



THE CAMILLE & HENRY DREYFUS FOUNDATION

## 2016 in Review



### The Camille & Henry Dreyfus Lectureship

IN THE DEPARTMENT OF CHEMISTRY AT THE UNIVERSITY OF BASEL

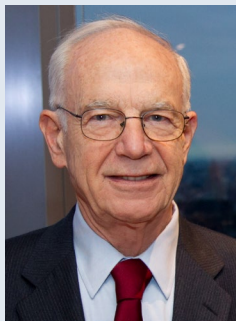
2013	GEORGE WHITESIDES <i>Harvard University</i>
2014	MARYE ANNE FOX <i>University of California, San Diego</i>
2015	CHAD MIRKIN <i>Northwestern University</i>
2016	JOHN HARTWIG <i>University of California, Berkeley</i>
2017	

*In memory of the Dreyfus brothers, who received their PhDs from the University of Basel and founded British Celanese and the Celanese Corporation of America*



FUNDED BY THE CAMILLE & HENRY DREYFUS FOUNDATION, INC

# Letter from the President, Henry C. Walter



Chemists continue to make a positive impact on our lives in an ever-increasing variety of important ways. Some examples include improving human health, solving environmental issues, and creating new materials. Dreyfus awardees are often at the forefront of these areas, and the Foundation is proud to have helped support these innovative scientists for over 70 years.

The Foundation's most longstanding programs are the Camille and Henry Dreyfus Teacher-Scholar awards, which honor emerging young leaders in the chemical sciences. Since the program's inception in 1970, the Foundation has recognized 850 Teacher-Scholars, many of whom have gone on to make immense contributions to the field.

In 2010, the Foundation initiated a biennial symposium for the most recent Teacher-Scholars. This has become an enjoyable and thought-provoking tradition within the Dreyfus community, with so many distinguished young chemists from around the country coming together to exchange information and ideas.

A new session on communicating chemistry was introduced at the 2016 symposium. In conjunction with this initiative, the attending recent Teacher-Scholars each produced a brief video about their research and its significance. I watched all of these videos and was very impressed with both their quality and the important work that the community is engaged in. The videos give a broad sense of the directions in which the chemical sciences are headed and how the work of the Teacher-Scholars may impact all of us. These videos are found on the Dreyfus website and on YouTube. I encourage you to watch them.

Another exciting biennial event is the ACS Presidential Symposium on the topic of the previous year's Dreyfus Prize. The Dreyfus Foundation organizes and sponsors this event, which is held at the ACS spring national meeting. This one-day symposium features several of the most distinguished chemists in that given field. Last March, the symposium was on Making Molecules and Materials, the topic of the 2015 Dreyfus Prize. It featured a truly outstanding series of talks delivered to a standing room audience. We look forward to hosting a similar symposium in 2018 on Theoretical and Computational Chemistry, the topic of the 2017 Dreyfus Prize.

Before closing, I would like to acknowledge the passing of Jack Roberts, who was associated with the Dreyfus Foundation for 45 years as a Consultant, Advisor, and Honorary Advisor. Jack was a pioneer in the field of physical organic chemistry and a mentor to countless students, many of whom have gone on to great renown. An early example is George Whitesides, who received the inaugural Dreyfus Prize. We fondly remember Jack for his many years of wise counsel and friendship.

Thank you as always for reading, and best wishes to all for 2017.

*Henry C. Walter*



*Edith & Jack Roberts at the 2009 Dreyfus Prize ceremony honoring George Whitesides at Harvard University*

# Dreyfus Teacher-Scholar Symposium

The fourth biennial symposium for the newest Camille and Henry Dreyfus Teacher-Scholars was held at the New York Academy of Sciences on October 28. The symposium provides an opportunity for the recent Dreyfus Teacher-Scholars, the leading young faculty in the chemical sciences, to present their research to colleagues, hear distinguished senior Teacher-Scholars speak about their research accomplishments, and engage in a session on an interesting aspect of teaching.

A new session on communicating chemistry was introduced this year. The attending recent Teacher-Scholars each produced a 2-3 minute video about their research and its potential importance, with much of the content aimed at non-scientists. These videos, as well as the talks by the senior Teacher-Scholars, are available on the Foundation website and YouTube page.

The speakers were (in sequence):



**Kristi Anseth**

University of Colorado Boulder: *Cellular Control in a Couple of Clicks*



**Gino Del Guercio**

Boston Science Communications, and **Stephen Lyons**, Moreno/Lyons Productions: *Teacher-Scholar Videos: Communicating Chemistry*



**Marsha Lester**

University of Pennsylvania: *Exploring Uncharted Regions of Atmospheric Reaction Pathways*



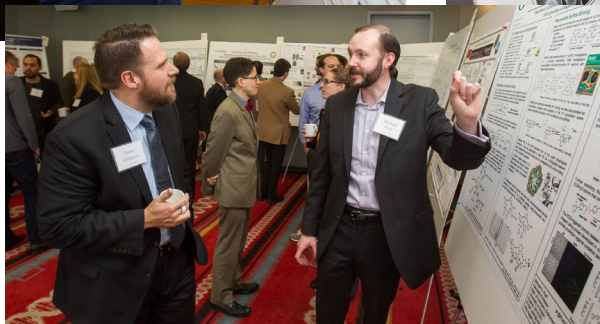
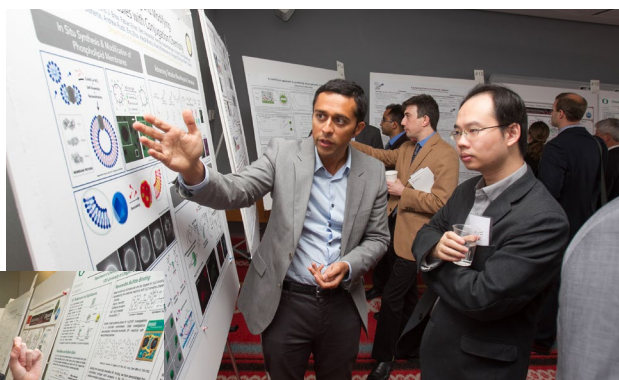
**Anthony Bishop**

Amherst College: *Small-Molecule On/Off Switches for Signaling Enzymes: Target-Specific Inhibition and Activation of Protein Tyrosine Phosphates*



**Stephen Buchwald**

Massachusetts Institute of Technology: *Asymmetric Copper-Catalyzed Hydrofunctionalization Reactions*



left: Andre Hoelz and Emily Balskus  
center: Jason Gillmore and Michael Pluth  
right: Neal Devaraj and Wei Min

## New Online Forum for Dreyfus Teacher-Scholars

At previous Teacher-Scholar symposia, many attendees said they would like to maintain contact with the Dreyfus community in the future. In response to this, the Foundation has created a new online forum exclusively for Teacher-

Scholars to connect with each other, discuss issues relating to teaching, research, opportunities for collaborations and grants, and information on upcoming conferences and events. See <http://www.dreyfus.org/forum>

## 2017 Dreyfus Prize to Spotlight Theoretical & Computational Chemistry



“Each Dreyfus Prize highlights major accomplishment in a different area of the chemical sciences. We consider, in addition, the promise of benefit to society,” said Matthew Tirrell, chair of the Dreyfus Foundation Scientific Affairs Committee. “Innovations

**T**he Foundation has selected Theoretical and Computational Chemistry as the topic of the 2017 Dreyfus Prize in the Chemical Sciences. The Dreyfus Prize, which is awarded biennially and open to international nominations, recognizes an individual for exceptional and original research in a selected area of chemistry that has advanced the field in a major way. The prize consists of a monetary award of \$250,000, a medal, and a certificate.

in theoretical and computational chemistry are deeply significant and underpin our understanding of biological interactions, chemical dynamics and structure, as well as many beneficial chemical technologies.”

The deadline for nominations is March 2, 2017. Further details may be found on the Foundation website.

## Camille and Henry Dreyfus Lectureship at University of Basel

**T**he Foundation honors the heritage of the Dreyfus brothers and promotes scientific exchange between U.S. and Swiss chemists through the Dreyfus Lectureship at the University of Basel, where Camille and Henry Dreyfus

were awarded their Ph.D.s. John F. Hartwig, the Henry Rapoport Professor of Chemistry at the University of California, Berkeley, was the 2016 Dreyfus Lecturer. Hartwig’s research focuses on the discovery and understanding of new reactions catalyzed by transition metal complexes. He visited the University of Basel in October, met with students and faculty, and delivered two Dreyfus lectures: *Catalysis – A Quiet Revolution in Synthesis* and *Approaches to Selective Functionalization of Small and Complex Molecules*.



John Hartwig with Andrea Schenker-Wicki, President, University of Basel

Initiated in 2013, the previous Dreyfus Lecturers at the University of Basel were George Whitesides of Harvard University, Marye Anne Fox of University of California, San Diego, and Chad Mirkin of Northwestern University (*see cover photo*). The 2017 Dreyfus Lecturer will be David Weitz of Harvard University.

## Jean Dreyfus Lectureships

**T**he Jean Dreyfus Lectureship provides funding to bring a leading researcher to a primarily undergraduate institution to give both popular (public) and technical lectures in the chemical sciences, to meet with students and faculty, and to support two undergraduates in summer research. Initiated in 2010, to date the program has supported 28 lectures.

These Lectureships were held in 2016:

**Robert Bergman** (University of California, Berkeley) at Albright College (*pictured at right*)

**Sharon Hammes-Schiffer** (University of Illinois at Urbana-Champaign) at University of Colorado Denver

**Craig Hawker** (University of California, Santa Barbara) at Western Washington University

**Cynthia Jameson** (University of Illinois at Chicago) at Washington & Jefferson College

**David Milstein** (Weizmann Institute of Science) at Carleton College



**Elizabeth Nolan** (Massachusetts Institute of Technology) at University of Evansville

**Daniel Schwartz** (University of Colorado Boulder) at Furman University

**Timothy Swager** (Massachusetts Institute of Technology) at Harvey Mudd College

## ACS-Dreyfus Symposium on Making Molecules & Materials

The Foundation sponsored a Presidential Symposium on Making Molecules and Materials, the topic of the 2015 Dreyfus Prize, at the national meeting of the American Chemical Society in San Diego on March 15. The Dreyfus Foundation is pleased to have supported this symposium, which featured the following distinguished leaders in the field, (in sequence):



### Frances Arnold

California Institute of Technology: *Innovating with Evolution: Expanding the Enzyme Universe to Make Molecules and Materials*



### Joseph DeSimone

The University of North Carolina at Chapel Hill: *Instead of 2D-Printing Over and Over Again: Continuous Liquid Interface Production of 3D Objects*



### Chad Mirkin

Northwestern University: *Making Materials with Programmable Nucleic Acid Bonds*



### Moungi Bawendi

Massachusetts Institute of Technology: *Fundamental Science and Applications of Nanocrystals*



### Melanie Sanford

University of Michigan: *Development of New C-H Bond Functionalization Reactions*



### David Tirrell

California Institute of Technology: *Non-Canonical Amino Acids as Tools for Protein Medicinal Chemistry*



### Craig Hawker

University of California, Santa Barbara: *Combining Facile Synthetic Strategies and Simple Purification Techniques for the Preparation of Unique Materials*



### Krzysztof Matyjaszewski

Carnegie Mellon University: *From Molecules to Materials: Macromolecular Engineering by Taming Free Radicals*

## Dreyfus-Sponsored ACS Awards

Since 1998, the Dreyfus Foundation has sponsored two annual awards that are administered by the American Chemical Society: Encouraging Women into Careers into the Chemical Sciences and Encouraging Disadvantaged Students into Careers in the Chemical Sciences. In 2016, these awards were made to Carol Fierke, University of Michigan, and Luis Colon, University at Buffalo, respectively.

Each award consists of \$5,000 to the awardee and a grant of \$10,000 to an eligible non-profit institution, designated by the recipient, to strengthen the objectives of the award. Fierke directed her grant to University of Michigan to support a variety of initiatives that support women in chemistry. Colon's grant was directed to the University at Buffalo Foundation, for the purpose of increasing the number of students in the chemical sciences, with particular focus on disadvantaged students.



Richard Zare, Luis Colon, Carol Fierke, and Scott Walter

## News of the Board

Matthew Tirrell was elected to chair the Dreyfus Scientific Affairs Committee in 2016. Tirrell is the Dean and founding Pritzker Director of the Institute for Molecular Engineering at The University of Chicago. The Foundation acknowledges Marye Anne Fox for her leadership during her two terms as chair.

John I. Brauman, the J. G. Jackson - C. J. Wood Professor of Chemistry Emeritus at Stanford University and Director of the Dreyfus Foundation, has been named as the recipient of the 2017 Charles Lathrop Parsons Award by the American Chemical Society. The award recognizes outstanding public service by a member of the ACS. Two other Directors of the Foundation, Marye Anne Fox and Richard Zare, have also received this award, in 2005 and 2001, respectively.

## Board of Directors

Henry C. Walter  
*President*

Dorothy Dinsmoor  
*Vice President and Secretary*

H. Scott Walter  
*Treasurer and Chair,  
Finance and Audit Committee*

Matthew V. Tirrell  
*Chair, Scientific Affairs Committee*

John R. H. Blum

Edward A. Reilly

Marye Anne Fox

John I. Brauman

Richard N. Zare

Paul Woitach

## Honorary Director

H. Marshall Schwarz

## Advisors

Louis E. Brus

David E. Hansen

Francois M. M. Morel

JoAnne Stubbe

## Honorary Advisor

Dudley R. Herschbach

## Staff

Mark J. Cardillo  
*Executive Director*

Gerard Brandenstein  
*Associate Director*

Adam Lore  
*Operations Manager*

The mission of the Camille and Henry Dreyfus Foundation is *to advance the science of chemistry, chemical engineering, and related sciences as a means of improving human relations and circumstances throughout the world.* Established in 1946 by chemist, inventor, and businessman Camille Dreyfus as a memorial to his brother Henry, the Foundation became a memorial to both men when Camille Dreyfus died in 1956. Throughout its history the Foundation has sought to take the lead in identifying and addressing needs and opportunities in the chemical sciences.



THE CAMILLE  
& HENRY DREYFUS  
FOUNDATION

555 Madison Avenue  
New York, New York 10022  
T: (212) 753-1760  
F: (212) 593-2256  
[www.dreyfus.org](http://www.dreyfus.org)

# 2016 Awards

---

## **Camille Dreyfus Teacher-Scholar Awards Program**

Andrew J. Boydston, *University of Washington*  
Luis M. Campos, *Columbia University*  
William C. Chueh, *Stanford University*  
Neal K. Devaraj, *University of California, San Diego*  
Mircea Dinca, *Massachusetts Institute of Technology*  
Naomi S. Ginsberg, *University of California, Berkeley*  
Aditya S. Khair, *Carnegie Mellon University*  
Jared C. Lewis, *The University of Chicago*  
Amanda J. Morris, *Virginia Polytechnic Institute and State University*  
Eranda Nikolla, *Wayne State University*  
Michael D. Pluth, *University of Oregon*  
Nathaniel K. Szymczak, *University of Michigan*  
Qiu Wang, *Duke University*

## **Henry Dreyfus Teacher-Scholar Awards Program**

Fadi Bou-Abdallah, *The State University of New York at Potsdam*  
Timothy B. Clark, *University of San Diego*  
Kelling J. Donald, *University of Richmond*  
Jane M. Liu, *Pomona College*  
Katherine E. Plass, *Franklin & Marshall College*  
Matthew T. Whited, *Carleton College*  
Liliya A. Yatsunyk, *Swarthmore College*

## **Postdoctoral Program in Environmental Chemistry**

Ronald C. Cohen, *University of California, Berkeley*  
William R. Dichtel, *Northwestern University*  
Naomi S. Ginsberg, *University of California, Berkeley*  
Matthew W. Kanan, *Stanford University*  
Hemamala Karunadasa, *Stanford University*  
Jesse H. Kroll, *Massachusetts Institute of Technology*  
Jiwoong Park, *The University of Chicago*  
Mak A. Saito, *Woods Hole Oceanographic Institution*

## **Senior Scientist Mentor Program**

Edward J. Behrman, *The Ohio State University*  
Phillip Crews, *University of California, Santa Cruz*  
Roger L. DeKock, *Calvin College*  
Peter H. von Hippel, *University of Oregon*  
Paul H. Wine, *Georgia Institute of Technology*

## **Jean Dreyfus Lectureship for Undergraduate Institutions**

California State University, Fresno  
Hobart and William Smith Colleges  
Iona College  
University of Evansville  
University of Puget Sound

# Award Programs and 2017 Deadlines

---

## **The Dreyfus Prize in the Chemical Sciences,**

awarded biennially, consists of a monetary award of \$250,000, a medal, and a certificate. The prize, which is open to international nominations, is awarded to an individual in a selected area of chemistry to recognize exceptional and original research that has advanced the field in a major way. The 2017 Prize will be awarded in theoretical and computational chemistry.

*Deadline:* March 2, 2017

## **The Camille Dreyfus Teacher-Scholar Awards**

**Program** supports the research and teaching careers of talented young faculty in the chemical sciences at Ph.D.-granting institutions. Based on institutional nominations, the program provides discretionary funding to faculty prior to their sixth year of appointment. Criteria for selection include an independent body of scholarship attained as independent researchers and a demonstrated commitment to education. The award provides an unrestricted research grant of \$75,000.

*Deadline:* February 10, 2017

## **The Henry Dreyfus Teacher-Scholar Awards**

**Program** supports the research and teaching careers of talented young faculty in the chemical sciences at primarily undergraduate institutions. Based on institutional nominations, the program provides discretionary funding to faculty who are within the fourth and twelfth years of their independent academic careers. The award is based on accomplishment in scholarly research with undergraduates, as well as a compelling commitment to teaching. The award provides an unrestricted research grant of \$60,000.

*Deadline:* May 18, 2017

## **The Postdoctoral Program in Environmental Chemistry**

is intended to further the development of scientific leadership in the field of environmental chemistry. The award provides a principal investigator with \$120,000 over two years to appoint a postdoctoral fellow in environmental chemistry.

*Deadline:* August 1, 2017

**The Senior Scientist Mentor Program** has been suspended.

## **The Jean Dreyfus Lectureship for Undergraduate**

**Institutions** provides an \$18,500 grant to bring a leading researcher to a primarily undergraduate institution to give a series of lectures in the chemical sciences, at least one of which is promoted and accessible to the general public.

The lecturer is expected to substantially interact with undergraduate students and faculty over the period of the visit. The program provides funds to host the speaker and to support summer research opportunities for two undergraduate students.

*Deadline:* May 18, 2017

The Camille and Henry Dreyfus Foundation sponsors the American Chemical Society awards **for Encouraging Disadvantaged Students into Careers in the Chemical Sciences** and **for Encouraging Women into Careers in the Chemical Sciences**. The awards recognize significant accomplishments by individuals in stimulating these students to choose careers in the chemical sciences and engineering. Each award consists of \$5,000, a certificate, and a grant of \$10,000 to an eligible non-profit institution, designated by the recipient, to strengthen its activities in meeting the objectives of the award. See the American Chemical Society's website for additional information on these awards: <http://www.acs.org>  
*Deadlines for both awards:* November 1, 2017