW MEXICO**

### **New Mexico Highlands University, Carol Linder**

Carol Linder

### Summer II

Sean Lujan

## **NEW YORK**

### **Ellis Preparatory Academy, Jeremy Heyman**

Adam Braunschweig  
Daniela Buccella  
Jeff Morris  
Colin Nuckolls  
Nate Traaseth  
Mike Ward

Columbia University  
City College of New York

### Summer I

Oumou Barry  
Andres Flamenco  
Jose Remigio  
Kelvin Saldana-Rivera  
Jerson Valerio  
Katherine Vallejo

### **George Washington Carver High School for the Sciences, Janice Sutton**

Alison Hyslop

St. Johns University

### Summer I

Monet Schultz  
Ashley Walters

### **Prospect Park Alliance, Charmion Browne**

Joshua Cheng  
Dereck Skeeta

Brooklyn College  
Medger Evars College

### Summer I

Mamadouramata Bah  
Jamon Davis  
Saran Keira



# 2012 Project SEED Programs

## Mentors

## Institutions/Coordinator

## Students

### **Rochester Local Section, ACS, Lea Michel**

Gabrielle Gaustad

Rochester Institute of Technology  
Golisano Institute Sustain

### Summer I

Omega Christian

### **Sarah Lawrence College, Colin Abernethy**

Colin Abernethy  
Mali Yin

### Summer I

Nicholas Villanueva

### Summer II

Maria Mendoza

### **Union City High School/AEA, Nadia Makar**

David Apigo  
Treena Arinzeli  
Mare Cohen  
Prad Dingari  
Alan Futran  
Gregory Herzog  
Ryan Hinrichs  
Alokik Kanwal  
Philip Leopold  
Matthew Libera  
Philip Leopold  
James Link  
Jose Lopez  
Luisa Marcos  
Mary Ann Pearsall  
James Simon  
Stravoula Sofou  
James Simon  
Gordon Thomas  
Charles Zhou

Beth Israel Medical Center  
Drew University  
Montclair University  
New Jersey City University  
New Jersey Institute of Technology  
New York University  
Princeton University  
Rutgers University  
Seton Hall  
Stevens Institute of Technology

### Summer I

Dolly Basaldua  
Mavelyn Boza  
Stephanie Cuaycong  
Naya Garrido  
Claudia Gutierrez  
Julmar Holguin  
Gabriela Lage  
Arleni Liriano  
Fabian Mantilla  
Angie Molina  
Jezabel Nunez  
Sherilyn Nunez  
Angie Orejuela  
Kailyn Rodriguez  
Kevin Romero  
Iroshi Seneviratna  
Eddie Torres

### Summer II

Karla Erazo  
Kimberly Perez  
Kaylee Saltos

## **NORTH CAROLINA**

### **North Carolina Local Section, ACS, Kenneth Cutler**

Louise Ball  
David Beraton  
Elena Jakubikova  
Leslie Sombers  
Alan Tonelli

Duke University  
North Carolina State University  
University of North Carolina at Chapel Hill

### Summer I

Asha Bethea  
Miles Ndukwe  
Karlton Pugh  
Carlos Rivera  
Michael Zhou

# 2012 Project SEED Programs

## Mentors

## Institutions/Coordinator

## Students

### **North Carolina Local Section, ACS, Kenneth Cutler (continued)**

Jeffrey Yoder  
Qiu Wang

### Summer II

Jonathan Chan  
Eben Evbuomwan

### **University of North Carolina - Charlotte, Tom Schmedake**

Marcus Jones  
Jordan Poler  
Daniel Rabinovich  
Michael Walter

### Summer I

Aubrei Fowler  
Wai Lam  
Victor Morales-Diaz  
Colton Overson

## **OHIO**

### **Akron Section-ACS, Tama Drenski**

Abraham Joy  
Jia Li  
David Modarelli  
George Newkome  
Chrys Wesdemiotis

University of Akron

### Summer I

Myeisha Fry  
Jeremy Hatler  
Roseanna Helmick  
Malik Scales

### Summer II

Amal Almahd  
Nasia Brown

### **Case Western Reserve University, Carlos Crespo-Hernandez**

Carlos Crespo-Hernandez  
Lei Zhu

### Summer I

Julie De La Pena  
Omar Mahmoud

### Summer II

Jonathan Rodriguez  
Briana Sealey

### **University of Cincinnati, Hairong Guan**

Michael Baldwin  
Adam Bango  
Hairong Guan  
Anna Gudmundsdottir  
Supapore Kradtap-Hartwell  
James Mack  
Peng Zhang

University of Cincinnati  
Xavier University

### Summer I

Thomas Houston  
Levi Kirby  
Daryl Ringwood

### Summer II

Patrick Carr



# 2012 Project SEED Programs

## Mentors

### **The Forensics Mentors Institute, Barry Logan**

Apisri Ieamniramit  
Brittany Pasierb  
Sarah Muller

### **University of Pennsylvania, James McGonigle**

Rocio del A Cardona-Couvertier  
Russell Composto  
Robert Hickey  
Na Zhang

## **PUERTO RICO**

### **University of Puerto Rico, Ingrid Montes**

Carlos Cabrera  
Nestor Carballeira  
Jorge Colon  
Jose Prieto

## **RHODE ISLAND**

### **Brown University, Timothy Herbert**

Rocio Caballero-Gill	Brown University
Timothy Herbert	University of Rhode Island

### **University of Rhode Island, Mindy Levine**

Mindy Levine  
Brett Lucht

## **SOUTH CAROLINA**

### **University of South Carolina, Chuanbing Tang**

Brian Benicewicz  
Sophya Garashchuk  
Linda Shimizu  
Chuanbing Tang

## Institutions/Coordinator

## Students

### Summer I

Stephen Cancel  
Dominique Mason  
Borat Tan  
Lauren Wray

### Summer I

Rebecca Irizarry  
Mattie Gaye  
Mazi Richburg

### Summer II

Tianna Whalen-Whiting

### Summer I

Kamylle Lamboy-Cruz  
Leysa Lopez-Gonzalez

### Summer II

Brian Colon  
Valerie Colon-Ramirez  
Francisco Martinez

### Summer I

Sara Barrios  
Lester Vega

### Summer II

Sage Cohen  
Ella DeMarco

### Summer I

Eboni Drake  
Cody Maddox  
William McAdams  
Tina Monzavi



# 2012 Project SEED Programs

## Mentors

## Institutions/Coordinator

## Students

### University of South Carolina, Chuanbing Tang (continued)

Hui Wang  
Qian Wang

### Summer II

Kimberly McRae  
Matthew Wirth

## TENNESSEE

### The University of Memphis, Ted Burkey

Ted Burkey  
Xiaohua Huang  
Xuan Zhao

### Summer I

Brian Hoffman  
Jordan Jackson  
Nedas Jakstas

## TEXAS

### Greater Houston Local Section, Carolyn Burnley

Hua-Jun Fan  
Elmer Ledesm  
Michael Matson  
Ognjen Miljanic  
Remi Oki  
David Thompson

Prairie View A&M University  
Sam Houston State University  
University of Houston  
University of St. Thomas

### Summer I

Kevin Aitch  
Oshae Cartwright  
Chelsea Harris  
Annie La  
Christine Mai  
Arnold Rollings

### Summer II

Kevin Baltazar  
Antonio Carrillo  
Cristina Coronado  
Jerome Lore  
Luis Rodriguez  
Shybrion Tyler

### San Antonio Local Section, ACS, E. Robert Fanick

Maoqi Feng  
Adeola Grillo  
Vicky Poenitzch,  
Sushma Ramsinghani  
Zachary Tonzetich  
Marilyn Wooten

Trinity University  
Southwest Research Institute  
University of the Lucarnate Word  
University of Texas San Antonio

### Summer I

Dillon Adams  
Monette Cardona  
Erica Deckert  
Iz'Mon Treigh Pierce  
Cristian Verdi

### Summer II

Salvador Echeveste  
Zhen Mei

### Texas Tech University, Christopher Bradley

Chris Bradley

### Summer I

Sherry Lin

# 2012 Project SEED Programs

## Mentors

## Institutions/Coordinator

## Students

### **University of Texas at El Paso, Luis Echegoyen**

Luis Echegoyen

### Summer II

Luis Gardea

### **University of Texas at Tyler, Neil Gray**

Blake Bextine

Neil Gray

Tanya Shtoyko

### Summer I

Matthew Coker

Melisa Flores

Katrina Tilaon

### **William B. Travis High School, Jack Jones**

Jon Pierce-Shimomura

University of Texas at Austin

Christopher Sullivan

### Summer I

Jacqueline Landa

Noel Villegas

### Summer II

Alfredo Serrato

## VERMONT

### **University of Vermont, Rory Waterman**

William Geiger

Matthew Liptak,

Jose Madalengoitia

Gluseppe Petrucci

Rory Waterman

### Summer I

Antoine Masereka

Dylanger Pittman

Deo Pokhrel

Prabin Sharma

Chi Zhou

## WEST VIRGINIA

### **Marshall University, Brian Day**

Brian Day

Derrick Kulling

Michael Norton

### Summer I

Ciana Crawford

Tatiana Mickles

Dakota Nicely

### **West Virginia School of Osteopathic Medicine, Kristie Bridges**

Kristie Bridges

### Summer II

Margaret Hower

Sabrina Vance

## WISCONSIN

### **Medical College of Wisconsin, Michael Mathias**

Neil Hogg

### Summer I

Cha Lee

### Summer II

Annie Yang

---

## 2012 Project SEED Programs

### Mentors

### Institutions/Coordinator

### Students

#### **University of Wisconsin-Milwaukee, A. Andrew Pacheco**

Andrew Pacheco  
Marius Schmidt

#### **Summer I**

Gabriella Johnson  
Quaevion Smith

#### **University of Wisconsin-Stevens Point, Mike Zach**

Mike Zach

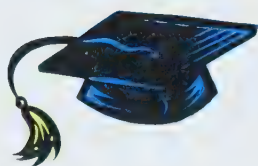
#### **Summer I**

Pahoua Cheng



### **Project SEED Mission Statement**

“To assure that students from economically disadvantaged backgrounds have opportunities to experience the challenges and rewards of chemically-related sciences.”



## 2012-2013 Project SEED College Scholarship Recipients

The Project SEED College Scholarship is a one-year nonrenewable scholarship for Project SEED participants entering their freshman year majoring in a chemical science field. In 2012, twenty-nine students who have demonstrated a high potential to succeed in chemistry were awarded the college scholarships for the 2012-2013 academic year. Congratulations to the recipients of College Scholarships, the ACS Committee on Project SEED wishes all students continued success in their future careers.

**Alfred and Isabel Bader:** Alfred Bader is one of the founders of the Aldrich Chemical Company (1951), which is now Sigma-Aldrich Company. Alfred and Isabel Bader have generously contributed to the Project SEED program since 1992, established the Project SEED Summer II Program, and provided first year college scholarships to over 260 Project SEED Alumni.

**Ashland Inc.** is a leading global company which provides specialty chemicals, technologies and expertise to customers worldwide.

**The Bayer Foundation** contributed to the Project SEED Endowment. Bayer is a research based company with major businesses in health care and life sciences as well as chemicals and imagining technologies. Since 1993, Bayer has supported 60 SEED Alumni in their freshman year in college.

**CIBA Specialty Chemicals** is a leading global producer to performance and protection effects that improve customers' products. Prior to the company's acquisition by BASF, The Ciba Foundation made a generous legacy gift to the American Chemical Society to establish the Ciba Specialty Chemicals Scholars Endowment, a new element added to the SEED college scholarship program. Nine first-year SEED college scholarship recipients will receive scholarships for the remaining three years of their chemical science degree programs.

**The Estate of Elizabeth Ernest Fosbinder:** Wife of late ACS member, Dr. Russel J. Fosbinder, stipulated the establishment of an endowment in honor of Dr. Fosbinder to fund college scholarships for graduates of Project SEED. Since 2004, fourteen scholarships have been awarded.

**Glenn and Barbara Ulliyot:** Glenn Ulliyot worked for Smith, Kline & French Laboratories. He was a major contributor to the discovery and manufacture of new drugs to the medical world. Barbara Ulliyot had a management career at ACS and was a valuable member. Glenn and Barbara provided 28 college scholarships to Project SEED students over their lifetime.

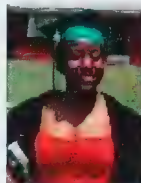


# Alfred and Isabel Bader Scholars



## ALYSSA CHARBONEAU

High School: Mount Abraham Union High School, Bristol, VT  
 SEED Institution: University of Vermont, Burlington, VT  
 SEED Mentor: William Geiger  
 Research Title: Production of Tetrapentylammonium TFAB and [NBu<sub>4</sub>][BARF<sub>24</sub>]  
 University/College Major: Northeastern University, Boston, MA - Pharmacy Major



## AYOLAH IBEZIM

High School: White Station High School, Memphis, TN  
 SEED Institution: University of Memphis, Memphis, TN  
 SEED Mentor: Abby Parrill  
 Research Title: Autotoxin Inhibition Screening to Identify Autotoxin Inhibitors  
 University/College Major: Boston University, Boston, MA - Biochemistry/Molecular Biology Major

## VALERIE COLON-RAMIREZ

High School: University Garden High School, San Juan, PR  
 SEED Institution: University of Puerto Rico, San Juan, PR  
 SEED Mentor: Jose Prieto  
 Research Title: Studies Toward the Synthesis of the Polypropionate Chain of Mycalolide A: Epoxide-based Approach  
 University/College Major: University of Puerto Rico Recinto de Rio Piedras, PR - Pharmacology

## AMINUL ISLAM

High School: Cass Technical High School, Detroit, MI  
 SEED Institution: Wayne State University, Detroit, MI  
 SEED Mentor: Thomas Bobovski  
 Research Title: Synthesis of Starting Material for Novel Resorufin Attached N<sub>4</sub>Py Ligand  
 University/College Major: University of Michigan, Ann Arbor, MI - Chemistry Major



## MONICA DUPLER

High School: South High School, Pueblo, CO  
 SEED Institution: Colorado State University, Pueblo, CO  
 SEED Mentor: Sandra Bonetti  
 Research Title: The Isolation of Exocellular Fungal Hydrolases from Non-Glucose Media  
 University/College Major: Colorado State University, Fort Collins, CO - Chemistry Major



## SUNNY LEE

High School: Oakland Technical High School, Oakland, CA  
 SEED Institution: Chevron Oronite LLC, Richmond, CA  
 SEED Mentor: Ken Nelson  
 Research Title: Testing of an Experimental ZnDTP  
 University/College Major: University of California, Santa Barbara, CA Biochemistry Major

## SOANY HEREDIA

High School: Union City High School, Union City, NJ  
 SEED Institution: University of Medicine and Dentistry of New Jersey, Newark, NJ  
 SEED Mentor: Robert Wieder  
 Research Title: The Mammosphere Repopulating Efficiency of Dormant Breast Cancer Cells  
 University/College Major: Stevens Institute of Technology, Hoboken, NJ - Biochemistry Major



## MEI YUN LI

High School: Oakland Technical High School, Oakland, CA  
 SEED Institution: USDA, ARS, WRRRC, Berkeley, CA  
 SEED Mentor: Luisa Cheng  
 Research Title: Development of a Zebrafish Embryo Toxicity Test for the Detection of Toxin Contaminants  
 University/College Major: San Jose State University, CA - Biochemistry Major



## MARI VASQUEZ HERNANDEZ

High School: Bloomington High School, Bloomington, IL  
 SEED Institution: Illinois State University, Normal, IL  
 SEED Mentor: Marjorie Jones  
 Research Title: Photodynamic Effects of Porphyrinoids with Leishmania tarentolae  
 University/College Major: Creighton University, Omaha, NE - Biochemistry Major



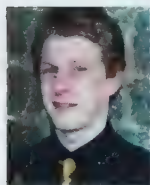
## ALISON LOGIA

High School: Sequoia High School, Redwood City, CA  
 SEED Institution: Stanford University, Stanford, CA  
 SEED Mentor: Travis Walker  
 Research Title: Developing Small Molecule Probes to Study Apoptosis in Cancer & Huntington's Patients  
 University/College Major: Stanford University, Stanford, CA - Chemical Engineering Major

## Bader Scholars

### SEAN LUJAN

High School: Robertson High School, Las Vegas, NM  
SEED Institution: New Mexico Highlands University, Las Vegas, NM  
SEED Mentor: Carol Linder  
Research Title: GOLGA3 Protein Chemistry  
University/College Major: New Mexico Institute of Mining and Technology, Socorro, NM – Biochemistry Major



### DEVON OVERSON

High School: North Bergen High School, North Bergen, NJ  
SEED Institution: Stevens Institute of Technology, Hoboken, NJ  
SEED Mentor: Athula B. Attygalle  
Research Title: Synthesis and Actuation of Hybrid Nanostructures  
University/College Major: Brigham Young University, Provo, UT – Biochemistry Major

### SHRUTI PATEL

High School: Union City High School, Union City, NJ  
SEED Institution: Rutgers University, Piscataway, NJ  
SEED Mentor: Paul E Thomas  
Research Title: Can the exporter gene, mcjD from Microsin J25 substitute for capD in the production of Capistrain?  
University/College Major: Rutgers University, New Brunswick, NJ – Pharmacy Major

### TUONG PHAM

High School: Mira Mesa High School, San Diego, CA  
SEED Institution: The Scripps Research Institute, La Jolla, CA  
SEED Mentor: Pilakowski  
Research Title: Histone Deacetylase (HDAC) Inhibitors as Potential Therapeutics for Huntington's Disease  
University/College Major: University of California, Berkeley, CA – Biochemistry Major



### GWYNNDOLYN PRUCE

High School: West Valley High School, Fairbanks, AK  
SEED Institution: University of Alaska, Fairbanks, AK  
SEED Mentor: William A. Howard  
Research Title: Photo-Sensitive, Redox-Active Ancillary Ligands  
University/College Major: University of Florida, Gainesville, FL – Chemistry Major

### MARLEN RAMIREZ

High School: Union City High School, Union City, NJ  
SEED Institution: State Univ. of New Jersey, New Brunswick, NJ  
SEED Mentor: Jim Simon  
Research Title: Chemical Analysis and Medicinal Properties of *Artemisia annua*  
University/College Major: Rutgers University, New Brunswick, NJ – Chemistry Major

### DEMETRIUS RANDOLPH

High School: Buena Vista High School, Saginaw, MI  
SEED Institution: Saginaw Valley State University, Saginaw, MI  
SEED Mentor: Stephanie Brouet  
Research Title: Synthesis of Potential Antibiotic Compounds  
University/College Major: Central Michigan University, Mt. Pleasant, MI – Chemistry Major

### MORRET THANG

High School: Southport High School, Indianapolis, IN  
SEED Institution: IUPUI, Indianapolis, IN  
SEED Mentor: Brenda Blocklock  
Research Title: Cloning of a Putative Fatty Acid Desaturase from *Dictyostelium discoideum*  
University/College Major: Wabash College, Crawfordsville, IN – Chemistry Major

### CHRISTIAN UGAZ

High School: Union City High School, Union City, NJ  
SEED Institution: Princeton University, Princeton, NJ  
SEED Mentor: A.J. Link  
Research Title: Utilizing Unnatural Amino Acids to Stabilize Proteins  
University/College Major: Saint Peter's University, Jersey City, NJ – Biochemistry Major

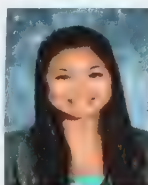
### NICHOLAS UGAZ

High School: Union City High School, Union City, NJ  
SEED Institution: Princeton University, Princeton, NJ  
SEED Mentor: Mark Brynildsen  
Research Title: Investigation of Persisted Metabolic Activity  
University/College Major: Fairleigh Dickinson University, Teaneck, NJ – Chemistry Major

## Ashland Scholars

### ASHLEY AIKEN

High School: Delcastle Technical High School, Wilmington, DE  
SEED Institution: University of Delaware, Newark, DE  
SEED Mentor: Thomas Epps  
Research Title: Preparation of Block Copolymer Thin Films: Combining Spin Coating and Interferometry  
University/College Major: University of Delaware, Newark, DE  
Biochemistry/Forensic Science Major



### ASHLEY TEOW

High School: Sylvania Southview High School, Sylvania, OH  
SEED Institution: The University of Toledo, Toledo, OH  
SEED Mentor: Anderson  
Research Title: The Use of Headspace Solid-phase Micro extraction with On-Fiber Derivatization Coupled to Gas Chromatography to Improve the Chromatographic Resolution of Chiral Compounds  
University/College Major: The University of Toledo, Toledo, OH – Chemistry Major



## Bayer Scholars



### BILLY AGUINAGA

High School: Union City High School,  
Union City, NJ  
SEED Institution: New York University,  
New York, NJ  
SEED Mentor: James Canary

Research Title: Change in Peptide's  
Secondary Structure Serves as Copper Sensor  
University/College Major: Fairleigh Dickinson University,  
Teaneck, NJ – Chemistry Major



### BISHOY FANOUS

High School: Bayonne High School,  
Bayonne, NJ  
SEED Institution: New Jersey Institution of  
Technology, Newark, NJ  
SEED Mentor: Marie Aloia

Research Title: Coated vs. Uncoated:  
Characterization Pharmaceutical Blends  
University/College Major: The College of New Jersey, Ewing, NJ  
– Chemistry Major



### MINA YOUSSEF

High School: New Brunswick High School,  
New Brunswick, NJ  
SEED Institution: Rutgers University, New  
Brunswick, NJ  
SEED Mentor: David Ribnicky

Research Title: Measuring the Effects of Food  
Matrices on the Bioaccessibility Anti-Diabetic Botanicals Using  
the TNO Gastro-Intestinal Model  
University/College Major: Rutgers University, New Brunswick,  
NJ – Chemistry Major

## CIBA Scholars



### NICIA FLIKWEERT

Niecia Flikweert is a sophomore at Calvin  
College, Grand Rapids, MI, she will graduate  
in 2015. Niecia is very dedicated to the field  
of biochemistry and is very excited to  
continue her education within the sciences.



### SI LI

Si Li is a sophomore at the Boston University.  
She is majoring in chemistry and will  
graduate in 2015. After her freshman year in  
the university, she decided to continue her  
studies in the medical field.



### MARC MANKARIOUS

Marc Mankarious is a sophomore at Rutgers  
University, Newark, majoring in chemistry.  
Marc stated that Project SEED provided  
opportunity, influence and experience.  
Through it, he developed a passion for  
chemistry, chose a career path as a chemist,  
and experienced how it felt to research, experiment and develop.

## Fosbinder Scholars

### EMAD MIQBEL

High School: Union City High School, Union City, NJ  
SEED Institution: Princeton University, Princeton, NJ  
SEED Mentor: Howard Stone  
Research Title: The Front Instability During Wound Healing  
University/College Major: Rutgers, the State University of NJ,  
New Brunswick, NJ – Chemistry Major

### BIAK CHIN PAR

High School: Southport High School, Indianapolis, IN  
SEED Institution: Indiana University-Purdue University,  
Indianapolis, IN  
SEED Mentor: Bruce D. Ray  
Research Title: Structural NMR of Hen Egg White Ovomucoid, a  
Glycosylated Kazal Family Serine Proteinase Inhibitor  
University/College Major: Indiana University Purdue University  
Indianapolis, IN – Chemistry Major

## Ullyot Scholar

### VINCENT LI

High School: Galileo Academy of Science & Technology, San  
Francisco, CA  
SEED Institution: University of California, Berkeley, CA  
SEED Mentor: James Schnable  
Research Title: Characterization of Unannotated Synthetically  
Conserved Gene Fragments in the Grasses  
University/College Major: Middlebury College, Middlebury, VT –  
Chemistry Major

## Project SEED Scholar



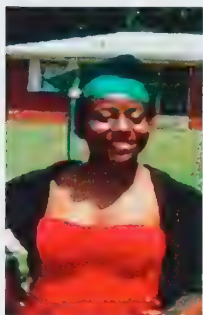
### JAMICHAEL WILLIAMS

High School: Hancock Central High School,  
Sparta, GA  
SEED Institution: Georgia College & State  
University, Milledgeville, GA  
SEED Mentor: Rosalie Richards  
Research Title: Synthesis of a Water-Soluble

Octobrominated Cobalt Porphyrin  
University/College Major: Georgia College & State University,  
Milledgeville, GA – Chemistry Major

## Mentor and Student Testimonies

### Ayolah Ibezim



"I really enjoyed performing experiments in the lab. I have always been interested in the field of criminal justice. Knowing that I can handle working in a chemical lab all day long analyzing results for an experiment tells me that I will be able to work in a criminal investigation lab analyzing evidence all day long. I loved working in the chemical lab; I feel that I will love working in the criminal investigation lab."

**Abby Parrill, Ph.D., University of Memphis—Mentor:** "Ayolah learned a great deal about protein structure and the energetics of protein-ligand complex formation during her work on this project. She was able to evaluate over 40,000 candidate molecules with her modeling and then perform the experimental bioassays on the 50 that were selected for experimental assays. Ayolah displays an excellent ability to learn new skills and techniques, and to interpret the results of her efforts. Ayolah works hard, thinks about her work and its meaning, and takes constructive criticism well."

*Ayolah is a Biochemistry and Molecular Biology Major at Boston University, MA*

### Mari Vazquez-Hernandez



"My experience during Project SEED both years was very enjoyable. I was able to get an inside look on what perhaps college may be like. As a high school student, I was able to experience real research that I designed myself. After Project SEED, I am determined to acquire a higher-level education and pursue a career in the science field, which may include chemistry and biochemistry. I would love to travel the world to do research and discover new things. Project SEED has influenced my college decisions because it introduced me into a world I was very unfamiliar with, a world of endless research possibilities that awaits me in the next few years."

**Marjorie Jones, Ph.D., Illinois State University—Mentor:** "During both summers Mari did research with the protozoan parasite *Leishmania*, which required her to learn a lot of techniques involved with growing these cells in culture, evaluating their growth using spectroscopy, and testing a series of compounds for their inhibitory effects on cell growth. She interacted well with others in the lab and always was careful about her lab safety and chemical hygiene. She also was not discouraged when things did not work out in her research, and she was able to begin problem solving to see how to 'fix' research problems. Her communication skills are very good. She was patient and helpful, and her explanations were well formulated."

*Mari is a Biochemistry Major at Creighton University, NE*



## JaMichael Williams



"I have always had an interest in the field of science. As an early teenager, I decided that one of my career choices in life would be to become a pharmacist. My experiences with the Project SEED Program led me to an increased curiosity into science and the chemistry of how things work and affect the environment. This curiosity push me to want to become a pharmacist even more by introducing me into porphyries and other chemicals that may one day prevent disease and contribute to society. The program helped me to overcome my fears of public speaking and presenting while also teaching me the proper way to form research papers and write reports. For me, Project SEED wasn't only an internship, but an educational experience that will have a lifelong effect on me."

**Rosalie Richards, Ph.D., Georgia College & State University – Mentor:** "Over the course of the two summers that JaMichael has conducted research in my labs, I have come to recognize his rare combination of heart, leadership, and talent. He meticulously expanded his research project to delve into the synthesis of a family of porphyries for the design of potential drugs for the photodynamic therapy of cancers. We could rely on JaMichael to lead research discussions and demonstrate techniques and concepts. He completed tasks as assigned but with the level of detail akin to that of a graduate student. Plus, JaMichael is humble, pleasant, fun, and respectful of others at all times."

JaMichael is a Chemistry Major at Georgia College & State University, Milledgeville, GA

## Bishoy Fanous



"My Project SEED research experience was basically research on coated vs. uncoated in characterizing pharmaceutical blends. This helped me choose my career in the future as an anesthesiologist because they deal with many pharmaceutical drugs and preoperative medicine, which I am interested in learning about and dealing with in the future. Also, chemistry interests me the most out of all the other sciences because of the way it involves both math and science. The way chemical experiments work is what attracts me the most to chemistry."

**Marie Aloia, New Jersey Institute – Mentor:** "Although I acted as mentor and supervisor, he was the type of student that would step up to the job and become my co-worker. Bishoy quickly learned every experimental procedure and how to operate all the lab equipment we were required to use. He could make changes to recipes and procedures, and adjust equipment whenever needed to complete our research. He could work directly with my supervisors when I was not available. At the end of the season, his project was rated in the top-third of all the Project SEED student projects at our Northern New Jersey end-of-season presentations."

Bishoy is a Chemistry Major at The College of New Jersey, Ewing, NJ

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## Billy Aguinaga



"During my time at NYU, I worked on a project that allowed me to familiarize myself with several aspects of working in a lab and most importantly reinforced my interest in chemistry. Throughout the course of eight weeks, I was humbled by my lack of understanding about some of the aspects of laboratory procedure and even chemistry. I had erroneously believed that I had a complete understanding of the subject and found myself feeling completely unprepared. However, I was not deterred but rather motivated. I want to continue my studies in chemistry. While working in the laboratory, I was inspired by the motivation and knowledge of the people I worked with during the summer. ACS Project SEED made it possible for me to work at an NYU laboratory, an opportunity that I would not have otherwise and certainly didn't expect.

Learning is a lifelong task, but Project SEED made me realize that I want to devote the next couple of years of my life to learning chemistry."

**James Canary, Ph.D., New York University – Mentor:** "Working with graduate student Xiaojian Wang, he undertook a project on the development of helical peptides that could act as sensors for metal ions. He completed his assigned portion of the project very effectively, obtaining positive results. Billy showed very strong interest in chemistry. He was very inquisitive and asked many questions, seeking to learn all the details of his experiment. He was very effective and helpful, and we are sure that he will continue to be successful in his future endeavors."

*Billy is a Chemistry Major at Fairleigh Dickinson University, NJ*

## Mei Yun Li



"From my experience as a Project SEED intern, I have opened up to the option of being a researcher. Before the internship, I had only aimed to be a nurse. I now am more aware and open to different careers in my future. I want to explore the possible jobs I can get in the field of science. My mentor has taught me that some things will take a while, but it would be worth it in the end. I understand that a long time is quite short as long as I enjoy what I do. I never thought that I would stay in school for another decade to get a high position for a job; but, I now believe that it is okay in obtaining the degree I want. The hands-on experience and having to give a presentation about what I did made me feel proud to tell others. I felt like a real researcher as well as an adult during the internship. I had fun and learned a lot."

**Luisa Cheng, Ph.D., Western Regional Research Center, Albany, CA – Mentor:** "Mei Yun was quite shy at first and a little overwhelmed with all the new information, tasks, and people. She adjusted quickly and was very patient even when the project did not proceed as quickly as anticipated. She very diligently worked with us to figure out problems and optimize the new assay. Mei Yun is meticulous in her work processing fish embryos, making detailed observations. She also worked very hard on her report and oral presentation and asked some very thoughtful questions. I enjoyed working with Mei Yun tremendously. She reminded me a lot of myself as a new immigrant student struggling to navigate a new language, culture, and school system. Through these challenges, she has remained humble. Mei Yun definitely has the potential to do well. She has the determination and work ethic to succeed in college. I am very proud of her and am grateful to Project SEED for the opportunities you provide these bright young people."

*Mei-Yun is a Biochemistry Major at San Jose State University, CA*



## Monica Dupler



“Project SEED has enhanced my view of chemistry in ways I would have never expected. I was always aware of the value of chemistry, but I oftentimes allowed seemingly mundane class assignments to overshadow its true influence. Even the research project I was honored to collaborate with could in time drastically change the quality of life for countless people all over the world. Because of this opportunity, I now wish for my career to bring me as much inspiration and joy that I’ve experienced in my time researching at Project SEED, and I will continue to strive for that goal. In the end, my nerves directed me on the path to the greatest lesson of all: confidence. Despite any initial fears, I’ve gained the self-assurance and the passion to seek out the answers that I personally desire to know the most. This confidence extends beyond the lab, giving me the ability to make clear decisions about my future. Thank you, ACS, for the life-changing lessons and amazing opportunity.”

**Sandra Bonetti, Ph.D., Colorado State University – Mentor:** “I have known Monica for 20 months and have had the wonderful opportunity to serve as her mentor on two (Project SEED I and II) biochemical research projects for the past two summers. As a faculty mentor to more than 50 undergraduate, graduate, and high school students in research, I believe that mentoring Monica and watching her develop as a scholar and scientist has been one of the most gratifying experiences I have had in my 20 years at Colorado State University, Pueblo. Her work ethic and maturity surpass that of many of her peers and college students I have known. I look forward to her future achievements and successes.”

Monica is a Chemistry Major at Colorado State University, CO

## Alison Logia



“Project SEED has impacted my life in the best way possible. This program not only gave me the avenue through which I have gained one of my life’s biggest accomplishments, it also allowed me to financially support my family while discovering what I love. My amazing experiences from my internship were the main reason I chose to become a chemical engineer. My Project SEED mentor has become a friend and role model as well as a scientific mentor, and my time spent on Stanford’s campus has been life-changing. Project SEED changed my life.”

**Travis Walker, Stanford University, CA – Mentor:** “Alison is very motivated to learn as she continues to make time in her busy athletic and philanthropic schedule to complete her research. However, I believe that Alison’s biggest attribute is her curiosity to explore the physical world. She has an amazing mind and an outstanding drive and devotion to learning. I have mentored many individuals through various programs, and I have learned that mentoring high school students can be challenging. Mentoring Alison has been nothing but a pleasure. She provides an extra set of inquisitive eyes and a curious mind that consistently has offered insightful questions to our research. Having Alison as a student reassures my view that the passing of knowledge to the next generation is the most important goal of a scientist.”

Alison is a Chemical Engineer Major at Stanford University, CA

# Speaking from the Lab

## Summer I Students



"I absolutely loved Project SEED, and I would absolutely recommend it to anyone who likes science and wants to learn more about it. In just a couple of weeks, I learned more than I would in a year of school because of the hands-on experiences that Project SEED provided. Thank you so much." *Tina Monzavi, SC*

"I not only enjoyed the science but also the people. This opportunity was such a great experience, and I would do it all over again in a heartbeat. Everyone in my lab helped me so much. I learned a great deal of science but also life lessons in general. I feel like because of this chance I was given through Project SEED, I was more prepared for my senior year, but also for college as well. This experience also helped me mature over the summer."

*Joy Brittney, IN*

"I learned a lot during my internship at the University of Portland. I recommend this program to any high school student who wants to get more science experiences before attending college, because this program gives you a quick overview of what to expect in the world of science. My summer rocked because I was doing what I always dreamed of. I would like to thank ACS for letting us participate in this program."

*Florence Nzaniye, OR*

"It was truly a life-changing experience. Going through this program has reinforced my decision to go along with my plans of acquiring a career in chemistry or science in general."

*Luis Martinez, IA*

"This has been a great experience of the real world of science, and it has given me a better perspective on what I want to pursue as a career."

*Monette Cardona, TX*

"Project SEED is an amazing opportunity for high school students. This program opens new doors to students who want to pursue a science-related field. I strongly recommend this program. Without this program, a great deal of students would not have any idea how research works. Thank you."

*Christopher Quispe, NJ*

"This program helped me develop a new thinking about what I want to study and how science is helpful to society. It exceeded all my expectations."

*Angelica Morales, NJ*

"Project SEED is the best program for high school students."

*Al-Tahbee Hassan, MI*

"Excellent program that broadened my perspective on the world and guided me onto the path of scientific study."

*Davis Le, CA*





# Speaking from the Lab

## Summer II Students

Project SEED students returning for a second summer of research.

"Project SEED is an excellent program to help develop analytical skills that are required in collegiate studies. Working in a college lab is truly different from high school lab work. While high school sciences focus on a broad range of subjects — working in a lab with graduate students allows the student to use instruments that will never be available to the average high school student."

*Philip Mui, OH*



"I am really glad that I was able to be a part of this program for two years in a row. These past two summers have been memorable, and now I feel a little more prepared for the future and what's ahead, thanks to Project SEED."

*Julie Nguyen, CA*

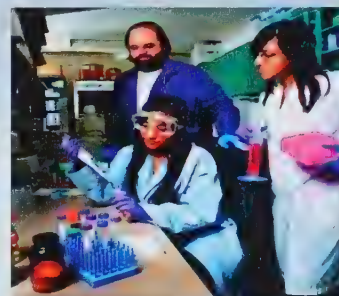
"Project SEED is an excellent program. I learned many advanced scientific techniques. I also felt like I doubled the knowledge that I received from my chemistry class. I am very proud that I was selected for not just one summer, but two. I was very pleased and would recommend this program to any eligible student in a heartbeat!"

*Nasia Brown, OH*



"The time I spent at Dr. Jorge Colon's laboratory has helped me reinforce, and put into practice, what I learned in my science courses throughout high school, and I have also learned new things. I have developed research and laboratory skills unknown to a majority of high school students. In addition, it has provided me with a head start on research experience, which is very important when applying to different programs and internships."

*Francisco Martinez, PR*



"Project SEED is a great summer experience!" *Gabriel Pauling, NC*

"Very good opportunity to participate in independent research." *Matthew Wirth, SC*

"I had a great time the past two summers. Thank you for letting me experience research first-hand. I hope this program keeps expanding successfully."

*Antonio Carrillo, TX*

"This program was vital in helping me adjust to a college work ethic." *Vincent Smarra, PA*

"Project SEED was a beneficial experience and has solidified my plan of pursuing a scientific career." *Ronald Whetstone, AL*

"Project SEED opened my eyes to a world of opportunity and education in the field of science."

*Vania Durand, NJ*

"Nothing is better than spending your summer learning new things, meeting new people, and taking on challenging tasks, because that's truly a memorable experience." *Huong Tran, CA*

**Project SEED Students  
Presenting at 2012 Sci-Mix Event  
244<sup>nd</sup> ACS Fall National Meeting, Philadelphia, PA**

Project SEED students from Delaware, Georgia, New Jersey, New York, and Pennsylvania local sections presented their summer research projects to hundreds of attendees at the ACS annual Sci-mix poster session.



Photo by Linda Wang, C&EN, ACS

**Delaware**

Tahj Boston  
Aliyah Hodge  
Markia Smith

**Georgia**

Clarisa Hernandez

**New Jersey**

Mike Adarkwah  
Billy Aguinaga  
Heidi DeLeon  
Vania Durand  
Sarah-Belle Elia  
Karla Erazo  
Mary Garah  
Josselyn Gomez

**Edmund Korley**

Joseph Kparway  
Angelica Morales  
Sherilyn Nunez  
Afia Obeng  
Kimberly Perez  
Amparo Pozos-Gonzales  
Edwin Rivas  
Kevin Romero  
Shivam Sabharwal  
Kaylee Saltos  
Iroshi Seneviratna  
Glendy Soriano  
Chlamaka Udoye  
Gissela Vega  
Jimmy Villafuerte

**New York**

Jacqueline Chou  
Hany El-Adle  
Monet Schultz  
Riise Taylor  
Nicholas Villanueva  
Ashley Walters

**Pennsylvania**

Dominique Mason  
Maria Mendoza  
Borat Tan  
Chelsea Weidaw  
Lauren Wray



## Project SEED Student Survey Results

The students were asked several questions about their educational and occupational aspirations to see if their experience in the Project SEED program influenced their career path. The questionnaire was designed to evaluate whether Project SEED is serving economically disadvantaged youth, its target population and whether the program is meeting its goals. Of the 338 students in the Summer I program, 322 students returned their questionnaires and all 93 students in the Summer II program returned their questionnaires. Some of the results of the study are as follows:

Student Gender	Summ I	Summ II	Total %
Male	133	57	46%
Female	189	36	54%

Demographics by Ethnicity	Summ I	Summ II	Total %
Native American	2	0	0%
Asian or Pacific Islander	64	19	20%
African American (Non-Hispanic)	97	20	28%
Hispanic	89	37	30%
White (Non-Hispanic)	47	11	14%
Other (Non-Hispanic)	23	6	8%

Family Income Level	Summ I	Summ II	Total %
\$6,999 or Less	89	22	20%
\$7,000 to \$16,000	58	19	13%
\$17,000 to \$25,000	66	23	15%
\$26,000 to \$35,000	190	18	10%
\$36,000 or more	46	11	6%

State Demographics	Summ I	Summ II
Alabama	4	1
Arizona	0	0
Arkansas	0	0
California	44	18
Colorado	0	0
Delaware	5	0
District of Columbia	2	0
Florida	1	2
Georgia	10	0
Idaho	3	0
Illinois	7	0
Indiana	18	5
Iowa	2	1
Kansas	3	0
Louisiana	4	1
Maryland	6	1
Massachusetts	4	1
Michigan	20	4
Minnesota	6	0
Mississippi	2	0
Missouri	3	0
Montana	1	0
Nebraska	7	0
New Hampshire	0	0
New Jersey	75	24
New Mexico	0	1
New York	13	3
North Carolina	13	2
Ohio	18	6
Oregon	2	1
Pennsylvania	11	4
Puerto Rico	2	3
Rhode Island	4	0
South Carolina	4	2
Tennessee	2	0
Texas	15	9
Vermont	5	0
Virginia	2	1
Washington	0	0
West Virginia	3	2
Wisconsin	3	1
TOTAL	322	93

# Project SEED Student Survey Results

Overall, how would you rate your Project SEED experience?	Summ I	Summ II	Total %
Excellent	250	81	80%
Good	66	10	18%
Fair	6	2	2%

How likely is it that you will become a scientist?	Summ I	Summ II	Total %
Excellent	158	57	52%
Good	116	25	34%
Fair	44	7	12%
Poor	4	4	2%

Student Research Sites	Summ I	Summ II	Total %
Industrial Laboratory	75	19	23%
Medical Laboratory	36	2	9%
Government Laboratory	21	7	7%
Academic Laboratory	190	65	61%

Students Agreed that Project SEED Helped:	Summ I	Summ II	Total %
Develop skills and abilities	307	90	96%
Develop self-confidence	269	86	86%
Develop responsibility	307	88	95%
Understand the ethical behavior of scientists	289	86	90%
Develop better study habits	212	71	68%
Learn what advance study is like	301	92	95%
Decide to continue my education after high school	297	89	93%
Choose a college major	197	66	63%
Decide to pursue a career in science	226	76	73%
Develop greater interest in scientific/technical areas	285	85	89%

How much education do you expect to complete?	Summ I	Summ II	Total %
Some College	58	22	19%
Vocational, Trade	0	0	0%
2-year College	2	0	.50%
4-year College	54	6	14.5%
Graduate/Professional School	208	65	66%

College Majors	Summ I First Choice	Summ II First Choice	Total %
Agriculture	12	0	3%
Architecture	5	1	1%
Astronomy	3	0	1%
Biology & Life Sciences	50	18	16%
Business & Commerce	5	2	2%
Chemistry	66	24	22%
Communications	0	0	0%
Computer Sciences	5	0	1%
Earth Sciences	1	1	0%
Education	8	1	2%
Engineering	39	14	13%
Foreign Languages	0	0	0%
Health Professions	39	7	11%
Home Economics	1	0	0%
Language and Literature	0	0	0%
Library Science	0	0	0%
Mathematics	7	5	3%
Military Sciences	1	0	0%
Pharmacy Sciences	0	0	0%
Philosophy	3	1	1%
Physics	5	2	2%
Social Sciences	0	0	0%
Technical & Vocational	46	13	14%
Other	26	4	7%



---

# Major Contributors to the Project SEED Program

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Dan Florin Stoicescu

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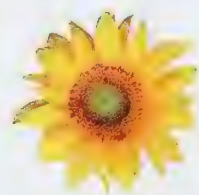
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## GIFTS OF HONORARIA

Sharon Haynie

\*Gifts made in December 2011

## Thanks to Our Contributors



The ACS Project SEED program would like to extend a special thanks to those who continue to contribute to the success of the program. Many thanks to our members, friends, foundations, and corporate donors for allowing us to accomplish the program's mission.

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West Virginia School of Osteopathic Medicine, WV

### Memorial Gifts

#### Dr. Marjam Behar

Dr. Marjam Behar, an ACS member for 52 years, was a longstanding Project SEED mentor and coordinator for a local Project SEED program. She overcame many obstacles to lead a fulfilling scientific career and was passionate about helping others to do the same. This year, contributions made in her memory will provide two Project SEED stipends in 2013.

#### Dr. Anita Brandolini

Dr. Anita Brandolini was an active member of the ACS and its North Jersey Section. She was a member of the Committee on Project SEED and the Committee on Public Relations and Communications. In 2011, she was named a Fellow of the American Chemical Society. In her memory, the North Jersey Section is establishing an annual Project SEED Award to be given to an outstanding high school student at the annual Project SEED Poster Session held in September.

#### Dr. James (Jim) Manner

Dr. James Manner was a member of the Project SEED Committee and an enthusiastic fundraiser for Project SEED in the Pittsburgh area. Jim was a chair of the Society of Analytical Scientists of Pittsburgh (SACP), a member of the Spectroscopy Society of Pittsburgh, a counselor and member of the American Chemical Society, and served on the Board of the Directors for Pittcon.



# Project SEED Endowment Named Scholars

Named stipend scholarships established through individual and corporate contributions to the ACS Project SEED Endowment.

## **Clayton E. Callis (2)**

Students: Taylor Adair, Sheree Dorsey  
SEED Site: Univ. of Missouri Kansas City, MO

## **Ciba SEED Scholars (6)**

Students: Tahj Boston, Victor Morales-Diaz, Aubrei Fowler, Markia Smith, Riise Taylor, Jerson Valerio

SEED Sites: City College of New York; NY, University of Delaware, DE, University of North Carolina, Charlotte, NC

## **William J. Dulmage (1)**

Student: Mina Shnoudah  
SEED Site: New Jersey Inst. of Technology, NJ

## **The Glaxo Foundation (15)**

Students: De'Andre Allen, Erica Butts, Joyce Elias, Tomas Giraldo, Aliyah Hodge, Barry Johnson, Wai Lam, Colton Overson, Fredrick Perry III, Karlton Pugh, Keith Richard, Carlos Rivera, Antoinette Robustelli, Ruth Sanchez, Nicholas Villanueva

SEED Sites: Duke University, NC, Georgia State University, GA; North Carolina State University, NC, Princeton University, NJ; Ramapo College of New Jersey, NJ, Rutgers University, NJ, Sarah Lawrence College, NY, Stevens Institute of Technology, NJ; University of Delaware, DE, University of North Carolina Charlotte, NC; Rowan University, NJ

## **John C. Haas (1)**

Student: Rebecca Irizarry  
SEED Site: University of Pennsylvania, PA

## **Milton Harris (1)**

Student: Seong Jang  
SEED Site: George Washington University, DC

## **Henry A. Hill (1)**

Student: Ladan Aden  
SEED Site: Stonehill College, MA

## **Rao Makineni (12)**

Students: Cathleen San Marcos, Mary Tran, Michelle Tran, Vivian Tran, Hau Truong, Eric Truong, Kristy Verma, Van Vo, Shakyari Williams, Eileen Wu, Qianwen Zhang, Eddy Zheng

SEED Sites: University of California-Davis, CA; Chevron Energy Technology Company, CA; L&L Dental Ceramics, CA; San Francisco State University, CA; Chevron Products Company, CA; University of California-Merced, CA; California State University-East Bay, USDA Western Research Center, CA; University of the Pacific, CA

## **Donald F. & Mildred Topp Othmer (32)**

Students: Lucero Arevalo, Anthony Arredando, Concepcion Astudillo, Mamadouramata Bah, Oumou Barry, Eduardo Beltran, Victor Chiliquinga, Omega Christian, Jamon Davis, Sarah-Belle Elia, Andres Flamenco, Naya Garrido, Ana Santiago, Sarah Keira, Joseph Kparway, John Mankarious, Angelica Morales, Al-Lisa Murray, Nanaama O'Hene, Angie Orejuela, Danielle Peact, Amparo Pozos-Gonzales, Christopher Quispe, Jose Remigio, Chelsie Riche, Snivam Sabharwal, Kelvin Saldana-Rivera, Chiamaka Udoeye, Ashley Walters, Katherine Vallejo, Gissela Vega, Jimmy Villafuerte

SEED Sites: Rochester Institute of Technology, NY; Medgar Evers College, NY; Brooklyn College, NY; Rutgers University, NJ; UMDNJ-New Jersey Medical School, NJ; New Jersey Institute of Technology, NJ; Rowan University, NJ; Rider University, NJ; Seton Hall University,

# Project SEED Endowment Named Scholars

## Donald F. & Mildred Topp Othmer (continued)

SEED Sites: NJ; New Jersey City University, NJ; Fairleigh Dickinson University, NJ; St. John's University, NJ; New York University, NY; City College of New York, NY; Columbia University, NY

## John D. Roberts (1)

Student: Joseph Maglio  
SEED Site: Stonehill College, MA

## Rohm and Haas Corporation (10)

Students: Acealeyah Dothard, Thomas Houston, Nicole Ishimwe, Omar Mahmoud, De Jonette Morehead, Cheryle Reve, Amaris Rodgers, Daryl Ringwood, Shannon Sharp, Darian Wilson

SEED Sites: Youngstown State University, OH; Xavier University, OH; University of Cincinnati, OH; Case Western Reserve University, OH; University of Toledo, OH

## Vincent A. Sedlak (7)

Students: Myeisha Fry, Jeremy Hatler, DuShuan Headd, Roseanna Helmick, Jennifer Koehl, Malik Scales, Philip Mui

SEED Sites: University of Toledo, OH; University of Akron, OH

## Horace and Thelma Selby (15)

Students: Stephen Cancel, Dwayne Coleman, Mattie Gaye, Emily Janicki, Dominique Mason, Victoria Muir, Mazi Richburg, Borat Tan, Charles Thornton, Aaron Trischler, Vincent Smarra, Chelsea Weidaw, Tianna Whalen-Whiting, Lauren Wray, Haniyyah Wheeler

SEED Sites: Duquesne University, PA, Forensics Mentors Institute, PA, University of Delaware, DE, University of Pennsylvania, PA

## Anne K. Silver (2)

Students: Keiley Bakhtiar, Sang Lau

SEED Sites: University of Kansas Medical Center, KS; Wichita State University, KS

## Beth Anne Walden Memorial Fund (1)

Student: Sherry Lin  
SEED Site: Texas Tech University, TX

## Xerox Corporation (1)

Student: Young Hun Kim  
SEED Site: Columbia University, NY

## Kang Yang (1)

Student: Antonio Carrillo  
SEED Site: Sam Houston State University, TX

## Other Award Scholars

### Albert T. Winstead (4)

Students: Elizabeth Travis-Hall, Vivian Mensah, Brian Tran, Alejandra Torres-Diaz

SEED Sites: Georgetown University, DC, George Washington University, DC, John Hopkins University, MD; University of Maryland Eastern Shore, MD

### Ellis K. Fields (12)

#### National Travel Award

Students: Billy Aguinaga, Heidi DeLeon, Vania Durand, Karla Erazo, Mary Garah, Josselyn Gomez, Maria Mendoza, Kimberly Perez, Edwin Rivas, Kaylee Saltos, Glendy Soriano, Chelsea Weidaw

SEED Sites: Duquesne University, PA, Fairleigh Dickinson University, NJ, New Jersey Institute of Technology, NJ, Princeton University, NJ, Rutgers, the State University of New Jersey, NJ, Saint Peter's College, NJ, Sarah Lawrence College, NJ, Seton Hall University, NJ, Stevens Institute of Technology, NJ

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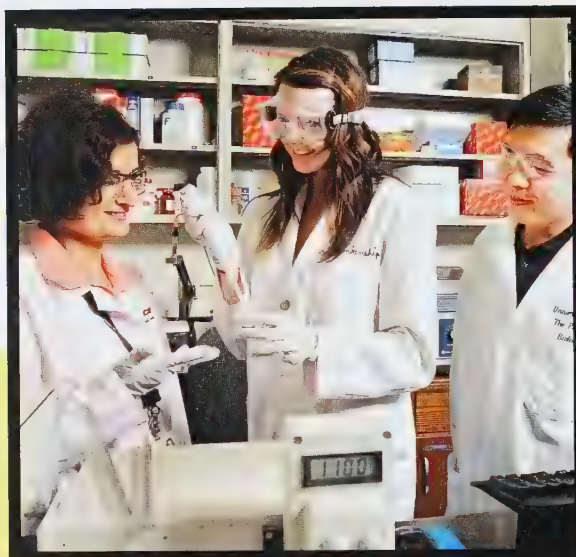
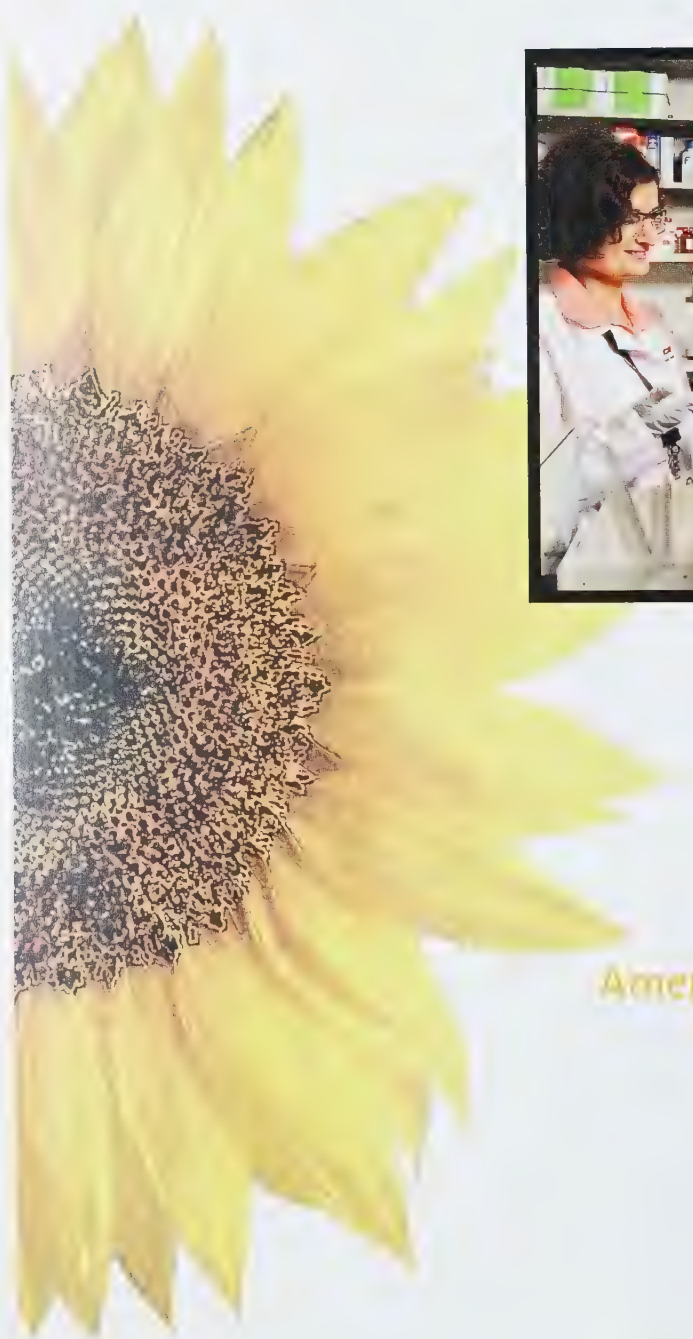
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January 30, 2015

Drs. Alfred and Isabel Bader  
2961 N Shepard Avenue  
Milwaukee, WI 53211-3435

Dear Alfred and Isabel,

Thank you for your support of Project SEED! I am pleased to enclose the 2014 Program Summary. As you read the names, testimonials and accomplishments of Project SEED students, please remember that this is made possible because of you, our invaluable donor (listed on page 36).

Last summer, 423 financially disadvantaged high school students were able to imagine a different path for their future. These students experienced the day-to-day life of a chemist by learning how to conduct research in a professional laboratory setting, perform experiments adhering to individual safety and policy procedures, and prepare oral and written presentations to communicate their findings to the public. This leads to a key aspect of the program, an increase in self-confidence.

Mentor, Paul Boswell, commented on the positive change in his student. "Without her experience in the SEED program, there's a strong possibility that, despite her good grades and smarts, she wouldn't have felt comfortable going into a science field in college. The SEED program gave her exposure to a career in science, confidence in her scientific abilities, and research experience that very few high school students get."

Thank you again for your contribution which provides talented young people the chance to see new opportunities in the field of science through real-world settings.

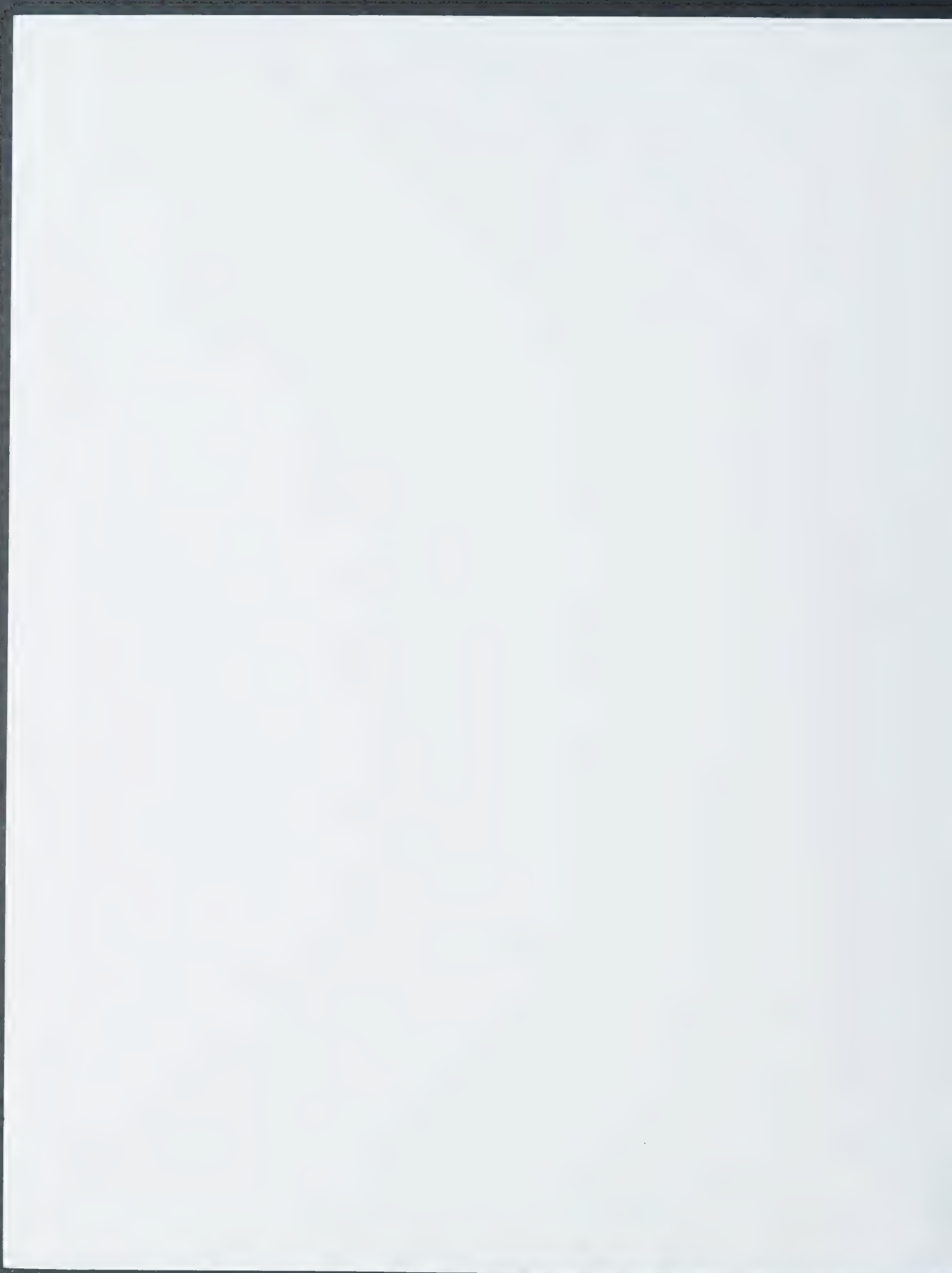
Sincerely,

Mary Bet Dobson  
Assistant Director

*As always, your commitment to the Bader Scholars for Project SEED students is deeply appreciated.*

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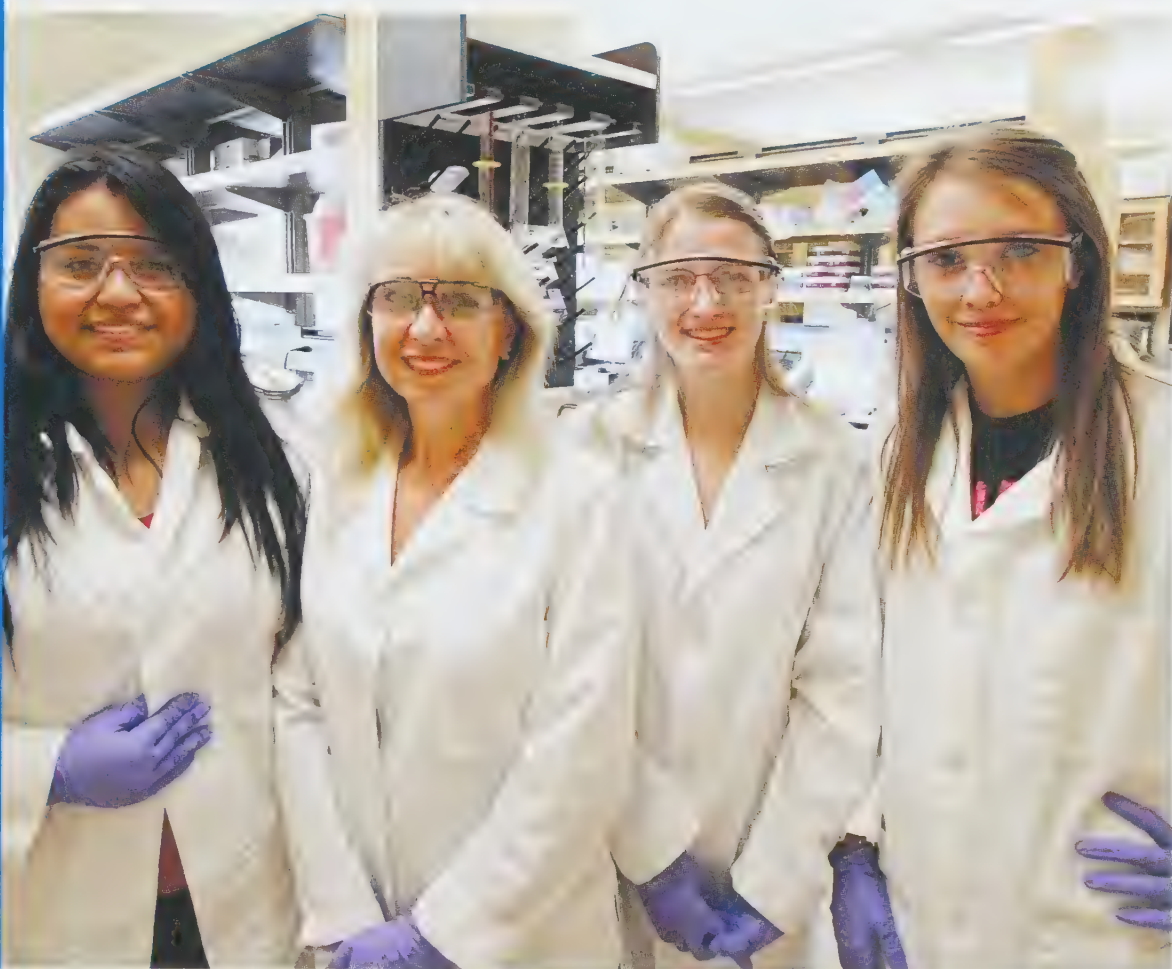
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# Project SEED

## Program Summary

Hands-On Research for  
High School Students



# 2014







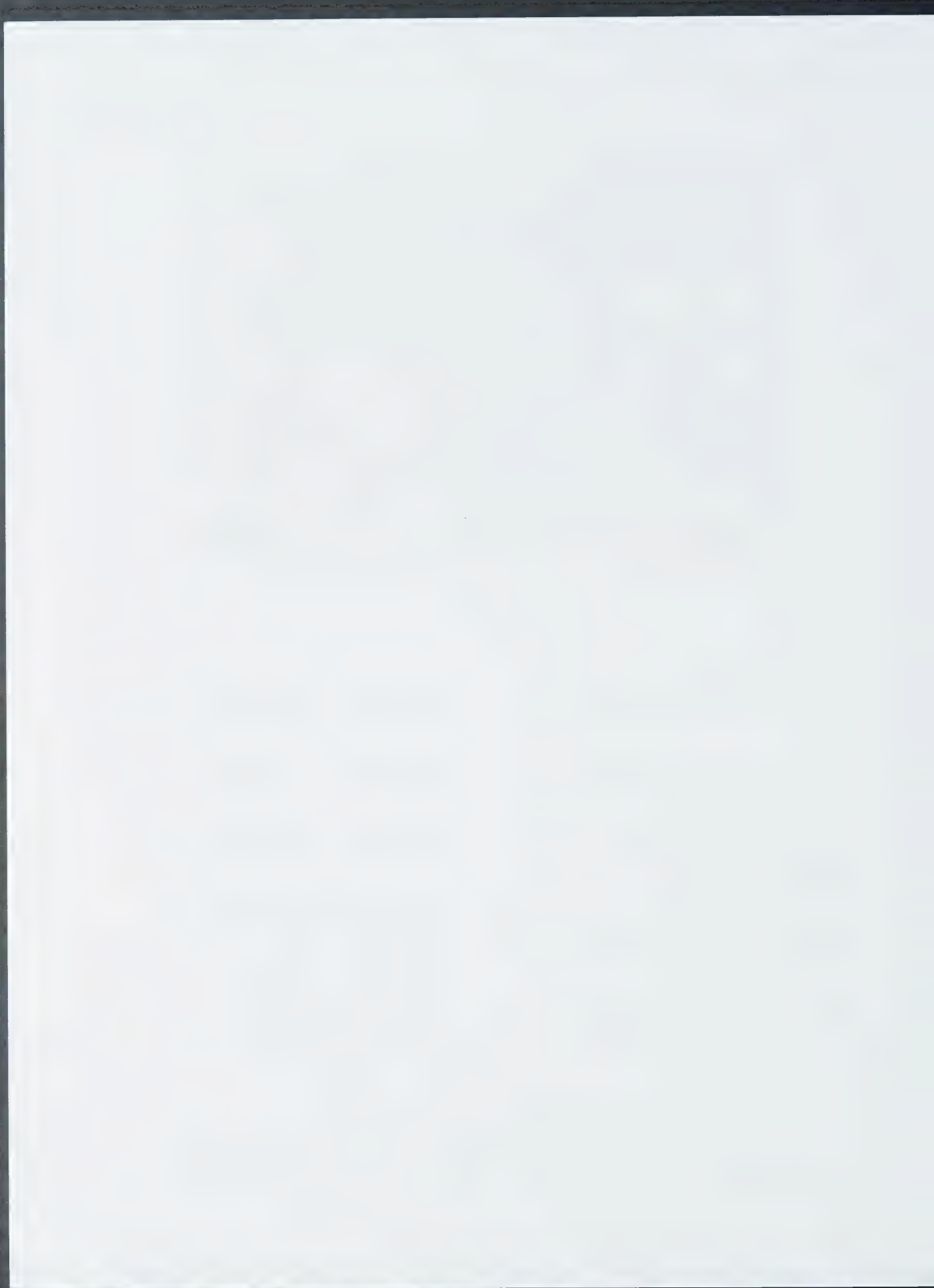
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### Project SEED Mission Statement

"To assure that students from economically disadvantaged backgrounds have opportunities to experience the challenges and rewards of chemically-related sciences."



# Project SEED

## Executive Summary

Project SEED, a program of the American Chemical Society (ACS), enables economically disadvantaged high school students to participate in summer research projects and realize their potential to pursue higher education. Since its inception, the program has placed nearly 9,700 students in academic, industrial, and governmental laboratories for 8 to 10 weeks during the summer. Students work with nearly 500 volunteer scientists and receive individualized attention as each mentor supervises only one or two students.

This was another successful year for Project SEED: a total of 423 students participated, 291 of whom were Summer I students and 132 of whom were Summer II students. This represented the highest participation of Summer II students in the history of the program. Students were mentored by 468 volunteer scientists and coordinators in 140 institutions in 37 states, the District of Columbia, and Puerto Rico. The impact of Project SEED is apparent in the feedback from the 418 participants who responded to an exit questionnaire about their summer experiences. 98% of the participants stated that they discovered the ability to learn new skills, 84% felt that Project SEED was successful in improving their self-confidence, 90% noted that they developed a greater interest in scientific and technical areas, and 80% reported that their overall experience helped them decide to pursue a career in science.



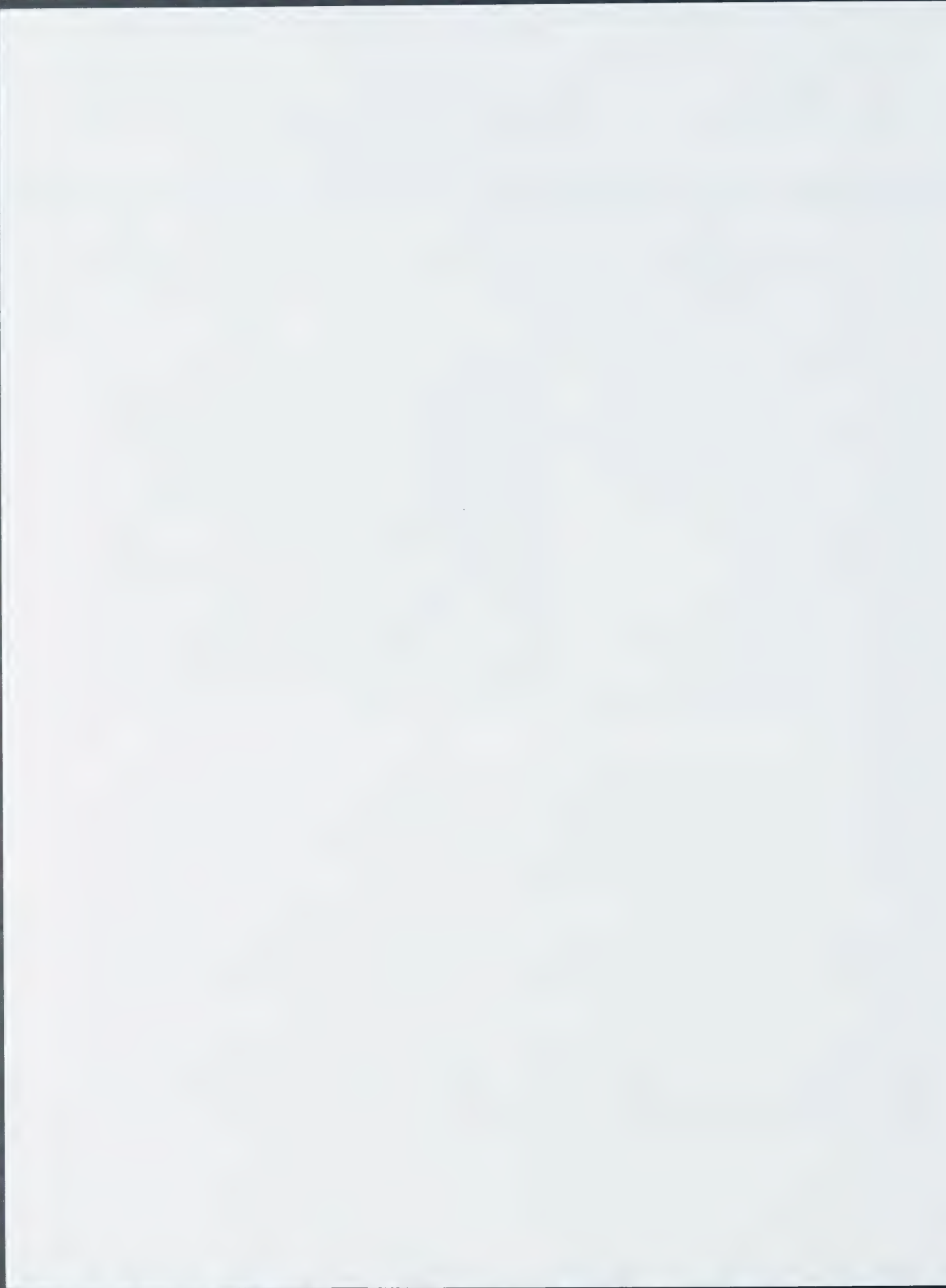
Greater Houston Local Section

Nineteen students from California, Pittsburgh, Portland, and the Snake River Local Sections, and from Clark Atlanta, Stanford, and Western Kentucky Universities presented their Project SEED research projects at the Sci-Mix poster session at the ACS fall national meeting in San Francisco. (See page 33.) The total student stipend was \$1,023,500, supported through funding received from the ACS Project SEED Endowment, industries, foundations, academic institutions, ACS local sections, and ACS friends and members. (See pages 36–39.) ACS provided student stipends and paid all administrative costs.

Since 1993, the Project SEED program has awarded more than 550 non-renewable college scholarships to Project SEED alumni entering their freshman year in college. In 2014, 28 students (See pages 22–26) pursuing careers in a chemical science received this award. These scholarships of up to \$5,000 were funded through the continuing generosity of Alfred and Isabel Bader, Ashland Inc., the Bayer Foundation, the Russel J. Fosbinder Endowment, and the Glenn and Barbara Ulyot Endowment.

Project SEED continues to make a difference in the education and lives of thousands of high school students who demonstrate an interest in chemistry. On behalf of the ACS, the staff, and the Project SEED Committee, thank you to our volunteer mentors and coordinators, their supporting institutions, our friends and members, and our financial supporters. We are grateful for your support, your generosity, and your commitment to helping in the success of our high school students!





# 2014 Project SEED Summer I & II Programs

## Mentors/Coordinators

## Institutions

## Students

### ALABAMA

#### Jacksonville State University, Nixon Mwebi

Jan Gryko  
Nixon Mwebi  
Al Nichols

Nixon Mwebi

#### University of Alabama, Huntsville, Emanuel Waddell

Emanuel Waddell

### ARIZONA

#### Northern Arizona University, Suman Sirimulla

Matthew Gage  
Jani Ingram

### CALIFORNIA

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Yong Ba  
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Florence Wu

Aemtek, Inc.

Marlin Halim  
Chul Kim

California State University, East Bay

Ken Nelson, Lea Cleary  
Michael Adams  
Kaustav Chaudhuri  
Andrew Thomas  
Madeleine Sessions

Chevron Oronite Company LLC

#### Summer I

Daizhara Hoyett  
Carrie Jamison  
Gwendell Thomas

#### Summer II

Stephanie Benefield

#### Summer II

Keyana Lewis

#### Summer I

Lauren Gregg  
Alexis Parks

#### Summer I

Jose Acuna  
Martin Alcaraz  
Stephanie Castellon  
Kimberly Perez

#### Summer I

Omar Gomez  
Elisha Nealy  
Marcus Lewis  
Samantha Montes

#### Summer II

Angel DeLeon  
David Galvan

#### Summer I

Jia Yu

Josue Chaves Montes  
Jennifer Law

Carmela Gonzalez  
Andrea Hernandez  
Daisy Ledezma  
Abigail Serrano

## 2014 Project SEED Summer I & II Programs

Mentors/Coordinators	Institutions	Students
Mike Long	Chevron Products Company	Duong Huynh
Elaine White	Creative Energy Foods, Inc.	Valerie Ngo Ho
Gennady Borinshteyn Jeanine Boskovich	Libby Labs	An Tat
Andrew Ichimura	San Francisco State University	Cameron Kong Laili Lily Xie Carter Ly Li Xu
Weiming Wu Zheng-Hui He		
Patrick Morrison	Smith-Emery Company	Brandon Chan
Andy LiWang Erik Menke Jay Sharping Jing Xu Hrant Hratchian Matthew Meyer	University of California, Merced	Leonor Alcaraz-Guzman Kevin Dutra Hannah Kim Martha Vasquez-Guzman James Willis Mary Xiong
O. Sparkman Ryan Moffet, Mark Brunell Roshanak Rahimian Jerry Tsai	University of the Pacific, Stockton	Yannett Avila So Her Sereena Nand Rajada Ealey Hildelisa Espinoza
Jianchi Chen Gary Banuelos Spencer Walse Chris Wallis Sean Gordon	USDA-ARS Water Management Research Lab.	Alfredo Arroyo Christian Garcia Rodrigo Renteria Sylvia Rodriguez Eriberto Tadeo
Yuzhu Zhang	USDA-ARS Western Research Center	Thao Pham-Vu
Yaya Zhu Michael Cheng Toni Miao Tao Wei	Chevron Energy Technology Company	<b><u>Summer II</u></b> Carina Dimas Claudia Gutierrez Van Huynh Petro Shevtchenko
Jonathan Moore	Chevron Oronite Company LLC	Tsz Yan (Nancy) Ng
Kenneth Forbes	Nexeo Solutions, LLC	Ramiro Guzman Parra
Weiming Wu	San Francisco State University	Adelaide Jem
Olayinka Olatunji-Ojo	University of California, Berkeley	Timothy Chung
Patti LiWang	University of California, Merced	Amy Vang

# 2014 Project SEED Summer I & II Programs

## Mentors/Coordinators

## Institutions

## Students

Jianhua Ren  
Ryan Moffett

University of the Pacific, Stockton

Denisha Hill  
Tosha Monroe  
Melissa Zaragoza

Sarah Throne

USDA-ARS Western Research Center

Silvia Xie

Betty Burri

Western Human Nutrition Research

Jade Tso

### **Stanford University, Kaye Storm**

Emily Hollenbeck  
Nathan Luehr

### **Summer I**

Adela Palominos  
Wilbur Shi

Fernando Novoa  
Yewchin Teo

### **Summer II**

Vi Le  
Maria Nguyen

### **The Scripps Research Institute, Dawn Eastmond**

**Co-coordinator – Nathalie Earley**

Valery Fokin

### **Summer I**

Rayyan Aburajab

Kurt Wuthrich  
Pedro Serrano-Navarro

### **Summer II**

Marchelle Meza  
William Wey

### **University of California, Davis, Shota Atsumi**

Louise Berben  
Kirill Kovnir

### **Summer I**

Carolina Banales  
Ali Keyani

Shota Atsumi  
Susan Kauzlarich

### **Summer II**

Pangying Her  
Aiza Tariq

### **University of California, Riverside, Jingsong Zhang**

**Co-coordinator – Dennis Pederson**

Jingsong Zhang

### **Summer II**

Katherine Gonzalez

## COLORADO

### **Colorado State University, Pueblo, David Dillon**

Sandra Bonetti

### **Summer I**

Mario Cruz

Sandra Bonetti  
Matthew Cranswick

### **Summer II**

Carisa Medina-Abrajan  
Brooklynn Trujillo



# 2014 Project SEED Summer I & II Programs

Mentors/Coordinators	Institutions	Students
----------------------	--------------	----------

## DELAWARE

**University of Delaware, College of Engineering, Melissa Jurist**  
**Co-coordinator – Michael Vaughan**

Karl Booksh  
 Thomas Epps

### Summer I

Paulina Cortez  
 William Esteves

**DuPont Central Research & Development, Sharon Haynie**  
 Sharon Haynie

### Summer II

Justin Simmons

## DISTRICT OF COLUMBIA

**Chemical Society of Washington, ACS, Ajay Mallia**

Zeeshan Ahmad

National Institute of Standards

### Summer I

Khazar Choudhry

David Yang  
 Rodrigo Maillard  
 Richard Weiss

Georgetown University

Kishawn Love  
 Kaitlyn Marsh  
 Andy Zhang

Michael Massiah  
 Kaveh Jorabchi  
 Hanning Chen  
 Akos Vertes

George Washington University

Mesgana Dagnachew  
 Feven Gezahegn  
 Breona Jones-Rice  
 Brandon Kim

Efrain Rodriguez  
 Nicole LaRonde- LeBlanc  
 Andrei Vedernikov  
 Jeffrey Davis

University of Maryland

Ariane Chandler  
 Marti Green  
 Jonathan Lee  
 Sindy Rosales-Rivera

Marie-Christine Daniel-Onuta University of Maryland Baltimore County

Hamza Ahmed

Fenella France

Library of Congress,  
 Preservation Research and Testing

### Summer II

Linhchi Nguyen

YuYe Tong  
 Jennifer Swift  
 K. Travis Holman

Georgetown University

Richard Castro  
 Hyo Joung Kim  
 Joshua Yoo

Vladislav Sadtchenko

George Washington University

Ta-Chung Mou

Jeffrey Davis  
 Zhihong Nie

University of Maryland

Michaela Berger  
 Sang Ho Jee

# 2014 Project SEED Summer I & II Programs

## Mentors/Coordinators

## Institutions

## Students

### FLORIDA

#### Barry University, George Fisher

##### Co-coordinator – Rajeev Prabhakar

John Berry

Florida International University  
Biscayne Bay Campus Bernard Mingo

Rajeev Prabhakar

University of Miami

#### The University of Tampa, Glenroy Martin

Glenroy Martin

#### University of Miami, Adam Braunschweig

##### Co-coordinator – Ken Mills, Paul Natland

Amy Scott

James Wilson

Adam Braunschweig

Marc Knecht

Francisco Raymo

##### Summer I

Marsha Edwards

Daphka Alius  
Bernard Mingo

##### Summer II

Cameron McKenzie

##### Summer I

Cachay Byrd  
Ambur Clark  
Darrell Fletcher  
Kyle Hippalyte-Wade  
Deja Shuler

### GEORGIA

#### Clark Atlanta University, Ishrat Khan

Myron Williams

Ishrat Khan

Michael Williams

#### Georgia State University, Suri Iyer

Suri Iyer

Maged Henary

Jun Yin

##### Summer I

Nia Colon  
Julie Julien  
Alicia Worthy

##### Summer I

Essowe Telou

##### Summer II

William Hardy  
Eric Ward

### IDAHO

#### Idaho State University, Andrew Holland

##### Co-coordinator – Joshua Pak

Caryn Evilla

Renee Rodriguez

Lisa Goss

Andrew Holland

Joshua Pak

##### Summer I

Christopher Brisco  
Mateo Gonzalez  
Jillyn Rushton  
Nicholas Stubblefield  
Kristen Stucki

##### Summer II

Jordan Childs

# 2014 Project SEED Summer I & II Programs

## Mentors/Coordinators

## Institutions

## Students

### Snake River Local Section, ACS, Don Warner

Don Warner  
Jeunghoon Lee

Boise State University

### Summer II

Frank Gigray  
Samantha Ward

## ILLINOIS

### Chicago Local Section, ACS, Kathleen Mortell

Daniel Becker  
Dali Liu  
Miguel Ballicora  
Chad Eichman

Loyola University Chicago

### Summer I

Amanda Hok Lay  
Amelia Jimenez

Aisha Patel

## INDIANA

### Indiana Local Section, ACS, Elmer Sanders

#### Co-coordinator – Sherri Rinker

Robert Sammelson

Ball State University

### Summer I

Aparna Chintapalli

Anthony Borel  
Mark LaPack  
Zhenqi (Pete) Shi  
Bruce Parker

Eli Lilly and Company

Aushat-Carolyn Audu  
Tetee Dahn  
Kathryn McGhehey  
Emmaline Moore

Brittani Burton  
Erin Clark

Heritage Research Group

Christian Ramos

Rafat Siddiqui  
Maria Rizzo

Indiana University Health Methodist  
Research Institute

Marqualis Cooper  
Nina Raymundo

Ann Kimbel-Hill

Indiana University Purdue University Indianapolis  
School of Dentistry

Amanual Araya  
Hakeem Bryant

Kelly Schweitzer

Indiana University Purdue University Indianapolis  
School of Medicine

Sarah Law

Steve Presse

Indiana University Purdue University Indianapolis  
School of Science

Roger Biak

L. Jack Windsor  
Stephen Wasall  
Jacob Kinnun  
Bruce Ray  
Lixin Wang  
Brenda Blacklock  
Robert Minto  
James Marrs  
Jiliang Li  
Domenick Zero

Oral Health Research Institute Indiana  
University School of Denistry

Krystrauna Cole  
Elly Mawi  
Sui Par  
Sui Tial  
Lara Martinez  
Nicholas Perkinson

Rebecca Pyle  
Ernesto Cabrera  
Aishat Siddeeq



# 2014 Project SEED Summer I & II Programs

## Mentors/Coordinators

## Institutions

## Students

Hsiu-Chiung Yang  
Patrick Putnam  
Michael Kobierski

Eli Lilly and Company

Rajesh Sardar  
Horia Petrache

Indiana University Purdue University Indianapolis  
School of Science

### **Purdue University, Bryan Boudouris**

Timothy Warren  
Jeffrey Greeley  
Rajamani Gounder  
Bryan Boudouris  
Julie Liu

Stephen Beaudoin

### **Saint Mary's College, Kayode Oshin**

**Co-coordinator – Philip Bays**

Kayode Oshin

### **University of Notre Dame, Mary Prorok**

Robert Stahelin

Indiana University School of Medicine-South Bend

Marya Lieberman

University of Notre Dame

Richard Dahl

Indiana University School of Medicine-South Bend

Seth Brown  
William Bogges  
Michelle Joyce  
Holly Goodson  
Laurie Littlepage

University of Notre Dame

### Summer II

Mikaela Greer  
Stephan Mitchell  
Seth Reasoner

Sonali Mali  
VanBawiTha Thawng

### Summer I

Colleen Deignan  
Brenda Haro Gonzalez  
Anahi Rostro  
Devon Wolfe  
Laan Yeung

### Summer II

Jordan Thorpe

### Summer I

Ashley Holderread

### Summer I

Lydia Thomas

Myracle Newsome

### Summer II

Sharon Njeri

Kateri Chabot  
Carlton Gary

Ariel Meece  
Nicole Osborne

## IOWA

### **Iowa State University, Javier Vela**

Javier Vela

### Summer I

Abdisalan Omar

### Summer II

Abigail Contreras-Ramos

Malika Jeffries-El



## 2014 Project SEED Summer I & II Programs

Mentors/Coordinators	Institutions	Students
<b>KANSAS</b>		
<p><b>Wichita State University, Syed Taher</b> Syed Taher</p>		<p><u>Summer I</u> Syed Shafuan</p> <p><u>Summer II</u> Syed Shawn</p>
<p><b>Western Kentucky University, Yan Cao</b> Yan Cao</p>	<p>Institute for Combustion Science and Environmental Technology</p>	<p><u>Summer I</u> Whitney Heard</p> <p><u>Summer II</u> Julia Gensheimer</p>
<b>LOUISIANA</b>		
<p><b>McNeese State University, Omar Christian</b> Ron Darbeau Omar Christian</p>		<p><u>Summer I</u> Aaliyah Ardoin Demisha Brown</p>
<b>MARYLAND</b>		
<p><b>Morgan State University, Louise Hellwig</b> <b>Co-coordinator – Pumtiwitt McCarthy</b> Pumtiwitt McCarthy</p>		<p><u>Summer II</u> Corshai Williams</p>
<p><b>University of Maryland Eastern Shore, Victoria Volkis</b> <b>Co-coordinator – Uche Udeochu</b> Victoria Volkis Byunrok Min Anthony Nyame</p>		<p><u>Summer I</u> Kelsey Chandler Saddie Dowden Ahmed Elsayed</p>
<b>MASSACHUSETTS</b>		
<p><b>Stonehill College, Cheryl Schnitzer</b> Jillian Goldfarb</p>	<p>Boston University</p>	<p><u>Summer I</u> Safwa Ali Julia Dariu</p>
<p>Louis Liotta</p>	<p>Stonehill College</p>	<p>Jessica Antoine Johnathan Jironvil</p>
<p>Deyang Qu</p>	<p>University of Massachusetts, Boston</p>	<p>Jason Fong</p>

# 2014 Project SEED Summer I & II Programs

## Mentors/Coordinators

## Institutions

## Students

### MICHIGAN

#### Delta College, Bernadette Harkness

Anja Mueller Central Michigan University  
Abhijit Sarkar Michigan Molecular Institute  
Adam Warhausen Saginaw Valley State University

Tami Sivy Saginaw Valley State University

#### Eastern Michigan University, Harriet Lindsay

Vijay Mannari

#### Henry Ford Community College, Keith Williams

G. Andres Cisneros Wayne State University  
Wen Li  
Matthew Allen  
Howard Matthew

#### Kalamazoo Local Section, ACS, Donald Schreiber

Gelert Mezei Western Michigan University  
Ramakrishna Guda

#### Michigan State University, Chrysoula Vasileiou

Co-coordinator – Babak Borhan

John Frost  
James Jackson  
Merlin Bruening  
James Geiger  
Kevin Walker  
Babak Borhan  
Robert Maleczka  
Xuefei Huang

Dana Spence

#### Summer I

Katelynn Curry  
Justin Martin  
Alicia Ball

#### Summer II

Travis Hahn

#### Summer II

Vlad Marcu

#### Summer I

Fahmida Ahmed  
Sabbir Ahmed  
Hamidul Islam  
Ayesha Khanam

#### Summer I

Ixtlaziuhatl Soto  
Kathryn Way

#### Summer I

Sara Aljazi  
Munzer Elsir  
Tabitha Inna  
Rehana Muhammadi  
Bhakti Pokhrel  
Reeta Shaffo  
Mulki Sheikh-Omar  
Anika Taufiq

#### Summer II

Cara Jackson

### MINNESOTA

#### University of Minnesota, Paul Boswell

Jerry Cohen

Lee Penn  
Philippe Buhlmann  
Sanjay Gupta, Christian Thill  
Burckhard Seelig

#### Summer I

Medinat Akindele  
Taiyee Vue  
Isabella Her  
Kieu Ho  
Mai Vang  
Peter Yang

# 2014 Project SEED Summer I & II Programs

## Mentors/Coordinators

## Institutions

## Students

David Thomas  
Romas Kazlauskas  
Paul Boswell

### Summer II

Mo Chang  
Rosemary Olatunbosun  
Brian Yang

## MISSOURI

### **Kansas City Local Section, ACS, Eckhard Hellmuth Co-coordinator – James Puckett**

Bhaskar Das  
James Durig  
Anthony Caruso

University of Kansas Medical Center  
University of Missouri - Kansas City

### Summer I

Melissa McNearney  
Maria De LaTorre Romo

### **University of Missouri, Saint Louis, Keith Stine**

Eike Bauer

### Summer I

Misael Barcenas-Toledo

## MISSISSIPPI

### **The University of Southern Mississippi, Douglas Masterson**

Philip Bates

### Summer I

Vasundhra Srevatsan

Douglas Masterson  
Vijay Rangachari

### Summer II

Jamarii Robinson  
Clintisha Sellers

## NEBRASKA

### **Doane College, Sharmin Sikich**

Sharmin Sikich

### Summer I

Samantha Vogel

### **University of Nebraska-Lincoln, Mark Griep**

Marilyne Stains  
Jian Zhang  
Chin Cheung

### Summer I

Marytza Abebe  
Malachi Abebe  
Katharen Hedges

## NEW JERSEY

### **Bayonne High School, Marie Aloia**

Marie Aloia

### Summer I

Makary Brota  
Isadora Faris

Zhonghui Huang

New Jersey Institute of Technology

### Summer II

Abanoub Boules



# 2014 Project SEED Summer I & II Programs

## Mentors/Coordinators

## Institutions

## Students

### Fairleigh Dickinson University, Marion McClary

Marion McClary

### Summer I

Nicole Hanna

### Summer II

Catherine Elia

### Fordham University, Susan Fahrenholtz

Trevon Tyson

Han Zhang

New Jersey Institute of Technology

### Summer I

Batch Clerizier

Danielson Joseph

Jose Lopez

Seton Hall University

Jimmy Duong

James White

Rutgers University

### Summer II

Rempee Kalia

### New Brunswick Health Sciences Technology High School, Andre Bridgett

David Ribnicky

Rutgers University

### Summer I

Adairiz Lopez

### New Jersey City University, Kenneth Yamaguchi

Nurdan Aydin

Robert Aslanian

### Summer I

Aiman Awan

Andy Ling

Kenneth Yamaguchi

Robert Aslanian

### Summer II

Claudia Mendoza

Brian Villarreal

### New Jersey Institute of Technology, Reginald Tomkins

Ravi Ravindra

Gordon Thomas

William Hammond

### Summer II

Ravindu Gunawardana

David Villacis

Johanna Gordillo

Tania Mejia

### Rutgers New Jersey Medical School, Yaakov Saturen

Abraham Pinter

Public Health Research Institute

James Theis

William Honnen

Chaoyang Xue

Eliseo Eugenin

David Perlin, Steven Parks

Neeraj Chauhan, Ionnis Mavrianos

Ionnis Mavrianos

### Summer I

Abigail Amponsah

Katherine Mendoza

Maisha Manzoor

Camila Morocho

Chloe Segui

Faith Ogbennaya

Corally Valembun

### Rowan University, Gregory Caputo

Lark Perez

Timothy Vaden, Lei Yu

### Summer I

Judith Cruz-Lopez

Jeremy Shriver



## 2014 Project SEED Summer I & II Programs

Mentors/Coordinators	Institutions	Students
<b>Rutgers University, Piscataway, Shaneika Nelson</b> Ralf Warmuth Gerard Dismukes		<b><u>Summer I</u></b> Zoe-Jerusha Beepat Shaquille Nelson
Daniel Seidel		<b><u>Summer II</u></b> Aaminah Bhat
<b>Rutgers University, Newark, W. Huskey</b> Dimitrios Ntarlagiannis		<b><u>Summer I</u></b> Shizeema Llanos
Huixin He		<b><u>Summer II</u></b> Claudia Torres
<b>Rutgers, The State University of New Jersey, Deborah Stalling</b> Chung Yang Nanjoo Suh		<b><u>Summer II</u></b> Vinay Doshi Andres Fernandez
<b>Rutgers – SHRP Health Science Program, Kimberly Moreno</b> Robert Weider Virgil Muresan	Rutgers, the State University of New Jersey, New Jersey Medical School	<b><u>Summer I</u></b> Ayleen Pittar-Flores Johanna Riera Kushani Vithanage
Robert Weider		<b><u>Summer II</u></b> Michelle Ling
<b>Saint Peter's University, Jessica Epstein</b> Jessica Epstein Michael Castaldi		<b><u>Summer I</u></b> Bryan Acuna Francisco Montiel
<b>Seton Hall University, John Sowa</b> John Sowa		<b><u>Summer II</u></b> Julie Attys Kalkidan Yimer
<b>UMDNJ-Medical School, Allene Johnson</b> George Yap		<b><u>Summer I</u></b> Alia Ibrahim
<b>Union City High School Academy for Enrichment and Advancement, Mina Armani</b> Rajesh Dave	New Jersey Institute of Technology	<b><u>Summer I</u></b> Jose Hernandez
Christopher D'Ambrose Rajesh Dave Ecevit Bilgili	New Jersey Institute of Technology	<b><u>Summer II</u></b> Olvis Hernandez Maryann Moquete Rina Rosales
Michele Pavanello	Rutgers University, Newark	Mary Ortiz

# 2014 Project SEED Summer I & II Programs

Mentors/Coordinators	Institutions	Students
<b>Union City High School Academy for Enrichment and Advancement, Nadia Makar</b>		
Marc Cohen	Beth Israel Medical Center	<u>Summer I</u> Daisy Morocho
Robert Barat Michael Jaffee	New Jersey Institute of Technology	Allison Guajala Jailene Mendez Frank Yubi
James Link	Princeton University	Armando Jimenez
James Simon Daniel Gurles Karina Schafer Gregory Herzog	Rutgers University, New Brunswick	Ian Martinez Laura Martinez Justin Quezada Josue Sanchez
Jose Lopez Hepin Zhou	Seton Hall University	Jhon Caldas Kevin Zhen
Tsan-Liang Su	Stevens Institute of Technology	Emily Aguirre-Mora Cancio Vasquez Aylin Guillen Josie Martinez Orlando Mendez Arman Namjouyan Bianelly Tellez
Philip Leopold		
Hongjun Wang		
Svetlana Sukhishvilli		
Marc Cohen	Beth Israel Medical Center	<u>Summer II</u> Kevin Melendez
Gerard Parkin	Columbia University	Natalie Moncayo
Ryan Hinrichs	Drew University	Jael Estrada
Kelvin Olsen Yang Deng	Montclair State University	Lorraine Pinheiro Nunes Jessica Yubi
Terry Kamps	New Jersey City University	David Arteaga
Treana Arenzeh Trevon Tyson	New Jersey Institute of Technology	Precious Martinez Willear Glimniene
E. H. Yang Stefan Strauf	Stevens Institute of Technology	Nix Benitez Anthony Leon

## 2014 Project SEED Summer I & II Programs

<b>Mentors/Coordinators</b>	<b>Institutions</b>	<b>Students</b>
<b>Union City High School Academy for Enrichment and Advancement, Amanda Smith</b>		<b><u>Summer I</u></b>
Howard Stone	Princeton University	Leonel Argueta
Stavroula Sofou	Rutgers University, Piscataway	<b><u>Summer II</u></b>
		Nicole Broncales Julio Rivas

### NEW MEXICO

<b>Sandia National Laboratories, Bernadette Hernandez-Sanchez</b>		<b><u>Summer I</u></b>
<b>Co-coordinator – Amy Tapia</b>		Thao Nguyen Selena Tran-Jurado
Bernadette Hernandez-Sanchez		
Timothy Boyle		

### NEW YORK

<b>Bristol-Myers Squibb, Ronald Bates</b>		<b><u>Summer I</u></b>
Ronald Bates		Venice Magunga
<b>East Syracuse Minoa High School, Sally Mitchell</b>		<b><u>Summer I</u></b>
Arindam Chakraborty	Syracuse University	Jackson Hernandez
<b>Ellis Preparatory Academy, Jeremy Heyman</b>		<b><u>Summer I</u></b>
Bart Kahr	New York University	Amina Akhter Maria Feliz Oumouhani Zakaria
Michael Ward		
Daniela Buccella		
Michael Ward	Molecular Design Institute	<b><u>Summer II</u></b>
		Chi Nguyen
<b>Manhattan International High School, Marigle Barbosa</b>		<b><u>Summer I</u></b>
Jeanine D'Armiento	Columbia University	Miguelina Ortiz Aniket Rajoria
Charles Drain	Hunter College of the City University New York	
<b>Sarah Lawrence College, Colin Abernethy</b>		<b><u>Summer I</u></b>
Colin Abernethy		Haifa Rahman

### NORTH CAROLINA

<b>North Carolina University, Laura Sremaniak</b>		<b><u>Summer I</u></b>
Alan Tonelli	North Carolina State University	Abbott Ndukwe Jackline Omweno Da'Naujah Venters Crystal Villines
Joseph Deaton		
Joshua Pierce		
Walter Weare		



# 2014 Project SEED Summer I & II Programs

## Mentors/Coordinators

Melissa Pasquenelli

### University of North Carolina, Charlotte, Thomas Schmedake

Thomas Schmedake  
Daniel Rabinovich  
Michael Walter

## OHIO

### Akron Local Section, ACS, Tama Drenski

Ali Dhinojwala  
Gaurav Amarpuri  
Kevin Cavicchi  
Chrys Wesdemiotis  
Charles Moorefield, George Newkome  
Machael Konopka

Thomas Leeper  
Yu Zhu  
Jia Li

### Case Western Reserve University, Carlos Crespo-Hernandez

Emily Pentzer  
Lei Zhu  
Carlos Crespo-Hernandez

Blanton Tolbert

Sichun Yang  
Rajesh Viswanathan  
Anna Samia  
Carlos Crespo-Hernandez

### University of Cincinnati, Hairong Guan

Peng Zhang  
Vladislav Litosh

Anna Gudmundsdottir  
Hairong Guan  
James Mack

### University of Toledo, Jon Kirchhoff

Amanda Bryant-Friedrich  
Jared Anderson  
Cora Lind-Kovacs  
Jianglong Zhu

## Institutions

## Students

### Summer II

Timothy Chen

### Summer I

Sophia Galofaro  
Brandon Patrick  
Khadiya Ross

### Summer I

Lawrence Edding

Spencer Lewis  
Ryan Prickler  
Demi Reed  
Destiny West

### Summer II

Lilith Freed  
Arielle Hooks  
Mariah Wilson

### Summer I

Daphney Bonner  
Anson Hiew  
Jessica Pham  
Erica Truong  
Tiarra Yarber

### Summer II

Ayah Abed  
Q'Nyjah Britton  
Vy Lam  
Raymond Santiago

### Summer I

Donyae Holloway  
Que'ana Mitchell

### Summer II

Keye'sha Graham  
Lindsey Steele  
Bria Waldon

### Summer I

Samar Ayoub  
Harmonie Christian  
Tamia Reditt  
Cristin Reno



# 2014 Project SEED Summer I & II Programs

## Mentors/Coordinators

## Institutions

## Students

Dragan Isailovic

### **Youngstown State University, Sherri Lovelace-Cameron**

Sherri Lovelace-Cameron

### Summer II

Shival Sinha

### Summer I

Alyssa Blosser  
Michaela Gibson

## OREGON

### **Eastern Oregon University, Anna Cavinato**

Anna Cavinato

### Summer I

Shelby Evans

### Summer II

Jessica Nava

### **Portland Local Section, ACS, Angela Hoffman**

Angela Hoffman

Portland State University

### Summer I

Anthony Nguyen

Carl Wamser

### Summer II

Henry Ha

## PENNSYLVANIA

### **Bayer MaterialScience LLC, Irene McGee**

Ted Frick, Lauren Emery  
George Combs

### Summer I

Tyler Coleman  
Zakiya Thompson

### **Duquesne University, Jennifer Aitken**

#### **Co-coordinator – Nolan Larry**

Ellen Gawalt  
Jennifer Aitken  
Jeffry Madura, Bernandie Jean  
Michael Van Stipdonk, Khiry Patterson  
Partha Basu, Charles Sinagra  
Michael Cascio  
Bruce Beaver, Abigail Cohen

### Summer I

Nadeja Kodjo  
Amber Latona  
Stephen Lau  
Dwight Nelson  
Katie O'Kelley  
Cheyanne Perez  
Shakasia Pierce

Ralph Wheeler, Travis Mackoy  
Stephanie Wetzel  
Jacilynn Brant, Jennifer Aitken

### Summer II

Melissa Fowkes  
Kelly Pesta  
Cheyanne Simmons

# 2014 Project SEED Summer I & II Programs

## Mentors/Coordinators

## Institutions

## Students

### The Forensics Mentors Institute, Barry Logan

Mandi Arntson

Warren Korn

Angelic Wray

## PUERTO RICO

### University of Puerto Rico, Ingrid Montes

Jose Prieto

Arthur Tinoco

Arthur Tinoco

Carlos Cabrera, Ileana Gonzalez

## SOUTH CAROLINA

### University of South Carolina, Chuanbing Tang

Changyong Qin

Benedict College

Thomas Makris

University of South Carolina

Nasrollah Hamidi

Morgan Stefik

Hui Wang

Maksymilian Chruszcz

Linda Shimizu

University of South Carolina

Andrew Greytak

### Winthrop University, Nicholas Grossoehme

#### Co-coordinator – Rachel Law

Chris McConville

Bluestar Silicones

Jay Hanna

Winthrop University

Nicholas Grossoehme

Cliff Calloway

### Summer I

Samiya Cornwell

Alonzo Elias

Timothy Martin, Jr.

Kathryn Peavy

### Summer II

Grace Pak

### Summer I

Carlos Huang-Zhu

Nicole Zambrana

### Summer II

Siul Jesus Munoz Serrano

Ricardo Valdes

### Summer I

Edna Maehtle

Ke'Shawna Brown

Shantavia Edmonds

Alexis Jones

Song Lee

Linda Taylor

### Summer II

Briana Abraham

Paolo Milan

### Summer I

Benjamin Amezua Reyes

Mary Fargalla

Adria Rogers

Anais Smith

## 2014 Project SEED Summer I & II Programs

### Mentors/Coordinators

### Institutions

### Students

#### TENNESSEE

#### **The University of Memphis, Ted Burkey**

Daniel Baker  
Abby Parrill  
Tomoko Fujiwara  
Ted Burkey  
Xuan Zhao

#### **Summer I**

Courtavious Drain  
Tavian Holbrook  
Shania Minnifield  
Nzingah Walker  
Robyn Watkins

#### TEXAS

#### **Greater Houston Local Section, ACS, Carolyn Burnley Co-coordinator – Oluwatoyin Asojo**

Kjersti Aagaard-Tillery      Baylor College of Medicine  
Oluwatoyin Asojo  
Bert O'Malley

#### **Summer I**

Cristian Cachado  
Zuriel Hodge  
Roneisia Martin

Gururaj Neelgund      Prairie View University  
Yingchun Li  
Gina Chiarella  
Hua-Jun Fan

Chrisan-Kay Clarke  
Nancy Osazuwa  
Richard Qian  
Victoria Taylor

Pat Killough      Shell Global Solutions  
Dave Denley  
Pierre Tutunjian

Ngoc Pham

Richa Chandra      University of St. Thomas

Ryann Cartwright

B. Montgomery Pettitt      University of Texas Medical Branch, Galveston

Jordan Murray

Francesco DeMayo      Baylor College of Medicine

#### **Summer II**

Me'Kelle Caballero  
Rubi Valenzuela  
Gonteria Robinson

Oluwatoyin Asojo

George Bennett      Rice University

Denwis La

David Thompson      Sam Houston State University

Kelly Gray  
Xavier McNeil

Richa Chandra      University of St. Thomas

Edwin Rodriguez

#### **San Antonio Local Section, ACS, E. Robert Fanick**

Joe Pan      Southwest Research Institute

#### **Summer I**

Alejandra Rodriguez

Adeola Coker      Feik School of Pharmacy at UIW  
Sushma Ramsinghani

Samatha Alderete  
Ashley Ontiveros



# 2014 Project SEED Summer I & II Programs

## Mentors/Coordinators

## Institutions

## Students

Sushma Ramsinghani

Feik School of Pharmacy at UIW

### Summer II

Cheyenne Silva

Ratna Vadlamudi

University of Texas Health Science Center  
at San Antonio

Jocelyn Hernandez Vasquez

Zachary Tonzetich

University of Texas San Antonio

Nicanor Muzquiz

### **University of Texas at Tyler, Neil Gray**

Jason Smee, Neil Gray

Tanya Shtoyko

Neil Gray

### Summer I

Aaron Ashley

Danielle Rush

Afreen Syeda

Sean Butler

### Summer II

Sarah Shupe

## VERMONT

### **University of Vermont, Rory Waterman**

Rory Waterman

University of Vermont

### Summer I

Museeki Mutume

## WISCONSIN

### **Medical College of Wisconsin, Michael Mathias**

John Corbett

### Summer II

Marisol Madrigal

### **University of Wisconsin, Milwaukee, A. Andrew Pacheco**

A. Andrew Pacheco, Jennifer McGarry

### Summer I

Candice Xiong

## WEST VIRGINIA

### **West Virginia School of Osteopathic Medicine, Kristie Bridges**

Joyce Morris-Wiman

### Summer II

Garrett Clemons



Stanford University



## 2014 Project SEED College Scholarship Recipients

### CONGRATULATIONS!



Project SEED awards a first-year non-renewable college scholarship of up to \$5,000 to Project SEED alumni who are planning to continue a career in chemical sciences. The scholarships are designed to assist students in their transition from high school to college.

In 2014, Project SEED awarded 28 scholarships.

## 2014–2015 College Scholarship Recipients

### Yousef Abdelmotaal

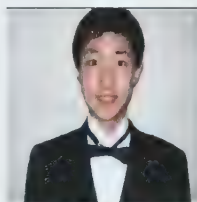
High School: High Tech High School,  
North Bergen, N.J.  
SEED Institution: Stevens Institute of  
Technology, Hoboken, N.J.  
SEED Mentor: Svetlana Sukhishvili  
University: Rutgers University,  
Brunswick, N.J.  
College Major: Pharmacy



Abdelmotaal

### Stephanie Benefield

High School: Ranburne High School,  
Ranburne, Ala.  
SEED Institution: Jacksonville State  
University, Ala.  
SEED Mentor: Nixon Mwebi  
University: Jacksonville State Univ., Ala.  
College Major: Chemistry



Ha

### Ravindu Gunawardana

High School: Union City High School,  
Union City, N.J.  
SEED Institution: New Jersey  
Institute of Technology, Newark  
SEED Mentor: Bruce Bukiet  
University: New Jersey Institute of  
Technology, Newark, N.J.  
College Major: Chemical Engineering



Ho

### Henry Ha

High School: Clackamas High School  
Portland, Oreg.  
SEED Institution: Portland State  
University, Oreg.  
SEED Mentor: Carl Wamser  
University: Princeton University, N.J.  
College Major: Chemical Engineering



Huynh

### Christina Trinh Ho

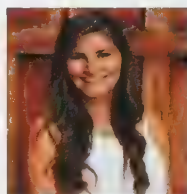
High School: Southport High School,  
Indianapolis, Ind.  
SEED Institution: Indiana University  
Purdue University Indianapolis, Ind.  
SEED Mentor: Deborah Nichols  
College Major: Pre-Pharmacy



Lee

### Van Huynh

High School: Oakland High School,  
Oakland, Calif.  
SEED Institution: California State  
University East Bay, Hayward, Calif.  
SEED Mentor: Monika Sommerhalter  
University: University of California, Los  
Angeles  
College Major: Biochemistry



Meza

## ALFRED AND ISABEL BADER SCHOLARS

**Alfred Bader** is one of the  
founders of the Sigma-Aldrich  
Company and both **Alfred and  
Isabel Bader** have generously  
contributed to the Project SEED  
program for the past 18 years  
sponsoring more than 370 SEED  
alumni.

### Fatmata Jalloh

High School: Abraham Lincoln High School,  
Des Moines, Iowa  
SEED Institution: Iowa State University, Ames  
SEED Mentor: Patrick Dilsaver  
University: Iowa State University, Ames  
College Major: Biochemistry

### Jason Jones

High School: Lewisville High School,  
Richburg, S.C.  
SEED Institution: Winthrop University,  
Rock Hill, S.C.  
SEED Mentor: James Hanna  
University: Spartanburg Methodist College,  
Spartanburg, S.C.  
College Major: Chemical Engineering

### Su-Hwan Paul Lee

High School: Oak Grove High School,  
Hattiesburg, Miss.  
SEED Institution: The University of Southern  
Mississippi, Hattiesburg, Miss.  
SEED Mentor: Wujian Miao  
University: University of Mississippi, Miss.  
College Major: Chemical and Biomolecular  
Engineering

### Marchelle Meza

High School: Junipero Serra High School, San  
Diego, Calif.  
SEED Institution: The Scripps Research  
Institute, La Jolla, Calif.  
SEED Mentor: Pedro Serrano & Michael Geralt  
University: University of California, Berkeley  
College Major: Biochemistry

## 2014–2015 College Scholarship Recipients

### **Fernanda Perez**

High School: Marc and Eva Stern Math & Science School, Los Angeles, Calif.  
SEED Institution: California State University, Los Angeles  
SEED Mentor: Krishna Foster  
University of California, San Diego  
College Major: Biochemistry



Perez

### **Gonteria Robinson**

High School: Madison High School, Houston, Tex.  
SEED Institution: Baylor College of Medicine, Houston, Tex.  
SEED Mentor: Oluwatoyin Asojo  
University: Texas State University, San Marcos, Tex.  
College Major: Biochemistry



Robinson

### **Monet Schultz**

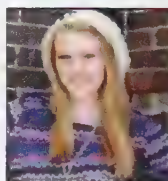
High School: George Washington Carver High School for the Sciences, Springfield Gardens, N.J.  
SEED Institution: St. Johns University, Queens, N.Y.  
SEED Mentor: Alison Hyslop  
University: Binghamton University, N.Y.  
College Major: Chemistry



Silva

### **Cheyenne Silva**

High School: John Marshall High School, San Antonio, Tex.  
SEED Institution: University of Texas at San Antonio  
SEED Mentor: Kelly Nash  
University: University of Texas at San Antonio  
College Major: Biochemistry



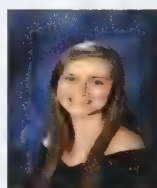
Stroud

### **Sarah Stroud**

High School: Riley High School, South Bend, Ind.  
SEED Institution: University of Notre Dame, Ind.  
SEED Mentor: Bradley Smith  
University: Trine University, Angola, Ind.  
College Major: Chemical Engineering



Vang



Ward

### **Malik Sylla**

High School: George Washington Carver High School of Engineering and Science, Philadelphia, Pa.  
SEED Institution: The Center for Forensic Science Research & Education, Willow Grove, Pa.  
SEED Mentor: Mandi Arntson  
University: Albright College, Reading, Pa.  
College Major: Biochemistry

### **Ricardo Valdes**

High School: Radians High School, Cayey, PR  
SEED Institution: University of Puerto Rico Rio Piedras, San Juan, PR  
SEED Mentor: Carlos Cabrera  
University: University of Massachusetts Amherst, Mass.  
College Major: Chemistry

### **Amy Vang**

High School: Golden Valley High School, Merced, Calif.  
SEED Institution: University of California, Merced  
SEED Mentor: Andy Li Wang  
University: University of California, Merced  
College Major: Biochemistry

### **Samantha Ward**

High School: Borah High School, Boise, Idaho  
SEED Institution: Boise State University, Boise, Idaho  
SEED Mentor: Jeunghoon Lee  
University: Carroll College, Helena, Mont.  
College Major: Biochemistry

### **William Wey**

High School: Westview High School, San Diego, Calif.  
SEED Institution: The Scripps Research Institute, La Jolla, Calif.  
SEED Mentor: Hyun-Yong Jin  
University: Vanderbilt University, Nashville, Tenn.  
College Major: Biochemistry



## 2014–2015 College Scholarship Recipients

### ASHLAND SCHOLARS

**Ashland Inc.** is a leading global company which provides specialty chemicals, technologies and expertise to customers worldwide. Ashland Inc. has sponsored eight Project SEED alumni.

#### Iyanuoluwa Ahmed

High School: Parkville High School, Parkville, Md.

SEED Institution: University of Maryland Eastern Shore, Princess Anne, Md.

University: University of Maryland College Park  
College Major: Biochemistry

#### Jordan Childs

High School: Pocatello High School, Pocatello, Idaho

SEED Institution: Idaho State University, Pocatello, Idaho

SEED Mentor: Todd Davis

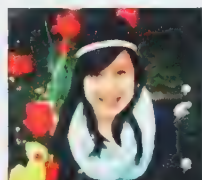
University: Portland State University, Oreg.  
College Major: Chemistry/Pharmacy



Childs



Becker



Choi

### BAYER SCHOLARS

**The Bayer Foundation** is a research based company with major businesses in health care and life sciences as well as chemicals and imaging technologies. The Bayer Endowment continues to support the Project SEED Program with a total of 66 SEED alumni.

#### Mikayla Becker

High School: Maumee High School, Maumee, Ohio

SEED Institution: University of Toledo, Ohio

SEED Mentor: Kedar Baryal

University: University of Toledo, Ohio  
College Major: Pharmaceutical Sciences

#### Ji Whae Choi

High School: Thomas Jefferson High School for Science and Technology, Alexandria, Va.

SEED Institution: F.D.A. Center for Biologics Evaluation and Research, Bethesda, Md.

SEED Mentor: Justine Vionnet

University: Cornell University, Ithaca, N.Y.  
College Major: Chemistry & Chemical Biology

#### Vy Le

High School: Madison High School, Portland, Oreg.

SEED Institution: University of Portland, Oreg.

SEED Mentor: Angela Hoffman

University: University of Portland, Oreg.  
College Major: Chemistry/Biochemistry



## 2014–2015 College Scholarship Recipients

### FOSBINDER SCHOLARS

A college scholarship endowment in honor of the late ACS member, Dr. Russel J. Fosbinder was established in 2004 stipulated funding of SEED graduates. The endowment continues to support the Project SEED Program and has supported a total of nineteen students.

#### Linhchi Nguyen

High School: Walter Johnson High School, Bethesda, Md.

SEED Institution: Library of Congress, Washington, D.C.

SEED Mentor: Eric Breitung & Fenella France  
University: Princeton University, N.J.

College Major: Chemistry

#### Seth Reasoner

High School: Homeschooled, Brownsburg, Ind.

SEED Institution: Eli Lilly and Company, Indianapolis, Ind.

SEED Mentor: Mark LaPack

University: Berea College, Berea, Ky.

College Major: Chemistry

### ULLYOT SCHOLAR

**Glenn and Barbara Ulyot:** Glenn Ulyot worked for Smith, Kline & French Laboratories. He was a major contributor to the discovery and manufacture of new drugs to the medical world. Barbara Ulyot had a management career at ACS and was a valuable member. Glenn and Barbara provided 28 college scholarships to Project SEED students over their lifetime.

#### Sonali Mali

High School: Avon High School, Avon, Ind.

SEED Institution: Indiana University Purdue University School of Science, Indianapolis

SEED Mentor: Rajesh Sardar

University: Indiana University, Bloomington

College Major: Biochemistry



Reasoner



Mali

## 2014 Project SEED Student Testimonies



Bader Scholar: **Yousef Abdelmotaal**, High Tech High School, North Bergen, N.J.  
Mentor: Svetlana Sukhishvili  
SEED Institution: Stevens Institute of Technology, Hoboken, N.J.

Last summer, I started exciting new research at Stevens Institute of Technology. There, I utilized the grafting from controlled radical polymerization technique to synthesize temperature responsive polymer-grafted clay nanoparticle complexes, which exhibited temperature controlled aggregation/disaggregation at temperatures above/below its LCST (Lower Critical Solution Temperature). Not only has research over the summer taught me scientific and laboratory procedures, but it also taught me self-confidence and increased my self-esteem. Research over the summer became

part of my daily routine and I enjoyed the process of learning and applying new information, participating in day to day activities, and being a part of the group-dynamic. Working on research has thought me how to utilize teamwork and collaboration to take advantage of everyone's strengths. In addition, my research experience in the past summer allowed me to obtain invaluable knowledge by working in a research group at the graduate level. Project SEED not only enhanced my communication skills and confidence, but also made me realize that I have the potential to accomplish so much in the field of chemistry. As a result, I decided that I want to pursue a career in chemistry. After considering a number of careers, I finally decided that I wanted to become a pharmacist. Like science and technology, the field of pharmacy is always evolving. Thus, my experience with Project SEED encouraged me to pursue a career in chemistry and opened my eyes to a whole different world of science. *Ultimately, I hope I can unitize the skills I learned over the summer in not only pharmacy school, but also in my everyday life. Like Project SEED, I hope I can teach other students effective communication, confidence, teamwork, and collaboration.*

Ashland Scholar: **Jordan Childs**, Pocatello High School, Pocatello, Idaho  
Mentor: Todd Davis  
SEED Institution: Idaho State University, Pocatello



The Project SEED research I had the privilege to experience this year was once in a life time. I loved the people and the overall experience in my lab. My research was in Organic Chemistry, but I mainly focused on the preparation of fluorinating ketones. My participation in the SEED Program helped me make the final decisions for my future as a Pharmacist. The research in Organic Chemistry and of fluorinating ketones gave me a better understanding of the science of how drugs are developed and improved for the Pharmaceutical industry. Before I went to the SEED Program I had struggled with fully understanding how chemistry worked until I received hands on research from the SEED Program. The thought of working in a chemistry lab with college students was scary, but my mentors pushed me out of my comfort zone, teaching me things that took a whole college semester to understand in two months. Once I noticed I could do the work in the lab, I knew that I would be able to handle the process of becoming a Pharmacist by majoring in chemistry. *The SEED Program is an experience I will never forget that has challenged, influenced, and helped me push for my future goals.*



## 2014 Project SEED Student Testimonies



Bader Scholar: **Ji Whae Choi**, Thomas Jefferson High School for Science and Technology, Alexandria, Va.  
Mentor: Willie Vann and Justine Vionnet  
SEED Institution: F.D.A. Center for Biologics Evaluation and Research, Rockville, Md.

I was introduced to Project SEED by one of the most supportive and passionate teachers in my academic career. He is my high school AP chemistry teacher. Without his help, I would not have experienced Project SEED, a research program that widened and deepened my perspective and knowledge in science.

The summer of 2013, I participated in Project SEED, which had connected me to Dr. Vann's lab in the Center for Biologics Evaluation and Research at U.S. Food and Drug Administration. There, with the help of Mrs. Vionnet, who is one of the head scientists at Dr. Vann's lab, I was able to focus my research on the polysaccharide coats that enable bacteria that cause disease, such as meningitis and urinary tract infections, to attack the body's defense mechanisms. More specifically, I isolated and purified CMP-neuAc synthetase. Using the purified enzyme, I synthesized and purified the CMP-9-fluoro-neuAc analogue substrate. This experience nurtured my knowledge in chemistry and chemical biology. It was truly an invaluable experience not only because of the academic, but also the social benefits. Along with the significant amount of skills and knowledge that I have gained at the lab, I built a precious relationship with my mentor. I remember all of her advices about school, college applications, science, and life from the summer. I cannot thank her and Dr. Vann enough for all they have done for me. This Project SEED experience actually led me to my current fascination with chemical biology. I applied to Cornell University, knowing that it has a specific program built for chemistry and chemical biology. At Cornell, I wish to participate in a research program and utilize my synthesized compound called CMP-9-fluoro-neuAc, which facilitates the investigation into those polysaccharide coats, from the internship to broaden my knowledge in chemical biology. Although I am not certain about what I want to be in the future, I am sure that I will further study chemistry and chemical biology. In addition, my relationship with Dr. Vann and Mrs. Vionnet motivates me to become a scientist, doctor, or pharmacist, who can help the children, students, and adults in difficult situations. *In summary, my Project SEED experience was remarkable, and I will never be able to forget it. Thank you.*

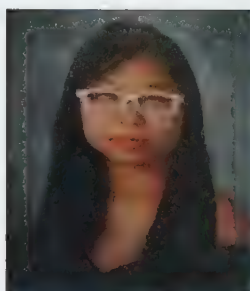
Bader Scholar: **Henry Ha**, Clackamas High School, Portland, Oreg.  
Mentor: Nicholas Day and Carl Wamser  
SEED Institution: Princeton University, N.J.

After spending my summer in an organic chemistry lab with a group of undergraduate students, I developed a love for exploring nature on a much more personal level. From my research, I learned that Mother Nature still has so much to offer us, even down to things as small and simple as a flower.

*I hope to continue my endeavors in chemistry and utilize what nature can tell us so that man can share in the benefits.*



## 2014 Project SEED Student Testimonies



Bader Scholar: **Van Huynh**, Oakland High School, Oakland, Calif.  
Mentor: Monika Sommerhalter  
SEED Institution: California State University, Hayward

During the summer of my junior year, I was involved in the American Chemical Society's Project SEED program. From this program, I furthered my interest in Bisphenol A (BPA). I actually got to perform experiments on BPA. I gained many insights about biochemistry. I worked on projects that biochemists do on a daily basis. I mainly researched BPA. Monika Sommerhalter, my mentor at Cal State East Bay, taught me the skills needed to perform the experiments like isolating the polyphenol oxidase (PPO) from potato. I performed multiple experiments to purify the samples to

acquire the targeted enzyme, in this case PPO. I learned BPA, a phenol, converts into a quinone with PPO, after its conversion the chitosan uses chemisorption to collect the toxic quinones into contained solid waste. The primary focus of the experiments was to test the efficiency of the process. Dr. Sommerhalter guided me throughout the program, introducing me to the courses and various safety standards that biochemists must follow, such as hazardous disposal restrictions, and preservation of lab equipment. She taught me the connection between lab work and commercial products. My research is not finished yet. I will continue with my internship in the summer of 2014 and this time I will focus on the purification of enzymes. With my basic training, I will design my own experiments and the toxins to work on. *Thanks to this project, I have a career path to aim for to become a biochemical researcher with an emphasis on toxin removal. To prepare for that, I want to obtain a PhD in biochemistry.*

Bader Scholar: **Marchelle Meza**, Junipero Serra High School, San Diego, Calif.  
Mentor: Pedro Serrano and Michael Geralt  
SEED Institution: The Scripps Research Institute, La Jolla, Calif.

My passion for science began in seventh grade when I checked out a biography on Marie Curie. Since then, I have eagerly engaged in many AP science courses and participated in various hands-on lab experiences. This past summer I had the opportunity to work at The Scripps Research Institute in a lab that focuses on protein analysis through Nuclear Magnetic Resonance Spectroscopy. I applied for the position and I was up against 300 other students from the San Diego area. Thankfully, I was granted the internship position for the summer and I was generously funded through Project SEED. Before my official first day in the lab, I met with my mentors to discuss the project I was going to be working on. Not only did this initial meeting

experience help calm my nerves, but it also allowed me to get a grasp of the types of procedures and research I would be conducting. Nevertheless, I was still nervous my first day at The Scripps Research Institute (TSRI). After meeting everyone in the lab and getting settled into my cubicle, I finally began to feel comfortable in my new "home" for the summer (since I would be there from 8am-5pm, 5 days a week). Personally, the most intimidating part of getting acclimated to the Wüthrich Lab at TSRI was actually meeting the man to whom the Lab belonged: Nobel Prize Laureate Professor Kurt Wüthrich himself. I soon realized he enjoyed having fun and making jokes at times, but he also took his work and projects very seriously. My mentors, Pedro Serrano and Michael Geralt, were also very welcoming upon my arrival into the lab. The Wüthrich Laboratory focuses on using Nuclear Magnetic Resonance (NMR) Spectroscopy to determine the three-dimensional structure of proteins. My project focused on the preparation of three different protein solutions from the RBM39 complex for NMR studies. The protein coded from RBM39 is involved in T-Cell regulation and RNA splicing. While the interaction of parts of this protein have been well characterized, the binding of the linker to other proteins is still poorly understood. In order to investigate the interactions involving the linker and its role in T-Cell regulation, constructs containing the linker are needed. This is where my research becomes relevant. My project was based around three basic procedures: cloning, expression and purification.

My Project SEED experience in the Wüthrich Lab was phenomenal, enriching and enjoyable. Overall, being able to conduct scientific research in the field of biochemistry at the age of sixteen was unbelievable. Even I was astonished at what I had accomplished and learned in just one summer. Although I enjoyed science prior to my





## 2014 Project SEED Student Testimonies

internship, working in a lab heightened my passion for science immensely. I now possess a very high level of respect for those who dedicate their lives to scientific research: it is not just a job where you wear a lab coat and goggles (although that is part of it), it is a very enduring and demanding field. Because of my research experience through Project SEED, I am now able to confidently pursue a career in the field of chemistry. My goal is to go into pharmaceutical research. Ultimately, I want to be able to make an impact on the world. Through science and medicine, I feel as if I can one day do this. Coming from a low-income minority household, I have learned to embrace every opportunity available to me. When I was granted the amazing opportunity to conduct research at one of the top research facilities in the world, I knew my love for science would flourish. Through my experience, I have been equipped with a plethora of skills that most people my age do not have, gained hands-on experience with many different pieces of lab equipment, built strong relationships with the amazing people who I worked alongside, and solidified my desire to eagerly pursue a career in scientific research. *Ultimately, I am incredibly grateful for being given this life changing opportunity through Project SEED. With my summer internship experience, I am now ready to advance myself in the scientific community.*



Fosbinder Scholar: **Linhchi Nguyen**, Walter Johnson High School, Bethesda, Md.  
Mentor: Eric Breitung & Fenella France  
SEED Institution: Preservation Research and Testing Division  
Library of Congress, Washington, D.C.

From June 2013 to August 2013, as an American Chemical Society's SEED student, I worked on validating a program that identifies degraded and non-degraded audio magnetic tapes to preserve historical records. The project helped me learn the process of scientific research and important techniques in a chemistry lab though it was not initially in my area of interest. By using infrared spectrometry and multivariate statistics, I sorted non-degraded and degraded tapes into distinguishable categories based on infrared spectra, creating a fast way to identify their conditions without playing the tapes. Having no prior research experience, I now understand what teamwork in research is: as I ate lunch or discussed new projects with my team, I felt at home and inspired to figure out problems with other brilliant minds. Moreover, from my experience with Project SEED, I learned not only important skills of a scientist - asking questions, making a poster, writing a report paper - but also came to understand the wide realm of possibilities for pursuing science because of its relevance in every subject, from preserving the past to developing new technology. *With new understandings about scientific research, I am now certain becoming a scientist is a path I want to pursue.*

Bader Scholar: **Fernanda Perez**, Marc and Eva Stern Math & Science High School, Los Angeles, Calif.  
Mentor: Krishna Foster  
SEED Institution: California State University, Los Angeles



As an American Chemical Society (ACS) Project SEED Scholar, I was given the opportunity to work with a chemistry professor from the California State University Los Angeles (Cal State LA) on a research project. My eyes were opened to the different chemistry fields and career opportunities. I received training in common laboratory techniques, such as pipetting and distillation. Participating in ACS Project SEED allowed me to meet students who were on the path I am about to take, the journey of an undergraduate student majoring in biochemistry. Prior to Project SEED I wasn't certain of my career path; I knew I wanted to go into a science field yet I was unsure of how to do that or what field. Chemistry and biology both held my attention. Because of Project SEED I was able to explore my interest in chemistry. Project SEED allowed me to get a summer's worth of experience in a research lab and made me realize it was what I'd want to do not only in college but as a career. *My summer experience served as not only a guide but a small taste of what I'm working towards: a research career in biochemistry.*

## 2014 Project SEED Student Testimonies



Bayer Scholar: **Cheyenne Silva**, John Marshall High School, San Antonio, Tex.  
Mentor: Kelly Nash  
SEED Institution: University of Texas at San Antonio, San Antonio

During my Project SEED research experience I worked in the laboratory of Prof. Kelly Nash in the Department of Physics and Astronomy at the University of Texas at San Antonio. In this lab, Prof. Nash's group synthesizes nanoparticles for use in biological applications. My project was to focus on the development of a new synthesis for ultraviolet light induced synthesis of gold nanoparticles using biological structures. At the end of the summer, I found this type of research was enjoyable because I got to work in the areas of physics, chemistry and biology. *I always knew I wanted to be a scientist and my experience in the lab only proved to me that I made the best decision by participating in the ACS Project SEED Program.* I have determined that I would like to be a biologist with a focus on genetics. I plan to use the things I learned from the ACS Project SEED Program as I enter college and one day obtain a doctorate degree.

Bader Scholar: **Samantha Ward**, Borah High School, Boise, Idaho  
Mentor: Jeunghoon Lee  
SEED Institution: Boise State University, Boise, Idaho

Last summer, I was admitted into the Project SEED program, though I had little chemistry experience. I was ecstatic. Only after accepting did I realize with mild terror that I was about to spend 400 hours of my summer in a college lab, equipped with nothing but wide-eyed awe and a rather basic understanding of the metric system. For the first three weeks, I was lost. I stood out badly, and I felt that everyone could see the holes in my knowledge. I didn't feel intelligent or mature enough to deserve a chance in the lab. My mentors were tough though. I was not going to be a passive observer; I was going to do research. As I started getting the hang of it, I began enjoying little things. Sometimes I would look down at my notebook and admire my series dilution calculations, enjoying their complexity, or I would suspiciously pipette 1.26 microliters of DNA juice into the first micro-centrifuge tube and test my faith in biology, doubting that strands so small could affect the whole solution. They did. I started learning about the bigger things, like sacrificing summers, and working eight hours, and understanding paychecks and bosses. And oh my goodness, I learned about science. As I started asking one of my mentors general questions, the smallest details grew into discussions. I was the most engaged I'd ever been in my life. We discussed everything from steric hindrance and gold nanoparticles and defending theses to calculus and quantum physics and succulent plants, and a thousand other things. He knew everything, and had the patience to explain it all. I've never met someone I admire so much. I wanted to know as much as he did. Throughout the summer, I attended meetings and wrote reports and read more science articles than I ever knew was possible, and I started to realize that working in science isn't just about using science— it demands social skills, writing skills, literary analysis skills. If I decided to make a career out of it, it would not mean abandoning any of the other knowledge I had. In fact, I would have to use it constantly. The first day of the program I couldn't have explained to you a single thing I did. But now I can tell you I worked on utilizing the plasmonic resonance properties of gold nanoparticles and a catalytic DNA hybridization scheme in order to make a solution that detects target molecules and reports their presence colorimetrically. I fell in love with a field I'd never enjoyed before. Each day as I drove home from the lab, I began to feel like a new person. I knew more about science than I ever imagined I was capable of. *I cannot say science has been my lifelong dream, but I can say without a doubt participating in research has made me passionate about science. I think differently now, and have started to enjoy learning the how of life's chemical processes.* I want to study biochemistry in school because I want to explore it more. Though it is very challenging for me, I like learning how to think differently. And there is so much more learning left to do.



**"I fell in love with a field I'd never enjoyed before"**



# Students Speaking from the Lab

## Summer I and Summer II Students

This has been one of the best experiences in my life. In eight weeks, I learned so much and became so much more developed as a student and as a person. This program has opened many doors to my future. I am extremely grateful for the opportunity.

**Carlos Huang, PR**  
Summer I

It really opened my eyes to a whole different world, one that I probably would not have ever considered.

**Samantha Montes, Calif.**  
Summer I

This summer really pushed me to learn and I think I learned more than I would have ever hoped as a high school student.

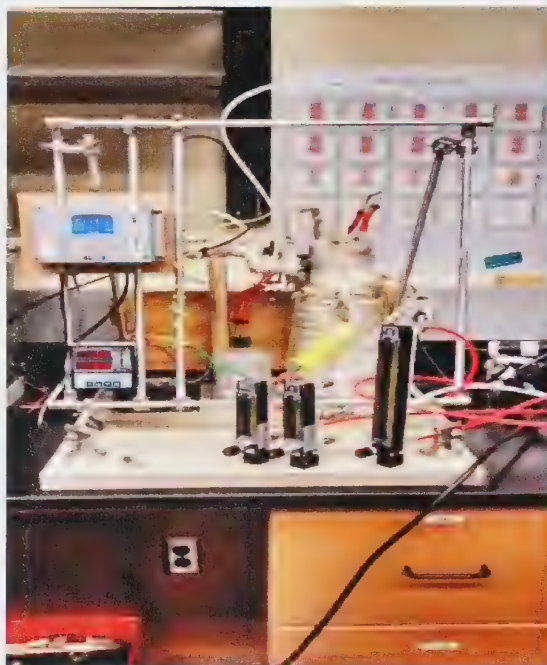
**Ashley Holderread, Ind.**  
Summer I

A very good opportunity for young men and women to gain valuable skills and learn how advanced research is conducted.

**Raymond Santiago, Ohio**  
Summer II

Excellent program for students! Teaches you an immense amount of things that benefit you for your future! Recommended for anyone interested in science!

**Amber Latona, Pa.**  
Summer I



Being a member of the SEED Program for two years, I learned so much about chemical researching, and I enjoyed every moment in the lab. I am really lucky to be one of the SEED students because it is such an extraordinary program. I cannot thank all the sponsors and mentors enough for this great opportunity.

**Mo Chang, Minn.**  
Summer I

Project SEED truly opened my eyes to all the opportunities available to me in the field of science. Hands-on research allowed me to become more confident, and showed me that with hard work, I will be able to contribute positively to the scientific community one day in the future.

**Aylin Guillen, N.J.**  
Summer I

My professor was truly amazing. His knowledge of biochemistry and its applications in the real world intrigued me, and inspired me to do two summers of Project SEED work.

**Cameron McKenzie, Fla.**  
Summer II

Project SEED is a great program that not only allows you to build a future, but also grow as a person.

**Jordan Childs, Idaho**  
Summer II

This program was definitely one of the best if (not the best) things that has happened to me educationally. It gave me a lot of knowledge in the chemistry field as well as experience working in a laboratory, which are both VERY important for me, since I plan on following a career in the science field. I also felt productive because I spent my last two summers (SEED 1 & 2) working and preparing for my future. In my opinion, if it were possible, everyone planning on pursuing a science career should be able to be part of the SEED program, because it really shows you much more than high school science, this program provides a hands-on experience in chemistry. I am very happy with the program, my mentor, and the experience that I have had. I want to thank all of the people that made it happen. THANK YOU!

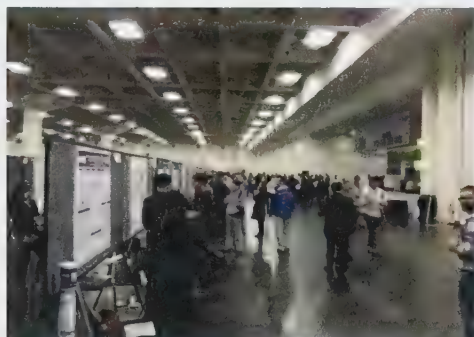
**Ricardo Valdes, PR**  
Summer II

SEED helped me realize how much I love chemistry.

**Olvis Hernandez, Ala.**  
Summer II

## Project Seed Students at Sci-Mix

Project SEED students from California, Pittsburgh, Portland, and Snake River Local Sections and from Clark Atlanta, Stanford, and Western Kentucky Universities presented their Project SEED research projects at the Sci-Mix poster session at the 248<sup>th</sup> ACS Fall National Meeting in San Francisco, Calif.



**California Local Section: Coordinator, Elaine Yamaguchi**

**Josue Chavez Montes**

Single Stranded DNA

**Rajada Ealey**

Protein Folding and Purification

**Hildelisa Espinoza**

Effects of Protein Sequence on Protein Structure through Modern Molecular Biology Techniques

**Van Huynh**

Quantification of Oil-Based Mud in Crude Oil Mixtures using Infrared to Quantify Fatty Acid Surfactants

**Petro Shevtchenko**

Viscosity Measurements and their Applications

**An Tat**

Chemical and Microbial Analysis of Cosmetics

**Jade Tso**

Analysis of Antioxidant Status of Mongolian Gerbil Livers in Response to Varying Amounts of Dietary  $\beta$ -cryptoxanthin

Analysis of Antioxidant Status of Plasma in Bangladesh Women in Response to  $\beta$ -cryptoxanthin-rich Tangerines and  $\beta$ -carotene-rich Sweet Potatoes

**Laili Lily Xie**

Photo-Oxidation of Anatase Titanium Dioxide Thin Films

**Jia Yu**

Salt Determination in Food Products

**Clark Atlanta University: Coordinator, Ishrat Khan**

**Julie Julien**

The Synthesis and Physicochemical Characterization of Beta-Cyclodextrin-Poly(ethylene-glycol) for Active Drug Delivery Characterization and Electrical Prospects of Indium Nitride

**Alicia Worthy**

**Pittsburgh Local Section: Coordinator, Jennifer Aitkens**

**Melissa Fowkes**

Characterizing Ionic Liquids as Potential New Battery Materials

**Kelly Pesta**

Extraction and Analysis of Organic Gunshot Residue

**Cheyenne Simmons**

The Synthesis and Characterization of Quaternary Diamond-like Semiconductors

**Portland Local Section: Coordinator, Carl Wamser**

**Henry Ha**

Analysis of Various Porphyrins in CO<sub>2</sub> Reduction and Future Fuel Applications

**Snake River Local Section: Coordinator, Don Warner**

**Frank Gigray**

Preparation of Aldehydes and Ketones for Variations at the C6/C7 Positions of Aziridinomitosenes

**Samantha Ward**

Utilizing Gold Nanoparticles for Colorimetric DNA Sensing

**Stanford University:**

**Coordinator, Kaye Storm**

**Vi Le**

The Reversible Fracture Energy of a Pressure Sensitive Adhesive: Effects of Cycling

**Western Kentucky University: Coordinator, Yan Cao**

**Julia Gensheimer**

Effect of pH on Electrochemical Exfoliation of Graphite



# 2014 Student Survey Results

The results of the survey provide information on the background of the students, their educational aspirations, and their assessment about Project SEED. Of the 423 participants, 418 students responded.

Student Gender	Summer I	Summer II	Total %
Male	95	49	34%
Female	191	83	66%
TOTAL	286	132	100%

Family Income Level	Summer I	Summer II	Total %
\$6,999 or Less	87	27	27%
\$7,000 to \$16,000	42	26	16%
\$17,000 to \$25,000	66	29	23%
\$26,000 to \$35,000	55	29	20%
\$36,000 or more	36	21	14%
TOTAL	286	132	100%

Demographics by Ethnicity	Summer I	Summer II	Total %
Native American	2	0	1%
Asian or Pacific Islander	61	33	22%
African American	92	28	29%
Hispanic	71	46	28%
White	41	22	15%
Other	19	3	5%
TOTAL	286	132	100%

Overall, how would you rate your Project SEED experience?	Summer I	Summer II	Total %
Excellent	230	116	83%
Good	46	15	15%
Fair	10	1	2%
TOTAL	286	132	100%

Demographics by State	Summer I	Summer II
Alabama	3	2
Arizona	2	0
California	45	23
Colorado	1	2
Delaware	2	1
District of Columbia	13	7
Florida	8	1
Georgia	4	2
Idaho	5	3
Illinois	3	0
Indiana	29	11
Iowa	1	1
Kansas	1	1
Kentucky	1	1
Louisiana	2	0
Maryland	3	1
Massachusetts	5	0
Michigan	17	3
Minnesota	6	3
Mississippi	1	2
Missouri	3	0
Nebraska	4	0
New Jersey	47	32
New Mexico	2	0
New York	8	1
North Carolina	7	1
Ohio	18	11
Oregon	2	2
Pennsylvania	13	4
Puerto Rico	2	2
South Carolina	10	2
Tennessee	5	0
Texas	16	11
Vermont	1	0
West Virginia	0	1
Wisconsin	1	1
TOTAL	291	132

## 2014 Student Survey Results

Overall, how would you rate your Project SEED experience?	Summer I	Summer II	Total %
Excellent	230	116	83%
Good	46	15	15%
Fair	10	1	2%

How likely is it that you will become a scientist?	Summer I	Summer II	Total %
Excellent	154	98	60%
Good	85	21	26%
Fair	40	11	12%
Poor	7	2	2%

Student Research Sites	Summer I	Summer II	Total %
Academic Laboratory	174	75	60%
Government Laboratory	7	9	4%
Industrial Laboratory	78	36	27%
Medical Laboratory	27	12	9%

Students Agreed that Project SEED Helped:	Summer I	Summer II	Total %
Develop Skills and abilities	280	131	98%
Develop self-confidence	233	118	84%
Develop responsibility	273	129	96%
Understand the ethical behavior of scientists	255	123	90%
Develop better study habits	194	95	69%
Learn what advance study is like	273	125	95%
Decide to continue my education after high school	270	125	94%
Choose a college major	192	95	69%
Decide to pursue a career in science	239	95	80%
Develop greater interest in scientific/technical areas	254	122	90%

How much education do you expect to complete?	Summer I	Summer II	Total %
High School	61	27	21%
Vocational, Trade	1	2	1%
2-year College	1	0	0%
4-year College	51	22	17%
Graduate/Professional School	172	81	61%

College Majors	Summer I First Choice	Summer II First Choice
Agriculture	3%	0%
Architecture	2%	1%
Astronomy	0%	0%
Biology & Life Sciences	18%	16%
Business & Commerce	2%	1%
Chemistry	22%	33%
Communications	0%	0%
Computer Sciences	3%	3%
Earth Sciences	0%	0%
Education	1%	1%
Engineering	9%	14%
Foreign Languages	0%	0%
Health Professions	17%	6%
Home Economics	0%	0%
Language & Literature	0%	0%
Library Science	0%	0%
Mathematics	3%	2%
Military Sciences	0%	0%
Pharmacy Sciences	0%	0%
Philosophy	2%	1%
Physics	1%	2%
Social Sciences	0%	0%
Technical & Vocational	14%	18%
Other	2%	2%

## 2014 Project SEED Major Contributors

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### **SUSTAINING PARTNERS**

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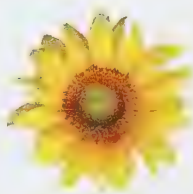
Glenn Moser

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Joan Anne Laredo-Liddell\*

\*Gifts made in December 2013



### **ACKNOWLEDGEMENT**

On behalf of the ACS, the staff, and the Project SEED Committee, thank you to our members, friends, foundations, and corporate donors, we are grateful for your generosity and commitment to helping in the success of our high school students!

**We truly appreciate your continued generosity!**



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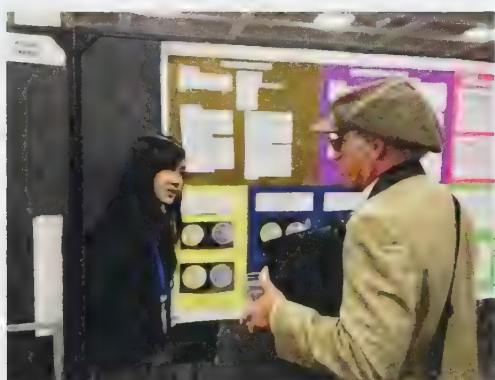
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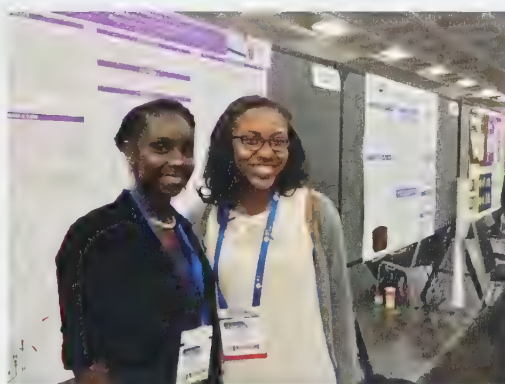
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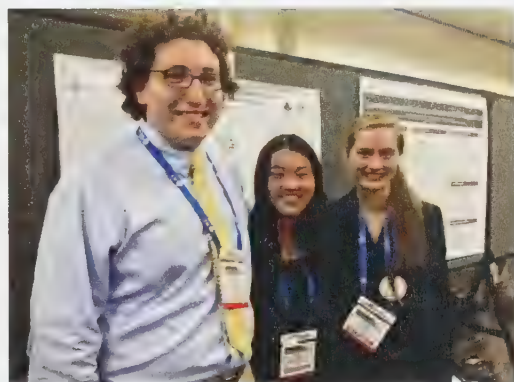
Vy Le



Alicia Worthy, Julie Julien



Petro Shevtchenko



Frank Gigray, Samantha Ward, Amy Vang



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Students supported through individual and corporate contributions to the ACS Project SEED Endowment.

### **Beth Anne Walden Memorial Fund (1)**

Afreen Syeda – *University of Texas at Tyler*

### **Clayton E. Callis (2)**

Misael Barcenas-Toledo – *University of Missouri, St. Louis*

Maria De LaTorre – *University of Missouri, Kansas City*

### **Ciba SEED Scholars (6)**

Judith Cruz-Lopez – *Rowan University, N.J.*

Aylin Guillen – *Steven Institute of Technology, N.J.*

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Maryann Moquete – *New Jersey Institute of Technology*

Justin Simmons – *DuPont Central Research, Del.*

Jessica Yubi – *Montclair State University, N.J.*

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### **The Glaxo Foundation (15)**

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Carmela Gonzalez, Andrea Hernandez, Abigail Serrano

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Carmen Kong, Carter Ly, Laili Lily Xie – *San Francisco*

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Vi Le – *Stanford University, Calif.*

Jade Tso – *Western Human Nutrition Research, Calif.*

Frank Gigray, Samantha Ward - *Boise State University, Idaho*

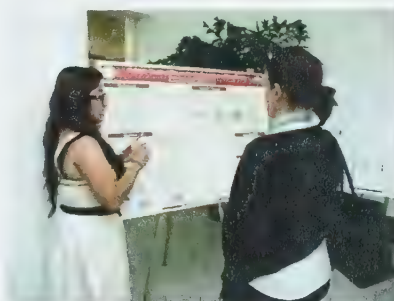
Julia Gensheimer – *Western Kentucky University*

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Melissa Fowkes, Kelly Pesta, Cheyenne Simmons – *Duquesne University, Pa.*



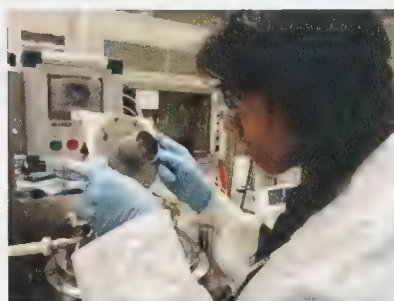
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La Grande

David Cedeño  
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Ingolf Gruen  
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Columbia

Angela Hoffman  
University of Portland, Oreg.

Keith Kostecka  
Columbia College  
Chicago, Ill.

Adriane Ludwick  
Sugar Grove, Pa.

Joshua Pak  
Idaho State University  
Pocatello

Brian Salvatore  
Louisiana State University  
Shreveport

Jeffery Seyler  
University of Southern Indiana  
Evansville

Barbara Sitzman  
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Purdue University  
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Michelle Rivard  
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Midland, Mich.

James Visintainer  
Hudson, Ohio

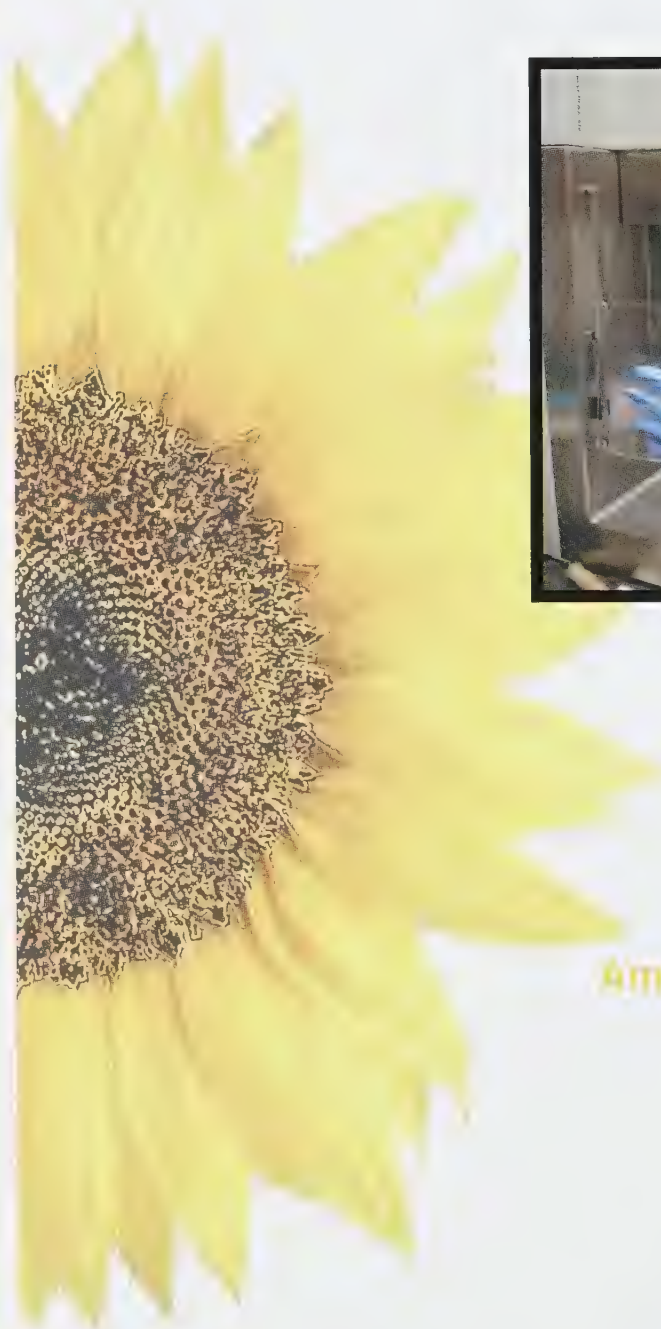
Committee on Committees  
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**American Chemical Society  
Project SEED Program**

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ACS Project SEED

Survey

Conducted to ACS Project SEED College Scholars

December 28, 2016





## ACS Project SEED College Scholarship

### Survey Summary

#### Background

The ACS Project SEED College Scholarship is one of the components of the ACS Project SEED program. It was established in 1993 to assist Project SEED alumni in their transition from high school to college as they pursue chemistry related sciences undergraduate degrees. Scholarships are one-year nonrenewable; recipients receive up to \$5,000 for their freshman year. Over the last 23 year 620 scholarships have been awarded.

#### The survey

The survey was conducted to ACS Project SEED College Scholars current and alumni from November 14 thru December 8, 2016. The purpose was to provide an analysis of the impact of Project SEED on these recipients, by obtaining information about their experiences, as well as their academic, mentoring, and career path.

Former Project SEED students were located by email records archived in the Project SEED database. A total of 116 completed the survey, for a 36% response rate. This is a remarkable response rate; typically the rates are between 10% to 15%. The survey reached to 322 students of the potential 620 students. Invitation email was sent to 426 contacts, 104 of them bounced back. Responders were identified from participants from last 15 years of the program (2001 thru 2016). Seventy one percent (71%) of the responded were from the last six years of the program. And 57% of the respondents were enrolled in an undergraduate degree program at the time of the survey.

Of the 116 participants 70% were female and 29% male. Related to the ethnicity of the

participants, forty seven percent (47%) fell into the category of minority in science, which includes; Black or African American, Hispanic/Latino, and American Indian or Alaskan Native; 31% were from Asian or Pacific Islander backgrounds and 17% were white.

The survey questionnaire is enclosed in Appendix 1 of this report.

#### Results and Findings

The results from the 116 completed surveys showed strong evidence of the positive impact of Project SEED. Participants were asked to rate the value of the Project SEED program, 96% of the responses rated Project SEED as extremely or very valuable program.

As shown on Q2. (Appendix 2), 85% of the participants strongly agree or agree that Project SEED program helped them to develop professional skills, 91% stated that the program impacted them to develop technical abilities; 86% to develop self-confidence, 52% to develop better study habits, and 88% learned what advance study in chemistry was like.

The survey strongly indicates that Project SEED influenced the participants in their decision to attend college and selection of their major or career.

Project SEED helped me:	Extremely or Very Influential
Decision to attend college.	61%
Choice of major in college	81%
Interest in a career in a chemistry-related field.	70%
Ability to complete my undergraduate degree.	63%



Most of the participants (over 78%) reported that the top three benefits of the Project SEED program were to encourage them to consider a science-related career (86%); to provide opportunities to conduct research in the chemical sciences (84%); and 78% indicated that Project SEED helped them to acquire new skills from the Project SEED mentor.

What were the benefits to you of being an ACS Project SEED participant?	Percent
Encouraged me to consider a science-related career.	86%
Provided me with opportunities to conduct research in the chemical sciences.	84%
Helped me acquire new skills from my ACS Project SEED mentor.	78%
Provided me with networking opportunities and access to chemists whom I would not have met otherwise.	72%
Supported my career interest in the chemical sciences.	70%
Provided me with opportunities to present research projects at ACS national and regional conferences and/or local meetings.	59%

The respondents also agreed that other benefits of participating in the program were to provide networking opportunities (72%); to support career interest in the chemical sciences (70%); and to provide opportunities to present research projects (59%).

Of the participants only 40% reported on their current working occupation, 37% of them work in business and industry; 22% in K-12 Education and Higher Education; the remainder are in other occupations.

## Mentoring

The participants (75%) responded that they were very satisfied with their Project SEED mentor. And 16% of the participants found that they were somewhat satisfied with their mentor. Interestingly, the highest area of influence of the mentors in the academic career of the students was to improve their research skills.

Mentor's influence on your academic career	Extremely or Very Influential
My mentor contributed to improving my academic achievement.	64%
My mentor encouraged my interest in the chemical sciences.	70%
My mentor encouraged me to pursue a chemistry-related career.	68%
My mentor provided opportunities for networking.	52%
My mentor assisted me in improving my research skills.	80%
My mentor offered advice regarding my educational goals.	71%

An evidence of this is the following comment:  
*"... This influence of having an experienced mentor to guide and answer the many questions I had about college and chemistry related major made the most impact in my education and life choices than any other experience I have had. Another extreme influence through Project SEED was the end requirement of preparing a presentation and research paper. This is when I discovered my love for public speaking, research writing, and networking that I never would have realized without this experience; it influence me to go into undergraduate research upon entering in college, and pursue careers in research in chemical engineering fields..."*





## The Conclusions

The conclusions are supported by the statistical data from the respondents and narratives from survey questions 17, 18, and 19.

The survey confirms that the Project SEED programs have the desired financial impact in the participants. Specifically 84% of the respondents indicated that they were satisfied with the summer programs funding. And 92% responded that the college scholarship helped them to have fewer financial worries in college and 61% indicated that allowed them to focus more in their classes.

Forty five percent (45%) of the responded have graduated. The predominant educational level achieved by participants who have received a degree was Bachelor degree 33%, other 9%, Ph.D 2%, and MD 1%.

Forty one percent of the responded are pursuing or have graduated in a chemistry related field. See Q12 (Appendix 2) for detail.

The narratives reported on question 17 (Appendix 2) –what made students decided to participate in Project SEED– indicate that the majority of students' decision to participate in the Project SEED programs was influenced by their chemistry teachers or guidance counselors. Some highlighted comments:

*"My high school chemistry teacher recommended me for the program at Highlands University in summer 2011. I enjoyed the program so much that I participated again in summer 2012. I thought it would be a good opportunity to learn about a career in research and chemistry related fields as well as strengthen my chemistry knowledge & skills".*

*"I had an early curiosity and deep admiration for sciences, especially the subject of chemistry and this was recognized by my high school Chemistry Teacher Ms. Terril...As such, she encouraged me to consider applying to and*

*conducting summer research through ACS Project SEED Program. I am forever indebted to her and to my advisor, Prof. Franz, for their support and direction early on in what would be my career."*

*"Project SEED exposed me to science and research in a way I never could have through my public school science curriculum. I could, for the first time, really see myself studying chemical engineering because of Project SEED. The scientists I met served as my greatest role models, and my mentor is still a lifelong friend"*

*"I believe that a big factor was having that stipend that allowed me to have some starter money for college and to help my household out."*

*"My biggest influence is my decision to study chemical engineering and my professional interest."*

*"By far, Project SEED opened my eyes to the beauty of research. From a relatively young age, I learned the satisfaction that comes with research and the amount of hard work required to construct, maintain, and present a project— all thanks to Project SEED. Accordingly, one of the biggest influences Project SEED had on me was the fact that I wish to incorporate research as a crucial part of my career."*

*"The biggest influence for my participation in Project SEED ... because I am from a low-income family with no background in college or any other education. An opportunity like Project SEED was very fortunate for me."*

In summary the participants' experiences in the program were overwhelming positive and had a high impact in their career path. Their comments support this finding, like this:

*"The ACS Project SEED program is excellent; it provides the necessary resources to conduct a real research with professional in the area. I can affirm that it meets and exceeds all the*



*requirements a high school student seeks from an internship. Nevertheless there could be managed some conferences or conventions to expose the chemistry industry to the students."*

However, some mixed review were also shared, indicating the need to see mentors more frequently, requesting more guidance and better communication with mentors as well as with Project SEED staff. (See comments in Q19. Appendix 2).

### **Recommendations**

Program Expansion The program shall be expanded increasing its stipend and number of participants given the evidence of strong impact and benefits reported by the participants documented by the quantitative results and the narratives. The advertisement and promotions of the program with high school chemistry teachers shall continue as it is evidenced they are a main source of influence for students to join the program.

Improving Mentor's Communication and Project Seed staff Mentors shall be proactive and diligent in communicating and managing the tasks of the program so students know what to do prior, during and after the program.

After Program Services Expand existing resources and platforms to allow the alumni of the Program to remain in contact and deepening its work and interest in chemistry and science fields.









# Announcing the New C&EN Magazine

From Our Editor-in-Chief

---



C&EN has always been known for its journalism: award-winning, in-depth, and spanning the chemistry enterprise's complex landscape. We are pleased to announce that with next week's issue (Feb. 29), the magazine that chemists have relied on for decades will have a fresh and modern look and a new organization that better serves your needs. It's just the first part of a broader, ongoing effort to improve your experience with C&EN, no matter how, when, or where you are consuming our journalism.

## How Is C&EN Evolving?

---

**A Modern Look That's Easier To Navigate.** The clean, uncluttered design we'll unveil in print on Feb 29 will make C&EN even more pleasurable to read. The magazine's new organization will help you locate the stories that matter most to you more quickly and easily.

**A More International Perspective.** In recent months C&EN has made several moves to better serve our international readers. We've broadened the international scope of our chemical policy and regulation coverage and increased our pool of foreign correspondents in order to truly capture news and trends from outside the U.S.

**More Expert Opinions.** Perspectives, C&EN's monthly opinion feature, was introduced last fall and was an invitation to the chemistry community to share their unique perspectives on trends with C&EN's audience. These columns have generated many interesting conversations, and we will continue to bring your voices straight to our pages.

**For decades, C&EN's print magazine has been the most powerful mechanism by which ACS communicates with its members.** With next week's issue, we're excited to unveil the first in many initiatives that will position C&EN as a leader in the rapidly changing world of modern journalism. Our print magazine will remain the cohesive element that allows our readers to connect with us. But with a new mobile app debuting midyear and a restructured and reenergized website coming up later on, the print magazine's new look is just one piece of the puzzle. C&EN's in-depth journalism and innovative storytelling will now be front and center with readers and advertisers alike, across mediums, devices and continents.

Please be sure to pick up the next issue of C&EN! We're excited for this next journey, and hope you share your new experience with us along the way.



**Bibiana Campos Seijo, Ph.D.**

Editor-in-chief, C&EN

# 2015–16 PROJECT SEED COLLEGE SCHOLARSHIPS

**THE AMERICAN CHEMICAL SOCIETY** Committee on Project SEED has announced the winners of its 2015–16 college scholarships. The recipients, who were selected from participants in ACS's Project SEED research program, receive one-year nonrenewable scholarships of up to \$5,000 to help cover tuition and fees during their freshman year of college. The 31 scholarships for the 2015–16 academic year, which have a total value of \$155,000, were funded by private corporations and individual donors. Additionally, three Project SEED college scholars receive scholarships for three renewable years beginning in their sophomore year.

Project SEED is ACS's summer research program that enables economically disadvantaged high school students to conduct hands-on research. For more information, visit [www.acs.org/projectseed](http://www.acs.org/projectseed).

## ALFRED & ISABEL BADER SCHOLARS

Alfred Bader is one of the founders of Aldrich Chemical, now Sigma-Aldrich. The Baders supported Project SEED for many years and contributed to the initiation of the Summer II SEED program.

**Medinat Akindele** is a graduate of Harding Senior High School, in St. Paul. Under the guidance of Molly Kreiser at the University of Minnesota, Twin Cities, Akindele worked on research titled "A Study of Conversion of [ $^{13}\text{C}_6$ ]Indole-3-acetyl Aspartate to [ $^{13}\text{C}_6$ ]Indole-3-acetic Acid in Alisa Craig Tomato." Akindele is majoring in chemistry at UMN Twin Cities.

**Aaliyah Ardoin** is a graduate of Washington-Marion Magnet High School, in Lake Charles, La. At McNeese State University, in Lake Charles, Ardoin worked under the direction of Ron Darbeau on research titled "Preparation and Study of Dibenzyl(1,2-dioxoeth-



ane-1,2-diy1)biscarbamate." Ardoin is majoring in chemistry at McNeese State University.

**Maria De LaTorre** graduated from East High School, in Kansas, Mo. She conducted research under the mentorship of James Durig at the University of Missouri, Kansas City. The title of her research is "Properties and Stability of a Molecule, Purification of a Sample, and Infrared Spectroscopy." She is majoring in chemical engineering at Kansas State University, in Manhattan.

**Jael Estrada** is a graduate of Union City High School, in New Jersey. He completed research at Drew University, in Madison, N.J., under the guidance of Ryan Hinrichs. His research is titled "Reactive Uptake of Gaseous Terpenes at Acidic Air-Water Interfaces." He is majoring in environmental studies and sustainability at Drew University.



**Mateo Gonzalez** graduated from Century High School, in Pocatello, Idaho. Under the guidance of Rene Rodriguez at Idaho State University, Pocatello, Gonzalez worked on research titled "Effect on the Sn Incorporation on the Material Properties of PECVD Deposited  $\text{GeS}_2$  Thin Films." He is majoring in chemistry at Idaho State University, Pocatello.

**Calley Hickman** is a graduate of Morris Area High School, in Minnesota. Under the guidance of Ted Pappenfus at the University of Minnesota, Morris, Hickman conducted research titled "Computational Investigation of Benzo[1,2-b:4,5-b']dithiophene (BDT) Molecules." She is majoring in chemistry at UMN Morris.



**Carlos Huang** graduated from Academia Bautista de Puerto Nuevo, in San Juan, P.R. He conducted research on

"Synthesis of the Polypropionate Chain of Mycalolide A Using an Epoxide-Based Approach" at the University of Puerto Rico, Río Piedras, under the mentorship of José A. Prieto. Huang is majoring in chemical engineering at the University of Puerto Rico, Mayaguez.

**SangHo Jee** graduated from Old Mill High School, Millersville, Md. Under the mentorship of Zhihong Nie at the University of Maryland, College Park, Jee conducted research titled "Encapsulation of Hydrophobic Dyes as Model Drugs in Hybrid Assemblies of Inorganic Nanoparticles." Jee is majoring in biochemistry at the University of Maryland, College Park.



**Imran Khan** is a graduate of Niles West High School, in Skokie, Ill. Khan conducted research at Loyola University, in Chicago, under the guidance of Rick Holz. Khan's research is titled "Catalytically Important Residues in NHase." Khan is majoring in integrated science at Northwestern University.

**Carisa Medina-Abrajan** is a graduate of East High School, in Pueblo, Colo. She conducted research at Colorado State University, Pueblo, under the mentorship of Sandra Bonetti on "The Effects of Iron (Fe) and Copper (Cu) on Fungal Hydrolase Activities: Isolation and Characterization of Fungal Phosphohydrolases." Medina-Abrajan is majoring in biochemistry at Colorado State University, Pueblo.

**Camila Morocho** graduated from Science Park High School, in Newark, N.J. She conducted research under the mentorship of Yaakov Saturen and Eliseo Eugenin at the Public Health Research Institute at the International Center of Public Health at Rutgers University, Newark. Her research is titled "Role of Lipids in the Pathogenesis of Accelerated Atherosclerosis in HIV-Infected Individuals." She is majoring in chemical and biomolecular engineering at New York University.

**Sereena Nand** is a graduate of Amos Alonzo Stagg High School, in Stockton, Calif. Under the mentorship of Roshanak Rahimian at the University of the Pacific, in Stockton, she conducted research titled "Arteries Function Impaired by High Fructose and Glucose Intake." She is ma-



joring in biochemistry at the University of California, Los Angeles.

**Faith Ogbennaya** graduated from Saint Vincent Academy, in Newark, N.J. She conducted research at the Public Health Research Institute at the International Center of Public Health at Rutgers University, Newark, under the mentorship of John Mavrianos. Her research is titled "Effects of Phosphorylation on Two-Component Response Regulator Protein's Transport to the Mitochondria." She is majoring in biochemistry at Drew University, in Madison, N.J.

**Ngoc Pham** is a graduate of Westbury Senior High School, in Houston. Pham conducted research at Shell Global Solutions, in Houston, under the mentorship of Pierre Tutunjian, Pat Killough, and Dave Denley. Pham's research is titled "Determination of the Branching Index in Base Oils by High Resolution Nuclear Magnetic Resonance." Pham is majoring in chemistry at Houston Baptist University.

**Nina Raymundo** is a graduate of Lawrence North High School, in Indianapolis. Under the mentorship of Maria Teresa Rizzo at Methodist Research Institute, in Indianapolis, she conducted research titled "Arachidonic Acid's Contribution to Neoplastic Cell Growth in Malignant Gliomas." She is majoring in biochemistry at Indiana University, Bloomington.

**Cristin Reno** graduated from Sylvania Southview High School, in Ohio. She conducted research at the University of Toledo, in Ohio, under the guidance of Jianglong Zhu. Reno's research is titled "Stereoselective Synthesis of S-linked 2-Deoxy Glycosides." She is majoring in chemical engineering at the University of Toledo.

**Jamarii Robinson** is a graduate of the Mississippi School for Mathematics & Science, in Columbus. Robinson conducted research under the mentorship of Douglas Masterson at the University of Southern Mississippi, in Hattiesburg, titled "Synthesis of Unnatural  $\alpha$ -Methyl  $\beta$ -Proline Analogues." Robinson is majoring in chemical engineering at Mississippi State University, in Starkville.

**Claudia Torres** graduated from Kent Place School, in Summit, N.J. She con-



ducted research under the mentorship of Huixin He at Rutgers University, Newark. Her research is titled "The Controllable Synthesis of Fluorescent Green, Excitation-Dependent Graphene Quantum Dots." Torres is majoring in molecular biochemistry at Yale University.

**Brooklynn Trujillo** is a graduate of South High School, in Denver. Under the mentorship of Matthew Cranswick at Colorado State University, Pueblo, Trujillo conducted research titled "Reaction of  $[W^{IV}(O)(mnt)_2]^{2-}$  with Strong Acids." Trujillo is majoring in chemistry at Colorado State University.

**Jade Tso** graduated from Franklin High School, in Elk Grove, Calif. She conducted research at the Department of Agriculture's Western Human Nutrition Research Center, in Davis, Calif., under the mentorship of Betty J. Burri. Tso's research is titled "Analysis of Antioxidant Status of Plasma in Bangladesh Women in Response to  $\beta$ -Cryptoxanthin-Rich Tangerine and  $\beta$ -Carotene-Rich Sweet Potatoes." She is majoring in chemistry at Duke University.



## ASHLAND SCHOLARS

Ashland is a global company that provides specialty chemicals, technologies, and expertise to customers worldwide.



**Samar Ayoub** is a graduate of Sylvania Southview High School, in Ohio. Under the mentorship of Amanda Bryant-Friedrich of the University of Toledo, Ayoub conducted research titled "5'-Deprotection of 3'-Ketone of Thymidine." Ayoub is attending the University of Toledo.

**Destiny West** graduated from Firestone High School, in Akron, Ohio. West conducted research at the University of Akron under the guidance of Michael Konopka. West's research is titled "Intracellular Membrane Dynamics in Methanotropic Bacteria." West attends Ohio State University.

## BAYER SCHOLARS

The Bayer USA Foundation has been a major donor to Project SEED and a major contributor to the Project SEED endowment.

**Carolina Banales** is a graduate of Florin High School, in Sacramento. She conducted research at the University of California, Davis, under the mentorship of Natalia Loewen. Her research is titled "Electrocatalytic Hydrogen Evolution by Iron Clusters." She is majoring in biochemistry at UC Davis.

**Timothy Chen** graduated from Green Hope High School, in Cary, N.C. Under the mentorship of Melissa Pasquinelli at North Carolina State University, in Raleigh, Chen conducted research titled "Predicting the Mechanism of Endocrine Disruption for Firemaster 550 with Virtual Screening (Two-Year Study)." Chen is attending North Carolina State University. He is majoring in engineering.

**Aparna Chintapalli** graduated from Homestead High School, in Cupertino, Calif. Under the guidance of Robert Samelson at Ball State University, in Muncie, Ind., Chintapalli conducted research titled "Optimized Synthesis of Core 2-Pyridone Structures with Potential Biological Activities." Chintapalli attends Pomona College, in Claremont, Calif.

**Judith Cruz Lopez** is a graduate of Vineland High School, in New Jersey. She conducted research at Rowan University, in Glassboro, N.J., under the mentorship of Timothy Vaden. Her research is titled "Raman Spectroscopy of Ionic Liquid Solutions." She is majoring in chemical engineering at Rowan University.

## FOSBINDER SCHOLARS

The estate of Elizabeth Ernst Fosbinder, wife of late ACS member Russell J. Fosbinder, has provided an endowment to fund college scholarships for graduates of Project SEED.

**Anthony Nguyen** is a graduate of Tualatin High School, in Oregon. Under the guidance of Angela Hoffman at the University of Portland, Nguyen conducted research titled "Isolation and Bi-



*Continued on page 68*

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**PROGRESS REPORT**

2015



## PROJECT SEED

Project SEED places economically disadvantaged high school students in academic, industrial, or governmental laboratories for 8 to 10 weeks during the summer to engage in hands-on scientific research under the supervision of a volunteer scientist mentor. Since 1968, nearly 10,000 students have experienced the excitement of chemistry through research projects at more than 350 institutions nationwide. Project SEED has been proven effective, as exit surveys show that 78% of SEED participants plan to go to college, a far greater percentage than their economic demographic would predict.



Credit: University of South Carolina

A Project SEED student and mentor share a laugh in the lab at the University of South Carolina.

# 97%

of Project SEED students indicate the experience helped them to develop new skills and abilities

“The program has influenced me to major in chemistry pre-medicine and become an anesthesiologist. Not only do I want to help administer medicine but I would like to do research along with others and help advance medicine that will be used well past my lifetime. It has helped me grow into a very independent young woman and has helped me become [more] curious and eager to learn than ever before.”

—Aaliyah Ardoin, McNeese State University

# 460

volunteer mentors and coordinators



Credit: Colorado State University

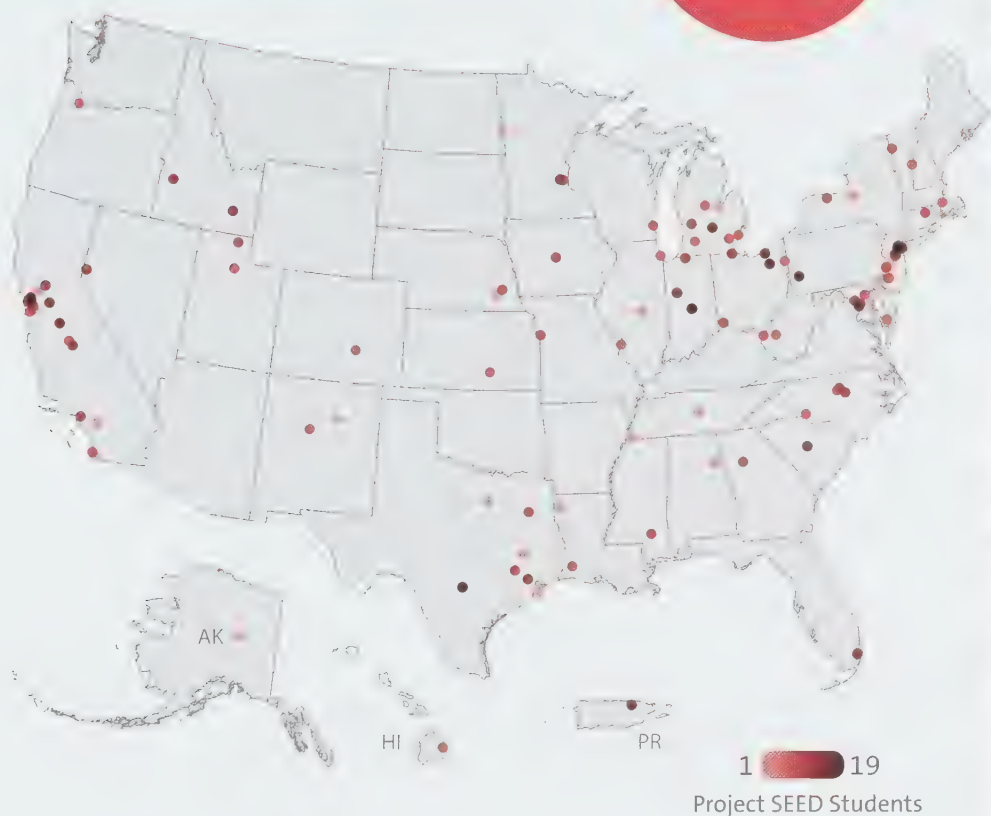
Project SEED students working in the lab at Colorado State University.

“The course of my life has been changed by Project SEED and the invaluable experience it gave me.”

—SangHo Jee, University of Maryland

## PROJECT SEED IN 2015

100% of your donation supports a research fellowship



# 423

research fellowships were awarded

### 2015 PROJECT SEED STUDENTS

Female	62%
Male	38%

### RESEARCH SITES

Academic Laboratory	63%
Government Laboratory	5%
Industrial Laboratory	25%
Medical Laboratory	7%

“Through Project SEED I have started my path to becoming a great scientist and engineer, and who knows where this journey will take me!”

—Camila Morocho, New York University

# 91%

note that Project SEED was successful in improving their self-confidence

**\$2,500** supports a Project SEED summer research fellowship

**\$ 300** supports a Project SEED student during one week of research

**\$ 60** supports a Project SEED student during one day of research





Project SEED students access a variety of research experiences.

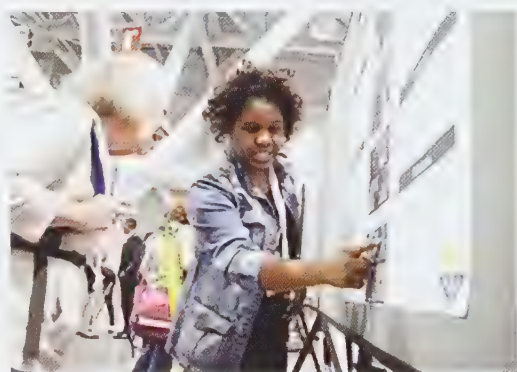
**63%**

of Project SEED students are from families with annual incomes of \$25,000 or less and 27% are from families with annual incomes of less than \$7,000

Clockwise from right: ACS Loyal Donor Sandra Tillin speaks with one of twenty Project SEED students about her research at Sci-Mix during the ACS National Meeting in Boston, MA. A Project SEED student presents her research at PacifiChem. Hawaii hosted its first Project SEED program since 1992.

“Project SEED was like going to graduate school without taking any of the prerequisite classes.”

—Bridgett Rakestraw, Scientist, BASF







Tonya Peeples  
David Pennington\*  
Joseph Perez  
Michael Perkins  
Joseph Perry  
Donald Peterson  
Andrew Petit  
Dorothy Philllips  
Stanley Pine\*  
Barbara Piper  
John Piwinski  
Marcia Prester  
Elton Price  
David Purdy\*  
Edith Rand  
Dilip Ray Chaudhuri\*  
David Rea  
Paul Reichardt  
Walter Reichle  
Harvey Reisman  
Margaret Rendall\*  
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Mark Rerek\*  
Yorke Rhodes  
James Rice\*  
Norman Rice\*  
Steven Richter\*  
Bernard Riley\*

William Stonebraker  
Marilyn Strauss  
Stephen Stroupe\*  
Jui Sun  
John Sutton  
Joel Swadesh\*  
Nobuyoshi Takahashi  
Tohru Takekoshi  
Steven Tannenbaum  
John Tanner, Jr.\*  
Dean Taylor, Jr.\*  
Dene Taylor  
Jacqueline Taylor  
Philip Taylor  
Mary Tecklenburg\*  
Alfred Tenny  
Marla Tepper  
Iwao Teraoka  
Anne Thacher  
Edith Thoburn  
Frank Tobin  
Alan Tonelli  
Yulan Tong  
Peter Toogood  
John Topliss  
Ronnell Townsend  
Anthony Trozzolo  
Jung Tsao\*

Jillian Dempsey  
Richard Eisenberg  
Judith Giordan  
Harry Gray  
Madeleine Joullié  
Jay Labinger  
Kyle Lancaster  
Charles Lieber  
Yi Lu  
George McLendon  
David McMillin  
Josef Michl  
Gary Mines  
Daniel Nocera  
Robert Scott  
Catherine Sigal  
Edward Solomon  
Michael Therien  
Joseph Vacca  
John Van Houten  
Jay Winkler  
Mark Wrighton  
BASF  
*The Dow Chemical  
Company*  
*W. R. Grace Foundation*  
*The Kavli Foundation*

## GIFTS IN HONOR AND MEMORY

The following received recognition with a contribution to the Society.

### Gifts in Honor

Harmon Abrahamson  
Alfred and Isabel Bader  
Jackie Barton  
Ernest Blakeney  
William Bornak  
The Chemical Club of  
Philadelphia  
Flick Coleman  
William "Gramps" Farris  
Anne Glenn  
Michael Greenberg  
Sharon Haynie  
George Heard  
Austin Hudson-LaPore  
Madeleine Jacobs  
Gerasimos (Mike)  
Karabatsos  
Venice Magunga  
Robert McBroom  
Demetri Merianos  
Bagher Nowshad  
James Piper  
Will Pomerantz  
Cantor Irving Shulkes  
Thomas Spencer, Jr.  
Matthew Suffness  
Chan Hung Tuck  
Lousetta Turner  
Jackie Veauthier

Vandon White  
T.C. Wu  
Elaine Yamaguchi

### Gifts in Memory

John Bailar, Jr.  
Elaine Battaglino  
Sidney Beddow  
Marjam Behar  
Henry Bent  
John Brown, Jr.  
Stanley Brown  
Maureen Chan  
Mou Shu Chao  
Malcolm Chisholm  
Aaron Cooper  
Norbert Cywinski  
Sister Mary Ambrose  
Devereaux  
Thomas Earle  
John Edwards  
Kenneth Ensley  
Rudolph Freedman  
Rodney Fryer  
Christopher Garsky  
Gladysmae Good  
David Grahame  
Alex Gringauz  
Edward Guen  
Robert Hackbart

Deborah Kilmartin  
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Gilbert Pacey  
Eli Pearce  
William Penn and  
Carolyn Haynie  
George Pimentel  
Murray Prester  
Ronald Rongone  
Harry Rose  
Alex Rowland  
Thomas Savereide  
Elwood Shaw  
Rudolph Spik  
John Stock  
Glenn Svoboda  
Louis Trudell  
Barbara Ulylot  
Charles Varsel, Jr.  
Helga Whiteside  
Robert Williams  
John Young  
Zig

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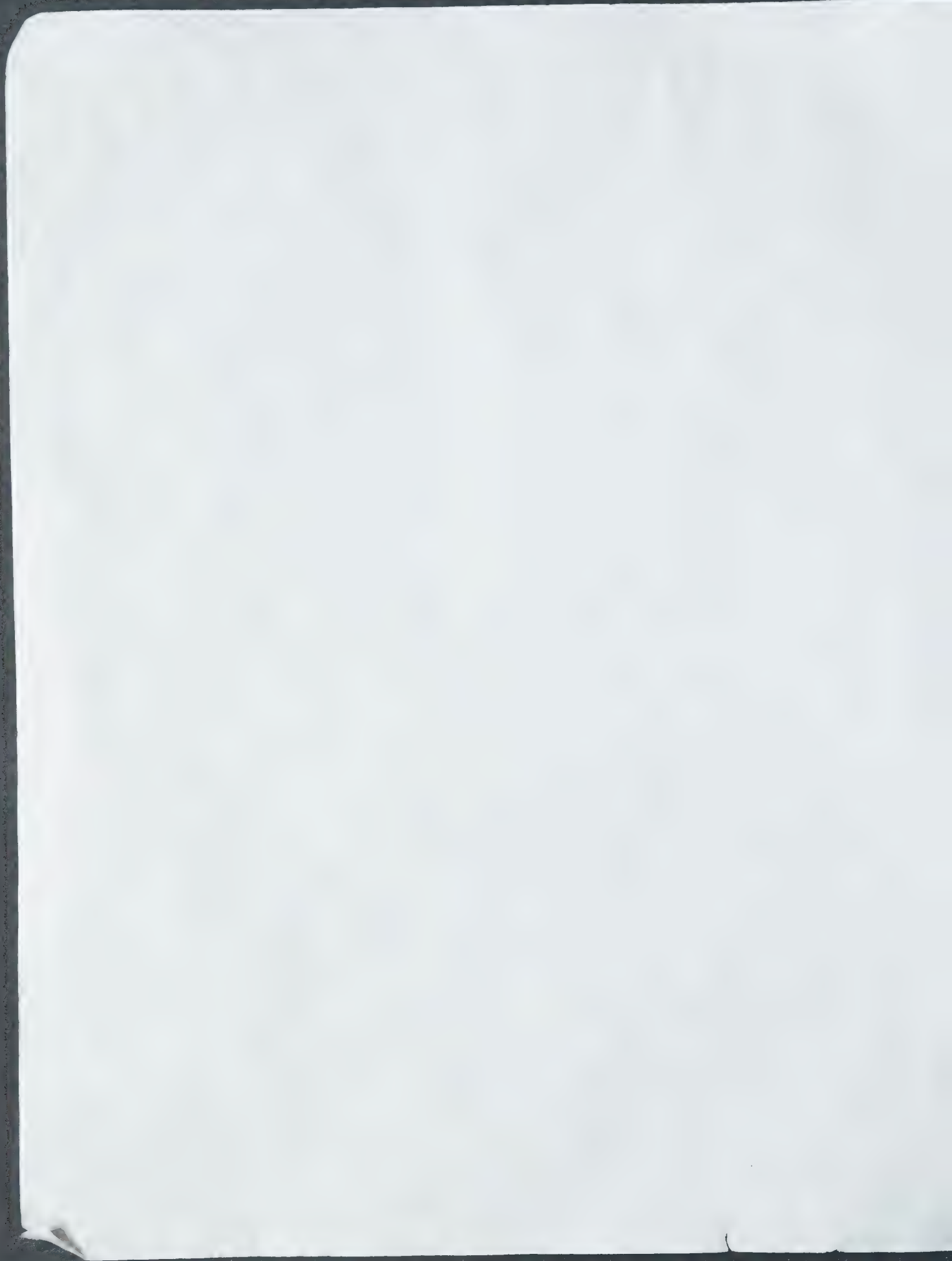
Kathy Fleming  
Director of Development

Mary Bet Dobson  
Assistant Director, Major and Planned Gifts

Lara Kadylak  
Manager, Annual Gifts

Robert Moss  
Manager, Corporate and Foundation Gifts

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ACS

Chemistry for Life

February 23, 2017

Dear Alfred and Isabel,

It is with great pleasure that I send you  
the 2016 Program Summary for Project SEED.  
Your enduring gift for the Gader Scholars  
has certainly helped to transform so  
many lives. Thank you - and I hope to  
see you both very soon.

Best regards,  
Mary Bet  
Doherty







**ACS**  
Chemistry for Life®

Development Office

April 13, 2017

Drs. Alfred and Isabel Bader  
Bader Fine Arts  
Astor Hotel  
924 E. Juneau, Suite 622  
Milwaukee, WI 53202

Dear Alfred and Isabel,

Daniel has kindly coordinated a time for us to meet next Thursday, April 20<sup>th</sup>, along with a visit to Bader Philanthropies. I look forward to seeing you both!

In the meanwhile, I am enclosing our newly printed ACS Project SEED brochure, along with a survey conducted of ACS Project SEED College Scholars. The majority of the respondents are, of course, Bader Scholars. I think you will be pleased to read the results.

See you soon!

All best regards,

Mary Bet Dobson  
Assistant Director, Development





ACS  
Chemistry for Life<sup>®</sup>

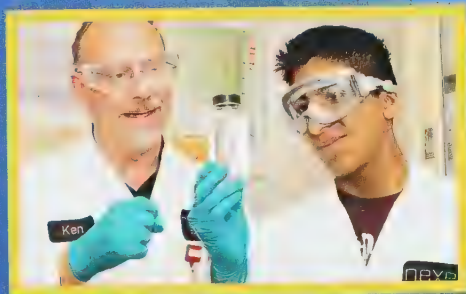
AMERICAN CHEMICAL SOCIETY

# 2016

## Project SEED Program Summary



*Hands-On Research for  
High School Students*









New Jersey Institute of Technology

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### Project SEED Mission Statement

"To assure that students from economically disadvantaged backgrounds have opportunities to experience the challenges and rewards of chemically-related sciences."



# Project SEED

## Executive Summary



Project SEED, a program of the American Chemical Society (ACS), helps economically disadvantaged high school students gain research experience and increase their self-confidence. Since 1968, the program has placed nearly 10,300 students in academic, industrial, and governmental laboratories for 8 to 10 weeks during the summer. This past summer, 435 volunteer scientists and coordinators worked with one or two students at more than 120 institutions in 38 states, the District of Columbia, and Puerto Rico. For their work, students receive a fellowship.

This was another successful year for Project SEED, with a total of 414 students participating in the program, 307 of whom were Summer I students and 107 of whom were Summer II students. To assess the success of the program, the students were asked to respond to a questionnaire. Of the 414 students in the program, 406 responded. The results of the

survey indicate that Project SEED does serve its target population: 82% of the respondents come from low-income families with incomes of \$35,000 or less; 67% of the respondents indicate that because of their experience with Project SEED they decided to pursue a career in science; 97% indicate that Project SEED helped them to develop new skills and abilities; 82% note that Project SEED was successful in improving their self-confidence; and 45% indicate they will become a scientist, engineer, or mathematician.

At the ACS fall national meeting in Philadelphia, 31 Project SEED students presented their summer research at the Sci-Mix poster session. The students represented the Georgia, Maryland, Minnesota, Nebraska, New York, Northeastern, North Jersey, Philadelphia, South Jersey, and Trenton Local Sections. (See pages 31-32.) The ACS Project SEED Endowment, industries, foundations, academic institutions, ACS Local Sections, and ACS friends and members supported total student fellowships of \$1,088,500. (See pages 36-38.) ACS provided student fellowships and paid all administrative costs.

For the academic year 2016-2017, Project SEED awarded 31 college scholarships to Project SEED alumni entering their freshman year in college who are pursuing careers in a chemical science. (See pages 19-24.) The scholarships of up to \$5,000 were funded through the continuing generosity of Alfred and Isabel Bader, the Ashland Inc., the Bayer Foundation, the Russel J. Fosbinder, and the Glenn and Barbara Ulliyot Endowments. In addition, three Project SEED college scholars received the Ciba Specialty Chemicals scholarships for three renewable years beginning in their sophomore year. Since 2009, a total of 21 students have received the Ciba scholarships, and 13 of them have graduated with chemical science degrees.

The ACS Project SEED program attributes its 48 years of success to the continued generosity of its many financial supporters, volunteer coordinators, and mentors. Thank you for your support and generosity. We look forward to celebrating the 50<sup>th</sup> anniversary of the program in 2018.





# 2016 Project SEED Summer I & II Programs

## Institutions/Coordinators/Mentors

## Students

### ALASKA

**University of Alaska-Fairbanks, William Howard**  
William Howard

Summer II  
Taylor Bergan

### ALABAMA

**Jacksonville State University, Nixon Mwebi**  
Jan Gryko  
Al Nichols  
Nixon Mwebi

Summer I  
Michael Lee  
Kenneth Livermore  
Francisco Lopez

### ARKANSAS

**University of Arkansas, Grant Wangila**  
Grant Wangila

Summer I  
Sadagicous Owens

### CALIFORNIA

**California Local Section, ACS, Elaine Yamaguchi**  
Brian Adzima

Autodesk Inc.

Summer I  
Derek Li

Chul Kim  
Marlin Halim

California State University, East Bay

Alexander Feng  
Emony Hill

Mike Long  
Ken Nelson, Jonathan Moore  
Toni Miao  
Michael Cheng  
Kaustav Chaudhuri  
Shenghua Li  
Hussein Alboudwarej

Chevron Energy and Technology Company

Ansoni Carmona  
Joakin Eje  
Fabiola Guerrero  
Ngoc Hoang  
James Isidro  
Hams Laeeq  
Zehui Li  
Huang Qiyang

Alam Hasson  
Qiao-Hong Chen  
Joy Goto

Fresno State University

Bryan Cantu  
Aaron Gonzalez  
Alison Phasakda

Jeanine Boskovich  
Gennady Borinshteyn

Libby Labs

Carlos Guerreros  
Jose Li

Kenneth Forbes

Nexeo Solutions, LLC.

Ruth Cervantes

Weiming Wu  
Zheng-Hui He

San Francisco State University

Junyi Liu  
Yuegi Yu

Don Tilley, Ryan Witzke

University of California, Berkeley

Sohail Haqiqat

# 2016 Project SEED Summer I & II Programs

## Institutions/Coordinators/Mentors

Patti LiWang  
Christine Isborn

University of California, Merced

Hrant Hratchian  
Vincent Tung

Jerry Tsai

University of the Pacific, Stockton

O. David Sparkman  
Jianhua Ren  
Andy Franz  
Liang Xue

Jianchi Chen  
Gary Banuelos

USDA-ARS Water Management Research Lab.

Jennifer Bragg  
Madhuvanti Kale  
Niu Dong, Colleen McMahan  
Sarah Throne  
William Hart-Cooper  
Fatima Alleyne  
Yong Gu

USDA-ARS Western Regional Research Center

Ken Nelson, Frank Plavac  
Jonathan Moore

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Mike Long

Chevron Products Company

Kenneth Forbes

Nexeo Solutions, LLC.

Andrew Ichimura  
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San Francisco State University

Tom Burns, Akiko Carver

University of California, Berkeley

Andy LiWang  
Anand Subramaniam

University of California, Merced

Ben Stokes, Qiao-Hong Chen

O. David Sparkman

University of the Pacific, Stockton

Spencer Walse  
Charles Burks

USDA-ARS Water Management Research Lab.

## California State University, Los Angeles, Frank Gomez

Robert Vellanoweth  
Frank Gomez

Michael Hayes

## Students

Julissa Garcia  
Erika Anaya Sanchez

Chou Xiong  
Mai Cheng Thao

Sarah Mendoza  
Luis Moreno  
Christian-John Salmasan  
Sue Vang  
Belen Sandoval  
Martha Valencia

Clarissa Ortega  
Noemi Espana

Kelly Flores  
Chang Kim  
Andrew Orellana  
Jonathan Orellana  
Andy Tran  
Elexis Webster  
Kenny Yu

### Summer II

Itzel Gonzalez

Tenzin Woesser

Valdemar Roman

Tao Wang Kwan

Haowen Liu

Eboni Bell  
Luis Garcia  
Jerry Vue  
Laivong Thung

Bonuichey Ha

Alexis Garcia  
Rodolfo Munoz-Pedraza

### Summer I

Kate Delgado  
Samantha Enriquez  
Julia Rojas  
Jennifer Reyes

# 2016 Project SEED Summer I & II Programs

## Institutions/Coordinators/Mentors

**California State University, San Bernardino, Dennis Pederson**  
Jingsong Zhang                      University of California, Riverside

**Stanford University, Kaye Storm**  
**Co-coordinator – Maiken Bruhis**  
Mengfei Yang  
Chis Lindsey  
Shifan Mao

Kim Parker

**University of California, Davis, Shota Atsumi**  
Sheila David  
Susan Kauzlarich  
Shota Atsumi

Alexei Stuchebrukhov

**University of San Diego, Jessica Bell**  
Jessica Bell

## CONNECTICUT

**University of Connecticut, Amy Howell**  
Jie He  
Alfredo Angeles-Boza  
  
Jing Zhao

## DELAWARE

**University of Delaware, Melissa Jurist**  
Thomas Epps  
Yushan Yan  
Karl Booksh

## DISTRICT OF COLUMBIA

**Chemical Society of Washington, Ajay Mallia**  
Michael Massiah                      George Washington University  
  
Hanning Chen  
  
Vladislav Sadtchenko

## Students

### Summer I

Camille Rose Fragante  
Misael Tovar-Diaz

### Summer I

Maryam Esa  
Blanca Jaime  
Kenny Solonio

### Summer II

Serena Chen

### Summer I

Beili Huang  
William Vongphackdy  
Laila Zaib

### Summer II

Daniel Leung

### Summer I

Richard Cruz  
Ryan Wey

### Summer I

Ailin Cuevas  
Jaqueline Cuevas  
Jennifer Perez  
Kevin Organista-Pablo

### Summer I

Modesto Estudillo-Huerta  
Jessica Grabowski  
Areli Tapia-Ortiz

### Summer I

Tennen Dukuly  
Jahmally Willie  
Blessing Eko  
Absatas Njie  
Johaness Osorio



# 2016 Project SEED Summer I & II Programs

## Institutions/Coordinators/Mentors

Timothy Warren K. Travis Holman Kaveh Jorabchi YuYe Tong	Georgetown University
Amol Kulkarni	Howard University
Fenella France	Library of Congress, Preservation Research and Testing Division
Xueging Song	University of District of Columbia
Zhihong Nie Andrei Vedernikov	University of Maryland, College Park
Marie-Christine Daniel-Onuta	University of Maryland Baltimore County
Akos Vertes	George Washington University
Wes Tew	National Institute of Standards and Technology
Julia Scherschligt James Fedchak	Thermodynamic Metrology Group, NIST

## Students

Lea Karan  
Florence Kyremanteng  
Meron Legasse  
Anulich Okorie

Deadrah Campbell

Nicolas Mbenga

Priscilla Hounkponou  
Laura Lopez

Tes Osei  
Zane Haug

Steven Hu

**Summer II**  
Jenny Chen

Andrew Almeida

Renard Petiangamba  
Tojo Rabemananjara

## FLORIDA

### Barry University, George Fisher

Rajeev Prabhakar                      University of Miami

### **Summer I**

Vladimir Civil  
Andy Armond

### Florida Gulf Coast University, Board of Trustees, Ju Chou

Ju Chou

### **Summer I**

Shangida Shareen  
Adriana Amaris

### University of Miami, Carmen Guzman

#### Co-coordinator – Marc Knecht

Roger Leblanc  
Amy Scott

### **Summer I**

Jael Baptiste  
Kirby Gilmore

Francisco Raymo  
Adam Braunschweig

### **Summer II**

Najsha Sweeting  
William Gilmore

### University of North Florida, Jennifer Williams

Christos Lampropoulos  
Jennifer Williams, Melissa Bush  
Radha Pyati

### **Summer I**

Darien Glover  
Asya Smith

# 2016 Project SEED Summer I & II Programs

## Institutions/Coordinators/Mentors

## Students

### GEORGIA

#### Clark Atlanta University, Ishrat Khan

Michael Williams  
Ishrat Khan  
James Reed

#### Summer I

Camron Berrian  
Michelle Payne  
Dakota Sands

### IDAHO

#### Idaho State University, Andrew Holland Co-coordinator – Joshua Pak

Rene Rodriguez  
Caryn Evilla  
Joshua Pak

#### Summer I

Paul Bickelhaupt  
Bianca Cataluna  
Abraham Olvera

Andrew Holland

#### Summer II

Andrew Hale

#### Snake River Local Section, ACS, Don Warner

Jeunghoon Lee  
Owen McDougal

Boise State University

#### Summer I

Andrea Nguyen  
Emily Wade

Rajesh Nagarajan  
Kevin Ausman  
Ken Cornell

#### Summer II

Noah Collingwood  
Jayde Nielsen  
Anthony Phero

### ILLINOIS

#### Chicago Local Section, ACS, Raelynn Miller

James Devery  
Wei-Tsung Lee  
Chad Eichman  
Dali Liu

Loyola University Chicago

#### Summer I

Janiel Cortes  
Rocco Molinelli  
Mir Rehman  
Brielle Ross

#### Milikin University, Anne Rammelsberg

Anne Rammelsberg

#### Summer I

David Bruns  
Connor Dickey

### INDIANA

#### Indiana Local Section, ACS, Elmer Sanders

Stanley Polis  
Odilon Campos  
Zhenqi Shi  
David Myers

Eli Lilly and Company

#### Summer I

Emmanuel Atilola

Mangilal Agarwal  
Amanda Siegel

Indiana University School of Engineering  
and Technology

Justice Vaughn  
Malcolm Wiseman

Clara Reasoner

# 2016 Project SEED Summer I & II Programs

## Institutions/Coordinators/Mentors

Ann Kimbel-Hill  
Horia Petrache  
Lilian Plotkin  
Steve Presse  
Charlie Dong

Indiana University Purdue University  
Indianapolis (IUPUI) School of Medicine

Lisa Jones  
Bruce Ray  
Lixin Wang  
Bill Gilhooly

IUPUI School of Science

Anthony Borel  
Hsiu-Chiung Yang  
Zhenqi Shi, Jose Clntron  
Tara Chouinard

Eli Lilly and Company

L. Jack Windsor

IUPUI School of Dentistry

Ann Kimbel-Hill

IUPUI School of Medicine

James Marrs  
Christine Picard  
Stephen Wassall

IUPUI School of Science

### **Purdue Local Section, ACS, Bryan Boudouris**

Rajamani Gounder  
Corey Thompson

Purdue University

Bryan Boudouris  
Stephen Beaudoin

### **University of Notre Dame, Mary Prorok Co-coordinator – Kayode Oshin**

William Boggess, Michelle Joyce  
M. Sharon Stack

Holly Goodson  
Amanda Hummon

## IOWA

### **Iowa State University, Javier Vela**

Jared Anderson  
Vincenzo Venditti  
Emily Smith

Javier Vela

## Students

Brianna Betton  
Samantha England  
Alejandro Marcial  
Emily Perez  
Sakhi Shah

Yonas Araya  
Ahbisak Chin  
Truc Kha  
Ayo-Oluwa Laleye  
Katessia Robertson

### Summer II

Rochelle Adjei  
Anna Martin  
Angelica Murillo  
Cassie Washam

Aundria Liggins

Haben Gebre

Daniel Adeniji  
Grace LeFevre  
Htayni Sui

### Summer I

Joey Mullins  
Brennen Vigar

### Summer II

Veronica Bowling  
Hannah Burnau

### Summer I

Jing Guo  
Lace Hunt

### Summer II

Christian Lemus  
Faith Young

### Summer I

Moises Garcia  
Aracely Miron-Ocampo  
Giovanni Tenikat

### Summer II

Danielle Espinosa-Gonzalez



# 2016 Project SEED Summer I & II Programs

## Institutions/Coordinators/Mentors

## Students

### KANSAS

**Wichita State University, Syed Taher**  
Syed Taher

Summer I  
Ashley Romero

Summer II  
Syed Shamiun

### LOUISIANA

**Louisiana State University-Shreveport, Brian Salvatore**  
Brian Salvatore

Summer II  
La'Brittany Hill

### MARYLAND

**Morgan State University, Louise Hellwig**  
Santosh Mandal

Summer I  
Ariana Jennings

Fasil Abebe

Summer II  
Jayda Smith

**University of Maryland Eastern Shore, Victoria Volkis**  
Deborah Sauder  
Victoria Volkis  
Byungrok Min

Summer I  
Montajha Bowen  
Cierra Jennestreet  
Aleyah Lewis

### MASSACHUSETTS

**Northeastern University, Patricia Mabrouk**  
Patricia Mabrouk

Summer I  
Maricelys Ramos

**Stonehill College, Cheryl Schnitzer**  
Deno Del Sesto

Summer II  
Cesar Romero

### MICHIGAN

**Calvin College, Mark Muyskens**  
Mark Muyskens  
Douglas Vander Griend

Summer II  
Joshua Howard  
Adriyanna Jones

**Midland Local Section, ACS, Bernadette Harkness**  
**Co-coordinator – David Karpovich**  
Jennifer Chaytor  
Tami Sivy

Summer I  
Darla Martinez  
Aubrie Taceyi

Anja Mueller  
Benjamin Swarts

Central Michigan University

Summer II  
Evamarie Medendorp  
Kailey Zochowski



# 2016 Project SEED Summer I & II Programs

## Institutions/Coordinators/Mentors

### Eastern Michigan University, Harriet Lindsay

Harriet Lindsay

Jeff Guthrie

### Henry Ford Community College, Keith Williams

Howard Matthew

Wayne State University

Matthew Allen

Wen Li

### Michigan State University, Chrysoula Vasileiou

#### Co-coordinator – Babak Borhan

Heedeok Hong

James Jackson, Lisa Jones

Denis Proshlyakov

Babak Borhan

William Wulff

James Geiger

Robert Maleczka

Denis Proshlyakov

Xuefei Huang

Remi Beaulac

## MINNESOTA

### Minnesota Local Section, ACS, Sarah Mullins

Jerry Cohen

University of Minnesota

Romas Kazlauskas

Wayland Noland

Philippe Buhlmann

Wayland Noland

## MISSISSIPPI

### The University of Southern Mississippi, Douglas Masterson

Joseph Lott

Song Guo

Jason Azoulay

## Students

### Summer I

Alaya HickS

### Summer II

Wilmer Zhinin

### Summer I

Suriya Chowdhury

Ruma Deb

Fahmida Khaton

Shaida Nishat

### Summer I

Dhan Bhandari

Dayton Buchanan

Maryam Ezz

Joana Lepuri

Fardowsa Omar

Jonathan Tuma

### Summer II

Maryam Abbas

Sabrein Ahmed

Ali Aljazi

Reeta Shaffo

### Summer I

Francisco Balderrama

Khao Nou Lor

Tommy Vang

### Summer II

Xatziri Viveros Aguilar

Samsam Dirie

Kenny Xiong

### Summer I

Sumar Beauti

Clara Ellis

Jaren Jones

# 2016 Project SEED Summer I & II Programs

## Institutions/Coordinators/Mentors

## Students

### MISSOURI

#### Kansas City Local Section, ACS, Michelle Paquette Co-coordinator – Eckhard Hellmuth

Michelle Paquette University of Missouri-Kansas City  
Nathan Oyler  
Keith Buszek

#### Summer I

Derrick Bailey  
Kaleb Rimpson  
Cooper Clements  
Montserrat Santos

#### Saint Louis University, Ryan McCulla

Ryan McCulla

#### Summer I

Patricia Golden

#### Summer II

April Lewis

### MONTANA

#### University of Montana, Earle Adams

Orion Berryman

#### Summer I

John Bowers

### NEBRASKA

#### Creighton University, Sade Kosoko-Lasaki

Devendra Agrawal  
Yaping Tu

#### Summer I

Nancy Chung  
Deysy Reyes

### NEVADA

#### University of Nevada, Reno, Laina Geary

Jason Shearer  
Yiftah Tal-Gan  
Matthew Tucker  
Wesley Chalifous  
Ian Wallace

#### Summer I

Katrina Arbogast  
Mariah Brito  
BreAnna Cardenas  
Phuc Duong  
Umme Simanto

Laina Geary

#### Summer II

Sava Karcher

### NEW HAMPSHIRE

#### Dartmouth College, Ivan Aprahamian

Katherine Mirica

#### Summer II

Nicholas Chambers  
Polina Pivak

# 2016 Project SEED Summer I & II Programs

## Institutions/Coordinators/Mentors

## Students

### NEW JERSEY

#### Academy for Enrichment & Advancement, Union City High School, Amanda Smith

Yang Deng                      Montclair State University  
Sally Stras                      Rutgers University, Piscataway

#### Summer I

Giovanni Cruz  
Valerie Zapata

Yang Deng                      Montclair State University  
Stavroula Sofou              Rutgers University, Piscataway

#### Summer II

Keileen Alvarez  
Katherine Fernandez  
Tracey Simon  
Emily Tumbaco

Sally Stras

#### Academy for Enrichment & Advancement, Union City High School, Mina Armani

Ecevit Bilgili                      New Jersey Institute of Technology

#### Summer I

Mario Banos

Sagnik Basuray

#### Summer II

Isaac Ortega

#### Academy for Enrichment & Advancement, Union City High School, Judith Barrios

Judith Barrios                      Academy for Enrichment and Advancement  
Steven Levison                      New Jersey Rutgers Medical School  
Raymond Birge  
Maria Agapito                      Saint Peter's University

#### Summer I

Miguel Castro  
Nathalee Martinez  
Amada Ponce  
Melanie Moncayo

Judith Barrios                      Academy for Enrichment and Advancement  
Pankaj Lal                      Montclair State University

#### Summer II

Anakarla Gonzalez  
Gilda Lovera  
Katherine Mendoza

#### Academy for Enrichment & Advancement, Union City High School, Nadia Makar

Marc Cohen                      Beth Israel Medical Center

Vadenska Valens                      Fairleigh Dickinson University  
Jinshan Gao                      Montclair State University

Clement Alo                      Rutgers University, Newark

Michele Pavanello  
Karina Schafer  
Agostino Pietrangelo  
Stavroula Sofou

Yufeng Wei                      Seton Hall University  
Philip Leopold                      Stevens Institute of Technology

#### Summer I

Rebecca Amador  
Taysha Campara  
Anna Yactayo  
Thairy Garcia  
Kiara Martinez  
Gabriela Ale  
Giselle Guaman  
Jennifer Hernandez  
Pedro Perez  
Nicole Ceballos  
Kamila Amador  
Ingrid Quintanilla  
Aldair Medrano

Stefan Strauf



# 2016 Project SEED Summer I & II Programs

## Institutions/Coordinators/Mentors

Gerard Parkin  
Kenneth Yamaguchi  
Flaminia Marrucci  
Hongjun Wang

Columbia University  
New Jersey City University  
New York University  
Stevens Institute of Technology

### Bayonne High School, Marie Aloia

Rajesh Dave  
New Jersey Institute of Technology

Maria Aloia

### Fairleigh Dickinson University, Marion McClary

James Vachio  
Ratna Vadlamudi

Marion McClary

### New Brunswick Health Sciences Technology High School, Joanne Ciezak

Marshall Bergen  
Rutgers University

### New Jersey City University, Kenneth Yamaguchi

Miriam Bendaoud  
Yufeng Wei  
Kenneth Yamaguchi

Reed Carroll

Robert Aslanian  
Terry Kamps

### New Jersey Institute of Technology, Reginald Tomkins

El Jabiri

Alexei Khalizov  
Liang Chen  
Roman Voronov

### New Jersey Institute of Technology, Leslie Williams

Ravindra Nuggehalli

### North Jersey Local Section, ACS, Bobbi Gorman

James White  
Rutgers University

## Students

### Summer II

Joan Martinez  
Jessica Alvitres  
Ying Qi Lin  
Jose Perez

### Summer I

Nada Wahba

### Summer II

Nardeen Khella

### Summer I

Salimata Fall  
Ashley Gordillo

### Summer II

Michelle Sinning

### Summer I

Rosa Veliz

### Summer I

Aswin Aguinaga  
John Carvajal  
David Herrera  
Prasami Rajapakse  
Mirka Ortiz  
Henry Velasquez

### Summer II

Efstathois Leontaris  
Jacqueline Suarez

### Summer I

Kevin Hernandez  
Marcelo Munoz  
Jaime Mendoza  
Isaiah Moreta  
Camila Sierra

### Summer I

Gladys Adarkwah

### Summer I

Jonathan Reynolds



# 2016 Project SEED Summer I & II Programs

## Institutions/Coordinators/Mentors

### **Rider University, Danielle Jacobs**

David Laviska  
Danielle Jacobs  
Jamie Ludwig

### **South Jersey Local Section, ACS, Gregory Caputo**

Timothy Vaden, Lei Yu      Rowan University  
Lark Perez

### **Rutgers University, Piscataway, Shaneika Nelson**

Daniel Seidel      Rutgers, the State University of New Jersey

### **Rutgers University-Camden, David Salas-de la Cruz**

David Salas-de la Cruz

### **Rutgers, The State University of New Jersey, Johan Guerra**

Frieder Jaekle      Rutgers University, Newark

Huixin He

### **Rutgers, The State University of New Jersey, Deborah Stalling**

Nanjoo Suh      Rutgers, the State University of New Jersey

Suzie Chen

### **Science Park High School, Andre Bridgett**

N. M. Ravindra      New Jersey Institute of Technology

Alexis Rodriguez      Rutgers University, Newark

### **Seton Hall University, Gerald Buonopane**

David Sabatino  
Gerald Buonopane

Cosimo Antonacci  
Sulie Chang

Rhonda Quinn

Maria Barca

## Students

### Summer I

Shawn Bailey  
Jibri Grigger-Muse  
Bianca Swidler

### Summer I

Omar Cruz Garcia  
Citlalli Jimenez

### Summer II

Jose Hernandez-Morales

### Summer I

Erika Garro  
Echefalachi Nwaemo

### Summer I

Mary-Jane Igwagu  
Jamila Osborne

### Summer II

Nicole Taylor

### Summer I

Chantal Chacho

### Summer II

Bianca Sanchez

### Summer I

Liandra Gutierrez-Stephens  
Edith Cordova-Zeas  
Josephine Arewa

### Summer I

Deborah Afotey  
Oscar Cosme  
Leonsteen Sterling  
Amrita Singh  
Joyce Jimenez  
Ashley Reid  
Chideya Waddell  
Allizea Kennedy

### Summer II

Adjeilyne Akrong  
Claudia Bonheur

# 2016 Project SEED Summer I & II Programs

## Institutions/Coordinators/Mentors

## Students

### NEW MEXICO

#### Sandia National Laboratories, Bernadette Hernandez-Sanchez

##### Co-coordinator – Amy Tapia

Bernadette Hernandez-Sanchez  
Timothy Boyle

##### Summer I

Rayna Bandy  
Fernando Guerrero

### NEW YORK

#### Rochester Institute of Technology, Lea Vacca Michel

Callie Babbitt, Christy Tyler Rochester Institute of Technology  
Andre Hudson  
Daniel Weix  
Anju Gupta  
Gabrielle Gaustad

##### Summer I

Truc-Nhi Do  
Kaysha Reed  
Jared Rodriguez  
Daimonique Singleton  
Ahmere Spires

### NORTH CAROLINA

#### North Carolina University, Laura Sremaniak

Alan Tonelli North Carolina State University  
Elena Jakubikova

##### Summer I

Aamenah Jordan  
Kylah Liftin

Michael Fitzgerald Duke University

Kathleen Donohue

Felix Castellano

Melissa Pasquinelli

North Carolina State University

##### Summer II

Betelihem Mebrahtu  
Benhor Samson  
Chidubem Nwaku  
Samuel Ndukwe

#### University of North Carolina, Charlotte, Thomas Schmedake

Michael Walter  
Daniel Rabinovich  
Thomas Schmedake  
Kirill Afonin

##### Summer I

Brandon Miller  
Liliana Moranchel  
Jacqueline Sandoval  
Beamiak Worku

### OHIO

#### Akron Local Section, ACS, Tama Drenski

Chrys Wesdemiotis University of Akron  
Kevin Cavicchi  
Steven Chuang  
David Modarelli  
Christopher Ziegler  
Ali Dhinojwala, Diane Gorse

##### Summer I

Dalal Abdelqader  
Tommy Alvarado  
Juanese Franklin  
Brandon Griffith  
Adwoa Odoom  
Maxwell Rankin

Jia Li  
Abraham Joy

##### Summer II

Tabitha Graves  
Sean Jeffreys

# 2016 Project SEED Summer I & II Programs

## Institutions/Coordinators/Mentors

### Case Western Reserve University, Carlos Crespo-Hernandez

Sichun Yang  
Clemens Burda  
Anna Samia  
Chris Dealwis  
Rajesh Viswanathan  
Daniel Scherson  
John Protasiewicz  
Carlos Crespo-Hernandez  
Genevieve Sauve  
Emily Pentzer

Carlos Crespo-Hernandez  
Rohan Akolkar, Alfred Anderson

### University of Cincinnati, Anna Gudmundsdottir

James Mack

Anna Gudmundsdottir  
Laura Sagle

### University of Toledo, Andy Jorgensen

Cora Lind-Kovacs

### Youngstown State University, Sherri Lovelace-Cameron

Sherri Lovelace-Cameron  
Tom Oder

Sherri Lovelace-Cameron

## OREGON

### Eastern Oregon University, Anna Cavinato

Anna Cavinato

### Portland Local Section, ACS, Angela Hoffman

Theresa McCormick  
Portland State University  
Marilyn Mackiewicz

## PENNSYLVANIA

### Covestro LLC, Irene McGee

Robyn Francis, Marie Urick

## Students

### Summer I

Abdel-Raheem Abed  
Jade Britton  
Sierra Jones  
Amanda Kong  
Destini McCrory  
Ali Moukdad  
Youssaf Rouiha  
Daisha Taylor  
Yonles Webb  
Jaylen Williams

### Summer II

Frankie Santiago-Perez  
Michael Sebring

### Summer I

Carl Williams

### Summer II

Khadyjah Diaw  
Isaiah Howard

### Summer I

Lich Do

### Summer I

Ali Mujahed  
Marckese Williams

### Summer II

David Polonus

### Summer I

Gabriella Rodriguez

### Summer I

Julia Dayton  
Nicole Zhen

### Summer II

Brian Foster  
Onyan Sheely



# 2016 Project SEED Summer I & II Programs

## Institutions/Coordinators/Mentors

### Duquesne University, Jennifer Aitken

Michael Cascio, Elizabeth Castellano  
Peter Wildfong, Kevin DeBoyace  
Patrick Flaherty, Mohit Gupta  
Jane Cavanaugh, Thomas Wright  
Jennifer Glenn  
Jennifer Aitken

Partha Basu  
Sara Dille  
Michael Van Stipdonk, Cassandra Hanley  
Stephanie Wetzel, Holly Castellano

## PUERTO RICO

### Puerto Rico Local Section, ACS, Ingrid Montes

Arthur Tinoco University of Puerto Rico, Rio Piedras

Jorge Colon

Carlos Gonzalez

Carlos Cabrera

Eduardo Nicolau  
Vilmali Lopez-Mejias  
Abel Baerga  
Jose Lasalde

Eduardo Nicolau  
Dalice Piñero-Cruz

## SOUTH CAROLINA

### University of South Carolina, Chuanbing Tang

Chuanbing Tang

## TENNESSEE

### LeMoyne-Owen College, Yahia Hamada

Yahia Hamada, Sherry Painter

Yahia Hamada

## Students

### Summer I

Israa Abdulmutaleb  
David Donehue  
Gildas Kodjo  
Destiny Lawrence-Brown  
Zachary Opalko  
Asia Parker

### Summer II

Jeremiah Jones  
Sarine McKenzie  
Jordan Pestok  
Angel Williamson-Wheat

### Summer I

Adelis Alvarez-Nieves  
Adriane Mendez Fernandez  
Isabel Aviles-Berrios  
Emanuel Colon-Escalera  
Rocio Del M. Aviles-Mercado  
Iranis Hernandez Gonzalez  
Cristofer Gonzalez  
Natalia Perez Rivera  
Arlin Guzan-Espinal  
Jelliany Lopez Batista  
Jahzeel Ortiz Velez  
Darwing Padilla Rolon

### Summer II

Caleb Colon  
Oliver Pichardo

### Summer II

Nia Livingston

### Summer I

Hasan Hamada  
Nour Zawahiri

### Summer II

Hajja-Aishah Darboe



# 2016 Project SEED Summer I & II Programs

## Institutions/Coordinators/Mentors

### Middle Tennessee State University, Paul Gregory Van Patten

Paul Gregory Van Patten

## Students

### Summer I

Helene Hamo  
Edgar Lozano

## TEXAS

### Greater Houston Local Section, ACS, Carolyn Burnley

#### Co-coordinator – Oluwatoyin Asojo

Kjersti Aagaard-Tillery      Baylor College of Medicine

Oluwatoyin Asojo

Bin Zhan

Bert O'Malley

Rojelio Mejia

Job Lopez

Yingchun Li

Hua-Jun Fan

Prairie View University

Max Fontus

Gururaj Neelgund

Nathaniel Soboyejo

Jakoah Brgoc

Lars Grabow

B. Montgomery Pettitt

University of Houston

University of Texas Medical Branch

Kjersti Aagaard

Sam Houston State University

### San Antonio Local Section, ACS, E. Robert Fanick

Maoqi Feng

Tian Tian

John Zhao

George Negrete, Andrew Tsin

Lorenzo Brancalone

Zachary Tonzetich

Doug Frantz

Kelly Nash

Southwest Research Institute

Trinity University

University of Texas at San Antonio

Carol Ellis-Terrell

Vasiliki Poenitzsch

Stanton McHardy

Kelly Nash

Southwest Research Institute

University of Texas at San Antonio

### Texas Wesleyan University, Terrence Neumann

Terrence Neumann

### Summer I

Alexia Harvey

Paige Moore

Chiagozie Ndukwe

Alberto Partida

Nazaria Ramirez

Shanii Tabb

Reginald Collins

Adesuwa Ehioghae

Babur Naimi

Kenia Ginyard

Owais Raza

Deshaun Miller

Hotam Yusupov

Alma Harris

Cindy Mai

Yenifer Gil

### Summer II

Samantha Clem

### Summer I

Sebastien Aguilar

Claudia Zamarripa

Elysha Garcia

Emily Infante

Santiago Lelia

Miguel Loredo

Andrew Martinez

Tristin Zamora

### Summer II

Raul Carreon

Sandra Figueroa

Jamie Turcios-Villatta

### Summer I

Bennie Tarrant

Emilio Zaragoza

# 2016 Project SEED Summer I & II Programs

## Institutions/Coordinators/Mentors

## Students

### UTAH

University of Utah, Sophie Caron  
Sophie Caron

Summer II  
Asma Rokhaneevna

### VERMONT

University of Vermont, Rory Waterman  
Rory Waterman

Summer I  
Hibo Jafar

Matthias Brewer

Summer II  
Kevin Huang

### WEST VIRGINIA

Marshall University, Derrick Kolling  
Michael Norton

Summer I  
Amber Stone

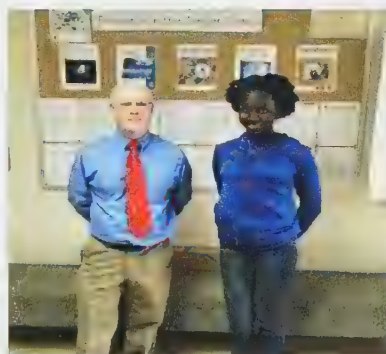
### WISCONSIN

Medical College of Wisconsin, Michael Mathias  
Matthew Scaglione  
John Corbett

Summer I  
A'voin Solis-McKinney  
Sokhna Wyatt-Ngoml



Akron Local Section, ACS



## 2016–2017 College Scholarship Recipients

The Project SEED College Scholarship is a first-year nonrenewable scholarship for Project SEED participants entering their freshman year majoring in a chemical science field. In 2016, 31 students who have demonstrated a high potential to succeed in chemistry were awarded the college scholarships for the 2016-2017 academic year. Congratulations to the recipients of the College Scholarships; the ACS Committee on Project SEED wishes all students continued success in their future studies.

### Alfred and Isabel Bader Scholars

**Alfred Bader** is one of the founders of the Sigma-Aldrich Company, today Sigma-Aldrich Co. **Alfred and Isabel Bader** have generously contributed to Project SEED over the years. In 1992 their support started the Summer II program and have since 1997 supported the Project SEED college scholarships.



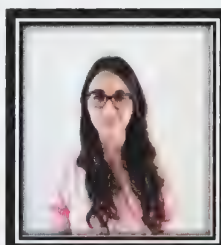
Alicia Ball



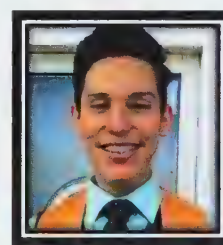
Idris Barakat



Chrisa-Kay Clarke



Graciela Gautier



Caleb Colon Jimenez



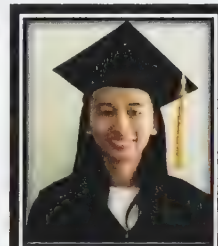
Shally Lin



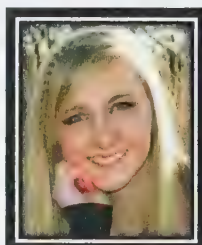
Yingqi (Linda) Li



Jose Martinez Hernandez



Tsz Yan Ng



Jayde Nielsen



Oliver Peguero



Onyah Sheely



Crystal Vejar



## 2016–2017 College Scholarship Recipients

### **Alicia Ball**

High School: Garber High School, Essexville, Mich.  
SEED Institution: Saginaw Valley State University, Mich.  
SEED Mentor: Adam Warhausen  
Michigan Technology University, Houghton  
Major: Biomedical Engineering

### **Idris Barakat**

High School: Parkside High School, Salisbury, Md.  
SEED Institution: University of Maryland Eastern Shore  
SEED Mentor: Byungrok Min  
Salisbury University, Salisbury, Md.  
Major: Biochemistry

### **Max Chee Garza**

High School: The Griffin School, Austin, Tex.  
SEED Institution: University of Texas at San Antonio  
SEED Mentor: Zachary Tozetich  
Seattle University, Seattle, Wash.  
Major: Biochemistry

### **Chrisa-Kay Clarke**

High School: Cypress Springs High School, Cypress, Tex.  
SEED Institution: Prairie View A&M University, Tex.  
SEED Mentor: Gururaj Neelgund  
Prairie View A&M University  
Major: Chemistry

### **Morgan Fabber**

High School: Blackman High School, Murfreesboro, Tenn.  
SEED Institution: Middle Tennessee State University, Murfreesboro  
SEED Mentor: Greg Van Patten  
Vanderbilt University, Nashville, Tenn.  
Major: Chemistry

### **Graciela Gautier**

High School: Carmen Belen Veiga High School, Juana Diaz, P.R.  
SEED Institution: University of Puerto Rico, Rio Piedras  
SEED Mentor: Jose Lasalde  
Iowa State University, Ames  
Major: Biochemistry

### **Kevin Huang**

High School: Burlington High School, Burlington, Vt.  
SEED Institution: The University of Vermont, Burlington  
SEED Mentor: Matthias Brewer  
University of Vermont  
Major: Chemistry

### **Caleb Colon Jimenez**

High School: University Gardens High School, San Juan, P. R.  
SEED Institution: University of Puerto Rico, San Juan, P. R.  
SEED Mentor: Eduardo Nicolau  
University of Puerto Rico, Mayaguez Campus  
Major: Chemical Engineering

### **Aimen Lateef**

High School: Niles West High School, Skokie, Ill.  
SEED Institution: Loyola University, Chicago, Ill.  
SEED Mentor: Kathy Mortell, Miguel Ballicora  
Dominican University, River Forest, Ill.  
Major: Biochemistry

### **Shally Lin**

High School: Pittsford Menckon High School, Pittsford, N.Y.  
SEED Institution: Rochester Institute of Technology, N.Y.  
SEED Mentor: Callie Babbitt  
University of Buffalo, N.Y.  
Major: Biochemistry

### **Yingqi (Linda) Lin**

High School: Hunter College High School, N.Y.  
SEED Institution: New York University  
SEED Mentor: Tianning Diao  
Swarthmore College, Swarthmore, N.Y.  
Major: Biochemistry

### **Jose Martinez Fernandez**

High School: Cane Ridge High School, Antioch, Tenn.  
SEED Institution: Middle Tennessee State University, Murfreesboro  
SEED Mentor: Greg Van Patten  
Harvard University, Cambridge, Mass.  
Major: Chemistry

### **Tsz Yan Ng**

High School: Southview High School, Sylvania, Ohio  
SEED Institution: The University of Toledo, Ohio  
SEED Mentor: Jianglong Zhu  
The University of Toledo  
Major: Chemical Engineering

### **Thao Nguyen**

High School: Volcano Vista High School, Albuquerque, N. Mex.  
SEED Institution: Advanced Materials Laboratory, Albuquerque, N. Mex.  
SEED Mentor: Bernadette Hernandez Sanchez  
University of New Mexico, Albuquerque  
Major: Chemistry



## 2016–2017 College Scholarship Recipients

### Jayde Nielsen

High School: Middleton High School, Middleton, Idaho  
SEED Institution: Boise State University Idaho  
SEED Mentor: Kevin Ausman  
Brigham Young University, Provo, Utah  
Major: Chemical Engineering

### Aisha Patel

High School: Niles West High School, Skokie, Ill.  
SEED Institution: Loyola University, Chicago, Ill.  
SEED Mentor: Chad Eichman  
DePaul University, Chicago, Ill.  
Major: Biochemistry

### Anthony Phero

High School: Centennial High School, Boise, Idaho  
SEED Institution: Boise State University, Idaho  
SEED Mentor: Ken Cornell  
University of Utah, Salt Lake City  
Major: Biochemistry

### Oliver Pichardo Peguero

High School: Escuela Especializada Bilingue Padre Rufo, San Juan, P.R.  
SEED Institution: University of Puerto Rico, Rio Piedras  
SEED Mentor: Dalice Pinero  
University of Puerto Rico, Rio Piedras  
Major: Chemistry

### Onyah Sheely

High School: Imani Christian Academy, Pittsburgh, Pa.  
SEED Institution: Covestro LLC, Pittsburgh, Pa.  
SEED Mentor: Robyn Francis  
Howard University, Washington, D.C.  
Major: Chemistry

### Crystal Vejar

High School: InTech Collegiate High School, North Logan, Utah  
SEED Institution: Utah State University, Logan  
SEED Mentor: Nicholas Dickenson  
Rensselaer Polytechnic Institution, Troy, N.Y.  
Major: Biochemistry

### Cassie Washam

High School: Western Boone Jr./Sr. High School, Thorntown, Ind.  
SEED Institution: Eli Lilly and Company, Indianapolis, Ind.  
SEED Mentor: Tara Chouinard  
DePauw University, Greencastle, Ind.  
Major: Biochemistry

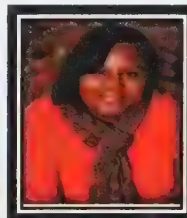
## Ashland Scholars

Ashland Inc. is a leading global company which provides specialty chemicals, technologies and expertise to customers worldwide. Since 2011, Ashland Inc. has sponsored Project SEED alumni.



### Katherine Lindsay

High School: Guerin Catholic High School, Noblesville, Ind.  
SEED Institution: Eli Lilly and Company, Indianapolis, Ind.  
SEED Mentor: Michael Stanick, Susan Gackenheimer  
Denison University, Grandville, Ohio  
Major: Biochemistry



### Demi Reed

High School: Firestone High School, Akron, Ohio  
SEED Institution: University of Akron  
SEED Mentor: Charles Moorefield  
Ohio University, Athens  
Major: Forensic Chemistry

# 2016–2017 College Scholarship Recipients

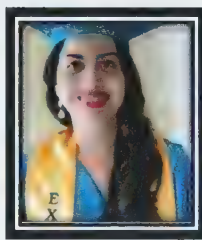
## Bayer Scholars

The **Bayer Foundation** contributed to the Project SEED Endowment. Bayer is a research based company with major businesses in health care and life sciences as well as chemicals and imagining technologies. Since 1993, Bayer has supported Project SEED alumni.



### Mayesha Awal

High School: Lawrence North High School, Indianapolis, Ind.  
SEED Institution: Indiana University School of Medicine  
SEED Mentor: X. Charlie Dong  
Georgetown University, Washington, D.C.  
Major: Biochemistry



### Stefannie Morales

High School: University Gardens High School, San Juan, P.R.  
SEED Institution: University of Puerto Rico Rio, Piedras  
SEED Mentor: Eduardo Nicolau  
Universidad de Puerto Rico en Bayamoin  
Major: Chemical Engineering

### Jose Ayala

High School: Passaic County Technical Institute, N.J.  
SEED Institution: Rutgers University, Newark, N.J.  
SEED Mentor: Karina Schafer  
Rutgers University, New Brunswick, N.J.  
Major: Chemistry

## Fosbinder Scholars

The **Estate of Elizabeth Ernest Fosbinder**, wife of late ACS member, Dr. Russel J. Fosbinder stipulated the establishment of an endowment in honor of Dr. Fosbinder to fund college scholarships for graduates of Project SEED. Since 2004, the endowment has supported Project SEED alumni.

### Mary Martinez

High School: The Metropolitan Soundview High School, Bronx, N.Y.  
SEED Institution: University of Puerto Rico, Rio Piedras  
SEED Mentor: Arthur Tinoco  
Bronx Community College, Bronx, N.Y.  
Major: Biochemistry



### Leul Tesfaye

High School: Wheaton High School, Wheaton, Md.  
SEED Institution: University of Maryland, College Park  
Mentor: Andrei Vedernikov  
Cornell University, Ithaca, N.Y.  
Major: Chemical Engineering

## Ullyot Scholars

**Glenn and Barbara Ullyot**. Glenn Ullyot worked for Smith, Kline & French Laboratories. He was a major contributor to the discovery and manufacture of new drugs to the medical world. Barbara Ullyot had a management career at ACS and was a valuable member. Glenn and Barbara provided college scholarships to Project SEED students over their lifetime.

### Jessica Chung

High School: Valley Catholic High School, Beaverton, Oreg.  
SEED Institution: University of Portland, Oreg.  
SEED Mentor: Angela Hoffman  
Harvard University, Cambridge, Mass.  
Major: Biochemistry



## 2016–2017 College Scholarship Recipients

### Ciba Specialty Chemicals Scholars

**CIBA Specialty Chemicals** was a leading global chemical company acquired by BASF in 2008. The Ciba Foundation made a generous legacy gift to the American Chemical Society to establish the Ciba Specialty Chemicals Scholars Endowment, a new component added to the Project SEED college scholarship program, which expanded the one-year Project SEED college scholarships to a three-year renewable scholarship. As of today, 13 of the 21 awardees have graduated in the chemical sciences.



**Medinat Akindede**  
Attending the University of  
Minnesota-Twin Cities,  
Minneapolis  
Major: Chemistry



**SangHo Jee**  
Attending the University of  
Maryland, College Park  
Major: Biochemistry



**Brooklyn Trujillo**  
Attending Colorado State University Pueblo  
Major: Chemistry

### ACS Project SEED Scholars



**Cindy Gnawa**  
High School: Wheaton High  
School, Silver Spring, Md.  
SEED Institution:  
Georgetown University,  
Washington, D.C.  
SEED Mentor: Richard Weiss  
University of Maryland,  
College Park  
Major: Biochemistry

**Lia Thung**  
High School: Golden Valley High School,  
Merced, Calif.  
SEED Institution: University of California, Merced  
SEED Mentor: Vincent Tung  
University of California, Berkeley  
Major: Chemistry



## 2016 Project SEED Students Testimonials



Bader Scholar: **Mayesha Awal**, Lawrence North High School, Indianapolis, IN  
Mentor: X.Charlie Dong  
SEED Institution: Indiana University School of Medicine  
Research Title: Search for Small Molecules to Improve Health and Longevity

In the summer of 2015, I was exhilarated when I was selected to intern with Project SEED. After Project SEED, I am enamored by research as it challenges me to think, explore, and create without any boundaries set upon me. I've always had an affinity for science, and with research I like the idea of creative engagement as I am able to test my ideas not only to benefit society, but also to watch the evolution of a small idea catered universally.

During my internship, I was only able to run two trial runs because of my limited time of 8 weeks. However, I acquired skills and techniques that I will benefit from for the rest of my life. For instance, patience and perseverance are vital in maintaining a healthy lab setting because I had to wait for days in order to lyse cells, and wait days to grow bacteria. I also learned how to embrace failure because in the field of science, failure is pivotal in order to learn the weaknesses of an experiment. Before, failure was a hard concept for me to accept as I was accustomed to the idea of perfection. This altered my perspective as I realized that imperfection is perfection not only in research but also in my life. In addition, the information I acquired about Sirtuin-6 and molecular biology exceeded any of the science material I was taught in high school as it was profound, thought-provoking, and engaging. Project SEED influenced and even changed me as I am now more open-minded, optimistic, and patient. *"From my experience, I aspire to be a chemist, neurologist, or a researcher in the future. Project SEED has motivated me to consider research as a career option for me in the future as Project SEED was a fruitful and fascinating experience. The ability to impact my world by changing not only the health of my community but also the health of the entire world in a small laboratory is amazing, and in the future, I would like to have the opportunity to change the world for humanity. Project SEED was truly an invigorating program for me as it has significantly impacted my learning, changed me as a person and as a scientist, and has directed me to other possible career choices."*

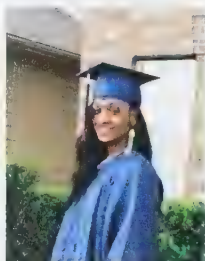
Bader Scholar: **Idris Barakat**, Parkside High School, Salisbury, MD  
Mentor: Byungrok Min  
SEED Institution: University of Maryland, Eastern Shore  
Research Title: Antioxidants Capacity in Fruits



It was a great honor to stand among the few proficient applicants who were considered for the Project SEED program. This experience introduced me into the world of biochemistry which was utterly unfamiliar to me before this internship. This project was a life changing experience in terms of scholastic and character development. Words cannot begin to articulate the extent of knowledge I gained from this experience. From this project, I was able to enhance my practical and technical skills. Moreover, it also allowed me to gain confidence in my abilities and think critically to solve problems. I have made a considerable amount of progress since the day I started working on my research project. Of course, I struggled a bit with the work load that followed writing my final lab report, since I was accustomed to writing generic high school lab report; however, I managed to pull through and stay on task. Every day of work played a crucial role in acquainting me with biochemistry. And also, instilled confidence that biochemistry is a good career choice. My frequent interaction with my mentor and his assistants made recognize the importance of Biochemist in our world and the role they play to improve our quality of life. *"Upon completion of my project, I realized the true essence of research and the new discoveries it brings to light. Conducting research in the world of chemistry is like exploring a new land. And in this case, I want to be the explorer. I believe any person can be a catalyst for new discoveries."*



## 2016 Project SEED Students Testimonials



Bader Scholar: **Chrisan-Kay Clarke**, Cypress Springs High School, Cypress, TX  
Mentor: Gururaj Neelgund  
SEED Institution: Prairie View A&M University, Prairie, TX  
Research Title: Preparation of CuZnS (Copper Zinc Sulfide)

My experience with Project SEED has inspired me to pursue a career in chemistry. This program was a great way for me to become more involved in science and it allowed me to be more aware of new and different margins in chemistry. I was introduced to many equipment and chemicals in the lab that I was not familiar with. *"The opportunity of being a part of Project SEED for two summers, opened my eyes to a whole new world of science. I am looking forward to utilizing the skills I have acquired during both internships, knowing that one day I will be able to incorporate the skills I have obtained and eventually introduce them younger generations and future scientists of the world."* One way I intend to make a difference is by starting a "Young Science Initiative Program", specifically for young students of similar demographic backgrounds as the students that participates in Project SEED. Like, Project SEED, I hope I can teach other students compelling teamwork, leadership and collaboration skills to help build a sense of hard work and confidence in each individual.



Bader Scholar: **Stefannie Morales**, University Gardens High School, San Juan, PR  
Mentor: Eduardo Nicolau  
SEED Institution: University of Puerto Rico, San Juan  
Research Title: Evaluation of Synthesized Nanocrystalline Hydroxyapatite-based Coatings for Applications in Bone Tissue Engineering

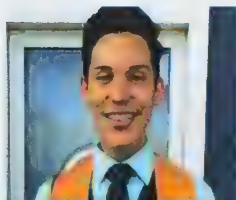
The American Chemical Society (ACS) Project SEED I Program was the greatest opportunity I could ever have had to develop my curiosity and interest in scientific research. It was a tool that helped me understand my weaknesses and strengthen my previous skills and create new ideas towards Science, especially Chemistry field. The research area was a difficult challenge for me because I had to test my own mind and show the potential to do critical thinking and find solutions to problems. Through this amazing trial I was endowed to go beyond the apparent circumstances and reason all the possible causes of an issue which gave me the ability to adapt to changes. This was a prodigious experience where I learned how to manage expensive equipment that required training, work as a team member, improve techniques to facilitate the experimentation process and have communication skills. I gained confidence, motivation, practical experience and work habits in a professional environment by applying methods and concepts learned in classes. Also, I was able to meet and create a network of personal contacts and resources that might help me to get a full-time job after college. During this Internship, I was able to ponder and determine the career I want to pursue as a professional. I decided that I want to obtain a Bachelor's degree in Chemical Engineering at Stanford University to continue graduate studies and get a PhD degree at Massachusetts Institute of Technology (MIT). I definitely obtained a real perspective on an occupation and know that my highest ambition is to be an active and recognized participant on investigations that can produce a meaningful step in our understanding of the universe matter and its behavior. *"This was an important stride to accomplish my future goals since I know it will give me some advantages and qualities that are fundamental to create a prominent scientist desirable in any university or industry. I am very grateful to this Program because putting hands on a real research changed my life and made me realize that truly "Chemistry is life".*

## 2016 Project SEED Students Testimonials

Bader Scholar: **(Linda) Yingqi Lin**, Hunter College High School, NY  
Mentor: Tianning Diao  
SEED Institution: New York University  
Research Title: Synthesis of 1,9-Bisformyldipyrrolyl Methane



Ever since freshman year, I'd been intrigued by scientific research. However, I didn't know it was possible for ordinary high school students to conduct research. I didn't have any of the connections that my classmates had obtained their research positions through, so although it sounded very interesting, I assumed that high school research was an inaccessible opportunity for me and contented myself by reading interesting scientific articles online in my spare time. Project SEED helped me grow both as a person and as a scientist by providing me with the amazing opportunity to join a laboratory and to experience scientific research firsthand. It was quite a change for me to go from a classroom of fellow teenagers where we learned about long-established scientific facts and theories to a laboratory where novel experiments were being done in hopes of making new scientific discoveries. Through this experience, I've gained a new appreciation for science and saw an aspect of the field that I'm not usually able to see in the classroom. From working in a lab, I've learned how to adapt quickly to a new environment, and also be more responsible and independent in my work, as I often ran steps of the reactions and the purification process by myself. Meanwhile, being suddenly exposed to the field of organic chemistry has taught me to not be intimidated by new topics, but rather to be curious and to aspire to learn more about them. It has led me to take an organic chemistry class at my school this year, in addition to a few other science classes, as I now know that I definitely want to study science in the future and possibly pursue it as a career. *"Project SEED also exposed me to a very academic college environment, and now I'm even more excited to hopefully attend college next year as a first generation college student majoring in biochemistry. After getting a glimpse of scientific research, and organic synthesis specifically, through Project SEED this summer, my career goal is now to become a scientific researcher who designs and synthesizes new drugs to aid disease treatment and prevention."*



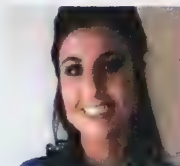
Bayer Scholar: **Caleb Colon Jimenez**, University Gardens High School, San Juan, PR  
Mentor: Eduardo Nicolau  
SEED Institution: Molecular Science Research Center of the University of Puerto Rico  
Research Title: The Effect of Different Concentration Ratios of Sodium Hypochlorite (NaClO) on the Tempo Mediated Oxidation of Cellulose Nanocrystals

The overall experience while participating in Project SEED was really amazing. I met and shared with many people, especially with my lab team and the professor. They even showed me facilities and machinery I never thought I would see in my current age. I learned a lot of things in those two months that I participated in the project, because to understand what we were going to investigate I had to read a lot of scientific papers, ask many questions and listen to the advises each of my mentors said. The greatest thing about the experience is that I know I took a huge step to the future when I decided to participate in this project and I don't regret it; I know that the knowledge that I obtained during the running time of the program will help me in future investigations that I will realize as a chemical engineer. *"By learning how to use some advance characterization machines and how to interpret and tabulate the data in specialized programs, I now possess a unique knowledge that not all people that have my same age have. I know that with this new knowledge I will be able to obtain even more and when the time comes I will lead great investigations. The program also showed me the vast areas in chemistry and now I have interest in researching in the areas of bionanotechnology, renewable energy resources, catalytic reactions and chemical applications on material sciences. I hope that in the near future I can concentrate in investigating these areas. With this being said, I fill confident that new opportunities will come my way thanks to the paths that this project has opened for me."*



## 2016 Project SEED Students Testimonials

Bader Scholar: **Aisha Patel**, Niles West High School, Skokie, IL  
Mentor: Chad Eichman  
SEED Institution: Loyola University, Chicago, IL  
Research Title: Iron-catalyzed Arene Prenylation for the Undergraduate Laboratory



Project SEED has not only greatly influenced my education and career choices, but has also helped me grow as a scientist. To begin with, I have participated in this project for two summers. Undertaking these research initiatives has allowed me to expand my knowledge in the area of chemical engineering. Expanding my knowledge in chemical science is quite useful given that I aspire to pursue research in chemistry with the ultimate goal of becoming a chemical engineer. This research opportunity has led me a step closer in reaching my dream. Moreover, this research experience has taught me quite a bit regarding patience because it takes many failed trials before you succeed. Project SEED has greatly helped me grow as a scientist by teaching me that anything in life is possible. I have successfully carried out new experiments that have never been done before and will be published in the Journal of American Chemical Society. In addition, this research experience has contributed to my growth as a scientist because it has enabled me to improve my understanding regarding the environment around me. Lastly, I have learned the importance of teamwork as a scientist.

*"During my research, I worked in team consisting of one undergraduate, three graduate students, and one post-graduate student. Each member offered their unique input on the research which eventually allowed me to be successful. Through this team, I learned that scientists need to work as a team in order to successfully complete their experiments. This is because each of the group members offers a different perspective to an experiment."*



Ashland Scholar: **Katherine Lindsay**, Guerin Catholic High School, Noblesville, IN  
Mentor: Michael Statnick, Susan Gackenheimer  
SEED Institution: Eli Lilly and Company, Indianapolis, IN  
Research Title: GPR120 Mediated Effects on ACTH secretion in AtT-20 cells

Research is a never ending puzzle. One piece of information will lead you to another, sometimes each part of the process can seem meaningless and insignificant, but as a whole, the work I complete can lead to a life-changing drug. I really enjoyed the small discoveries I made during the summer because most of it had yet to be studied. I got a first-hand experience in the drug development process as a high school student and I know that experience is priceless. After Project SEED, I have a greater interest in research and I would like to continue research in college. In addition, working at Lilly has taught me the importance of networking and fostering positive relationships outside of the lab.

*"Overall, I was fortunate to have this experience as it has set a good foundation for finding your passion in careers in science."*

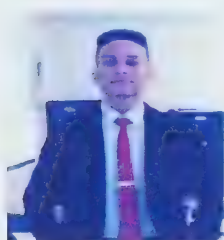
Bader Scholar: **Jayde Nielsen**, Middleton High School, Middleton, ID  
Mentor: Kevin Ausman  
SEED Institution: Boise State University, Boise, ID  
Research Title: Creating a Better Dispersion of Single Walled Carbon Nanotubes (SWNT) in sodium Dodecyl Sulfate (SDS)



Looking back on my high school career there were many different career paths that I could see myself in: nursing, biology, English, engineering, math, science, history. My world was a clean slate. My first plan was to become an English major, but after taking several science courses I found a love of sciences that I didn't know that I possessed. My first science class, biology, introduced me to the big picture of how life interacts with itself, but I never felt like it got in depth enough to satisfy my crave for knowledge. Finally after taking human anatomy, physiology, and chemistry, my understanding of how our world works was finally abated. My new dream is to create something that could help change the world. After taking chemistry I had the opportunity to participate in Project SEED a program that let high school students help in the research labs. Day after day in the

## 2016 Project SEED Students Testimonials

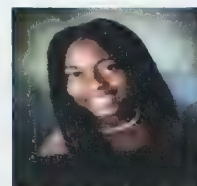
lab, I would find something exciting that helped further the research we were performing. Being able to help in the lab opened my eyes to how research really works. I know exactly what I want to go into now because I had the opportunity to get my hands into research of my own. *"My favorite part about doing this internship was the opportunity to see what the world of science is doing to better the world. These scientists are literally changing the world. Some are doing it by researching cancer, Parkinson's disease, animal diseases, security protocols, education in Idaho, and even studying the prime distribution of single walled carbon nanotubes (SWNT), etc. I want to be a part of this change by creating a new material that could completely alter the way that the world functions."*



Bader Scholar: **Jose Ayala**, Passaic County Technical institute, Wayne, NJ  
Mentor: Karina Schafer  
SEED Institution: Rutgers University, Newark, N.J.  
Research Title: Carbon Allocation in Wetland Grasses

In order to accurately predict the future we must take what we have today and make educated guesses based on that. Project SEED has taught me many things that will surely help me with the future. This program taught me how to write a well written essay with the guidance of my mentor on a college level. This experience exposed me to how some scientist work in the field whether it was rain or sunshine. Obtaining measurements in the midst of mud and water was a task that made me stronger and more tolerant towards climate disturbances. *"Project SEED showed me the other side of science. It showed the difference scientist can make when they make discoveries and how passionate someone can be when speaking about their field of expertise. It was after Project SEED that I truly considered majoring in chemistry because I wanted to gain further knowledge of how the environment around grows and changes and what I can do about it."*

SEED Scholar: **Cindy Gnawa**, East Orange STEM Academy High School, East Orange, N.J.  
Mentor: Frieder Jaekle  
SEED Institution: Rutgers University, Newark, NJ  
Research Title: Synthesis of Macrocycles



The American Chemical Society Project SEED summer research program gives students the chance to work alongside scientists on research projects and experience the work of chemists. When I first learned about ACS Project SEED, I seized the opportunity because I am interested in this career path. On my first day, I realized this internship was a challenge, it seemed impossible. I had never heard of organic chemistry and was unfamiliar with everything involving the project. I had to boost my work ethics in order to maneuver through the internship successful. I studied countless organic chemistry articles, watched dozens of videos on Khan Academy and researched every piece of equipment that I had to work with to fully understand its function. As time progressed, so did my expertise. *"My tedious job was rewarding. I attained invaluable knowledge about myself and my future aspiration. I learned in the best and hardest way that I have the potential to be a future chemist. Thanks to Project SEED, I challenged my work ethics and grew as a scholar who is ready for any future trials."*



## Students Speaking from the Lab



"Project SEED was an amazing opportunity and I am very thankful to have participated in such a fun and educational program. It has helped me so much in terms of future plans and developing skills. It was great working beside my mentor, undergrads, grads, etc. I also thank my PI for all the support and influence that she has given me. Thank you all!"

**Jaylen Williams, OH**  
Summer I

"I am a truly thankful and fortunate person to have had this wonderful opportunity. This experience has taught me many new things and has encouraged me to have a science related career in the near future. This program challenged me and taught me that anything is possible as long as you put your mind to it. I will never forget this, all of the new knowledge that I have obtained will always stay in my brain and the experience in my heart. Once again, Thank You!"

**Aracely Miron-Ocampo, IA**  
Summer I

"Not only did Project SEED further my interest in research, but the program also provided a way for me to meet kids my age who are also interested in science and research. Prior to this experience, none of my friends understood my love for science and math. Project SEED allowed me to connect with other high students with similar interests."

**Clara Reasoner, IN**  
Summer I

"I'm really thankful for this amazing opportunity thanks to the American Chemical Society and Dr. Elaine Yamaguchi. I took advantage of this opportunity the best I could because in small towns like Parlier, CA, it's rare to find great opportunities that I will benefit us the way Project SEED did for me and the other SEED students. I learned many different new things like how to work in a real lab with a real scientist, how cool can that be. This program has made me more excited for college and my future as a future scientists, already being a step ahead of everyone else. Not only did I learn to do scientific lab work, but I also learned how to work as a team with others who helped me along the way and supported me in everything like Anna, Teagan, Victoria, and Jackie. I can't wait to go back to Parlier High School and tell my friends and teachers about my experience with the USDA Department Water Management in Parlier, CA with Dr. Buñuelo's. Truly thankful and I couldn't be any happier with my experiment and experience, this is definitely one of the best experiences I have had."

**Noemi Espana, CA**  
Summer I

"Project SEED is one of the best experiences I have had in learning and in branching out my interest of pursuing science as a major in the future. The relationship created with other people, the constant learning being done, and the overall achievement of making everyone feel equal, regardless of financial background is the highlight of accomplishment done by Project SEED. The past two summers could not have been better without Project SEED."

**Cesar Romero, MA**  
Summer II

"Project SEED was such a great program! I learned so much more through this project in two months than I did in a school year! I really got a behind the scene view of what research is like and the trial and errors that researchers have to go through. It was an enlightening experience."

**Andrea Nguyen, ID**  
Summer II

## Students Speaking from the Lab

"Thank you so much for this opportunity! I used to think that I would never have the chance to work in a lab until I was well into my college career, but thanks to the SEED program, I was able to learn more about the environment in a lab, how to present my findings correctly, and generally more about myself. Thank you so much for setting me on the path to earning a Ph.D.!"

**Julia Dayton, OR**  
Summer I

"Thank you for the opportunity to become more educated this summer with this wonderful internship. It was an awesome experience. I was able to meet college students, work in a lab on research that will hopefully someday change the way we treat and cure certain diseases. Something like that changes people, families and gives people a longer life. That is priceless in itself."

**Tristin Zamora, TX**  
Summer I

"Project SEED is an amazing experience where one meets many great people, learns about an university campus, acquires advanced knowledge, and has an unforgettable summer."

**Oliver Pichardo Peguero, PR**  
Summer II

"Project SEED is a wonderful hands on experience during the summer. Not many opportunities come like this where you get to work with a professor in a lab and see what there day to day consists of. Also, you get to experience new topics that people are working on such as how to cure cancer and etc."

**Suraiya Chowdhury, MI**  
Summer I



"Coming from a developing country where we don't always have the means to equip the laboratories, it gives me a certain aspect of what it looks like collecting my own data, observing the living things. I learn to have an attention for details and develop my skills. Thanks to Project SEED, I carry to the highest point my desire for science and wish to pursue my education in the scientific or medical field. Thank you for this great opportunity!"

**Salimata Fall, NJ**  
Summer I

"ACS Project SEED made me have the best summer. I learned so much and I am very grateful to my mentor and the program coordinator at the University of Missouri -Kansas city. I am going to dearly miss being part of the ACS Project SEED program and I will forever treasure the educational experience it gave me."

**Montserrat Santos, MO**  
Summer I



"Thank you so much for everything, Project SEED! This program gave me an opportunity to pursue research that so few students have and which I certainly never thought I could have this early in my life, and I am so grateful for it. Project SEED allowed me to have a glimpse of what scientists/chemists do every day, as well as higher education in general. It really solidified my interest in science and gave me more confidence in my abilities as a (chemistry) student that I will definitely take with me into college. I really appreciate all the people that I've met through this program, from my PI and my mentor to my lab group members and my local coordinators, who have all helped me in some way or another and have given me really helpful advice for the future. Thank you so much!"

**Yingqi Lin, NY**  
Summer II

"I think Project SEED was a great, once in a lifetime opportunity for a high school student to experience. It expanded my love for science even more and I learned a lot from it!"

**Helene Hamo, TN**  
Summer II

"I enjoyed this program because it helped me expand my horizons for the scientific research field and it gave me a head start for what is yet to come for colleges."

**Chrisitan Lemus, IN**  
Summer II

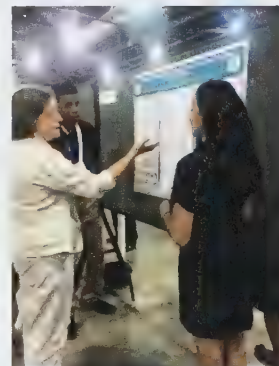
"Everyone given the opportunity to try the SEED program definitely should do so! It is an amazing experience you will never forget and could help decide what one would like to do in life!"

**Henry Velasquez, NJ**  
Summer I



## Project SEED Students at Sci-Mix

Project SEED students from Georgia, Maryland, Minnesota, Nebraska, New York, Northeastern, North Jersey, Philadelphia, South Jersey, and Trenton Local Sections presented their Project SEED research projects at the Sci-Mix poster session at the 252<sup>nd</sup> ACS fall national meeting in Philadelphia, PA.



### Georgia Local Section:

**Coordinator, Ishrat Khan**

Michelle Payne

Computational and Experimental Analysis of Pure Isotactic and Syndiotactic of Polymethyl Methacrylate and its Sterocomplex

### Maryland Local Section:

**Coordinator, Louise Hellwig**

Ariana Jennings

Transition complexes of non-steroidal anti-inflammatory drugs (NSAIDS)

### Minnesota Local Section:

**Coordinator, Sarah Mullins**

Samsam Dirie

Development of an Iron (II) Selective Electrode through the Synthesis of a New Phenanthroline Dicarboxylate-based Ionophore

### Nebraska Local Section:

**Coordinator, Sade Kosoko-Lasaki**

Nancy Chung

The Effect of Vitamin D Status Expressed on Myeloid Cells (TREM)-2 Expression in the Airways

Deysy Reyes

The Role of P-Rex1 in Asthmatic Airway Smooth Muscle Cells Proliferation

### New York Local Section:

**Coordinators, Marie Aloia, Judith Barrios, Nadia Makar, Marion McClary, Amanda Smith, Kenneth Yamaguchi**

Keileen Alvaraz  
Jessica Alvitres

The Relationship Between Leachate and Ozone Treatment  
Observation of the Induction of Apoptotic or Necrotic Processes in Lung Cancer Due to Memantine

Anakarla Gonzalez  
Nardeen Khella

Carbohydrates Influence on Liposome Vesicles  
Investigation of Multi-component Granular Bond Number to Predict Powder Flow Performance

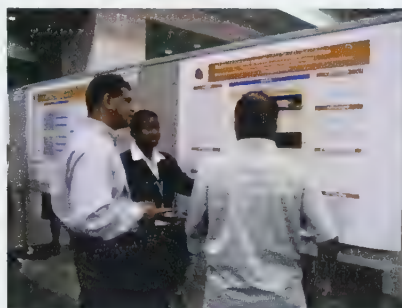
Yingqi Lin  
Joan Martinez  
Katherine Mendoza  
Jose Perez

Diazadiene Ligands and Their NiBr<sub>2</sub> Complexes  
Synthesis, Reactivity, and Structure of Ni, Pd, and Ir Complexes with Nitron  
An Economic Valuation of Green Infrastructure in Northern New Jersey  
Fabrication & Imaging of Nano Fiber: Migration Study of Cancer Cells on Biomimetic Fibers

Tracey Simon

Lipid Based Nano-Carriers

# Project SEED Students at Sci-Mix



## New York Local Section Continued:

Michelle Sinning	Stimulation of Feeding behavior: The Effect Towards Both Genders of <i>Procambarus clarkii</i> in Contaminated Water
Jacqueline Suarez	Testing Antimicrobial Effectiveness of Hydroxamic Acid: The Effects of Hydroxamic Acids on <i>Escherichia coli</i> HB101, <i>Salmonella typhimurium</i> TA1538, and <i>Staphylococcus aureus</i> at Different Time Intervals
Emily Tumbaco	Creation of Liposomes for Therapeutic Uses in Metastatic in MCF-7 Breast Cancer Cell Line

## Northeastern Local Section: Coordinator, Ivan Aprahamian

Polina Pivak	Drawing Chemiresistive Sensors on Shrinkable Polymeric Films: A Laboratory Experiment for High School and Undergraduate Students
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## North Jersey Local Section: Coordinators, Gerald Buonopane, Deborah Stalling

Adjeilyne Akrong/ Claudia Bonheur	Modern African Savanna Ecosystem: Stable Carbon Isotope Evidence for Diet and Habitat
Joyce Jimenez/ Ashley Reid	The Effects of Ethanol on the Growth of HL-60 Human Promyelocytic Leukemia Cells
Bianca Sanchez	Identifying Changes in Exosomes Numbers Between Treated and Untreated Animals
Chideya Waddell	The Human Evolution: Reconstructing Past Ecosystems or Soil Vegetation Using Carbon Isotopes of Pedogenic Carbonate

## Philadelphia Local Section: Coordinator, David Salas-de La Cruz

Echefalachi Nwaemo/ Erika Garro	Comparative Study of Cellulose Silk-Blended Films as a Function of Solvent Type
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## South Jersey Local Section: Coordinator, Gregory Caputo

Omar Cruz Garcia Citlalli Jimenez	Calorimetry using PvrTFSI and MSA Novel Synthesis of Benizimidazole
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## Trenton Local Section: Coordinator, Danielle Jacobs

Shawn Bailey/ Jibri Gigger-Muse Bianca Swidler	Development of a Polymer Lab for Organic Chemistry II Students  From Grain to Glass: Developing an Undergraduate Laboratory That Explores the Biochemistry in Alcohol Fermentation
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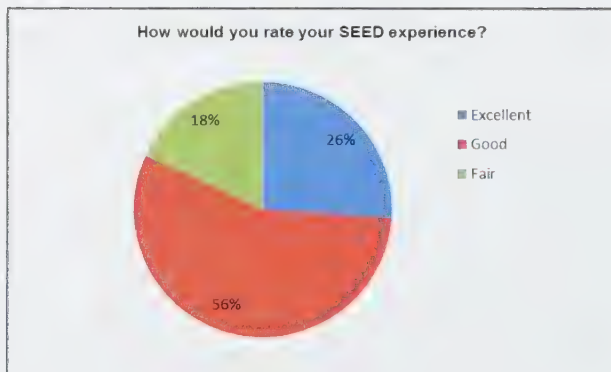
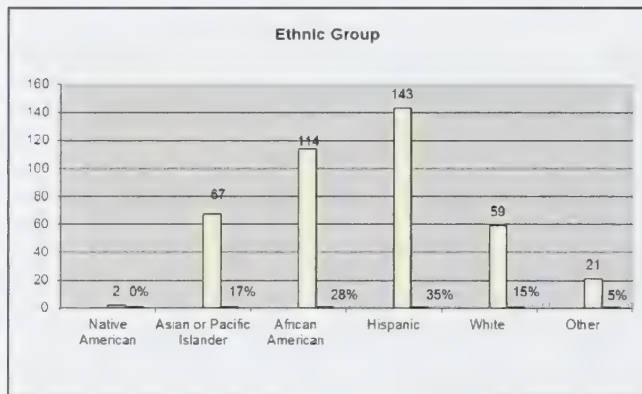


# 2016 Student Survey Results

The survey is designed to assess the success of the program. The results of the survey provide information on the background of the students, their educational aspirations, and their assessment about Project SEED. This information is useful in determining whether ACS Project SEED is serving its target population and if it is achieving its goals. Of the 414 students in the program, 406 students responded.

Student Gender	Summer I	Summer II	Total %
Male	116	43	39%
Female	183	64	61%
TOTAL	299	107	100%

Family Income Level	Summer I	Summer II	Total %
\$6,999 or Less	43	16	15%
\$7,000 to \$16,000	51	18	17%
\$17,000 to \$25,000	89	21	27%
\$26,000 to \$35,000	65	28	23%
\$36,000 or more	51	24	18%
TOTAL	299	107	100%



Demographics by State	Summer I	Summer II
Alabama	3	0
Arkansas	1	0
Alaska	0	1
California	53	14
Connecticut	4	0
Delaware	3	0
District of Columbia	16	4
Florida	8	2
Georgia	3	0
Hawaii	0	0
Idaho	5	4
Illinois	6	0
Indiana	18	13
Iowa	3	1
Kansas	1	1
Louisiana	0	1
Maryland	4	1
Massachusetts	1	1
Michigan	13	9
Minnesota	3	3
Mississippi	3	0
Missouri	5	1
Montana	1	0
Nebraska	2	0
Nevada	5	1
New Hampshire	0	2
New Jersey	58	21
New Mexico	2	0
New York	5	0
North Carolina	6	4
North Dakota	0	0
Ohio	20	7
Oregon	3	0
Pennsylvania	6	6
Puerto Rico	12	2
South Carolina	0	1
Tennessee	4	1
Texas	26	4
Utah	0	1
Virginia	0	0
Vermont	1	1
West Virginia	1	0
Wisconsin	2	0
TOTAL	307	107

## 2016 Student Survey Results

What is the highest level of education you expect to complete?	Summer I	Summer II	Total %
High School	4	0	1.0%
Vocational, Trade, Business	2	0	0.5%
Some College	0	3	0.7%
2-year College Graduate	3	1	1.0%
4-year College Graduate	77	33	27.1%
Graduate/Professional School	213	70	69.7%

Student Research Sites	Summer I	Summer II	Total %
Academic Laboratory	209	77	70%
Government Laboratory	16	6	5%
Industrial Laboratory	41	14	14%
Medical Laboratory	33	10	11%

Students Agreed that Project SEED Helped:	Summer I	Summer II	Total %
Develop Skills and abilities	289	105	97%
Develop self-confidence	239	95	82%
Develop responsibility	279	103	94%
Understand the ethical behavior of scientists	270	100	91%
Develop better study habits	177	77	63%
Learn what advance study is like	276	101	93%
Decide to continue my education after high school	261	99	89%
Choose a college major	151	73	55%
Decide to pursue a career in science	192	78	67%
Develop greater interest in scientific/technical areas	249	74	80%

College Majors	Summer I First Choice	Summer II First Choice
Agriculture	1%	1%
Architecture	0%	2%
Astronomy	1%	3%
Biology & Life Sciences	17%	17%
Business & Commerce	3%	3%
Chemistry	23%	19%
Communications	0%	0%
Computer Sciences	6%	4%
Earth Sciences	0%	0%
Education	2%	5%
Engineering	12%	10%
Foreign Languages	0%	0%
Health Professions	17%	12%
Home Economics	0%	0%
Language & Literature	0%	1%
Library Science	0%	0%
Mathematics	1%	0%
Military Sciences	1%	0%
Pharmacy Sciences	3%	2%
Philosophy	0%	0%
Physics	2%	3%
Social Sciences	0%	2%
Technical & Vocational	1%	2%
Other	10%	16%

What are the chances that you will become a scientist, engineer, or mathematician in the future?			
	Summer I	Summer II	Total %
Excellent	126	58	45%
Good	52	30	35%
Fair	112	17	17%
Poor	9	2	3%

## 2016 Student Survey Results

In the following statements, students were asked to evaluate their experience with their mentor.	Strongly Agree or Agree	Neutral	Disagree or Strongly Disagree	No Response
I learned new skills from my SEED mentor	86%	6%	3%	5%
It is easy to talk to my SEED mentor	83%	6%	4%	5%
My SEED mentor assisted me with improving my overall performance and SEED research work	85%	6%	4%	5%
My SEED mentor discussed career paths (including education) in chemistry and related sciences with me	70%	15%	10%	5%

Student/Mentor Relationship	Total%
Very Good	69%
Good	20%
Fair	5%
Poor	1%
No Response	5%
Total	100%

# 2016 Project SEED Major Contributors

## **PARTNERS**

**Donors of \$100,000 - \$249,999**

Alfred and Isabel Bader

## **DIAMOND**

**Donors of \$50,000 - \$99,999**

Ken and Susan Fahrenholtz

## **PLATINUM**

**Donors of \$25,000 - \$49,999**

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**Donors of \$5,000 - \$9,999**

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Economics Group  
Leslie De Riemer Anderson and Richard Anderson  
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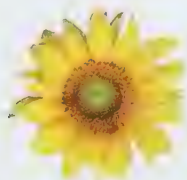
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## **ACKNOWLEDGEMENT**

**On behalf of the ACS, the staff, and the Project SEED Committee, thank you to our members, friends, foundations, and corporate donors. We are grateful for your generosity and commitment to helping in the success of our high school students.**

**We truly appreciate your continued generosity!**

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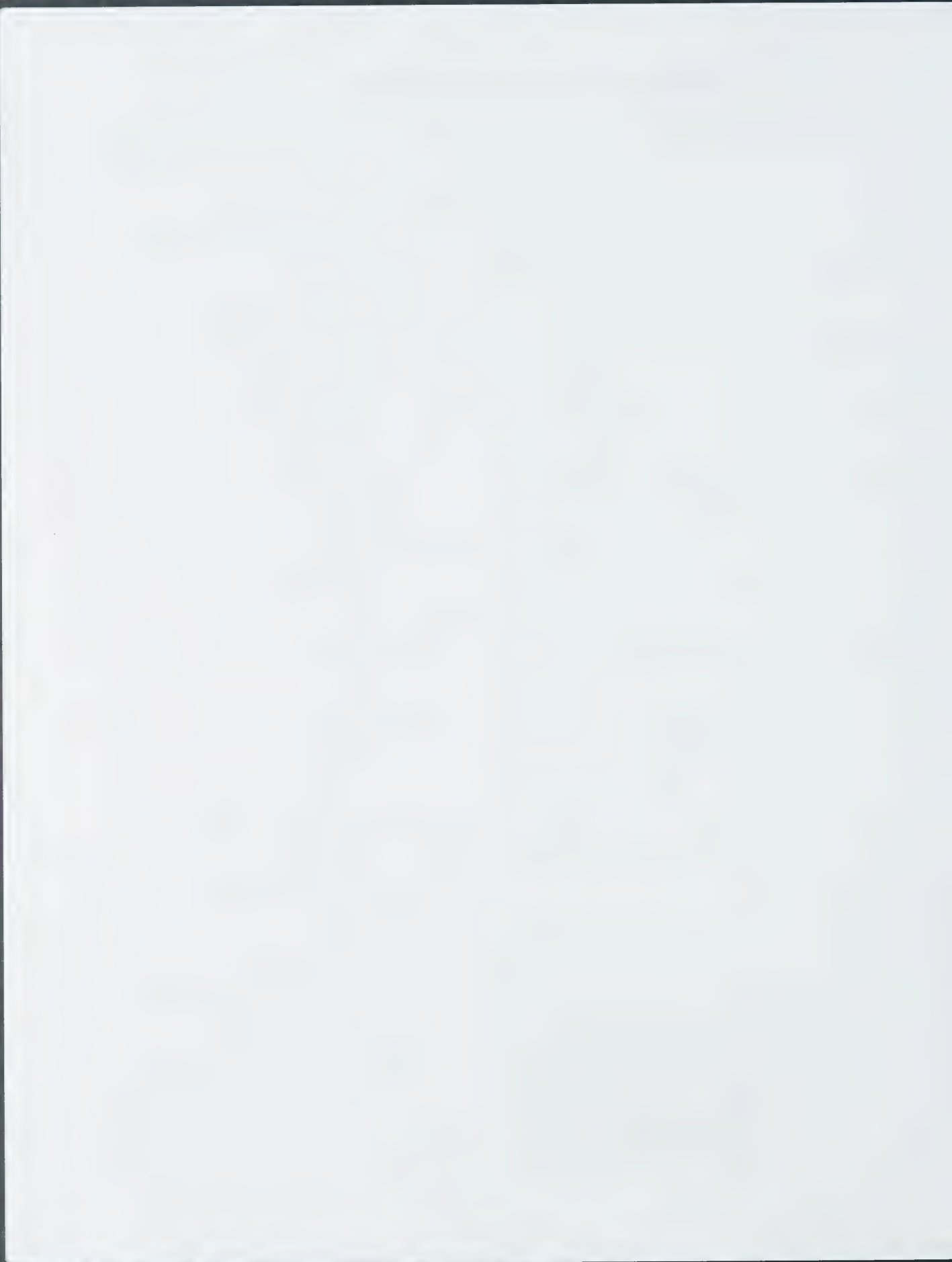
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JANUARY 30, 2017

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gems: Better  
than the  
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# THE YEAR IN NEW DRUGS



Approvals  
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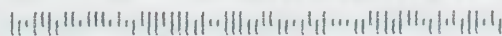
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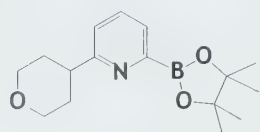
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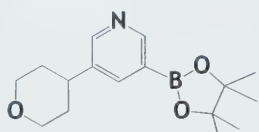




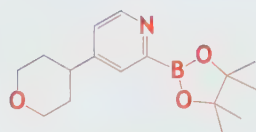
# Novel Heterocyclic Intermediates for Cross-coupling Reactions



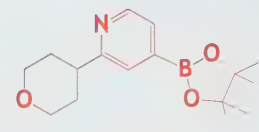
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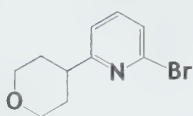
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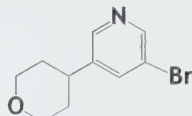
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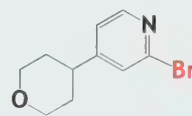
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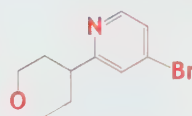
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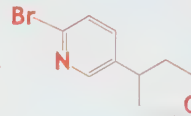
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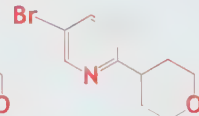
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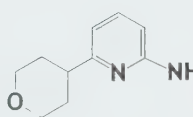
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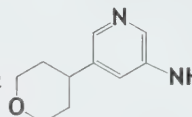
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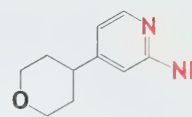
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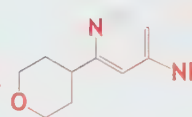
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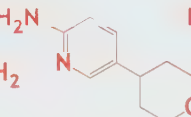
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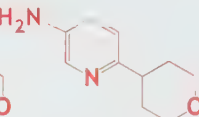
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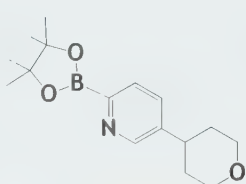
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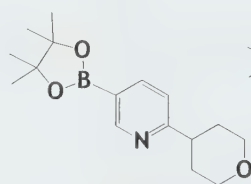
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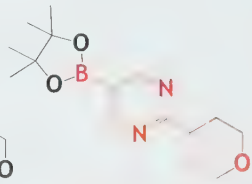
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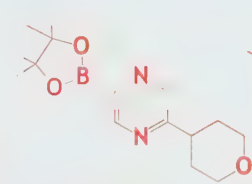
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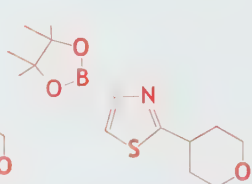
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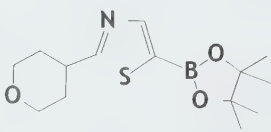
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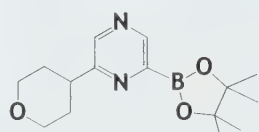
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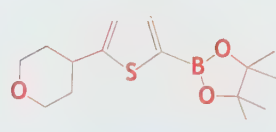
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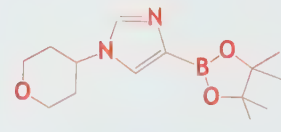
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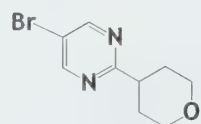
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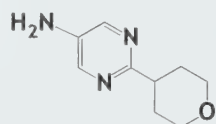
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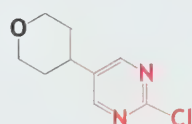
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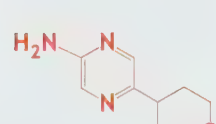
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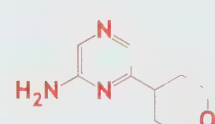
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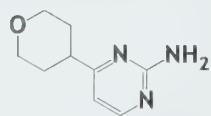
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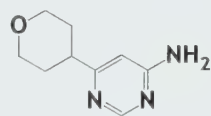
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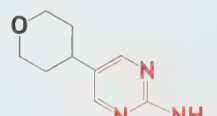
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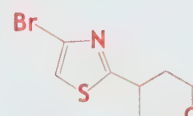
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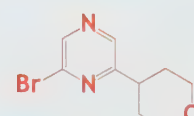
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# 2016–17 Project SEED Scholars

LINDA WANG, C&EN WASHINGTON

The American Chemical Society Committee on Project SEED has announced the winners of its 2016–17 college scholarships. The recipients, who were selected from participants in ACS's Project SEED research program, received one-year nonrenewable scholarships of up to \$5,000 to help cover tuition and fees during their freshman year of college. The 31 scholarships for the 2016–17 academic year, which have a total value of \$155,000, were funded by private corporations and individual donors. Additionally, three Project SEED college scholars received the Ciba Specialty Chemicals Scholarship.

Project SEED is ACS's summer research program that enables economically disadvantaged high school students to conduct hands-on research. For more information, visit [www.acs.org/projectseed](http://www.acs.org/projectseed).

## Alfred & Isabel Bader Scholars

Alfred Bader is one of the founders of Aldrich Chemical, now Sigma-Aldrich. The Baders supported Project SEED for many years and contributed to the initiation of the Summer II SEED program.

**Alicia Ball** is a graduate of Garber High School in Essexville, Mich. Under the guidance of Adam Warhausen at Saginaw Valley State University in Michigan, Ball worked on research titled "Synthesis, Characterization, Electrochemical, and Spectroelectrochemical Investigation of Wilkinson's Catalyst and Analogues." Ball is majoring in biomedical engineering at Michigan Technology University.

**Idris Barakat** is a graduate of Parkside High School in Salisbury, Md. At the University of Maryland Eastern Shore, Barakat worked under the direction of Byungrok Min on research titled "Antioxidants Capacity in Fruits." Barakat is majoring in biochemistry at Salisbury University.

**Max Chee-Garza** graduated from the Griffin School in Austin, Texas. He conducted research with Zachary Tozetic at the University of Texas, San Antonio. The title of his research is "Small-Molecule Sulfur Chemistry of Gallium(III) Porphyrins: Structural Models for Complexes Resulting from the Interaction of Hemes

with Hydrogen Sulfide." He is majoring in biochemistry at Seattle University.

**Chrisa-Kay Clarke** is a graduate of Cypress Springs High School in Cypress, Texas. Under the mentorship of Gururaj Neelgund at Prairie View A&M University, she conducted research titled "Preparation of CuZnS (Copper Zinc Sulfide) Introduction." She is majoring in chemistry at Prairie View A&M University.

**Morgan Fabber** graduated from Blackman High School in Murfreesboro, Tenn. Under the guidance of Greg Van Patten at Middle Tennessee State University in Murfreesboro, Fabber conducted research titled "Cation Exchanges with PbS Quantum Dots." Fabber is majoring in chemistry at Vanderbilt University.

**Jose Martinez Fernandez** is a graduate of Cane Ridge High School in Antioch, Tenn. He conducted research titled "PbS Quantum Dots Cation Exchanges" under the mentorship of Greg Van Patten at Middle Tennessee State University in Murfreesboro. He is majoring in chemistry at Harvard University.

**Graciela Gautier Jusino** is a graduate of Carmen Belen Veiga High School in Juana Díaz, Puerto Rico. Under the direction of Jose Lasalde at the University of Puerto Rico, Río Piedras, Jusino conducted research titled "Nicotinic Acetylcholine Receptor Detergent Complex Native Lipid Doping: Improvement in the Quality of Crystals." Jusino is majoring in biochemistry at Iowa State University.

**Kevin Huang** graduated from Burlington High School in Vermont. He conducted research on "Regiocontrol of Allylic C–H Amination Reactions" with Matthias Brewer at the University of Vermont. Huang is majoring in chemistry at the University of Vermont.

**Caleb Colón Jiménez** is a graduate of University Gardens High School in San Juan, Puerto Rico. Under the direction of Eduardo Nicolau at the University of Puerto Rico, Río Piedras, he conducted research titled "The Effect of Different Concentration Ratios of Sodium Hypochlo-

rite (NaClO) on the TEMPO Mediated Oxidation of Cellulose Nanocrystals." Jiménez is majoring in chemical engineering at the University of Puerto Rico at Mayagüez.

**Aimen Lateef** graduated from Niles West High School in Skokie, Ill. Under the direction of Kathy Mortell and Miguel Ballicora at Loyola University in Chicago, Lateef conducted research titled "Investigating ADP Glucose Pyrophosphorylase." Lateef is majoring in biochemistry at Dominican University.

**Shally Lin** is a graduate of Pittsford Mendon High School in New York. Under Callie Babbitt at Rochester Institute of Technology, Lin conducted research titled "Extracting Carbon Fullerenes from Natural Sediments." Lin is majoring in biochemistry at the University at Buffalo, SUNY.

**Yingqi (Linda) Lin** graduated from Hunter College High School in New York City. Under the direction of Tianning Diao at New York University, she conducted research titled "Diaza-diene Ligands and their NIBr<sub>2</sub> Complexes." She is majoring in biochemistry at Swarthmore College.

**Tsz Yan Ng** graduated from John F. Kennedy High School in Richmond, Calif. Ng conducted research titled "The Abrasiveness of Soot" with Jonathan Moore at Chevron Oronite in Richmond. Ng is majoring in chemical engineering at the University of Toledo.

**Thao Nguyen** is a graduate of Volcano Vista High School in Albuquerque, N.M. Under the direction of Bernadette Hernandez-Sanchez of the Advanced Materials Laboratory in Albuquerque, Nguyen conducted research titled "The Formation of Tin Chalcogenides Nanomaterials." Nguyen is majoring in chemistry at the University of New Mexico.

**Jayde Nielsen** is a graduate of Middleton High School in Idaho. Under the guidance of Kevin Ausman at Boise State University, Nielsen conducted research titled "Creating a Better Dispersion of Single Walled Carbon Nanotubes (SWNT) in Sodium Dodecyl Sulfate (SDS)." Nielsen is majoring in chemical engineering at Brigham Young University.

**Aisha Patel** graduated from Niles West High School in Skokie, Ill. She conducted research titled "Iron-catalyzed Arene Prenylation for the Undergraduate Laboratory" under the mentorship of Chad Eichman at Loyola University Chicago. She is majoring in biochemistry at DePaul University.





With the support of my amazing mentor,  
I was able to step out of my comfort zone,  
which was a closed niche wherever my  
twin sister was, and gain self-confidence.  
My time in the lab assured me of my  
capabilities and instilled within me a  
sense of accomplishment that will forever  
motivate me to take risks, work hard,  
and never give up. Furthermore, the  
experience Project SEED bestowed upon  
me encouraged me to "reach for the stars."

— M. Casarez

● Project SEED Participant  
Colorado, USA



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much greater commercial potential than anyone else's innovative drugs.

One of the most notable shifts in 2016 was the drop in cancer drug approvals. Over the past decade, oncology has eclipsed all other therapeutic areas in the number of new drugs to reach the market; 50 cancer treatments were approved between 2012 and 2016, and it has drawn deep investment from big pharma firms. But in 2016, just four new cancer treatments were approved—a far cry from the 14 okayed in 2015.

Views differ on how to interpret the paucity of cancer drugs in 2016. Two of the five drugs FDA pushed through at the end of 2015 were for cancer.

The two were also among a number of new products, including five cancer treatments, approved in 2015 that FDA called “breakthrough therapies,” a status granted to molecules that are highly innovative or address underserved diseases. Developers of such drugs get extra guidance from the agency, an all-hands-on-deck approach that trimmed clinical development times and may have gotten them on the market sooner.

And scientific innovation caused bursts of activity for certain indications that could be hard to match going forward. In 2015, points out Hardik Patel, oncology analyst at the health care consulting firm Datamonitor, eight drugs were approved for two types of cancer—lung and multiple myeloma.

“Although these are two of the largest oncology indications, I think this kind of production is difficult to sustain year-on-year,” he says.

Moreover, the oncology field is watching for several key approvals this year. “I think we’re in a lull right now waiting for several major readouts that are expected to hit during 2017, so I’m not particularly worried about the drop-off,” says Sally Church, editor of Biotech Strategy Blog, which focuses on cancer drug development.

Datamonitor projects 10 oncology treatments will be approved this year, including three for acute myeloid leukemia, or AML: Celgene’s enasidenib, an IDH2 inhibitor licensed from Agios; Novartis’s FLT2 inhibitor midostaurin; and Jazz Pharmaceuticals’ Vyxeos, a liposomal formulation of cytarabine and daunorubicin. “The AML market is set to see large growth, as there are currently no approved drugs for the disease in the U.S.,” Patel notes.

Three other drugs on the Datamonitor list are cancer immunotherapies. Two are checkpoint inhibitors—antibodies that take the brakes off the immune system—and the other is the first chimeric antigen receptor T-cell therapy, which is engi-

## 2016 new drug approvals by the numbers

**22**

New molecular entities approved in 2016

**4**

Cancer drugs approved in 2016

**45**

Approved in 2015

**14**

Approved in 2015

**50%**

Small molecules approved

**8**

Drugs with a novel mechanism of action approved

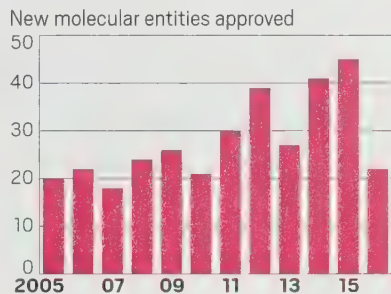
**\$750,000**

Price of first year of treatment of Biogen’s Spinraza

Source: FDA, companies

### Drop

New drug approvals in 2016 were less than half what they were in 2015.



Source: FDA

neered from a patient’s own cells to find and destroy cancer cells.

Many of the oncology deals that big companies signed in recent years were aimed at building up a portfolio of cancer immunotherapies, and digestion of those drug development programs is another reason cited for the 2016 slowdown. Companies with checkpoint inhibitors have accumulated an array of complementary molecules and are now trying to figure out which combinations will improve the effectiveness of cancer immunotherapy.

“The focus has definitely shifted to combinations to boost responses, and those take time” to develop, Church says. Market watchers could get some hints about effective combinations at cancer conferences this year.

Although cancer drug approvals should bounce back in 2017, the numbers mask a productivity problem. The pipeline is packed with new treatments, but a smaller percentage is actually getting past FDA and reaching patients. Meanwhile, the cost of getting those drugs to market is increasing, Munos says.

“The clinical success rate in oncology, in spite of everything that we’ve seen, keeps dropping,” he says. “That is not what you’d expect from a therapeutic area where you have a successful wave of innovation happening.”

Beyond oncology, the industry experienced several major setbacks to the drug pipeline in 2016. In many cases, the failed drug candidates had been tested in thousands of patients, representing many years of research and investment.

The most notable case came late in the year, when Lilly said its anti-amyloid antibody solanezumab, for Alzheimer’s disease, failed a third Phase III study. Although investor expectations for the trial were low, the lack of efficacy was a disappointment for the Alzheimer’s community, which currently lacks any treatments that can slow down the disease. Solanezumab is the third Alzheimer’s drug disappointment to come from Lilly’s pipeline; the  $\gamma$ -secretase inhibitor semagacestat and the BACE inhibitor LY2886721 failed in 2010 and 2013, respectively.

Pfizer, meanwhile, halted development of its PCSK9 inhibitor, bococizumab. The big pharma firm said it was ending work on the antibody because it simply wouldn’t be competitive in the lipid-lowering arena, in which two PCSK9 inhibitors are already on the market.

And although nucleic acid developers had victories in 2016 with the approval of two antisense oligonucleotides—Biogen and Ionis Pharmaceuticals’ spinal muscular atrophy treatment Spinraza and Sarepta Therapeutics’ Duchenne muscular dystrophy treatment Exondys 51—they also had significant setbacks.

Alnylam scuttled development of its most advanced RNAi-based therapy, revusiran, after seeing unwanted side effects and some patient deaths during a Phase III study in hereditary ATTR amyloidosis. And in November Arrowhead Pharmaceuticals jettisoned three of its RNAi programs over concerns about the safety of its delivery technology.

Although 2017 brings a clean slate, and forecasts suggest the industry will at least return to its recent average of 30 approvals per year, Munos is quick to point out that problems abound. “The numbers may be better this year,” he says, “but the industry is still going to face headwinds.” ■

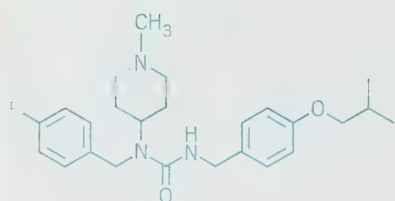


**KEY:** ■ Small molecule ■ Oligonucleotide □ Peptide ■ Antibody ◆ FDA fast track ■ Orphan drug ▲ FDA breakthrough status ● FDA priority review ◆ Novel mode of action ✕ FDA accelerated approval ★ FDA priority review voucher earned

DRUG NAME	ACTIVE INGREDIENT	APPLICANT	MODE OF ACTION	INDICATION
● <b>Ocaliva</b>	Obeticholic acid	Intercept Pharmaceuticals	FXR inhibitor	Primary biliary cholangitis ◆◆◆◆✕
● <b>Zinbryta</b>	Daclizumab	Biogen/AbbVie	IL-2 receptor antagonist	Multiple sclerosis ◆
● <b>Tecentriq</b>	Atezolizumab	Roche/Genentech	PD-L1 inhibitor	Bladder cancer ▲●◆✕
● <b>Nuplazid</b>	Pimavanserin	Acadia Pharmaceuticals	Serotonin 5-HT <sub>2A</sub> receptor agonist	Psychosis associated with Parkinson's disease ▲●
● <b>Venclexta</b>	Venetoclax	AbbVie	BCL-2 inhibitor	Chronic lymphocytic leukemia ■▲◆◆◆✕
● <b>Defitelio</b>	Defibrotide sodium	Jazz Pharmaceuticals	Unknown	Severe hepatic veno-occlusive disease ◆◆◆◆
● <b>Cinqair</b>	Reslizumab	Teva Pharmaceuticals	IL-5 inhibitor	Asthma
● <b>Taltz</b>	Ixekizumab	Eli Lilly & Co.	IL-17A inhibitor	Psoriasis
● <b>Anthim</b>	Obiltoximab	Elusys Therapeutics	<i>B. anthracis</i> toxin neutralizer	Anthrax treatment ◆■
● <b>Briavict</b>	Brivaracetam	UCB	Unknown	Epilepsy
● <b>Zepatier</b>	Elbasvir and grazoprevir	Merck & Co.	NS5A inhibitor and NS3/4A protease inhibitor	HCV genotypes 1 & 4 ▲●

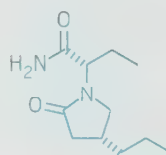
Source: FDA, in order of most to least recent approval

6



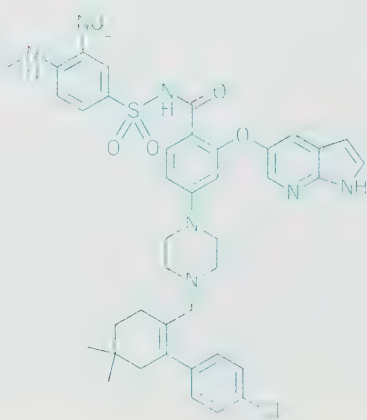
**Nuplazid (pimavanserin)**

8



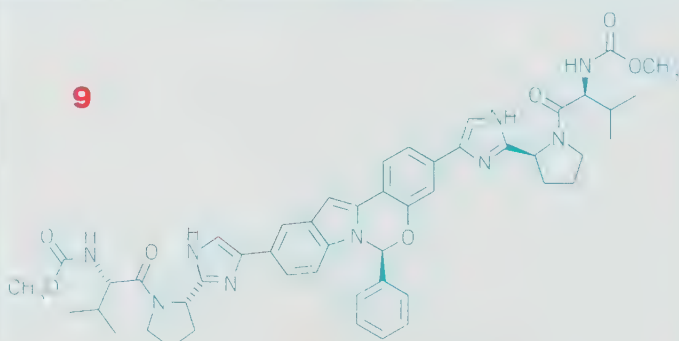
**Briavict (brivaracetam)**

7

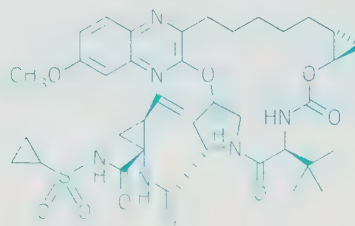


**Venclexta (venetoclax)**

9



**Elbasvir**



**Grazoprevir**

**Zepatier**

**Anthony Phero** is a graduate of Centennial High School in Boise, Idaho. Under the mentorship of Ken Cornell at Boise State University, Phero conducted research titled "Activity of *In Silico* Selected Compounds Against *E. coli* Methylthioadenosine Nucleosidase (MTN)." He is majoring in biochemistry at the University of Utah.

**Oliver Pichardo Peguero** is a graduate of Escuela Especializada Bilingue Padre Rufo in San Juan, Puerto Rico. He conducted research titled "Dithiolene-based MRI Contrast Agents" under the guidance of Dalice Piñero at the University of Puerto Rico, Río Piedras. He is majoring in chemistry at the University of Puerto Rico, Río Piedras.

**Onyah Sheely** is a graduate of Imani Christian Academy in Pittsburgh. Under the guidance of Robyn Francis at Covestro, Sheely conducted research titled "Competitive Comparisons between Multiple Carbonate Grades." Sheely is majoring in chemistry at Howard University.

**Crystal Vejar** is a graduate of InTech Collegiate High School in Logan, Utah. She conducted research titled "Shigella Research" under the guidance of Nicholas Dickenson at Utah State University. She is majoring in biochemistry at Rensselaer Polytechnic Institute.

**Cassie Washam** graduated from Western Boone Junior-Senior High School in Thorntown, Ind. She conducted research under the mentorship of Tara Chouinard at Eli Lilly & Co. Her research was titled "Biomarker Responses in Renin-Driven, Preclinical Model of Nephropathy." She is majoring in biochemistry at DePauw University.

## Ashland Scholars

Ashland is a global company that provides specialty chemicals, technologies, and expertise to customers worldwide.

**Katherine Lindsay** is a graduate of St.

Theodore Guerin Catholic High School in Noblesville, Ind. She conducted research on "GPR120-mediated Effect on ACTH Secretion in AtT-20 Cells" with Michael Statnick and Susan Gackenheimer at Eli Lilly & Co. She is majoring in biochemistry at Denison University.



**Demi Reed** is a graduate of Firestone High School in Akron, Ohio. Under the mentorship of Charles Moorefield at the University of Akron, Reed conducted research titled "The Many Uses of Different

Types of Chemistry." She is majoring in forensic chemistry at Ohio University.

## Bayer Scholars

The Bayer USA Foundation has been a major donor to Project SEED and a major contributor to the Project SEED endowment.

**Mayesha Awal**

is a graduate of Lawrence North High School in Indianapolis. Under the direction of X. Charlie Dong at Indiana University School of Medicine, Awal conducted research titled "Search for Small Molecules to Increase Health and Longevity." She is majoring in biochemistry at Georgetown University.



**Jose Ayala** graduated from Passaic County Technical Institute in Wayne, N.J. He researched "Carbon Allocation in Wetland Grasses" at Rutgers University, Newark, under Karina Schafer. He is majoring in chemistry at Rutgers University, New Brunswick.

**Stefannie Morales Jiménez** is a graduate of University Gardens High School in San Juan, Puerto Rico. She conducted research titled "Evaluation of Synthesized Nanocrystalline Hydroxyapatite-based Coatings for Applications in Bone Tissue Engineering" under the guidance of Eduardo Nicolau at the University of Puerto Rico, Río Piedras. She is majoring in chemical engineering at the University of Puerto Rico, Bayamón.

## Fosbinder Scholars

The estate of Elizabeth Ernst Fosbinder, wife of late ACS member Russell J. Fosbinder, has provided an endowment to fund scholarships for graduates of Project SEED.

**Mary Martinez Núñez** is a graduate of Metropolitan Soundview High School in New York City. Her research at the University of Puerto Rico, Río Piedras, was titled "Determining the Appropriate Techniques to Quantify Titanium(IV) and Iron(II) Concentrations, and the Levels of Titanium in a Cell Line Treated with Metal Bound Serum Transferrin." Her mentor was Arthur Tinoco. She is majoring in biochemistry at Bronx Community College.

**Leul Tesfaye** is a graduate of Wheaton High School in Maryland. She conducted research under Andrei Vedernikov at the University of Maryland, College Park, titled "Aerobic C-H Oxidation of Benzene with a Pt II Complex." Tesfaye is majoring

in chemical engineering at Cornell University.

## Ullyot Scholar

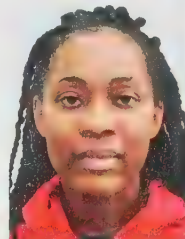
Glenn E. Ullyot was an accomplished chemical researcher who worked for Smith, Kline & French Laboratories. He was a major contributor to the discovery and manufacture of new drugs of critical value to the medical world. His wife, Barbara, had a management career at ACS.

**Jessica Chung** is a graduate of Valley Catholic High School in Beaverton, Ore. With Angela Hoffman at the University of Portland, she conducted research titled "Flavonoids Found in Dahlia Petals May Inhibit Hyaluronidase." She is majoring in biochemistry at Harvard University.

## ACS Project SEED Scholars

These scholarships are provided through the generosity of ACS friends and members.

**Cindy Gnawa** is a graduate of Wheaton High School in Maryland. She conducted research on "Synthesis of Macrocycles" under Richard Weiss at Georgetown University. She is majoring in biochemistry at the University of Maryland, College Park.



**Lia Thung** is a graduate of Golden Valley High School in Merced, Calif. Under the direction of Vincent Tung at the University of California, Merced, she conducted research titled "Perovskite Solar Cell Studies." She is majoring in chemistry at the University of California, Berkeley.

## Ciba Specialty Chemicals Scholars

The Ciba Foundation, through the Ciba Specialty Chemicals Scholars Endowment, offers Project SEED college scholarship recipients three-year renewable scholarships for the remainder of their chemical science degree programs.

The recipients are **Medinat Akindede**, who is majoring in chemistry at the University of Minnesota Twin Cities; **SangHo Jee**, who is majoring in biochemistry at the University of Maryland, College Park; and **Brooklyn Trujillo**, who is majoring in chemistry at Colorado State University, Pueblo. ■



## ► Obituaries

### John L. Bear

John L. Bear, 82, died on Oct. 24, 2016, in Houston.

“John was raised near Lampasas, Texas. In 1963, he joined the University of Houston, occupying an attic office and sharing laboratory space. Recently, his research focused on dirhodium and diruthenium complexes in unusual oxidation states. In 1975, John began a 17-year term as chair of the chemistry department, and in 1992, he was appointed dean of the College of Natural Sciences & Mathematics, a position that he retained for 18 years. Under John’s leadership, the college experienced phenomenal growth. John was passionate about student success and during his tenure as dean, he established several innovative programs to enhance undergraduate education.”—Randy Thummel, friend and colleague



**Most recent title:** professor of chemistry, University of Houston  
**Education:** B.S., chemistry, Southwest Texas State University, 1955; Ph.D., chemistry, Texas Tech University, 1960  
**Survivors:** wife, Gigi; daughter, Jane Anderson; and sons, Greg, Mark, Bryan, Adham, and Fahd Alfadli

### Leland L. Burger

Leland L. Burger, 98, died on Oct. 7, 2016, in Bellevue, Wash.

“Lee was a very personable gentleman. He was an excellent researcher in inorganic and nuclear chemistry. Lee was always interested in the education of young people and taught night classes in chemistry at the Washington State University Tri-Cities campus. He consistently worked to make the ACS Richland Section successful



in its endeavors.”—Richard Hermens, friend

**Most recent title:** project manager, Battelle  
**Education:** B.A., chemistry, University of Wyoming, 1939; Ph.D., inorganic chemistry, University of Washington, 1948  
**Survivors:** daughter, Virginia Burger Tracy; and son, James

### Latifah K. Darusman

Latifah K. Darusman, 63, died on Nov. 5, 2016, in Bogor, West Java, Indonesia.

“Latifah was one of the founders of the chemistry department at Bogor Agricultural University in Indonesia. The department was established in 1983 with the support of professor Marion H. O’Leary, who later supervised Latifah when she took a nondegree course in chemistry in 1984 at the University of Wisconsin, Madison. Latifah served as professor of chemistry and director of the Biopharmaca Research Center at Bogor Agricultural University from 1998 to 2014. Her love of analytical chemistry and herbal medicine materialized in her work on the development of bioanalytical and chemometrics methods for herbal standardization. Moreover, her compassionate nature, hard work, and empathy as a mentor are an inspiration for her junior colleagues.”—Rudi Heryanto, colleague



**Most recent title:** professor of chemistry, Bogor Agricultural University  
**Education:** B.S., soil science, Bogor Agricultural University, 1976; Ph.D., biochemistry, Bogor Agricultural University, 1995  
**Survivors:** husband, Dudung; son, Huda; and three grandchildren

### Thonet C. Dauphiné

Thonet C. Dauphiné, 103, died on Nov. 18, 2016, in Acton, Mass.

“During his career, my dad worked for Standard Oil of California, Oronite Chemical, Hooker Chemical, Nease Chemical, Chemical Process Corp., and E. B. Badger Co. He was also CEO of his own consulting

company, Design Enterprises, where he designed clean extraction of oil from shale via microwaves and operated a pilot plant in a remote part of Utah as a consultant to Badger, Raytheon, and Texaco. My parents were avid lifelong hikers, skiers, and sailors. On their 50th anniversary, the family climbed Mt. Washington. My parents were devoted readers, and each maintained a curiosity in life that took them on travels throughout the world.”—Stephen B. Dauphiné, son



**Most recent title:** CEO, Design Enterprises  
**Education:** B.A., chemical engineering, MIT, 1935; Sc.D., chemical engineering, MIT, 1939  
**Survivors:** sons, T. Charles Jr., Richard, David, and Stephen

### Robert H. Hauge

Robert H. Hauge, 77, died on March 17, 2016, in Houston.

“Colleagues describe Bob as ‘creative, bold, resolute, optimistic, and friendly.’ A Wisconsin country boy, he was turned on to chemistry by his college mentor and inspired further by Leo Brewer of the University of California, Berkeley. As a postdoc at Rice University under John Margrave, Bob worked on fluorine chemistry. He later joined Richard Smalley’s group, adding experimental creativity to the exploding field of carbon nanotechnology. Bob was a prolific collaborator and mentor, and he loved technical arguments to advance scientific understanding. He completed his 50th year at Rice University in 2015. He loved his science and his students and actively attended group meetings until a week before his death.”—Wade Adams, friend and colleague



**Most recent title:** Distinguished Faculty Fellow, Rice University  
**Education:** B.S., chemistry, Loras College, 1960; Ph.D., chemistry, University of California, Berkeley, 1965  
**Survivors:** step-daughter, Angie Gibson; and a step-granddaughter

## M. Ross Johnson

M. Ross Johnson, 71, died on Oct. 17, 2016, in Chapel Hill, N.C.

“M. Ross Johnson was most recently co-chairman and cofounder of Parion Sciences. From 1995 to 1999, he was president, CEO, and CFO of Trimeris. From 1987 to 1994, he was vice president of chemistry at Glaxo and worked at Pfizer Central Research in Medicinal Chemistry from 1971 to 1987. In 1989, Johnson was named the first ever Distinguished Research Fellow in the Laboratory of Medicinal Chemistry in the National Institute of Diabetes, Digestive & Kidney Diseases at the National Institutes of Health. For his many notable achievements, Johnson was inducted into the Medicinal Chemistry Hall of Fame in 2011. In 2012, he was named a Fellow of ACS.”— Thomas Crawford, friend



**Most recent title:** cochairman and cofounder, Parion Sciences

**Education:** B.S., chemistry, University of California, Berkeley, 1967; Ph.D., organic chemistry, University of California, Santa Barbara, 1970

**Survivors:** wife, Charlotte; sons, Michael and Gregory; and six grandchildren

## Rollie J. Myers

Rollie J. Myers Jr., 92, died on Sept. 12, 2016, in Berkeley, Calif.

“Rollie will be remembered for his wit and generosity, as well as his intellect and his contributions to education and science. He was an ACS member for more than 60 years. He loved teaching and was deeply committed to his students, and he enjoyed working with his many colleagues in various endeavors in the scientific community. His presence is, and will be, deeply missed.”— Mary Myers, daughter-in-law



**Most recent title:** emeritus professor of chemistry, University of California, Berkeley

**Education:** B.S., chemistry, California Institute of Technology, 1947; Ph.D., chemistry, University of California, Berkeley, 1951  
**Survivors:** daughter, Adele; son, Keith; and two grandsons

## John P. Oliver

John P. Oliver, 82, died on Oct. 3, 2016, in Royal Oak, Mich.

“John began his career at Wayne State University in 1951. He served as Ph.D. adviser to 38 students and published more than 120 peer-reviewed papers. His research fo-



cus on synthesis and characterization of organometallic compounds. He served as founding dean of the College of Science, associate dean of research and development, interim dean of the College of Liberal Arts & Sciences, vice president for academic affairs, vice president for research, and director of the Institute for Manufacturing Research. Following retirement, he began authoring a comprehensive departmental history. He was a constant source of gentle advice and sage wisdom to chairs, deans, directors, and junior faculty.”— David M. Coleman, friend and colleague

**Most recent title:** professor of chemistry, Wayne State University  
**Education:** B.A., chemistry, University of Oregon, 1956; Ph.D., inorganic chemistry, University of Washington, 1959  
**Survivors:** wife, Betty; daughter, Karen; sons, Roy and Gordon; and five grandchildren

## David Straus

David Straus, 84, died on June 11, 2015, in Gardiner, N.Y.



In addition to teaching biochemistry, he taught environmental science for 30

years. He maintained a leadership role in multiple community-based environmental organizations until his death in 2015. David represented the Mid-Hudson Section as the councilor for many years and attended all ACS national meetings.”—family of David Straus

focused on synthesis and characterization of organometallic compounds. He served as founding dean of the College of Science, associate dean of research and development, interim dean of

the College of Liberal Arts & Sciences, vice president for academic affairs, vice president for research, and director of the Institute for Manufacturing Research. Following retirement, he began authoring a comprehensive departmental history. He was a constant source of gentle advice and sage wisdom to chairs, deans, directors, and junior faculty.”— David M. Coleman, friend and colleague

“One of David Straus’s principal achievements was to apply his knowledge of chemistry to the nascent field of environmental science, beginning in the late 1960s.

years. He maintained a leadership role in multiple community-based environmental organizations until his death in 2015. David represented the Mid-Hudson Section as the councilor for many years and attended all ACS national meetings.”—family of David Straus

**Most recent title:** associate professor, State University of New York at New Paltz

**Education:** B.A., chemistry, Reed College, 1953; Ph.D., biochemistry, University of Chicago, 1960

**Survivors:** wife, Harriett; daughter, Lisa; sons, Lee and David; and eight grandchildren

## Henry F. (Hank) Whalen

Henry F. (Hank) Whalen, 81, died on Nov. 29, 2016, in Newtown Square, Pa.

“During his 24 years at PQ Corp., Hank was part of the management team that grew the company from \$50 million



to more than \$500 million in sales. Prior to joining PQ, he held various positions in business development at Rohm and Haas. Hank was a tireless advocate for the essential role of the chemical

sciences in industrial and economic development. He served as chair of the ACS Board of Directors, and in 2002, the society created an award in his honor and named him the first recipient. The Henry F. Whalen Jr. Award celebrates excellence in business development and management in the chemical enterprise. An avid traveler, Hank had crisscrossed the globe, but his most cherished trips were to the Jersey shore where he enjoyed fishing and sunsets over the Strathmere Bay.”—family of Hank Whalen

**Most recent title:** vice president, PQ Corp.

**Education:** B.S., chemistry, Villanova University, 1958

**Survivors:** wife, Barbara; daughters, Stacey Radich, Wendy Romano, and Jennifer Doyle; sons, Henry III and Joseph; and 10 grandchildren

To recognize your late loved one or colleague, submit obituary information at [cenm.ag/obits](http://cenm.ag/obits).





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# DONOR RECEPTION

Celebrating the 50th Anniversary  
of ACS Project SEED  
featuring Program Alumni

March 18, 2018 | 3:00 – 5:00 p.m.  
Hilton New Orleans Riverside | River Room  
25th ACS National Meeting & Exposition





*ACS Project SEED*

## **CAMPAIGN**

### **50 FORWARD MOMENTUM DONOR LEVELS**

**Forward Thinkers**

\$5,000 to \$9,999

**Forward Movers**

\$2,500 to \$4,999

**Forward Friends**

\$1,000 to \$2,499

**Forward Boosters**

\$500 to \$999

**Forward Supporters**

\$250 to \$499

**Forward Fans**

\$51 to \$249

**\$50 for Fifty**

Gifts of \$50

**Forward Firsts**

First gifts to Project SEED

# PROGRAM

## WELCOME

**Thomas Connelly, Jr.**  
ACS Executive Director & CEO

## TESTIMONIALS

**Irene McGee**  
Project SEED Coordinator  
Covestro

**Brian Foster**  
Project SEED Alumnus  
Princeton University

**Sonali Mali**  
Project SEED Alumna  
Indiana University

**Ingrid Montes**  
Project SEED Coordinator  
ACS Board Member

**Darwing Santiago Padilla-Rolón**  
Project SEED Alumnus  
University of Puerto Rico at Cayey

## CLOSING REMARKS

**John Adams**  
ACS Board Chair

For more information about the  
ACS Project SEED 50 Forward Campaign  
please visit: [www.acs.org/forward](http://www.acs.org/forward)

## 50 FORWARD LEADERSHIP

### Honorary Chairs

Alfred and Isabel Bader

### Champion

Sir Fraser Stoddart

### Advisors

Madeleine Jacobs and Catherine Sigal

### Chair

Anna Cavinato

### Volunteers

William Carroll, Jr.

David Chavez

Susan Fahrenholtz

Jin Gao

Jody Kocsis

Cynthia Maryanoff

Irene McGee

Ingrid Montes

Sarah Mullins

Masaki Tan

Don Warner

Jin-Quan Yu

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Catherine Sigal, Chair

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Thomas Connelly, Jr. (*ex officio*)

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Ingrid Montes

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Kathy Fleming, Director

Mary Bet Dobson, Assistant Director

Susan Ainsworth

Susan Castro

Lara Kadylak

Robert Moss

Gerry Vent



ACS

Chemistry for Life

April 16, 2018

Dear Isabel and Alfred -

I have just received the final, printed version of your letter for the Building Chemistry's Future newsletter. Isabel, thank you so very much for dedicating your time and thoughtful edits. It is infinitely better than the first version and I look forward to the response from members.



You will likely receive the package in the coming days but wanted to share this copy with you, along with the program from our Donor Reception in New Orleans. We heard outstanding stories from several SEED alumni and program volunteers. The impact of their experience on their lives is remarkable!

Thank you again for your role in building the Project SEED Endowment and the success of 50 Forward.

With gratitude,  
Mary Beth Dohm



Dear Fellow ACS Member,

Throughout the years my wife and I have tried to help the neediest and ablest students to learn about opportunities available in the sciences through the ACS Project SEED.

You know, of course, that Project SEED is a summer program that provides promising but disadvantaged high school students the chance to work in a research lab with a mentor. The two 8- to 10-week summer programs offered have been a turning point in the lives of a good number of students.

This year we celebrate Project SEED's 50th anniversary with *50 Forward*, a special appeal to build the Project SEED Endowment.

Be a part of the *50 Forward* momentum with your gift today or with a future legacy gift. We invite you to be as bold as the ACS Project SEED founders were 50 years ago. Together we can lead Project SEED outward, upward and, most of all, forward.

Gratefully,

Handwritten signatures of Alfred and Isabel Bader in black ink.

Alfred and Isabel Bader  
ACS Legacy Leaders

*P.S. Are you ready to make a gift to support Project SEED? Or have you already made a gift to the American Chemical Society, but haven't yet notified us? Be sure to fill out the Intention Form on the back of the enclosed reply form, so that we can ensure your wishes are fulfilled.*

## 50 FORWARD APPEAL

### HONORARY CHAIRS

Alfred and Isabel Bader

### CHAMPION

Sir Fraser Stoddart

### CHAIR

Anna G. Cavinato

### VOLUNTEERS

William F. Carroll, Jr.

David E. Chavez

Susan R. Fahrenheitz

Jin Gao

Jody A. Kocsis

Cynthia A. Maryanoff

Irene E. McGee

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