Pittsburgh Section

The Crucible

www.pittsburghacs.org

Volume: XCIX No.6 February 2014

The Pittsburgh Section ACS Welcomes New Chair Amy Rupert

The Pittsburgh Section of the ACS welcomes Amy Rupert as 2014 Chair. Amy received her BS in chemistry from Indiana University of Pennsylvania in 2006, and continued on to receive her PhD in analytical chemistry in 2012 at the University of Pittsburgh under the direction of Dr. Stephen G. Weber. She is currently a post-doctoral research associate in the department of Neurology under the direction of Dr. Michael J. Zigmond, whose primary works investigates interventions in the pathophysiology of Parkinson's disease.

Pittsburgh Section ACS 2014 Chair, Amy Rupert.

Amy has been a member of ACS since 2002, joining as a student affiliate at her undergraduate institution. She joined the ACS Pittsburgh executive board in 2013, serving as treasurer, and was elected chair-elect in July 2013 when a vacancy in that position arose. She helped to initiate both the YCC and WCC subgroups of the ACS, and still remains active in both, serving as outreach coordinator and treasurer, respectively. Through these organizations, she has helped to organize events such as the Girl Scout Merit badge and the group's involvement in National Chemistry Week. Amy also independently involves herself in outreach to the community, volunteering as judge for both the Pennsylvania Junior Academy of Science and the Pennsylvania Regional Science and Engineering Fair for the past 5+ years.

Amy looks forward to 2014 and to fostering growth and involvement in Pittsburgh's chemistry community through her service to the Pittsburgh Section of the ACS.

2014 Pittsburgh Section ACS Executive Committee

Chair: Amy Rupert
Chair-Elect: Mackenzie Speer
Secretary: Logan Miller
Treasurer: Evonne Baldauff

Contents . . .

Careers In Chemistry Symposium

Greater Pittsburgh Area Women Chemists Committee

WWW.PGHWCC.ORG

Saturday, February 1st
9am-12pm

Department of Chemistry ◆ University of Pittsburgh
219 Parkman Avenue ◆ Pittsburgh, PA 15260

***COST: $5 / FREE** to high school & undergraduate students with advanced registration*

Join us as our panel explores different types of positions available in industrial and academic settings. Hear from those at various stages in their careers. Q&A time will be available during each session.

Schedule of Events:

8:30am Registration & Refreshments

9:00am **Session I:** Industry Panel

10:00am **Session II:** Academic Panel

11:00am **Breakout Sessions:**

- Networking with panel members regarding application procedures, interviews, and negotiations
- Chemistry as a Major? (for high school students)

REGISTRATION DEADLINE: JANUARY 27th

To register, please send the form below and a check made out to "WCC" to:
Dr. Michelle Ward / 219 Parkman Ave / Room 107 / Pittsburgh, PA 15260.
Alternatively, you can also RSVP via the Upcoming Events page of our website: www.pghWCC.org.

CAREERS IN CHEMISTRY SYMPOSIUM

Name: _____

Affiliation: _____

Email: _____

Society for Analytical Chemists of Pittsburgh

February Meeting
Monday, February 3, 2014
8:00 PM
Duquesne University

"Capillary Electrophoresis for High Throughput Proteomics"

Norman J. Dovichi
University of Notre Dame

Abstract: Most proteomics studies employ liquid chromatography for analysis of peptides. We are investigating capillary electrophoresis (CE)-ESI-MS/MS as an alternative technology. We first developed a rugged and sensitive CE-ESI interface based on electrokinetically-pumped sheath-flow. This interface operates in the nanospray domain, produces low-zeptomole detection limits for capillary electrophoresis separation of peptides, and offers great flexibility in separation buffer conditions. We then analyzed the secreted protein fraction of M. marinum using both CZE and HPLC; CZE produced slightly more protein identifications in a slightly shorter time period than HPLC. We have recently improved the system. In the single-shot analysis of the E. coli proteome, we identified >1,300 peptides and >300 protein groups in a 50-min CZE separation. We have automated the system for the sequential, uninterrupted, and unsupervised operation over eight hours; an average of 1,115 ± 70 peptides and 270 ± 8 proteins were identified from the E. coli proteome. We also have investigated the use of prefractionation with CZE; the analysis of seven fractions of the E. coli proteome produced 23,706 peptide spectra matches, 4,902 peptide IDs, and 871 protein group IDs in 350 min analysis time. In an alternative separations scheme, we employed capillary isoelectric focusing for the analysis of differential protein expression in PC12 cells undergoing differentiation following treatment with nerve growth factor; we identified 835 protein groups and produced 2,329 unique peptides IDs.

Biography: Norman Dovichi holds the Grace-Rupley Professorship in the department of Chemistry and Biochemistry at the University of Notre Dame. He received his BSc with a dual major in Chemistry and Mathematics from Northern Illinois University and his PhD in Physical Analytical Chemistry from the University of Utah, where he was Joel Harris's first PhD student. He spent two years at Los Alamos Scientific Laboratory with Dick Keller. Since then he has held faculty positions at the Universities of Wyoming, Alberta, and Washington before taking his current position at Notre Dame.

Dovichi has graduated 57 PhD students, has published over 250 papers, holds seven US patents, and has given over 350 invited talks. He has served on the editorial advisory boards of 16 journals and now serves as Associate Editor for Analytical Chemistry. He holds an honorary professorship with the Chinese Academy of Sciences.

Dovichi has primarily focused his research on the use of capillary electrophoresis and ultrasensitive laser-induced fluorescence for analysis of minute amounts of biological molecules. In the 1980s, he introduced the concept of single molecule detection to the chemical literature. In the 1990s, his group employed that technology to measure the activity and activation energy of single enzyme molecules. His group also developed capillary array electrophoresis instruments for high-throughput DNA sequencing. This technology was patented and commercialized as the Applied Biosystems model 3700 DNA sequencer. He was recognized for this work by the journal Science as an "Unsung Hero of the Human Genome Project".

More recently, his group has focused its attention on chemical cytometry, which is the chemical analysis of the content of single cells. This chemical cytometry work has developed a suite of powerful tools for the characterization of glycosphingolipids in single neurons and glia. Most recently, his group has developed capillary electrophoresis-tandem mass spectrometry as a high throughput and very sensitive proteomics tool.

Dinner Reservations: Please email the SACP Administrative Assistant, Valarie Daugherty at daugherty@pittcon.org by Tuesday, January 28, 2014 to make dinner reservations. Should you not have email, please call 412-825-3220, ext 204. Dinner will cost $10 ($5 for students) and checks are to be made out to the SACP. If you have any dietary restrictions, please let Valarie know when you leave message. **Parking:** Duquesne University Parking Garage entrance is on Forbes Avenue. Upon entering the garage, you will need to get a parking ticket and drive to upper floors. Bring your parking ticket to the dinner or meeting for a validation sticker. Please contact Duquesne University, if any difficulties should arise.

JOB SEARCHING FOR CHEMICAL TECHNICIANS

Presented by

The Society for Analytical Chemists of Pittsburgh
The American Institute of Chemical Engineers, Pittsburgh Chapter
The American Chemical Society, Pittsburgh Section
The Spectroscopy Society of Pittsburgh

Friday, February 7, 2014

Pre-Registration Required for this Free Event

HARBOR GARDENS, STUDENT SERVICES AREA CONFERENCE ROOMS
Bidwell Training Center, 1650 Metropolitan Street, Pittsburgh, PA 15233
412-323-4000

FREE ON STREET PARKING IS AVAILABLE

PROGRAM

8:30 A.M. Registration

9:00 A.M. **MANAGING AN EFFECTIVE JOB SEARCH**
Daniel J. Eustace, Ph. D.
Career Consultant, American Chemical Society

11:30 A.M. **OVERVIEW OF THE LOCAL JOB MARKET**
Joseph D. Jolson, Ph. D.
Career Consultant, American Chemical Society

12:00 Noon **INFORMAL LUNCH WITH QUESTION AND ANSWER SESSION**

1:30 P.M. CLOSE

To Pre-Register for the Job Searching for Chemical Technicians Workshop
Send an email to Karen Johnson (412-323-4000 Ext. 161)

at:

kjohnson@mcg-btc.org

Your email must include your full name, complete contact information including address, phone number and email address.

JOB SEARCHING FOR CHEMICAL PROFESSIONALS

Presented by

The Society for Analytical Chemists of Pittsburgh
The American Institute of Chemical Engineers, Pittsburgh Chapter
The American Chemical Society, Pittsburgh Section
The Spectroscopy Society of Pittsburgh

Saturday, February 8, 2014
Pre-Registration Required for this Free Event

Room 150, Ashe Auditorium, Chevron Science Center, University of Pittsburgh
219 Parkman Ave. (off Bigelow Blvd.)

Parking at Soldiers and Sailors Parking Garage Provided. Lunch Provided.

PROGRAM

8:30 A.M. Registration

9:00 A.M. Welcome and Introduction

9:30 A.M. **MANAGING AN EFFECTIVE JOB SEARCH**
Daniel J. Eustace, Ph. D.
Career Consultant, American Chemical Society

12:10 P.M. **OVERVIEW OF THE LOCAL JOB MARKET**
Joseph D. Jolson, Ph. D.
Career Consultant, American Chemical Society

12:30 P.M. Networking Lunch

1:00 P.M. Resume Review and Personal Consultation

4:00 P.M. Close

Bring your parking ticket for validation and your resume to participate in the afternoon program
(Undergraduates without a resume may participate in the afternoon group resume review)

To Pre-Register for the Job Searching for Chemical Professionals Workshop
Send an email to Mr. John P. Auses at:
jpauses@pitt.edu

Your pre-registration must be received by Monday, February 3, 2014 and include your full name and complete contact information including address, phone number, email address and whether or not you expect to participate in the resume review. Academic registrants - please include university affiliation and university department. Let us know when you expect to complete your B.S., M.S., Ph.D., post-doc, or other assignment.

The Spectroscopy Society of Pittsburgh

February Meeting
Wednesday – February 19, 2014
Duquesne University

Technology Forum Speaker's Presentation 5:30 PM
Social Hour 5:30 PM • Dinner in the City View Café (6th Floor) 6:30 PM
Business Meeting 8:00 PM • Technical Program Speaker's Presentation 8:15 PM

TECHNICAL PROGRAM - 8:15 PM

"Synergy between NMR, Cryo-EM and Large-Scale MD Simulations - Novel Findings for HIV Capsid Function"

Dr. Angela Grohenborn, University of Pittsburgh School of Medicine

Abstract: Mature HIV-1 particles contain a conical-shaped capsid that encloses the viral RNA genome and performs essential functions in the virus life cycle. Previous structural analysis of two- and three-dimensional arrays provided a molecular model of the capsid protein (CA) hexamer and revealed three interfaces in the lattice. Using the highresolution NMR structure of the CA C-terminal domain (CTD) dimer and in particular the unique interface identified, it was possible to reconstruct a model for a tubular assembly of CA protein that fit extremely well into the cryoEM density map. A novel CTD-CTD interface at the local three-fold axis in the cryoEM map was confirmed by mutagenesis to be essential for function. More recently, the cryo-EM structure of the tube was solved at 8Å resolution and this cryo-EM structure allowed unambiguous modeling and refinement by large-scale molecular dynamics (MD) simulation, resulting in all-atom models for the hexamer-of-hexamer and pentamer-of-hexamer elements of spheroidal capsids. Furthermore, the 3D structure of a native HIV-1 core was determined by cryo-electron tomography (Cryo-ET), which in combination with MD simulations permitted the construction of a realistic all-atom model for the entire capsid, based on the 3D authentic core structure.

Bio: Dr. Angela Gronenborn is one of the country's leading structural biologists and an internationally renowned specialist in the application of nuclear magnetic resonance (NMR) spectroscopy for investigating structure, dynamics and folding of biological macromolecules. She joined the faculty of the University of Pittsburgh as a Professor in the School of Medicine in 2004. In 2005, the Department of Structural Biology was established with Prof. Gronenborn holding the Rosalind Franklin Professorship and Chair.

Bio Continued on Page 11

TECHNOLOGY FORUM - 5:30 PM

"DNA Sequence Evolution: Resurrecting the Past to See the Future"

Dr. Nathan Clark, University of Pittsburgh

The wealth of diversity between species provides us with a unique window on the forces that shaped the biological world. By studying DNA sequences from these species we are able to reconstruct the relationships between them and reveal the functions of their genes. Here, we will review techniques of DNA sequence analysis and their application to pinpoint evolutionary adaptations that allow each species to survive in its environment. We will visit genetic adaptations that combat harmful pathogens and others that allow competition between them. Furthermore, analysis of Neanderthal and Denisovan DNA has revealed that evolutionary adaptations continued to occur relatively recently in our own evolutionary trajectory. In a separate application, our novel analysis technique, evolutionary rate covariation, allows us to computationally predict relationships between genes so that we can piece together the genetic networks that compose all organisms. We demonstrate how rate covariation has been successfully employed to discover new genes in medical genetics, thereby revealing the genetic basis of disease.

Bio on Page 12

Dinner Reservations: Please register on-line at http://www.ssp-pgh.org/monthly-meeting-rsvp/ to make dinner reservations NO LATER THAN Thursday, February 13, 2014 at noon. Dinner will cost $10 ($5 for students) and checks can be made out to the SSP. This month's entrée will be Salmon. If you have any dietary restrictions, please indicate them when you RSVP. **Parking Instructions:** The Duquesne University Parking Garage is located on Forbes Avenue. Upon entering the garage, receive parking ticket and drive to upper floors. Pick up a parking chit at the dinner or meeting.

ACS Energy Technology Group

Tuesday, February 11, 2014

"Pittsburgh, Geology, and the Future of Energy"

Albert Kollar
Geologist, Carnegie Museum of Natural History and President of the Pittsburgh Geological Society

Social Hour 6:00 PM, Dinner 6:30 PM, Talk 7:30 PM

Spaghetti Warehouse
26th & Smallman Streets, Strip District, Pittsburgh PA
Free parking behind the restaurant

Pittsburgh was the leader in energy development commencing with the use of wood for making charcoal for the early iron furnaces. As the industrial revolution and technology evolved in conjunction with the discovery of fossil fuels; coal, oil and gas were exploited. Westinghouse developed Nuclear Power for electric generation in 1957 at Shippingport, PA. Today many believe the only way to the future is with energy generated from wind, solar, and other renewable sources of energy. However, hydropower is the largest renewal source of electricity generation and has been in service much longer. Mr. Kollar will discuss how Pittsburgh was the center of energy for the world in the latter half of the 19th century, only to lose it to Texas in 1901 with support of Pittsburgh's investment (think Gulf Oil), then may regain it with the discovery of the Marcellus Shale Formation for natural gas, and Utica Shale for oil.

Albert Kollar has a BS in Geology and MS in Geology and Invertebrate Paleontology. He has worked at the Carnegie Museum of Natural History for 37 years and traveled extensively across the United States, Alaska, and Atlantic Canada and in the UK. His research and field work covers diverse topics such as climate of fossil reefs, brachiopods, fossil climate change, geology of Carnegie dinosaurs from Wyoming and Utah, Pennsylvanian age amphibian and eurypterid trackway. The last four years he researched and has presented over 35 talks on energy. He teaches in the Pitt Osher program and has led hundreds of local geology field trips. His current interest is the geology of the Carnegie Museum building stones and the Pittsburgh commissions of Longfellow, Alden, Harlow, and architects.

For reservations, please contact Elliott Bergman at elliott.acstechnology@gmail.com by 1:00 on Feb. 10. Walk-ins are welcome. Our meetings are open to all. Cash or check payable to: Energy Tech Pgh Section ACS.

The cost of the dinner is $20 including tax and gratuity. Alcoholic drinks cost extra. Please specify your preference from the following menu choices: Spaghetti with meatballs, 15-layer lasagna, Four-cheese manicotti, Fettuccini Alfredo, Pesto Pasta, or Grilled chicken Caesar salad. Please indicate special needs such as vegetarian, gluten-free, etc.

BRIDGING CHEMISTRY AND INNOVATION
CERM 2014

CERM 2014
Save the Date!

The Central Regional Meeting of the ACS will be held October 1-4, 2014 at the Doubletree by Hilton Green Tree Hotel, Pittsburgh.

For more information, visit the CERM website at www.acscerm2014.org.

NO
SACP March Meeting
due to
Pittcon® 2014 Conference and Exposition

Pittcon 2014
will be held in
Chicago, Illinois
March 2 – March 6, 2014

University of Pittsburgh Department of Chemistry
Spring Lecture Series

January 23, 2014
2:30pm, 150 Chevron
Arun Yethiraj
University of Wisconsin Madison
"Self-Assembly in Complex Fluids"

February 4, 2014
2:30pm, 150 Chevron
Norman Dovichi
University of Notre Dame
"Capillary Electrophoresis for High Sensitivity Proteomics"

February 6, 2014
2:30pm, 150 Chevron
Issac Krauss
Brandies University
"Combining Organic Synthesis and Directed Evolution to Design HIV Vaccines"

4:00pm, 150 Chevron
Leslie Sombers
North Carolina State
"Disambiguating the Complex Chemical Mechanisms Underlying Basic Brain Function using Microelectrochemistry"

February 10, 2014
33rd Annual Pittsburgh Conference Lecture (PITTCON)
4:00pm, 150 Chevron
Paul Alvisatos
University of California-Berkeley
"Nanoscience and the Future of the Global Carbon Cycle"

February 11, 2014
33rd Annual Pittsburgh Conference Lecture (PITTCON)
2:30pm, 150 Chevron
Paul Alvisatos
University of California-Berkeley
"Design and Synthesis of Multi-Component Colloidal Nanocrystals for Catalysis and Sensing"

February 13, 2014
2:30pm, 150 Chevron
Chuan He
University of Chicago/HHMI
"Reversible DNA and RNA Methylation in Biological Regulation"

February 20, 2014
2:30pm, 150 Chevron
Rigoberto Hernandez
Georgia Tech
"Dynamics in Complex Environments: Rods and Janus Particles"

4:00pm, 150 Chevron
Clay S. Bennett
Tufts University
"Reagent Controlled Stereoselective and Stereospecific Glycosylation Reactions"

February 27, 2014
2:30pm, 150 Chevron
Michael Hopkins
University of Chicago
"Molecular Approaches to Artificial Photosynthetic Reduction of CO2"

4:00pm, 150 Chevron
Ramesh Jasti
Boston University
"The Bottom-Up Organic Synthesis of Carbon Nanotubes"

March 6, 2014
4:00pm, 150 Chevron
Hassane S. Mchaourab
Vanderbilt University
"Deciphering Alternating Access Mechanisms in Ion-Coupled and ABC Transporters. A Spin Labeling EPR Perspective"

March 13, 2014
4:00pm
150 Chevron
Eric Streiter
University of Wisconsin-Madison
"Understanding Ubiquitin Signaling Using Chemical Approaches"

March 20, 2014
2:30pm, 150 Chevron
Ivan Aprahamian
Dartmouth College
"Hydrazone-Based Switches, Fluorophores and Sensors"

4:00pm, 150 Chevron
David Wei
Fordham University
"TBA"

March 26, 2014
5th Annual Johannes F. Coetzee Memorial Lecture
2:30pm, 150 Chevron
Steven Boxer
Stanford University
"Vibrational Stark Spectroscopy Connects Electrostatics to Catalytic Rates at Enzyme Active Sites"

March 27, 2014
2:30pm, 150 Chevron
Mitchell Croatt
University of North Carolina at Greensboro
"TBA"

March 27, 2014
4:00pm, 150 Chevron
Amit Basu
Brown University
"New Molecules and Materials for Studying Carbohydrate Recognition"

April 3, 2013
2:30pm, 150 Chevron
Lane Baker
Indiana University
"Unconventional Pipetting for Bioanalysis"

Continued on Page 12

Pittsburgh Section ACS
Younger Chemists Committee

Join the Pittsburgh YCC for our annual ***Younger Chemists in Industry Night*** on Wednesday, February 19th at Hemingway's in Oakland. We will have guests from the local chemical industry available for an informal networking session and then a career panel discussion. We'll provide pizzas and appetizers. Free for YCC members, $5 for non-members.

What?
Annual Younger Chemists in Industry Night

Where?
Hemingway's in Oakland - 3911 Forbes Avenue

When?
February 19, 2014
6:00 - 8:00 PM EDT

Please visit our webpage www.pghycc.org to learn more about the event.

Pittsburgh YCC members would also like to congratulate our leaders Lea Veras and Ben Hay for being recognized by Younger Chemists Committee of the American Chemical Society for their past contributions and leadership qualities. Awarded with the Leadership Development Award, they will be representing our organization by participating in the YCC Leadership Development Workshop.

Get Connected!

Stay up-to-date on all the happenings of the Pittsburgh Section ACS

Section's Website: www.pittsburghacs.org

Facebook Page: Pittsburgh Section of the American Chemical Society

Linked In: Pittsburgh Section of the American Chemical Society

Applications for Student Travel Awards Now Being Accepted

The Pittsburgh Section of the American Chemical Society has budgeted funds to help encourage undergraduate/graduate student participation in national and regional ACS meetings. The awards are intended to help defray meeting registration and travel-related expenses (lodging, transportation, per diem) for eligible students. To apply for the funds, one should simply complete the application (available on our web site at www.pittsburghACS.org) and return it by the relevant deadline to:

Pittsburgh Section ACS
Travel Grants
Attn: Dr. Michelle Ward
Room 107 / Chevron Science Center
219 Parkman Avenue
Pittsburgh, PA 15260

Each year, the Pittsburgh Section of the ACS will award up to four $500 grants to aid our undergraduate/graduate student members in presenting papers or posters at ACS Meetings. Awards will be made based on the scientific merit of the paper/poster to be presented and financial need. The deadlines for receipt of applications are 06/01/2014 (for travel to be completed by 12/31/2014) and 12/01/2014 (for travel to be completed by 06/30/2015.

Our Section is looking forward to helping increase the participation of local students in ACS conferences. If you have any questions, please do not hesitate to contact Dr. Michelle Ward, muscat@pitt.edu or 412-624-8064.

Greater Pittsburgh Area Women Chemists Committee

WWW.PGHWCC.ORG

With Dr. Seth Horne
9am-12pm
Saturday, April 12th

Department of Chemistry ◆ University of Pittsburgh
219 Parkman Avenue ◆ Pittsburgh, PA 15260
Cost: $5/ free to members/ Open to the public!

The oral communication of research results is an integral part of the job for practicing scientists, whatever their field. It may be tempting to believe that good science will always speak for itself; however, the ability to clearly convey the substance and importance of a particular set of data plays a huge role in how those results are received. The purpose of this workshop is to provide a primer on some of the essential skills necessary to give effective research talks.

Topics covered will include:

- ✓ Structuring a presentation based on different formats, lengths, and target audiences
- ✓ Framing a problem and placing work in context
- ✓ Slide design with an emphasis on what makes a good vs. bad figure
- ✓ General tips for success and common pitfalls to avoid
- ✓ Considerations unique to posters and poster talks for scientific meetings

REGISTRATION DEADLINE: April 4th

To register, please send the form below and a check made out to "Greater Pittsburgh WCC" to Dr. Michelle Ward / 219 Parkman Ave / Room 107 / Pittsburgh, PA 15260.
You may also RSVP and submit payment via the Upcoming Events page on our website: www.pghWCC.org.

GIVING EFFECTIVE SCIENTIFIC PRESENTATIONS

Name: _____

Affiliation: _____

Email: _____

C³ Couture, Cosmetics, & Chemistry

Greater Pittsburgh Area Women CHEMISTS Committee

The Greater Pittsburgh Area WCC will be sponsoring an event on Saturday, April 5th for Girl Scouts to earn their "Science of Style" badge.

A limited number of spots are also open to 7-10th grade students in the Greater Pittsburgh Area who are interested in attending and expanding their understanding of science.

When: April 5th from 9am-12pm

Where: Chevron Science Center
(Department of Chemistry, University of Pittsburgh
219 Parkman Avenue, Pittsburgh PA 15260)

Cost: Free
(Advanced Registration Required)

The Greater Pittsburgh Area WCC will lead local girl scouts, and local students, through 5 different stations, which were designed to meet the mandated requirements to earn the Science of Style badge.

Girls will complete projects such as creating lip balm, perfume, and homemade shrinky-dink pendants (amongst others) – all the while learning the science behind cosmetics and fashion.

NOTE: There are a limited number of spots available for this workshop. Anyone interested in attending should register by March 25th using the link available on the Upcoming Events page of our website: www.pghWCC.org.
Contact Dr. Amy Rupert (aeh37@pitt.edu) or
Dr. Michelle Ward (muscat@pitt.edu) with any questions.

Spectroscopy Society of PIttsburgh Technical Program Bio Continued from Page 6

Dr. Angela Grohenborn, University of Pittsburgh School of Medicine

Prior to her move to Pittsburgh, Prof. Gronenborn was a member of the Senior Biomedical Research Service and Chief of the Structural Biology Section at NIDDK, NIH. She received both her undergraduate and Ph.D. degrees from the University of Cologne, Germany. After post-doctoral training she joined the Scientific Staff in the Divisions of Molecular Pharmacology and Physical Biochemistry at the National Institute for Medical Research, Mill Hill, London. In 1984, she moved to the Max-Planck Institute in Munich as head of the Biological NMR Group, and in 1988 to the NIH.

Prof. Gronenborn's research harnesses the power of NMR in two major areas: understanding biochemical mechanisms and the structural basis of cellular regulation as well as HIV pathogenesis. She has authored more than 450 publications, including structural studies on interleukins, chemokines, the tumor suppressor protein p53, various transcription factors and enzymes, and a number of HIV-encoded and -associated proteins. She also is noted for her contributions to advancing technology on how best to apply NMR to elucidate important problems in the biosciences.

University of Pittsburgh Department of Chemistry Spring Lecture Schedule Continued from Page 8

April 9, 2014
18th Annual Paul Dowd Lectures Series
4:00pm, 150 Chevron
Sarah Reisman
California Institute of Technology-Pasadena
"TBA"

April 10, 2014
18th Annual
Paul Dowd Lectures Series
2:30pm, 150 Chevron
Sarah Reisman
California Institute of Technology-Pasadena
"TBA"

April 17, 2014
2:30pm, 150 Chevron
Khalid Salaita
Emory University
"Using Light to Control and Visualize Molecular Forces in Living Systems"

4:00pm, 150 Chevron
Richard McCreery
University of Alberta
"Long Range Charge Transport in Molecular Junctions: A Bridge Between Molecular and Organic Electronics"

April 24, 2014
2:30pm, 150 Chevron
Francesco Paesani
University of California – San Diego
"TBA"

May 2, 2014
Innovations in Materials Chemistry
8:30am - 5:00pm, 150 Chevron
Omar Yaghi, University of California-Berkeley
Colin Nucolls, Columbia University
Ting Xu, University of California-Berkeley
Sara Skrabalak, Indiana University

May 3, 2014
Innovations in Materials Chemistry
8:30am - 12:00pm, 150 Chevron
Omar Yaghi, University of California-Berkeley
Colin Nucolls, Columbia University
Ting Xu, University of California-Berkeley
Sara Skrabalak, Indiana University

May 6, 2014
59th Annual Francis Clifford Phillips Lecture
4:00pm, 150 Chevron
Steve Soper
University of North Carolina
"TBA"

May 7, 2014
59th Annual Francis Clifford Phillips Lecture
2:30pm, 150 Chevron
Steve Soper
University of North Carolina
"TBA"

May 8, 2014
2:30pm, 150 Chevron
Thomas Kiefhaber
Technische Universität München
"Kinetics of Coupled Folding and Binding Processes and the Speed Limit for Protein-Protein Recognition"

Spectroscopy Society of PIttsburgh Technology Forum Bio Continued from Page 6

Dr. Nathan Clark
University of Pittsburgh

Dr. Nathan Clark's work brings computational analysis together with experimental biology in order to understand how evolution has shaped our genes and the complex networks that they form. Dr. Clark began his scientific career as an organic chemist in the lab of C. Grant Wilson at the University of Texas at Austin. He then joined the newly created Genome Sciences Ph.D. program at the University of Washington where he studied the adaptive evolution of reproductive proteins under the mentorship of Willie Swanson. Dr. Clark went on to become an N.I.H. Ruth Kirschstein post-doctoral fellow at Cornell University where he developed novel computational genomic methods to infer protein function in yeasts, fruit flies, and in humans. Now an Assistant Professor in the Department of Computational and ystems Biology at the University of Pittsburgh, his laboratory continues to use evolutionary analysis to predict functional changes to genes and the proteins they encode.

New Way To Fight Antibiotic-Resistant Bacteria: Target Human Cells Instead

"Integrating Chemical and Genetic Silencing Strategies To Identify Host Kinase-Phosphatase Inhibitor Networks That Control Bacterial Infection"
ACS Chemical Biology

As more reports appear of a grim "post-antibiotic era" ushered in by the rise of drug-resistant bacteria, a new strategy for fighting infection is emerging that targets a patient's cells rather than those of the invading pathogens. The technique interferes with the way that the pathogens take over a patient's cells to cause infection. This approach, published in the journal ACS Chemical Biology, could help address the world's growing problem of antibiotic-resistant "super bugs."

Huib Ovaa, Jacques Neefjes and colleagues explain that the problem of antibiotic-resistant bacteria poses a major public health threat. Health organizations have warned that unless alternatives to classic antibiotics are developed, even infections from minor scrapes could become deadly. Pharmaceutical companies are working on only a few new antibiotics, and they all take the same approach – attack the bacteria. But resistance is always a possibility. To get around this, researchers are now looking more closely at how bacteria co-opt the cells they invade for survival. These researchers previously reported that at least one set of host cell proteins, called kinases, can control bacterial growth. Ovaa and Neefjes' team decided to look at another class of proteins, called phosphatases, that act in the opposite way from kinases to see if inhibiting them would have a similar effect.

In lab tests, they identified phosphatases in human cells that are involved in bacterial survival. They also identified small molecules, or potential drugs, that could stop those phosphatases from working. Those molecules, which could form a new class of antibiotics, successfully stopped Salmonella, their test bacteria, from growing. Because this approach jams the host cell machinery rather than directly attacking the bacteria, the chances of bacteria developing resistance could be very low, say the researchers. They also say that the research shows that phosphatases, like kinases, could be general targets for drug development.

The authors acknowledge funding from The Netherlands Organization for Scientific Research (NWO), the Dutch Cancer Society (KWF), a European Research Council Advanced Grant and The Netherlands Proteomics Centre supported by The Netherlands Genomics Initiative.

To fight harmful bacteria in a "post-antibiotic era," scientists are developing a new strategy for shutting down infections.
Credit: Sebastian Kaulitzki/iStock/Thinkstock

Attention: Speakers Wanted

The Pittsburgh Section of the American Chemical Society is establishing a local speakers bureau and we would like for you to consider joining.

The speakers bureau will be available on our web site and will facilitate the connection between those organizing symposia and speakers from our area.

If you would like to be listed in the Bureau, please provide the following information:

- Name
- Affiliation
- Contact Information:

  Mailing Address
  Website (if applicable)
  Email address
  Phone

- Keywords/categories related to expertise (up to 5)
- Current CV/Resume (in pdf format)

Any questions should be directed to
Michelle Ward
(muscat@pitt.edu or
412-624-8064)

Business Directory

Services

Services

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Services

TELL OUR ADVERTISERS

Membership surveys show that you want more articles in our newsletter. If you tell our advertisers that you saw their ad here, they will provide more financial support and this will allow us to add more articles.

Get Connected!

Stay up-to-date on all the happenings of the Pittsburgh Section ACS

Section's Website:
www.pittsburghacs.org

Facebook Page:
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Business Directory

Services

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Services

Volunteers Needed!

There are a number of volunteer opportunities in the Pittsburgh ACS section! If you are interested in volunteering, please contact Heather Juzwa at hljuzwa@shimadzu.com!

Crucible Deadline

The deadline for items submitted to The Crucible is the 1st of the month prior to publication.

For example, all items for the March 2014 issue must be to the editor by February 1, 2013.

The Crucible

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Career Opportunities

SEARCHING FOR THAT SPECIAL JOB?

There are many companies and organizations searching for chemical and biochemical personnel to fill important jobs in their organizations.

- Companies for laboratory and management positions
- Universities & Colleges for teaching positions and laboratory personnel
- Hospitals for technical and research personnel

There are several web sites that may help you search for these open positions.

- www.mboservices.net/recr_disp.php
- http://pubs.acs.org/chemjobs/

Advertisers Index

The Crucible

A newsletter of the Pittsburgh Section of the American Chemical Society

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Aliquippa, PA 15001

Pittsburgh Area Calendar

Saturday, February 1
Greater Pittsburgh Area Women Chemists Committee
Careers in Chemistry Symposium
University of Pittsburgh, 219 Parkman Ave., Pittsburgh, PA

Monday, February 3
Society for Analytical Chemists of Pittsburgh
"Capillary Electrophoresis for High Throughput Proteomics"
Norman J. Dovichi, University of Notre Dame
Duquesne University, Pittsburgh, PA

Friday, February 7
Job Searching for Chemical Technicians
Harbor Gardens, Student Services Area Conference Rooms, Bidwell Training Center, Pittsburgh, PA

Saturday, February 8
Job Searching for Chemical Professionals
Chevron Science Center, Ashe Auditorium, University of Pittsburgh, Pittsburgh, PA

Tuesday, February 11
ACS Energy Technology Group
"Pittsburgh, Geology, and the Future of Energy"
Albert Kollar, Geologist, Carnegie Museum of Natural History and President of the Pittsburgh Geological Society
Spaghetti Warehouse, 26th & Smallman Streets, Strip District, Pittsburgh, PA

Wednesday, February 19
Pittsburgh Section ACS Younger Chemists Committee
Annual Younger Chemists in Industry Night
Hemingway's in Oakland, 3911 Forbes Ave., Pittsburgh, PA

Wednesday, February 19
The Spectroscopy Society of Pittsburgh
"Synergy Between NMR, Cryo-EM and Large-Scale MD Simulations - Novel Findings for HIV Capsid Function"
Dr. Angela Grohenborn, University of Pittsburgh School of Medicine
Duquesne University Pittsburgh, PA

Technology Forum
"DNA Sequence Evolution: Resurrecting The Past To See The Future"
Dr. Nathan Clark, University of Pittsburgh
Duquesne University, Pittsburgh, PA