IN THIS ISSUE

Call for Nominations for James Flack Norris Award

100 Years for HIST

CCEW Activities

History of the Woodward-Hoffmann Rules - Part Three

Our 100th Year of Publication!

Dr. Philip S. Low
Esselen Award Winner
Contents

Monthly Meeting .................................................. 3
Gustavus John Esselen Award ................................ 5
MedChem Meeting .................................................. 5
Featured Speaker: Michael Pollastri
Call for Nominations for James Flack Norris Award ... 6
100 Years for HIST ............................................... 7
CCEW Activities
By Dr. Jayashree S. Ranga ......................................... 8
Looking at the History of the Woodward-Hoffmann Rules - Part Three .... 9
Chemical Education Committee Update
By Ruth Tanner ...................................................... 10
Business Directory .................................................. 11
Calendar ............................................................... 13

Cover: Dr. Philip S. Low, Esselen Award Winner
Editorial Deadlines: May 2022 Issue: April 1, 2022
June 2022 Issue: May 1, 2022
EVENT DETAILS

THE PUBLIC IS INVITED - REGISTRATION IS REQUIRED

- Dinner reservations are required and should be made no later than noon, Monday, April 18.
- Available ticket packages include Members, $30.00; Non-members, $35; Retirees, $20; Students, $10. Reservations not cancelled at least 24 hours in advance will not be refunded.
- There is no charge if only attending the awards ceremony, but reservations are still required.
- Reservations for new members and for additional information, contact the secretary Anna Singer at (781) 272-1966 or e-mail at secretary@nesacs.org.
- Free Parking is available in the Broadway Street garage (3rd level or higher); enter from Cambridge Street via Felton Street.

The 1,012th Meeting of the Northeastern Section of the American Chemical Society

Gustavus John Esselen Award Meeting

Friday, April 29, 2022
Harvard University, Cambridge, MA
Harvard Faculty Club, 20 Quincy Street

Link to Register:

Meeting Agenda:
5:30 Social Hour
6:30 Dinner
8:00 Award Meeting and Presentation

Ceremony:
- Carolyn Mulrooney, NESACS Chair, Presiding
- Welcome and Award History – Karen Allen, Chair, Esselen Award Committee
- Presentation of the Award - Jane Esselen Blocker
- Introduction of the Award Recipient – R. Graham Cooks, Purdue University
- A New Generation of Targeted Therapies for Cancer, Autoimmune, and Infectious Diseases – Philip S. Low, Presidential Scholar for Drug Discovery and Ralph C. Corley Distinguished Professor of Chemistry, Purdue University.
Abstract:
We are exploring the use of high affinity targeting ligands to deliver attached drugs specifically into diseased cells, thereby simultaneously improving their potencies and reducing their off-target toxicities. For this purpose, we have designed targeting ligands for many human cancers, viruses and virus-infected cells, bone fracture surfaces, inflammatory macrophages, regulatory T cells, cancer associated fibroblasts, myeloid derived suppressor cells, antigen presenting cells, and tumor associated fibroblasts among others. Our tumor-targeted fluorescent dyes (one FDA-approved, two in clinical trials) are beginning to revolutionize cancer surgeries by enabling surgeons to find far more malignant lesions than previously possible. Our PSMA-targeted DOTA conjugate (177Lu-PSMA-617; phase 3 completed; awarded Breakthrough Status) has generated more than 40% response rates in refractory metastatic castration-resistant prostate cancer, offering hope for patients with previously untreatable tumors. Our tumor associated macrophage-targeted TLR7 agonists and regulatory T cell targeted immune stimulants enable the suppression of growth of nearly all solid tumors, and our universal CAR T cell therapies (clinical trials in 2022) have repeatedly shown an ability to eradicate solid tumors in animals. Our recently launched bone fracture-targeted anabolic agents (clinical trials in 2022) are reducing fracture healing times in animals by more than 60% while generating repaired bone that is stronger than healthy bone, and our fibroblast activation protein-targeted PI3K inhibitor (preclinical) is halting fibrosis in animal models of fibrotic diseases. Our influenza-targeted immunotherapy is 80X more potent than Tamiflu, and similar targeted immunotherapies for other viral diseases are undergoing development. Finally, our therapy for malaria (phase 3 clinical trials in SE Asia) is eliminating parasitemia in all patients in more than 3 days, and our nontoxic treatment for sickle cell disease (phase 1 clinical trials) shows promise for alleviating the causes of SCD. In my Esselen Award seminar, I will briefly summarize the structures, biological activities, preclinical data and clinical results (where available) for each of these therapies.

Biography:
Dr. Philip S. Low is the Presidential Scholar for Drug Discovery and the Ralph C. Corley Distinguished Professor of Chemistry at Purdue University. Dr. Low has spent over >35 years designing targeted imaging and therapeutic agents for the diagnosis and treatment of many human diseases. Included among the diseases for which he has developed therapies are malaria, multiple cancers, sickle cell disease, idiopathic pulmonary fibrosis, bone fractures, rheumatoid arthritis, and several virus infections. Seven drugs from Low's research are currently undergoing human clinical trials, one of which (Cytalux) was approved by the FDA in November 2021 and a second (177Lu-PSMA-617) recently received “Breakthrough Therapy Status” based on outstanding phase 3 data from the FDA. To accelerate development of his drugs, Low has founded seven successful companies (Endocyte Inc., OnTarget Laboratories Inc., Umoja Biopharma, Morphimmune Inc., Novosteo Inc., Eradivir Inc. and ErythroCure Inc.). Low has published >550 scientific articles (H-index of 115) and has >150 US patents/patents pending. Low has also been recognized with many national and international awards, including the AACR Award for Chemistry in Cancer Research, the ACS Award for Cancer Research (Sosnovsky Award), an NIH MERIT Award and the ACS Award (Esselen Award) for Chemistry in the Public Interest among others. In his spare time, Low likes skiing, hiking, golfing and playing with his grandkids. Dr. Low received his B.S. in Chemistry from BYU (1971) and his Ph.D. in Biochemistry from UCSD (1975).
Featured Presentation

Lead Repurposing and Parasite Hopping as a Route Toward New Therapeutics for Tropical Diseases

By Michael Pollastri

Organized by the Medicinal Chemistry Section of the Northeastern Section, American Chemical Society

Thursday – April 21, 2022, 4:00 pm

Register for the February Webinar meeting at: https://american-chemical-society.zoom.com/webinar/register/WN_qF0xk6qLQPeDibDvbpd8_g

Visit: www.nesacs.org/medchem.html

Many current therapies for neglected tropical diseases (NTDs) have significant shortcomings and are often highly toxic, yet improved drugs are slow to be developed as there is no financial incentive to do so. Recognizing the financial pressures inherent in NTD drug discovery, we utilize a method for repurposing classes of established inhibitors of enzymes and pathways in humans as starting points for inhibitor discovery for the pathogens that cause NTDs. Our efforts in deploying this approach, which we call “Lead Repurposing,” will be described, highlighting progress made in multiple chemotypes to identify potent, non-toxic, in vivo efficacious lead compound for several protozoan pathogens. Our implementation of a ‘distributed drug discovery’ network that involves investigators from industry, academia, and government laboratories will also be highlighted.

Featured Speaker:

Michael Pollastri
Northeastern University

Biography:

Dr. Michael Pollastri is serving as the Senior Vice Provost for Portland, where he leads the academic and research portfolio at the Roux Institute. Mike worked at Pfizer in hit-to-lead medicinal chemistry for nearly ten years. In 2007 he joined Boston University, where he led the establishment of the Center for Molecular Discovery, a resource focused on high-throughput screening and medicinal chemistry optimization capabilities. In 2009, he joined the faculty in the Department of Chemistry and Chemical Biology at Northeastern University and rose to the rank of full professor in 2017. He served as department chair, and then as interim dean of the College of Science until moving to the Roux Institute at Northeastern University in June 2020. His research is focused on discovery of new therapeutics for neglected tropical diseases. Dr. Pollastri earned his bachelor’s degree from the College of the Holy Cross, a master’s degree from Duke University, and his doctorate from Brown University.
CALL FOR NOMINATIONS

The 2022 James Flack Norris Award for Outstanding Achievement in the Teaching of Chemistry

Deadline: April 15, 2022

Nominations are invited for the 2022 James Flack Norris Award, which consists of a certificate and an honorarium of $3,000 and is given annually by the Northeastern Section (NESACS). The presentation will take place at a ceremony and dinner in November 2022 and will include a formal address by the awardee.

The Award was established in 1950 by NESACS to honor the memory of James Flack Norris (1871-1940), a professor of chemistry at Simmons College and M.I.T., chair of NESACS in 1904, and ACS President in 1925-26.

Individuals or teams of individuals may be nominated. Nominee(s) should have served with special distinction as teachers of chemistry at any level: secondary school, college, and/or graduate school. With the presentation of the first Award in 1951, awardees have included many eminent teachers at all levels whose efforts have had a wide-ranging effect on chemical education. The recipient will be selected from an international list of nominees who have served with special distinction as teachers of chemistry with significant achievements.

A nomination in the form of a letter should focus on the candidate or candidate’s contributions to and effectiveness in teaching chemistry. Curriculum vitae should be included and, where appropriate, a list of honors, awards, and publications related to chemical education. Seconding letters may also be included; these should show the impact of the nominee or nominee's teaching for inspiring colleagues and students toward an active life in the chemical sciences, and attest to the influence of the individual or team's other activities in chemical education, such as textbooks, journal articles, or other professional activity at the local, national, and international level.

The nomination materials should consist of the primary nomination letter, supporting letters, and curriculum vitae. Reprints or other publications should NOT be included. The material should not exceed thirty (30) pages [if individual] and should be submitted electronically in Adobe PDF format through April 15, 2022 to Ms. Anna Singer, NESACS Administrative Secretary, secretary@nesacs.org. For more information about the Award including a list of past award recipients, see https://www.nesacs.org/award/james-flack-norris-award.

Questions about the Award or the nomination process should be directed to the Chair of the Norris Award Committee, Dr. Christine Caputo, christine.caputo@unh.edu.
The Division of the History of Chemistry of the American Chemical Society (HIST) is 100 years old in 2022, and we have a present for you!

HIST is the home within ACS for chemists interested in the history of their discipline. Among our activities are publication of a peer-reviewed journal in history of chemistry, the *Bulletin for the History of Chemistry*, and holding symposia on historical topics at national and regional meetings of the ACS. Both of these activities involve chemists and historians from around the world. All members and affiliates of HIST receive two issues of the Bulletin each year as part of their membership: hard copies delivered by mail as well as electronic access.

In this anniversary year, we have prepared an extra issue of the *Bulletin*, available electronically to anyone (open access). Prominent chemist historians and historians of chemistry were invited to contribute essays on the theme “Novel Insights in the History of Chemistry: Looking Back Yet Mostly Looking Forward.” This theme led to a wide variety of responses, which we have collected together into the following six topics:

- Expansive Approaches to the History of Chemistry
- Foci on Specific Topics
- Multidisciplinary Approaches and Tools
- Thriving, Inclusivity, Diversity, and Equity and the History of Chemistry
- Relationships of Historians and Chemist-Historians
- The Past, Present and Future of History of Chemistry

We invite you to peruse this commemorative issue online at: http://acshist.scs.illinois.edu/bulletin_open_access/bull22-vol47-1.php

While you are there, check out 30 years of open-access issues of the *Bulletin*, which are free to all after a three-year window of access exclusively by HIST members and subscribers: http://acshist.scs.illinois.edu/bulletin_open_access/bull-index.php

Finally, join HIST as a member or affiliate. More information about HIST is available at: http://acshist.scs.illinois.edu/index.php

and a membership form can be found at: http://acshist.scs.illinois.edu/HIST%20Brochure(ACS)rv2020.pdf

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**VISIT NESACS ONLINE**
for Events, Committees, Newsletter Archive, Awards, News and More!

[www.NESACS.org](http://www.NESACS.org)
As the Chemists Celebrate Earth Week (CCEW) coordinator for Northeastern Section of American Chemical Society (NESACS), I welcome you all to participate in the upcoming CCEW 2022 events/activities. This year’s CCEW theme is "The Buzz About Bugs: Insect Chemistry”.

Hands-on activities at the Museum of Science in Boston:
NEACS will be collaborating with MoS, Boston during Rise (Up) Boston: A Climate Change Event - April 30 and May 1. This will be a weekend filled with community groups, climate activities, new exhibits, and climate-themed presentations. As a CCEW coordinator, I am planning to recruit about 30 volunteers, and they will be presenting hands-on earth activities related to CCEW theme for visitors of diverse age groups.

Community initiative and pledge towards “NO MOW MAY” campaign:
I welcome you to pledge for “NO MOW MAY” campaign in light of this year’s CCEW theme “The Buzz About Bugs: Insect Chemistry”.

What is No Mow May?
Never heard of it. Now you will. Imagine yourself super hungry and your grocery stock is completely empty. What do you do??? Perhaps stop thinking or imagining. Our early pollinators can’t afford to stop thinking as they are starving, especially when lawns are well-groomed and manicured in the month of May. So how about stacking up their menu cards with diverse options through our pledge of “No Mow May”.

Inspired by the article https://www.thebedfordcitizen.org/2021/05/garden-week-day-two-no-mow-may, how about pledging for “No Mow May” campaign? If No Mow May is not an option for you, how about “Less Mow May” or “Grow More May”. As very well described in the article, we can lengthen our pollinators menu card by not mowing our lawns in May (No Mow May) or not mowing a part of our lawn in May (Less Mow May) or planting more wildflowers in our lawn for our pollinator guests in May (Grow More May).

Adapt whatever works best for you and your lawn. If you are interested in participating, please sign up for the pledge and help our early pollinators do what they love to do, pollinate. Also ‘take n save’ pictures of your lawns before and after “No Mow May”. I will be sending a request to share them in June.

SIGN UP FOR THE PLEDGE HERE (works best with Google Chrome browser):
https://forms.gle/oXwEiYnMQpEzKgUy9

Illustrated Poem Contest:
NESACS will be organizing CCEW 2022 Illustrated Poem Contest for K-12 students.

By Dr. Jayashree S Ranga, Salem State University
Looking at the History of the Woodward-Hoffmann Rules – Part Three

Woodward and Hoffmann were not the first to propose a frontier orbital explanation for what later became known as electrocyclizations. It was Luitzen Oosterhoff. And Oosterhoff’s idea first appeared in the middle of a 1961 paper by Egbert Havinga and his graduate student Jos Schlatmann. To read about their story in Paper 3 of Jeffrey I. Seeman’s series on the history of the Woodward-Hoffmann rules, please click here: https://doi.org/10.1002/tcr.202100245.


REMARKS ON THE SPECIFICITIES OF THE PHOTO-CHEMICAL AND THERMAL TRANSFORMATIONS IN THE VITAMIN D FIELD

E. Havinga and J. L. M. A. Schlatmann
Laboratory of Organic Chemistry, The University, Leiden

Cartoon by Chip Cooper. Clockwise from the top left: Havinga, Schlatmann, and Oosterhoff.
Chemical Education Committee Update
By Ruth Tanner, Acting Education Chair

**Grant-in Aid:** The five students who received the Grant-in-aid for the 2022 ACS meeting in San Diego have submitted their research posters and have received their Abstract Identification numbers. The travel checks have been sent to each of the student’s advisors to give to their student(s). The students have been reminded that their Department has also committed funds for their travel and to check with their respective Department Chairs for these funds. They have also been sent information for registration, housing, and transportation. Dr. Matthew Gage, University of Massachusetts Lowell, Chemistry Department, is the Chair of the Grants-in-Aid Committee.

**Norris Richards Undergraduate Research Scholarships:** Announcements have been published in the January and March *Nucleus*. Letters have been sent to the Chairs of the Chemistry Departments in the Northeastern Section requesting them to bring the research grant information to the attention of their Faculty who have undergraduates doing research with them.

Dr. Jonathan Rochford at the University of Massachusetts Boston, Chemistry Department, is the Chair of the Scholarship Committee.

**Going for the Gold:** The annual local section exam and the national Chemistry Olympiad exam will again be given remotely online, thanks to the administrative assistance from the ACS K-12 Education Office. The results for both exams will be released in late March/early April.

Dr. Steve Lantos at Brookline High School is the Chair of the High School Education Committee.

**Chemists Celebrate Earth Week (CCEW):** CCEW events are expected to be back in-person this year. Unfortunately, the Museum of Science (MoS) does not have the capacity or funding to support a stand-alone daylong event this year. However, plans are to partner with the MoS during their Climate Weekend events scheduled for Saturday, April 30 – Sunday May 1 at the MOS. A detailed schedule for the CCEW events will be available in March.

The CCEW theme this year is *Buzz About Bugs; Insect Chemistry*. Among the topics to be explored are Protecting Pollinators, Dining on Bugs (Entomophagy), Taking the Sting Out of Bites, and Bugs to Dye For.
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New ACS Membership Packages

ACS has announced its new membership packages, effective January 1, 2022.

**The Premium Package**
This package provides full access to all ACS activities; if you are a current ACS Member, it offers identical benefits to what you enjoy today with realigned pricing.

- Regular Members – $160
- Society Affiliates – $160

**The Standard Package**
This package is ideal if you want to remain active in the Society, but do not attend many events or need wider access to ACS Publications. It is only available to existing members or prospective members who have a degree, certification, or significant work history in the chemical or related STEM sciences, or have certification as a teacher of a chemical science.

- Regular Members – $80
- Graduate Students – $55
- Undergraduate Students – $25

**The Basic Package**
 Anyone with an interest in chemistry or the allied sciences is invited to join the ACS. This package is a great way to be introduced to the ACS and the community, and to be connected to our diverse network of professionals.

This package is available to everyone in the chemistry enterprise, as well as to chemistry enthusiasts at no cost.

For details, see [https://www.acs.org/content/acs/en/membership/membership-packages.html](https://www.acs.org/content/acs/en/membership/membership-packages.html).
Calendar

Check the NESACS home page for late Calendar additions: http://www.NESACS.org

Note also the Chemistry Department web pages for travel directions and updates. These include:

Boston College
https://www.bc.edu/content/bc-web/schools/mcas/departments/chemistry/news-and-notes.html#events

Boston University
https://www.bu.edu/chemistry/seminars/colloquium

Brandeis University
https://www.brandeis.edu/chemistry/events.html

Harvard University
https://chemistry.harvard.edu/calendar/upcoming

MIT
https://chemistry.mit.edu/events

Tufts University
https://chem.tufts.edu-news-events/events

UMass Boston
https://www.umb.edu/academics/csm/chemistry/events

UMass Lowell
https://www.uml.edu/sciences/chemistry/colloquia.aspx

University of New Hampshire
https://ceps.unh.edu/chemistry/seminars/spring-2022-seminars

Notices for The Nucleus Calendar should be sent to:
Samurdhi Wijesundera,
Email: samu.amameth@gmail.com

APRIL 2022

April 4
Prof. Raychelle Burks (American Univ.)
BU, 11:15 pm

Prof. Hans Renata (Scripps)
Combining synthetic chemistry and biology for streamlining access to complex molecules
Brandeis, 3:40 pm

April 5
Prof. Ahu Gumrah (Univ. Manchester, UK)
UNH, 11:10 am

April 6
Prof. Sharron Hammes-Schiffer (Yale)
Proton-Coupled Electron Transfer in Catalysis and Energy Conversion
Tufts, 12:00 pm

April 7
Prof. Jiwoong Park (Univ. Chicago)
Harvard, Pfizer Hall 4:15 pm

April 11
Prof. Aaron Smith (UMBC)
BU, 11:15 pm

April 12
Prof. Elyssia Gallagher (Baylor)
UNH, Parsons N104 11:10 am

April 14
Prof. Ian Seiple (UC San Francisco)
Harvard, Pfizer Hall 4:15 pm

Dr. Christina Schroeder (NIH)
Bioactive Peptides: Harnessing Nature for the Benefit of Humankind
Tufts, Rm, P106, 4:30 pm

Prof. Hélène Lebel (Univ. Montreal)
MIT, Rm 6-120, 4:00 pm

Dr. Igor L. Medintz (Naval Research Lab.)
DNA dyes and resonance energy transfer: How far can you go before you run out of energy
MIT, 3:00 pm

April 19
Dr. Casey Grenier (Tekscan)
UNH, Parsons N104 11:10 am

April 20
Prof. Claudia Turro (Ohio State Univ.)
Harvard/MIT, Pfizer Hall 4:15 pm

Prof. Roger Summons (MIT)
Tufts, Rm P106, 12:00 pm

April 21
Prof. Alina Schimpf (UC San Diego)
Harvard, Pfizer Hall 4:15 pm

Prof. Michael Schmidt (BMS)
Innovation as the Engine of Process Chemical Research
MIT, Rm 6-120, 4:00 pm

Prof. David Sarlah (Univ. Illinois)
Empowering Synthesis: From Unique Methods to Complex Natural Products
MIT, Rm 6-120, 5:00 pm

April 25
Prof. Helen Backwell (Univ. Wisconsin Madison)
BU, 11:15 pm

Prof. Steven Buchwald (MIT)
Brandeis, 3:40 pm

April 26
Prof. Aron Streets (UC Berkeley)
Measuring protein-DNA interactions on long single molecules
MIT, Rm 6-120, 3:00 pm

Prof. Jinshan Gao (Montair State Univ.)
UNH, Parsons N104 11:10 am

April 27
Prof. Alice Ting (Stanford)
Brandeis, 3:40 pm

Prof. Dan Mindiola (UPenn)
MIT, Rm 6-120, 4:15 pm

Prof. Jia Niu (Boston College)
Polymer Chemistry Inspired Approaches to Polysaccharides and Glycomimetics for Material and Biological Discoveries
Tufts, Rm P106, 12:00 pm

April 28
Prof. Amit Chaudhary (Harvard)
Harvard, Pfizer Hall 4:15 pm

Dr. Ping Zhang (Technion)
MIT, Rm 6-120, 4:00 pm

Dr. Ilan Marek (Novartis)
Nucleophilic Substitution at Quaternary Carbon Stereocenters
MIT, Rm 6-120, 5:00 pm

May 04
Prof. Thomas B. Rauchfuss (Univ. Illinois)
MIT, Rm 6-120, 4:15 pm

May 05
Prof. Zhenan Bao (Stanford)
Molecular Design Concepts for Skin-inspired Organic Electronics
MIT, Rm 6-120, 4:00 pm

May 09
Prof. Deborah Chung (Univ. Buffalo)
Dielectric and electret behavior of electronic conductors and new avenue of electrical energy generation
MIT, Rm 6-120, 4:00 pm

May 10
Prof. Munira Khalil (Univ. Washington)
MIT, Rm 6-120, 3:00 pm

May 26
Prof. Nuno Maulide (Univ. Vienna)
MIT, Rm 6-120, 4:00 pm