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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, 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 Ullyot 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 50th anniversary of the program in 2018.
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<th>Students</th>
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<td>University of Alaska-Fairbanks, William Howard</td>
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<td>William Howard</td>
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<td>Hussein Alboudwarej</td>
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<td>Weiming Wu</td>
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<td>Zheng-Hui He</td>
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<td>Don Tilley, Ryan Witzke</td>
<td>Sohail Haqiqat</td>
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# 2016 Project SEED Summer I & II Programs

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<td>Patti LiWang</td>
<td>Julissa Garcia</td>
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<td>Kate Delgado</td>
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<td>John Henry</td>
<td>Samantha Enrique</td>
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<td>T. Burns</td>
<td>Julia Rojas</td>
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<td>M. Hayes</td>
<td>Jennifer Reyes</td>
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<td>California State University, Los Angeles, Frank Gomez</td>
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<td>Robert Vellanoweth</td>
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<td>Frank Gomez</td>
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<td>Michael Hayes</td>
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</table>
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
Chris 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 Zalib

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
### Institutions/Coordinators/Mentors

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<thead>
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<th>Institution/Coordinators/Mentors</th>
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<td>Timothy Warren</td>
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<td>K. Travis Holman</td>
<td>Florence Kyremanteng</td>
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<td>Kaveh Jorabchi</td>
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### FLORIDA

#### Barry University, George Fisher
- Rajeev Prabhakar
- University of Miami

#### Florida Gulf Coast University, Board of Trustees, Ju Chou
- Ju Chou

#### University of Miami, Carmen Guzman
- Co-coordinator – Marc Knecht
- Roger Leblanc
- Amy Scott
- Francisco Raymo
- Adam Braunschweig

#### University of North Florida, Jennifer Williams
- Christos Lampropoulos
- Jennifer Williams, Melissa Bush
- Radha Pyati

#### Summer I
- Vladimir Civil
- Andy Armond
- Shangida Shareen
- Adriana Amaris
- Jael Baptiste
- Kirby Gilmore
- Najsha Sweeting
- William Gilmore
- Darien Glover
- Asya Smith
## 2016 Project SEED Summer I & II Programs

### Institutions/Coordinators/Mentors

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<td>Andrew Holland</td>
<td>Andrew Hale</td>
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| Snake River Local Section, ACS, Don Warner  | Summer I                   |
| Jeunghoon Lee                              | Andrea Nguyen              |
| Boise State University                      | Emily Wade                 |
| Owen McDougal                               | Summer II                  |
|                                             | Noah Collingwood           |
|                                             | Jayde Nielsen              |
|                                             | Anthony Phero              |

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<td><strong>Purdue Local Section, ACS, Bryan Boudouris</strong></td>
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<td><strong>University of Notre Dame, Mary Prorok</strong></td>
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<td>William Boggess, Michelle Joyce</td>
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<td>Emily Smith</td>
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<td>Javier Vela</td>
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</table>
# 2016 Project SEED Summer I & II Programs

## Institutions/Coordinators/Mentors

### 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  
Fasil Abebe  
**Summer I**  
Ariana Jennings  
**Summer II**  
Jayda Smith

**University of Maryland Eastern Shore, Victoria Volkis**  
Deborah Sauder  
Victoria Volkis  
Byungrok Min  
**Summer I**  
Montajha Bowen  
Ciarra 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  
Saginaw Valley State University  
Tami Sivy  
**Summer I**  
Darla Martinez  
Aubrie Taceyi  
**Summer II**  
Evamarie Medendorp  
Kalley Zochowski

Anja Mueller  
Central Michigan University  
Benjamin Swarts
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

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

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

Summer I
Sumar Beauti
Clara Ellis
Jaren Jones
## 2016 Project SEED Summer I & II Programs

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<td><strong>MISSOURI</strong></td>
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<tr>
<td><strong>Kansas City Local Section, ACS, Michelle Paquette</strong></td>
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<td>Co-coordinator – Eckhard Hellmuth</td>
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<td><strong>Saint Louis University, Ryan McCulla</strong></td>
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<td>Ryan McCulla</td>
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<td>April Lewis</td>
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<td><strong>University of Montana, Earle Adams</strong></td>
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<tr>
<td>Orion Berryman</td>
<td>John Bowers</td>
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<td><strong>NEBRASKA</strong></td>
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<td><strong>Creighton University, Sade Kosoko-Lasaki</strong></td>
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<td>Devendra Agrawal</td>
<td>Nancy Chung</td>
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<td>Yaping Tu</td>
<td>Deysy Reyes</td>
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<td>Jason Shearer</td>
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<td>Wesley Chalifous</td>
<td>Phuc Duong</td>
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<td>Ian Wallace</td>
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<td>Katherine Mirica</td>
<td>Nicholas Chambers</td>
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<td>Polina Pivak</td>
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## 2016 Project SEED Summer I & II Programs

### Institutions/Coordinators/Mentors

#### NEW JERSEY

<table>
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<th>Institution/Location</th>
<th>Coordinator/Name(s)</th>
<th>Mentor(s)</th>
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<td>Yang Deng</td>
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<td>Sagnik Basuray</td>
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<td>Steven Levison</td>
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<td>Pankaj Lal</td>
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<td>Marc Cohen</td>
<td>Beth Israel Medical Center</td>
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<td>Vadenska Valens</td>
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<td>Jinshan Gao</td>
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<td>Clement Alo</td>
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<td>Michele Pavanello</td>
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<td>Karina Schafer</td>
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<td>Agostino Pietrangelo</td>
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<td>Philip Leopold</td>
<td>Stevens Institute of Technology</td>
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<td></td>
<td>Stefan Strauf</td>
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</tbody>
</table>

### Students

#### Summer I

- Giovanni Cruz
- Valerie Zapata
- Keileen Alvarez
- Katherine Fernandez
- Tracey Simon
- Emily Tumbaco
- Mario Banos
- Isaac Ortega
- Miguel Castro
- Nathalee Martinez
- Amada Ponce
- Melanie Moncayo
- Anakarla Gonzalez
- Gilda Lovera
- Katherine Mendoza
- Rebecca Amador
- Taysa Campara
- Anna Yactayo
- Thairy Garcia
- Kiara Martinez
- Gabriela Ale
- Giselle Guaman
- Jennifer Hernandez
- Pedro Perez
- Nicole Ceballos
- Kamila Amador
- Ingrid Quintanilla
- Aldair Medrano
# 2016 Project SEED Summer I & II Programs

## Institutions/Coordinators/Mentors

<table>
<thead>
<tr>
<th>Institutions/Coordinators/Mentors</th>
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<tr>
<td>Gerard Parkin, Columbia University</td>
<td>Kennedy Yamaguchi, New Jersey City University</td>
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<td>Kenneth Yamaguchi, New Jersey City University</td>
<td>Flaminia Marrucci, New York University</td>
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<td>Hongjun Wang, Stevens Institute of Technology</td>
<td>Ying Qi Lin, Stevens Institute of Technology</td>
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<tr>
<td>Bayonne High School, Marie Aloia</td>
<td>Jose Perez, New Jersey City University</td>
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<td>Rajesh Dave, New Jersey Institute of Technology</td>
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<td>Maria Aloia</td>
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<td>Fairleigh Dickinson University, Marion McClary</td>
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<td>James Vachio, Ratna Vadlamudi</td>
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<td>Marion McClary</td>
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<td>New Brunswick Health Sciences Technology High School, Joanne Ciezak</td>
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<td>Marshall Bergen, Rutgers University</td>
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<tr>
<td>New Jersey City University, Kenneth Yamaguchi</td>
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<td>Miriem Bendaoud, Yufeng Wei, Kenneth Yamaguchi</td>
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<td>Reed Carroll</td>
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<tr>
<td>Robert Aslanian, Terry Kamps</td>
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<td>New Jersey Institute of Technology, Reginald Tomkins</td>
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<td>El Jabari</td>
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<td>Alexei Khalizov, Liang Chen, Roman Voronov</td>
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<td>North Jersey Local Section, ACS, Bobbi Gorman</td>
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<td>James White, Rutgers University</td>
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## Students

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<td><strong>Summer II</strong></td>
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<tr>
<td>Joan Martinez, Jessica Alvitres</td>
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<td>Ying Qi Lin, Jose Perez</td>
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<td>Nada Wahba, Fairleigh Dickinson University, Nardeen Khella</td>
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<td>Salimata Fall, Ashley Gordillo</td>
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<td>Michelle Sinning, New Brunswick Health Sciences Technology High School,</td>
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<td>Joanne Ciezak</td>
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<td>Rosa Veliz, New Jersey Institute of Technology</td>
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<td>Aswin Aguinaga, John Carvajal, David Herrera, Prasami Rajapakse, Mirka</td>
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<td>Efstathios Leontaris, Jacqueline Suarez</td>
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<td>Kevin Hernandez, Marcelo Munoz, Jaime Mendoza, Isaiah Moreta, Camila</td>
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<td>Sierra</td>
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<td><strong>Summer I</strong></td>
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<td>Gladys Adarkwah</td>
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</table>
Institutions/Coordinators/Mentors

**Rider University, Danielle Jacobs**
David Laviska
Danielle Jacobs
Jamie Ludwig

**South Jersey Local Section, ACS, Gregory Caputo**
Timothy Vaden, Lei Yu
Lark Perez

**Rutgers University, Piscataway, Shaneika Nelson**
Daniel Seidel

**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, The State University of New Jersey, Deborah Stalling**
Nanjoo Suh

**Science Park High School, Andre Bridgett**
N. M. Ravindra
Alexis Rodriguez

**Seton Hall University, Gerald Buonopane**
David Sabatino
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
Ecelfalachi 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

NEW MEXICO

Sandia National Laboratories, Bernadette Hernandez-Sanchez
Co-coordinator – Amy Tapia
Bernadette Hernandez-Sanchez
Timothy Boyle

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

NORTH CAROLINA

North Carolina University, Laura Sremaniak
Alan Tonelli North Carolina State University
Elena Jakubikova

Michael Fitzgerald Duke University
Kathleen Donohue
Felix Castellano North Carolina State University
Melissa Pasquenelli

University of North Carolina, Charlotte, Thomas Schmedake
Michael Walter
Daniel Rabinovich
Thomas Schmedake
Kirill Afonin

OHIO

Akron Local Section, ACS, Tama Drenski
Chrys Wesdemiotis University of Akron
Kevin Cavicchi
Steven Chuang
David Modarelli
Christopher Ziegler
Ali Dhinojwala, Diane Gorse

Jia Li
Abraham Joy

Students

Summer I
Rayna Bandy
Fernando Guerrero

Summer I
Truc-Nhi Do
Kaysha Reed
Jared Rodriguez
Daimonique Singleton
Ahmere Spires

Summer I
Aamenah Jordan
Kylah Liftin

Summer II
Betelihem Mebrahtu
Benhor Samson
Chidubem Nwakuche
Samuel Ndukwe

Summer I
Brandon Miller
Liliana Moranchel
Jacqueline Sandoval
Bamiak Worku

Summer I
Dalal Abdelqader
Tommy Alvarado
Juanese Franklin
Brandon Griffith
Adwoa Odoom
Maxwell Rankin

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
- Marilyn Mackiewicz
- Portland State University

Summer I
- Gabriella Rodriguez

Summer II
- Julia Dayton
- Nicole Zhen

**Pennsylvania**

**Covestro LLC, Irene McGee**
- Robyn Francis, Marie Urick

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 Local Section, ACS, Ingrid Montes
Arthur Tinoco University of Puerto Rico, Rio Piedras
Jorge Colon
Carlos Gonzalez
Carlos Cabrera
Eduardo Nicolau
Viimali Lopez-Mejias
Abel Baerga
Jose Lasalde

Eduardo Nicolau
Dalice Piñero-Cruz

University of South Carolina, Chuanbing Tang
Chuanbing Tang

LeMoyne-Owen College, Yahia Hamada
Yahia Hamada, Sherry Painter

Yahia Hamada

Students

Summer I
Israa Abdalmuttaleb
David Donehue
Gildas Kodjo
Destiny Lawrence-Brown
Zachary Opalko
Asia Parker

Summer II
Jeramiah 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
Jeliliani Lopez Batista
Jahzeel Ortiz Velez
Darwing Padilla Rolon

Summer II
Caleb Colon
Oliver Pichardo

Summer II
Nia Livingson

Summer I
Hasan Hamada
Nour Zawahiri

Summer II
Hajja-Aishah Darboe
# 2016 Project SEED Summer I & II Programs

## Institutions/Coordinators/Mentors

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<td><strong>Middle Tennessee State University, Paul Gregory Van Patten</strong></td>
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<td>Edgar Lozano</td>
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### TEXAS

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<tr>
<td><strong>Co-coordinator – Oluwatoyin Asojo</strong></td>
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<td>Kjersti Aagaard-Tillery</td>
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<th>San Antonio Local Section, ACS, E. Robert Fanick</th>
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<td>Maoqi Feng</td>
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<td>Tian Tian</td>
<td>Sebastien Aguilar</td>
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<td>John Zhao</td>
<td>Claudia Zamarripa</td>
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<td>George Negrete, Andrew Tsin</td>
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<td>Tristin Zamora</td>
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<td>Carol Ellis-Terrell</td>
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<tr>
<td>Vasiliki Poenitzsch</td>
<td>Raul Carreon</td>
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<tr>
<td>Stanton McHardy</td>
<td>Sandra Figueroa</td>
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<td>Jamie Turcios-Villatta</td>
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<td>Terence Neumann</td>
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<td>Bennie Tarrant</td>
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<td>Emilio Zaragoza</td>
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2016 Project SEED Summer I & II Programs

Institutions/Coordinators/Mentors

**UTAH**

University of Utah, Sophie Caron
Sophie Caron

Sophie Caron Asma Rokhaneevna

**VERMONT**

University of Vermont, Rory Waterman
Rory Waterman

Matthias Brewer

**WEST VIRGINIA**

Marshall University, Derrick Kolling
Michael Norton

**WISCONSIN**

Medical College of Wisconsin, Michael Mathias
Matthew Scaglione
John Corbett

Summer I
Hibo Jafar
Summer II
Kevin Huang

Summer I
Amber Stone

Summer I
A’voin Solis-McKinney
Sokhna Wyatt-Ngomi

![Research in the Ziegler Group](image1)

![Akron Local Section, ACS](image2)
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.
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 Mendon High School, Pittsford, N.Y.  
SEED Institution: Rochester Institute of Technology, N.Y.  
SEED Mentor: Callie Babbit  
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, Albuqerque, 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 Bilingüe 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 Lily 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 Bayamón
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 Akindele
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
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.”

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 be 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 pursuit 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”.

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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-Bisformyldipyrrrol 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 (NaCIO) 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 Lily 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

“No 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
“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

New York Local Section Continued:

Michelle Sinning  Stimulation of Feeding behavior: The Effect Towards Both Genders of Procambarus clarkii in Contaminated Water
Jacqueline Suarez  Testing Antimicrobial Effectiveness of Hydroxamic Acid: The Effects of Hydroxamic Acids on Escherichia coli HB101, Salmonella typhimurium TA1538, and Staphylococcus aureus 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

North Jersey Local Section: Coordinators, Gerald Buonopane, Deborah Stalling

Adjeilyne Akrong/ Claudia Bonheur/ Joyce Jimenez/ Ashley Reid/ Bianca Sanchez/ Chideya Waddell  Modern African Savanna Ecosystem: Stable Carbon Isotope Evidence for Diet and Habitat The Effects of Ethanol on the Growth of HL-60 Human Promyelocytic Leukemia Cells Identifying Changes in Exosomes Numbers Between Treated and Untreated Animals 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

South Jersey Local Section: Coordinator, Gregory Caputo

Omar Cruz Garcia/ Citlalli Jimenez  Calorimetry using PvrTFSI and MSA Novel Synthesis of Benizimidazole

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
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.

<table>
<thead>
<tr>
<th>Student Gender</th>
<th>Summer I</th>
<th>Summer II</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>116</td>
<td>43</td>
<td>39%</td>
</tr>
<tr>
<td>Female</td>
<td>183</td>
<td>64</td>
<td>61%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>299</td>
<td>107</td>
<td>100%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Family Income Level</th>
<th>Summer I</th>
<th>Summer II</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>$6,999 or Less</td>
<td>43</td>
<td>16</td>
<td>15%</td>
</tr>
<tr>
<td>$7,000 to $16,000</td>
<td>51</td>
<td>18</td>
<td>17%</td>
</tr>
<tr>
<td>$17,000 to $25,000</td>
<td>89</td>
<td>21</td>
<td>27%</td>
</tr>
<tr>
<td>$26,000 to $35,000</td>
<td>65</td>
<td>28</td>
<td>23%</td>
</tr>
<tr>
<td>$36,000 or more</td>
<td>51</td>
<td>24</td>
<td>18%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>299</td>
<td>107</td>
<td>100%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Demographics by State</th>
<th>Summer I</th>
<th>Summer II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Arkansas</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Alaska</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>California</td>
<td>53</td>
<td>14</td>
</tr>
<tr>
<td>Connecticut</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Delaware</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>District of Columbia</td>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>Florida</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Georgia</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Hawaii</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Idaho</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Illinois</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Indiana</td>
<td>18</td>
<td>13</td>
</tr>
<tr>
<td>Iowa</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Kansas</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Louisiana</td>
<td>0</td>
<td>1</td>
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<tr>
<td>Maryland</td>
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<td>Massachusetts</td>
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<td>Michigan</td>
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<td>Minnesota</td>
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<td>Mississippi</td>
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<tr>
<td>Missouri</td>
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<td>1</td>
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<tr>
<td>Montana</td>
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<td>0</td>
</tr>
<tr>
<td>Nebraska</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Nevada</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>New Hampshire</td>
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<td>2</td>
</tr>
<tr>
<td>New Jersey</td>
<td>58</td>
<td>21</td>
</tr>
<tr>
<td>New Mexico</td>
<td>2</td>
<td>0</td>
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<tr>
<td>New York</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>North Carolina</td>
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<td>4</td>
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<tr>
<td>Ohio</td>
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<td>7</td>
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<tr>
<td>Oregon</td>
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<td>Pennsylvania</td>
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<td>6</td>
</tr>
<tr>
<td>Puerto Rico</td>
<td>12</td>
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<td>South Carolina</td>
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<td>Tennessee</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Texas</td>
<td>26</td>
<td>4</td>
</tr>
<tr>
<td>Utah</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Virginia</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Vermont</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>West Virginia</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>307</td>
<td>107</td>
</tr>
</tbody>
</table>
## 2016 Student Survey Results

### What is the highest level of education you expect to complete?

<table>
<thead>
<tr>
<th></th>
<th>Summer I</th>
<th>Summer II</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>High School</td>
<td>4</td>
<td>0</td>
<td>1.0%</td>
</tr>
<tr>
<td>Vocational, Trade, Business</td>
<td>2</td>
<td>0</td>
<td>0.5%</td>
</tr>
<tr>
<td>Some College</td>
<td>0</td>
<td>3</td>
<td>0.7%</td>
</tr>
<tr>
<td>2-year College Graduate</td>
<td>3</td>
<td>1</td>
<td>1.0%</td>
</tr>
<tr>
<td>4-year College Graduate</td>
<td>77</td>
<td>33</td>
<td>27.1%</td>
</tr>
<tr>
<td>Graduate/Professional School</td>
<td>213</td>
<td>70</td>
<td>69.7%</td>
</tr>
</tbody>
</table>

### College Majors

<table>
<thead>
<tr>
<th></th>
<th>Summer I First Choice</th>
<th>Summer II First Choice</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>1%</td>
<td>1%</td>
<td></td>
</tr>
<tr>
<td>Architecture</td>
<td>0%</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>Astronomy</td>
<td>1%</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Biology &amp; Life Sciences</td>
<td>17%</td>
<td>17%</td>
<td></td>
</tr>
<tr>
<td>Business &amp; Commerce</td>
<td>3%</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Chemistry</td>
<td>23%</td>
<td>19%</td>
<td></td>
</tr>
<tr>
<td>Communications</td>
<td>0%</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Computer Sciences</td>
<td>6%</td>
<td>4%</td>
<td></td>
</tr>
<tr>
<td>Earth Sciences</td>
<td>0%</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>2%</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Engineering</td>
<td>12%</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Foreign Languages</td>
<td>0%</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Health Professions</td>
<td>17%</td>
<td>12%</td>
<td></td>
</tr>
<tr>
<td>Home Economics</td>
<td>0%</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Language &amp; Literature</td>
<td>0%</td>
<td>1%</td>
<td></td>
</tr>
<tr>
<td>Library Science</td>
<td>0%</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Mathematics</td>
<td>1%</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Military Sciences</td>
<td>1%</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Pharmacy Sciences</td>
<td>3%</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>Philosophy</td>
<td>0%</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Physics</td>
<td>2%</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Social Sciences</td>
<td>0%</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>Technical &amp; Vocational</td>
<td>1%</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>10%</td>
<td>16%</td>
<td></td>
</tr>
</tbody>
</table>

### Student Research Sites

<table>
<thead>
<tr>
<th></th>
<th>Summer I</th>
<th>Summer II</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic Laboratory</td>
<td>209</td>
<td>77</td>
<td>70%</td>
</tr>
<tr>
<td>Government Laboratory</td>
<td>16</td>
<td>6</td>
<td>5%</td>
</tr>
<tr>
<td>Industrial Laboratory</td>
<td>41</td>
<td>14</td>
<td>14%</td>
</tr>
<tr>
<td>Medical Laboratory</td>
<td>33</td>
<td>10</td>
<td>11%</td>
</tr>
</tbody>
</table>

### Students Agreed that Project SEED Helped:

<table>
<thead>
<tr>
<th></th>
<th>Summer I</th>
<th>Summer II</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop Skills and abilities</td>
<td>289</td>
<td>105</td>
<td>97%</td>
</tr>
<tr>
<td>Develop self-confidence</td>
<td>239</td>
<td>95</td>
<td>82%</td>
</tr>
<tr>
<td>Develop responsibility</td>
<td>279</td>
<td>103</td>
<td>94%</td>
</tr>
<tr>
<td>Understand the ethical behavior of scientists</td>
<td>270</td>
<td>100</td>
<td>91%</td>
</tr>
<tr>
<td>Develop better study habits</td>
<td>177</td>
<td>77</td>
<td>63%</td>
</tr>
<tr>
<td>Learn what advance study is like</td>
<td>276</td>
<td>101</td>
<td>93%</td>
</tr>
<tr>
<td>Decide to continue my education after high school</td>
<td>261</td>
<td>99</td>
<td>89%</td>
</tr>
<tr>
<td>Choose a college major</td>
<td>151</td>
<td>73</td>
<td>55%</td>
</tr>
<tr>
<td>Decide to pursue a career in science</td>
<td>192</td>
<td>78</td>
<td>67%</td>
</tr>
<tr>
<td>Develop greater interest in scientific/technical areas</td>
<td>249</td>
<td>74</td>
<td>80%</td>
</tr>
</tbody>
</table>

### What are the chances that you will become a scientist, engineer, or mathematician in the future?

<table>
<thead>
<tr>
<th></th>
<th>Summer I</th>
<th>Summer II</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>126</td>
<td>58</td>
<td>45%</td>
</tr>
<tr>
<td>Good</td>
<td>52</td>
<td>30</td>
<td>35%</td>
</tr>
<tr>
<td>Fair</td>
<td>112</td>
<td>17</td>
<td>17%</td>
</tr>
<tr>
<td>Poor</td>
<td>9</td>
<td>2</td>
<td>3%</td>
</tr>
</tbody>
</table>
**2016 Student Survey Results**

In the following statements, students were asked to evaluate their experience with their mentor.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Agree or Agree</th>
<th>Neutral</th>
<th>Disagree or Strongly Disagree</th>
<th>No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>I learned new skills from my SEED mentor</td>
<td>86%</td>
<td>6%</td>
<td>3%</td>
<td>5%</td>
</tr>
<tr>
<td>It is easy to talk to my SEED mentor</td>
<td>83%</td>
<td>6%</td>
<td>4%</td>
<td>5%</td>
</tr>
<tr>
<td>My SEED mentor assisted me with improving my overall performance and SEED research work</td>
<td>85%</td>
<td>6%</td>
<td>4%</td>
<td>5%</td>
</tr>
<tr>
<td>My SEED mentor discussed career paths (including education) in chemistry and related sciences with me</td>
<td>70%</td>
<td>15%</td>
<td>10%</td>
<td>5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Student/Mentor Relationship</th>
<th>Total%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Good</td>
<td>69%</td>
</tr>
<tr>
<td>Good</td>
<td>20%</td>
</tr>
<tr>
<td>Fair</td>
<td>5%</td>
</tr>
<tr>
<td>Poor</td>
<td>1%</td>
</tr>
<tr>
<td>No Response</td>
<td>5%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>
## 2016 Project SEED Major Contributors

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**Donors of $100,000 - $249,999**
- Alfred and Isabel Bader

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- Leslie De Riemer Anderson and Richard Anderson
- Becton, Dickinson and Company
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- Joan Kaminski
- Eunice Kreider
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- Layton McCoy
- The T. Rowe Price Program for Charitable Giving
  Recommendation of William Dempsey Moore
- Steven Moss
- New England BioLabs, Inc.
- Miles Okino
- Morgan Stanley Global Impact Funding Trust
  Recommendation of Till and Bernice Peters
- Seymour Pomerantz*
- Stephen Rodemeyer
- Joseph Samuels
- Fidelity Charitable Gift Fund
  Recommendation of K. Barry and Jan Sharpless
- Donald and Virginia Songstad
- Stewart Stabley
- Strem Chemicals, Inc.
- Masaki Tan
- Orlin Trapp
- Doris Waddell

### 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!

*Gifts made in December 2015
2016 Project SEED Local Program Contributors

- Jacksonville State University, Ala.
  Dept. of Physical and Earth Sciences
- California State University, Los Angeles
  Marc and Eva Stern Math and Science High School
- California Local Section, ACS
  Chevron Products Company, Calif.
  Bio-Rad Laboratories
  Cortopassi Family Foundation
  Sandra Tillin, UC Merced
- San Gorgonio Local Section, ACS
  California State University, San Bernardino
- Stanford University, Calif.
  Genentech Foundation
  Santa Clara Valley Local Section, ACS
- University of California, Davis
  Early Academic Outreach Program
- San Diego Local Section, ACS
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- Connecticut Valley Local Section, ACS
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- Chemical Society of Washington, ACS, D.C.
  Noel Turner Fund
- University of Delaware, College of Engr.
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  Rosie Bonjouklian
  Indiana Local Section Membership
  Indiana Clinical and Translational Sciences Institute
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- Bruce Ray
- Iowa State University
  National Science Foundation (NSF)
- Purdue Local Section, ACS
  Purdue University, Ind.
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  School of Chemical Engineering
  Faculty Member Grants/Start-up Funds,
  Discretionary Funds
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- University of Notre Dame, Ind.
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  Harper Cancer Research Center
  St. Joseph Valley Local Section, ACS
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  K. Richard Buszek, UMKC
  Wai-Yim Ching, UMKC
  Michelle Paquette, UMKC
- Saint Louis University, Mo.
  National Science Foundation
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- Mississippi Local Section, ACS
  The University of Southern Mississippi
  Vice President for Research, Gordon Cannon

- University of Montana
  Orion Berryman

- Dartmouth College, N.H
  Trustees of Dartmouth College

- Academy for Enrichment and Advancement, Union City High School, N.J.
  Susan Fahrenholtz
  North Jersey Local Section, ACS
  Union City Board of Education, N.J.

- Bayonne High School, N.J.
  Bayonne Board of Education

- Fairleigh Dickinson University, N.J.
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  Susan Fahrenholtz

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- Rutgers, The State University of New Jersey, Piscataway
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- Rutgers, The State University New Jersey, Newark

- Rutgers University, Camden, N.J.
  Rutgers University Startup Package

- Seton Hall University, N.J.
  Susan Fahrenholtz
  North Jersey Local Section, ACS

- Science Park High School, N.J.
  Susan Fahrenholtz

- Sandia National Laboratories, N. Mex.

- Rochester Institute of Technology, N.Y.
  Gleason Startup Fund, Laura Tubbs,
  National Institute of Health, National Science Foundation, National Science Foundation
  CBET Award

- Duke University, N.C.
  National Science Foundation Grant
  Kathleen Donohue
  Michael Fitzgerald

- North Carolina State University
  National Science Foundation Grant

  Felix Castellano, Kathleen Donohue, Michael Fitzgerald, Elena Jakubikova
  Golden Corral Charitable Fund

- Carolina Piedmont Local Section, ACS
  University of North Carolina, Charlotte

- Akron Local Section, ACS, Ohio
  OMNOVA Solutions Foundation

- Case Western Reserve University, Ohio College of Arts and Sciences

- University of Cincinnati, Ohio Department of Chemistry

- Toledo Local Section, ACS
  University of Toledo, Ohio

- Youngstown State University, Ohio
  Youngstown State University Foundation
  Penn-Ohio Border Local Section, ACS

- Eastern Oregon University
  Richland Local Section, ACS

- Portland Local Section, ACS, Oreg.
  Jason Reynolds

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- Puerto Rico Local Section, ACS
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  College Access Challenge Grant
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- South Carolina Local Section, ACS
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- Memphis Local Section, ACS, Tenn.
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- Greater Houston Local Section, ACS, Tex.

- San Antonio Local Section, ACS, Tex.
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- University of Vermont

- The Medical College of Wisconsin

- Marshall University, W.V.
  Marshall Foundation
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Students supported through individual and corporate contributions to the ACS Project SEED Endowment.

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Pedro Perez – Rutgers University, N.J.
Sadagicous Owens – University of Arkansas
Areli Tapia – University of Delaware
Brandon Miller, Jacqueline Sandoval – University of North Carolina, Charlotte

William J. Dulmage (1)
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The Glaxo Foundation (15)
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Henry A. Hill (1)
Cesar Romero – Stonehill College, Mass.

Rao Makineni (12)
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Donald F. & Mildred Topp Othmer (32)
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Rohm and Haas Corporation (10)
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