

2016

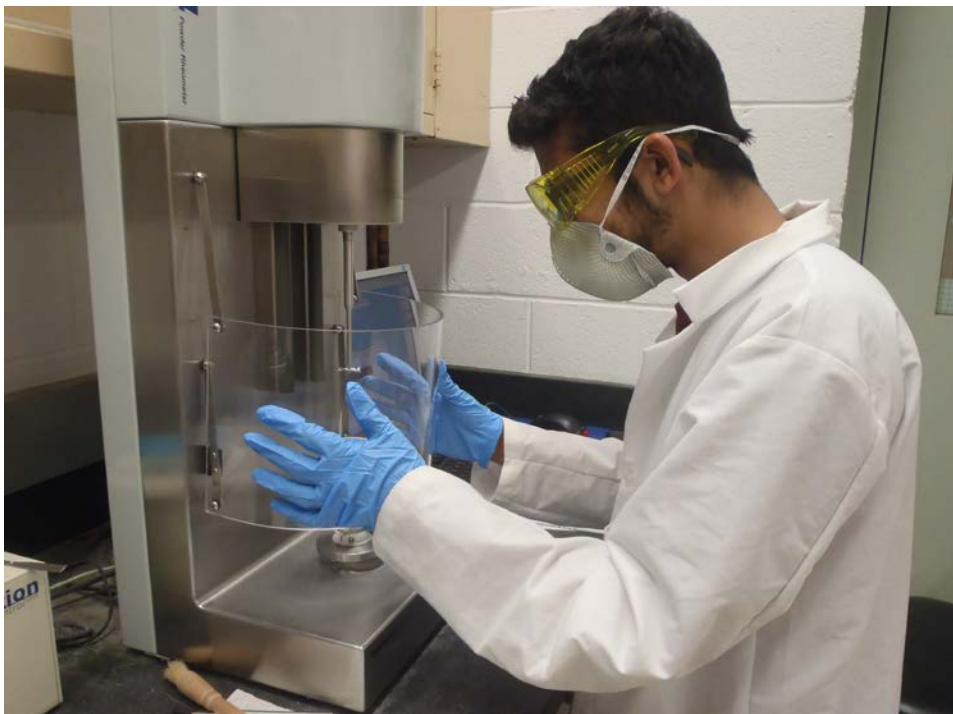
Project SEED

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 Ulyot 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.

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
Sadagicious Owens

CALIFORNIA

California Local Section, ACS, Elaine Yamaguchi
Brian Adzima Autodesk Inc.

Summer I
Derek Li

Chul Kim California State University, East Bay
Marlin Halim

Alexander Feng
Emory Hill

Mike Long Chevron Energy and Technology Company
Ken Nelson, Jonathan Moore
Toni Miao
Michael Cheng
Kaustav Chaudhuri
Shenghua Li
Hussein Alboudwarej

Ansoni Carmona
Joakin Ejie
Fabiola Guerrero
Ngoc Hoang
James Isidro
Hams Laeeq
Zehui Li
Huang Qiying

Alam Hasson Fresno State University
Qiao-Hong Chen
Joy Goto

Bryan Cantu
Aaron Gonzalez
Alison Phasakda

Jeanine Boskovich Libby Labs
Gennady Borinshteyn

Carlos Guerreros
Jose Li

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Ruth Cervantes

Weiming Wu San Francisco State University
Zheng-Hui He

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

Chevron Oronite Company LLC.

Mike Long

Chevron Products Company

Kenneth Forbes

Nexeo Solutions, LLC.

Andrew Ichimura
HeatherRose Lacy

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

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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
Xueqing 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
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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

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Roger Leblanc
Amy Scott

Francisco Raymo
Adam Braunschweig

University of North Florida, Jennifer Williams

Christos Lampropoulos
Jennifer Williams, Melissa Bush
Radha Pyati

Students

Lea Karan
Florence Kyremanteng
Meron Legasse
Anulichi 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

Summer I

Vladimir Civil
Andy Armond

Summer I

Shangida Shareen
Adriana Amaris

Summer I

Jael Baptiste
Kirby Gilmore

Summer II

Najsha Sweeting
William Gilmore

Summer I

Darien Glover

Asya Smith

2016 Project SEED Summer I & II Programs

Institutions/Coordinators/Mentors

GEORGIA

Clark Atlanta University, Ishrat Khan

Michael Williams
Ishrat Khan
James Reed

IDAHO

Idaho State University, Andrew Holland Co-coordinator – Joshua Pak

Rene Rodriguez
Caryn Evilla
Joshua Pak

Andrew Holland

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Owen McDougal

Rajesh Nagarajan
Kevin Ausman
Ken Cornell

ILLINOIS

Chicago Local Section, ACS, Raelynn Miller

James Devery Loyola University Chicago
Wei-Tsung Lee
Chad Eichman
Dali Liu

Milikin University, Anne Rammelsberg

Anne Rammelsberg

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Stanley Polis Eli Lilly and Company
Odilon Campos
Zhenqi Shi
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Amanda Siegel and Technology

Students

Summer I

Camron Berrian
Michelle Payne
Dakota Sands

Summer I

Paul Bickelhaupt
Bianca Cataluna
Abraham Olvera

Summer II

Andrew Hale

Summer I

Andrea Nguyen
Emily Wade

Summer II

Noah Collingwood
Jayde Nielsen
Anthony Phero

Summer I

Janiel Cortes
Rocco Molinelli
Mir Rehman
Brielle Ross

Summer I

David Bruns
Connor Dickey

Summer I

Emmanuel Atilola

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 Cintron
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

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Vincenzo Venditti
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Javier Vela

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Alejandro Marcial
Emily Perez
Sakhi Shah

Yonas Araya
Ahbisak Chin
Truc Kha
Ayo-Oluwa Laleye
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Summer II

Rochelle Adjei
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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

KANSAS

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Syed Taher

LOUISIANA

Louisiana State University-Shreveport, Brian Salvatore
Brian Salvatore

MARYLAND

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Santosh Mandal

Fasil Abebe

University of Maryland Eastern Shore, Victoria Volkis
Deborah Sauder
Victoria Volkis
Byungrok Min

MASSACHUSETTS

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Patricia Mabrouk

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Deno Del Sesto

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Anja Mueller
Benjamin Swarts

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Central Michigan University

Students

Summer I

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Summer II

Syed Shamiun

Summer II

La'Brittany Hill

Summer I

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Summer II

Jayda Smith

Summer I

Montajha Bowen
Cierra Jennestreet
Aleyah Lewis

Summer I

Maricelys Ramos

Summer II

Cesar Romero

Summer II

Joshua Howard
Adriyanna Jones

Summer I

Darla Martinez
Aubrie Taceyi

Summer II

Evamarie Medendorp
Kailey Zochowski

2016 Project SEED Summer I & II Programs

Institutions/Coordinators/Mentors

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Harriet Lindsay

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Babak Borhan

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Denis Proshlyakov

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Philippe Buhlmann

Wayland Noland

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Joseph Lott

Song Guo

Jason Azoulay

Students

Summer I

Alaya Hicks

Summer II

Wilmer Zhinin

Summer I

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Ruma Deb

Fahmida Khaton

Shaida Nishat

Summer I

Dhan Bhandari

Dayton Buchanan

Maryam Ezz

Joana Lepuri

Fardowsa Omar

Jonathan Tuma

Summer II

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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

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Summer I

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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

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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
Michele Pavanello Rutgers University, Newark

Karina Schafer
Agostino Pietrangelo
Stavroula Sofou

Yufeng Wei Seton Hall University
Philip Leopold Stevens Institute of Technology

Stefan Strauf

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

2016 Project SEED Summer I & II Programs

Institutions/Coordinators/Mentors

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Kenneth Yamaguchi New Jersey City University
Flaminia Marrucci New York University
Hongjun Wang Stevens Institute of Technology

Bayonne High School, Marie Aloia

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Maria Aloia

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James Vachio
Ratna Vadlamudi

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New Jersey City University, Kenneth Yamaguchi

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Yufeng Wei
Kenneth Yamaguchi

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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

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David Salas-de la Cruz

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Huixin He

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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 North Carolina State University
Melissa Pasquinelli

Summer II

Betelihem Mebrahtu
Benhor Samson
Chidubem Nwakuiche
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

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Youngstown State University, Sherri Lovelace-Cameron

Sherri Lovelace-Cameron
Tom Oder

Sherri Lovelace-Cameron

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Anna Cavinato

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Students

Summer I

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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 Abdulmuttaleb
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
Jellianny 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

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 Brancaleon

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

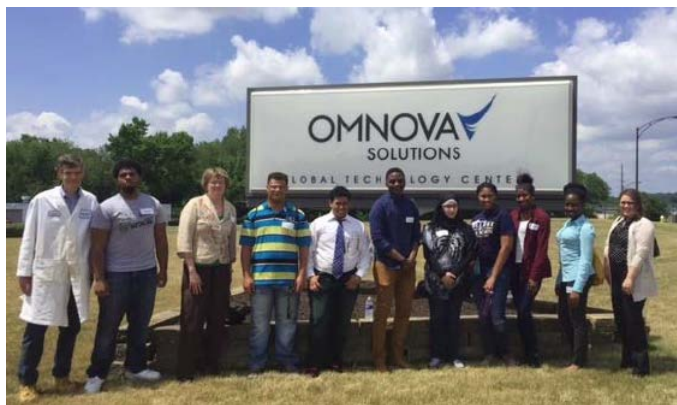
Marshall University, Derrick Kolling
Michael Norton

Summer I
Amber Stone

WISCONSIN

Medical College of Wisconsin, Michael Mathias
Matthew Scaglione
John Corbett

Summer I
A'voim 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



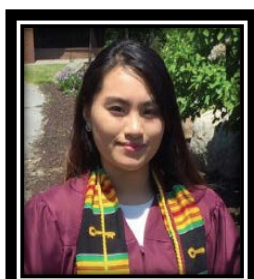
Chrisa-Kay Clarke



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 Mencklin 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: Jialong 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, 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



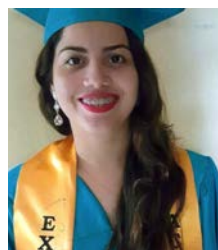
It was a great honor to stand among the few proficient applicants who were considered for the Project SEED program. This experience introduced me into the world of biochemistry which was utterly unfamiliar to me before this internship. This project was a life changing experience in terms of scholastic 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

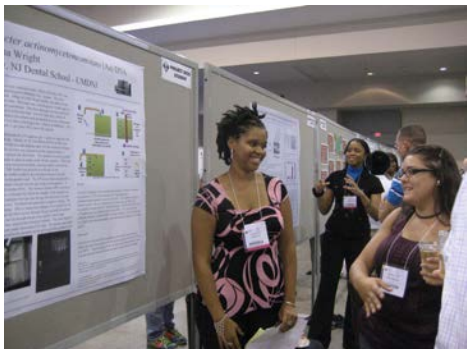
“I enjoyed this program because it helped me expand my horizons for the scientific research field and it gave me a head start for what is yet to come for colleges.”

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



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 PvrTFSl and MSA Novel Synthesis of Benizimidazole
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Trenton Local Section: Coordinator, Danielle Jacobs

Shawn Bailey/ Jibri Gigger-Muse	Development of a Polymer Lab for Organic Chemistry II Students
Bianca Swidler	From Grain to Glass: Developing an Undergraduate Laboratory That Explores the Biochemistry in Alcohol Fermentation

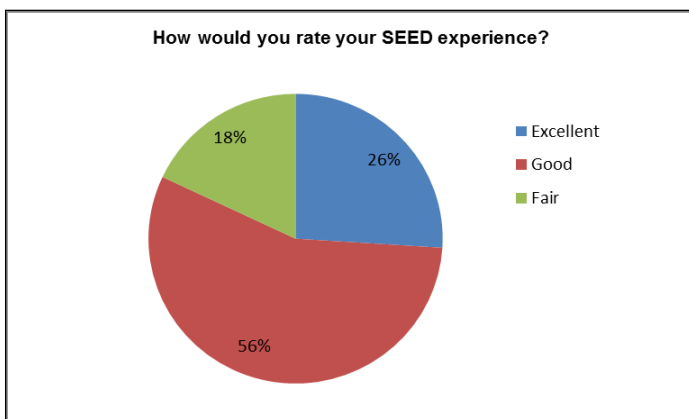
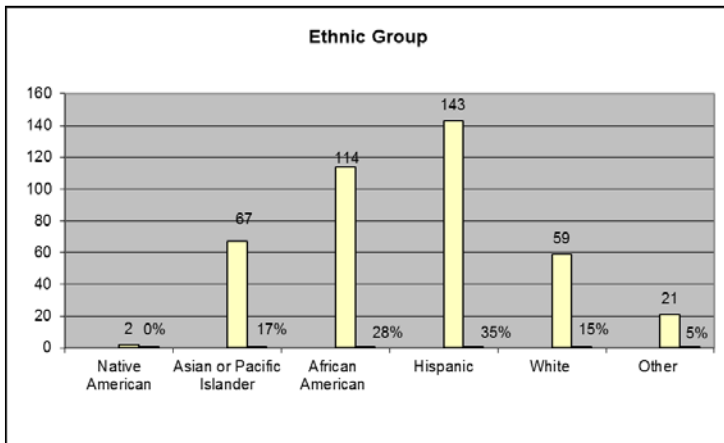
2016 Student Survey Results

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%

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We truly appreciate your continued generosity!

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