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Webinar

Improving Characterization of Monoclonal Antibodies
Making a Better Biotherapeutic

Wednesday, November 19, 2014
12 noon Eastern, 9 a.m. Pacific, 5 p.m. UK, 6 p.m. Central Europe

During the webinar, viewers will:

- Gain a deeper understanding of the factors important in biotherapeutic protein production and characterization
- Learn the fundamentals of microfluidics-based capillary electrophoresis
- Hear how microchip-CE can speed protein analysis, particularly in the drug development pipeline
- Have their questions answered live by the panelists!

Characterization of therapeutic proteins remains labor-intensive and time consuming due to their often complex and heterogeneous structure. This has led to a concerted effort within the biotechnology and biopharmaceutical industry to address these bottlenecks as a means to boost the development of more biotherapeutics. Studies in this vein, such as testing the effect of various cell culture conditions on posttranslational modifications or monitoring the purification process of recombinant proteins, produce large numbers of samples that can easily exceed the capacity of modern analytical laboratories. High throughput analytical platforms with high precision, automation, and ease-of-use are therefore in great demand. To this end, the use of microfluidic analytical platforms such as microchip capillary electrophoresis (CE) have greatly increased the efficiency and reproducibility needed for analyzing proteins intended for therapeutic use. In this webinar, our expert panelists will discuss posttranslational modifications and quality assessment of biotherapeutic proteins for biopharmaceutical development using microfluidic-CE characterization.

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Speakers

Friederike Winkhaus, Ph.D.
Roche Diagnostics GmbH
Munich, Germany

Niomi Peckham
Alexion Pharmaceuticals
Cheshire, Connecticut

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Dear Colleagues:

On behalf of the AAAS Board of Directors, it is my honor to invite you to join us in San Jose, CA for the 2015 AAAS Annual Meeting, 12-16 February. This annual event is one of the most widely recognized global science gatherings, with hundreds of diverse scientific sessions and communication opportunities with broad U.S. and international media coverage.

This year’s theme—Innovations, Information, and Imaging—will focus on transformation across all disciplines of science and technology brought about by rapid progress in organizing, visualizing, and analyzing data.

Everyone is welcome at the AAAS Annual Meeting. We hope you will join us in San Jose.

Gerald R. Fink, Ph.D.
AAAS President and Program Chair
Margaret and Herman Sokol Professor of Genetics
Massachusetts Institute of Technology

PRESIDENT’S ADDRESS

Gerald R. Fink
AAAS President and Program Chair
Margaret and Herman Sokol Professor of Genetics,
Massachusetts Institute of Technology

Thursday, 12 February
6:00–7:00 p.m.
San Jose Convention Center, Room 220A

Dr. Gerald Fink’s work in genetics, biochemistry, and molecular biology has advanced our understanding of gene regulation, mutation, and recombination. He developed a technique for transforming yeast that allowed researchers to introduce a foreign piece of genetic material into yeast cells and study the inheritance and expression of that DNA. The technique, fundamental to genetic engineering, laid the groundwork for the commercial use of yeast as biological factories for manufacturing vaccines and other drugs, and set the stage for genetic engineering in all organisms. Fink chaired a National Research Council Committee that produced the 2003 report Biotechnology Research in an Age of Terrorism: Confronting the Dual Use Dilemma, recommending practices to prevent the potentially destructive application of biotechnology research while enabling legitimate research. A founding member and past director of the Whitehead Institute, he received a Ph.D. in genetics from Yale University and a bachelor’s degree in biology from Amherst College. He is a member of the National Academy of Sciences and Institute of Medicine and a fellow of the American Academy of Arts and Sciences and the American Philosophical Society. He has received the National Academy of Sciences Award in Molecular Biology, the Genetics Society of America Medal, the Emil Christian Hansen Award for Microbiology, the George W. Beadle Award, the Gruber Prize in Genetics, and a Guggenheim Fellowship.

www.aaas.org/meetings
PLENARY LECTURES
All plenary lectures will be held in the San Jose Convention Center, Room 220A

Daphne Koller
President and Co-Founder, Coursera
*The Online Revolution: Learning Without Limits*
Friday, 13 February
5:00–6:00 p.m.

Karl Deisseroth
D.H. Chen Professor of Bioengineering, Stanford University
*Optical Desconstruction of Fully-Assembled Biological Systems*
Sunday, 15 February
5:00–6:00 p.m.

David Baker
Professor of Biochemistry, University of Washington
*Post-Evolutionary Biology: Design of Novel Protein Structures, Functions, and Assemblies*
Saturday, 14 February
5:00–6:00 p.m.

Neil Shubin
Professor, Organismal Biology and Anatomy, University of Chicago
*Finding Your Inner Fish*
Monday, 16 February
8:30–9:30 a.m.

TOPOICAL LECTURES

David Altshuler
Professor of Genetics and Medicine, Harvard Medical School
*Human Genome Sequence Variation and Disease*

Gerbrand Ceder
R.P. Simmons Professor of Materials Science and Engineering, Massachusetts Institute of Technology
*Lecture title to come*

Sally Davies
Chief Medical Officer and Chief Scientific Adviser, Department of Health, United Kingdom
*Antimicrobial Resistance: A Rising Global Threat*

Ann McKee
Professor of Neurology and Pathology, Boston University School of Medicine
*Emerging Concepts in Chronic Traumatic Encephalopathy*

Geoffrey Nunberg
Adjunct Professor of Information, University of California, Berkeley
*The Science of Grammar and Vice Versa*

Naomi Oreskes
Professor of the History of Science, Harvard University
*Science: Why Should They Believe Us?*

Naledi Pandor
Minister of Science and Technology, South Africa
*Lecture title to come*

Paul Farber
Distinguished Professor Emeritus, Modern Life Sciences, Intellectual History, Oregon State University
*Darwinian Evolution and Human Race*

Susan Fiske
Eugene Higgins Professor of Psychology and Public Affairs, Princeton University
*Humans are Intent Detectors: Implications for Society*
SEMINARS

Thursday, 12 February

Communicating Science
Scientific and technological issues may trigger societal conflict when they intersect with personal or political views. Today’s scientists and engineers are challenged to communicate and engage with the public, particularly amid pressure on research budgets and related concerns about transparency and accountability. This seminar will share expertise for scientists participating in science communication and public engagement.

Organized by: AAAS Center for Public Engagement with Science and Technology

Scientists Communicating Challenging Issues
MODERATOR: Susanne Moser, Susanne Moser Research and Consulting, Santa Cruz, CA

SPEAKERS:
Noah Diffenbaugh, Stanford University, CA
Kathleen Hall Jamieson, University of Pennsylvania, Philadelphia
Lisa Krieger, San Jose Mercury News, CA

Public Engagement for Scientists: Realities, Risks, and Rewards
MODERATOR: Bruce Lewenstein, Cornell University, Ithaca, NY

SPEAKERS:
Elizabeth Babcock, California Academy of Sciences, San Francisco
Heidi Ballard, University of California, Davis
Anthony Dudo, University of Texas, Austin
Nalini Nadkarni, University of Utah, Salt Lake City

Friday, 13 February

The Future of Computing
New ways of collecting and using information are transforming science, technology, and the fabric of society. This seminar will address some of the most important advances and needs in computing and the internet, including information-centric networking; high-performance computing; artificial intelligence; mobile and wearable devices; and cybersecurity.

Our Computational Foundation Crisis and Life Beyond
Organized by: Jon Candelaria, Semiconductor Research Corporation, Durham, NC; Larry A. Nagahara, National Cancer Institute, Bethesda, MD

SPEAKERS:
Tilak Agerwala, IBM T.J. Watson Research Center, Yorktown Heights, NY
Peter Norvig, Google Inc., Mountain View, CA
Charles Bergan, Qualcomm Inc., San Diego, CA

The Future of the Internet: Meaning and Names or Numbers?
Organized by: Glenn T. Edens, PARC, Palo Alto, CA; J.J. Garcia-Luna-Aceves, University of California, Santa Cruz

SPEAKERS:
Vinton Cerf, Google Inc., Mountain View, CA
David Oran, Cisco Systems, Cambridge, MA
Glenn T. Edens, PARC, Palo Alto, CA

Engineering Information: Adapting Risk and Resilience Frameworks to Cybersecurity
Organized by: Igor Linkov, U.S. Army Engineer Research and Development Center, Concord, MA; Sankar Basu, National Science Foundation, Arlington, VA

SPEAKERS:
Shankar Sastry, University of California, Berkeley
John E. Savage, Brown University, Providence, RI
Ahmad-Reza Sadeghi Sadeghi, Technical University of Darmstadt, Germany
Stephanie Forrest, University of New Mexico, Albuquerque
Ken Heffner, Honeywell International Inc., Clearwater, FL
Saturday, 14 February

**Infectious Disease: Monitoring and Response**
This seminar will consider how infectious disease can be effectively monitored in order to inform public health response. A discussion about the Ebola virus outbreak in West Africa will feature perspectives from key individuals and organizations involved in monitoring and responding to the public health emergency and provide information on current and future challenges. Another session will review vaccine development and recent advances in genomics, computational and structural biology, and systems biology that address genetic diversity and immune evasion, providing greater probability for success in the next generation of vaccines. The last session will discuss how Earth observation data can be used to predict the spatial and/or temporal distribution of disease in association with environmental factors, resulting in diverse health applications such as support for development of static spatial predictions of disease risk, outbreak early warning systems, and forecasts of climate change health impacts.

**Lessons from the Ebola Outbreak: Response and Responsibility**
*Additional information to follow.*

**The Human Vaccines Project: Transforming the Future of Vaccine Development**
*Organized by: Wayne Koff, International AIDS Vaccine Initiative, New York City*

**SPEAKERS:**
Wayne Koff, International AIDS Vaccine Initiative, New York City
Bali Pulendran, Emory Vaccine Center, Atlanta, GA
Peter Kwong, Vaccine Research Center, National Institute of Allergy and Infectious Diseases, Washington, DC

**Earth Observation Approaches to Spatial Disease Prediction, Surveillance, and Control**
*Organized by: Archie C.A. Clements, Australian National University, Canberra*

**SPEAKERS:**
Uriel Kitron, Emory University, Atlanta, GA
Kenneth J. Linthicum, U.S. Department of Agriculture, Gainesville, FL
Archie C.A. Clements, Australian National University, Canberra

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Sunday, 15 February

**Innovations in Imaging Earth**
From Global Positioning System (GPS) mapping devices to internet-connected location tagging, geospatial information permeates society in the modern digital world. This seminar will highlight advances in remote sensing technology, numerical simulations, and computation that enable monitoring of the Earth at high resolution. Big data analysis techniques combined with low cost, high quality data on environmental patterns and processes from satellites, unmanned aircraft, and remote sensor networks provide insights into global change dynamics and how they impact food security, environmental sustainability, and human welfare.

**Advances in Earth Observation: Enabling New Insights into Global Environmental Change**
*Organized by: Lyndon Estes, Princeton University, NJ; Tom Evans, Indiana University, Bloomington*

**SPEAKERS:**
Matt Hansen, University of Maryland, College Park
Kelly Caylor, Princeton University, NJ
Maggi Kelly, University of California, Berkeley

**Imaging Earth**
*Organized by: Ana Barros, Duke University, Durham, NC; Sally McFarlane, U.S. Department of Energy, Washington, DC*

**SPEAKERS:**
Piers Sellers, NASA Goddard Space Flight Center, Greenbelt, MD
Melba Crawford, Purdue University, West Lafayette, IN
William Collins, Lawrence Berkeley National Laboratory, CA

**Geospatial Innovations in Imaging Information Intelligently**
*Organized by: Steven Whitmeyer, James Madison University, Harrisonburg, VA; Declan De Paor, Old Dominion University, Norfolk, VA*

**SPEAKERS:**
David Thau, Google Inc., Mountain View, CA
Barbara Tewksbury, Hamilton College, Clinton, NY
Richard Treves, University of Southampton, United Kingdom
Robert Kolvoord, James Madison University, Harrisonburg, VA
Jennifer Piatek, Central Connecticut State University, New Britain
Declan De Paor, Old Dominion University, Norfolk, VA
SYMPOSIA TRACKS
Organizers are listed under symposia titles.

ANTHROPOLOGY, CULTURE, AND LANGUAGE

Discovering Lost Horizons: People, Land, and Society in Prehistory
George R. Milner, Pennsylvania State University, University Park; Michael Frachetti, Washington University, St. Louis, MO

History Written in Skeletons: Intersections of History, Archaeology, and Biology
Anita Guerrini, Oregon State University, Corvallis

Imaging the Past: Using New Information Technologies To Nurture Historical Analysis
Cecile Menetrey-Monchau and Annekathrin Jaeger, European Research Council, Brussels, Belgium

Radiography of the Past: Revealing the Invisible at Archaeological Sites
Louise Byrne, European Commission, Research Executive Agency, Brussels, Belgium

The Linguistics of Status, Influence, and Innovation: A Computational Perspective
Jacob Eisenstein, Georgia Institute of Technology, Atlanta

The Sense of Smell as a Novel Means to Explore Language, Culture, and Biology
Asifa Majid, Radboud University Nijmegen, Netherlands

Visualizing Verbal Culture: Seeing Language Diversity
John Nerbonne, Rijksuniversiteit Groningen, Netherlands

Worth More Than a Thousand Words: State-of-the-Art Visualization in Cultural Heritage
Francesca Casadio, The Art Institute of Chicago, IL; Marc Walton, Northwestern University, Evanston, IL

BIOLOGY AND NEUROSCIENCE

Innovations in the Family: New Structures, New Challenges
Toni Antonucci, University of Michigan Institute for Social Research, Ann Arbor

Measuring Research Integrity: Survey of Organizational Research Climate
C.K. Gunsalus, National Center for Professional and Research Ethics, Urbana, IL

Social Influences on Health Service Use Following Disasters
Eric Jones, University of North Carolina, Greensboro

Social, Emotional, and Cognitive Bases of Communication: New Analytic Approaches
Judith F. Kroll, Pennsylvania State University, University Park; Cecilia Aragon, University of Washington, Seattle; Laurie Beth Feldman, University at Albany, NY

Virtual Labs: Transforming the Social, Behavioral, and Information Sciences
Michael W. Macy, Cornell University, Ithaca, NY

The Microbiome
Susannah Tringe and Tanja Woyke, University of California, Berkeley; Berran Poyraz, University of Cincinnati College of Medicine, Cincinnati, OH

Visualizing Biomedical Data and Processes Across Space and Time Scales
David G. Lynn, Emory University, Atlanta, GA; Jay T. Goodwin, National Science Foundation, Arlington, VA

Searching for Alternative Chemistries of Life on Earth and Throughout the Universe
Victor J. Johnson, Burleson Research Technologies Inc., Morrisville, NC; Berran Yucesoy, University of Cincinnati College of Medicine, OH

To Bug or Not to Bug the Immune System: Benefits and Costs of Altering the Microbiome
Victor J. Johnson, Burleson Research Technologies Inc., Morrisville, NC; Berran Yucesoy, University of Cincinnati College of Medicine, OH

Visualizing Biomedical Data and Processes Across Space and Time Scales
Sean E. Hanlon, National Cancer Institute, Rockville, MD

What Are Race and Sex Doing in Our Genomes? Perspectives on Human “Types”
Sally Lehrman, University of California, Santa Cruz

BEHAVIORAL AND SOCIAL SCIENCES

Human Mathematical Abilities: From Intuition to the Classroom and Back
James L. McClelland, Stanford University, CA

Human-Made Noise and Nighttime Lighting
Clinton D. Francis, California Polytechnic State University, San Luis Obispo

Proceedings of the AAAS
www.aaas.org/meetings
When Experts Collide: Driving Cross-Cutting Innovation in Biological Imaging and Informatics
Carol Lynn Alpert, Museum of Science, Boston, MA

CLIMATE CHANGE, ENVIRONMENT, AND ECOLOGY

Avoiding Collapse: Human Impacts on the Biosphere
Anthony D. Barnosky, University of California, Berkeley; Paul R. Ehrlich, Stanford University, CA

Climate Change and Big Data
So-Min Cheong, University of Kansas, Lawrence

Climate Intervention and Geoengineering: Albedo Modification
Marcia McNutt, AAAS/Science, Washington, DC

Earth History: Innovative Approaches to Studying Critical Transitions
Dena M. Smith, Geological Society of America, Boulder, CO

Going Negative: Removing Carbon Dioxide From the Atmosphere
Jennifer Milne and Sally Benson, Stanford University, CA

Marine Ecosystems in Hot Water: Some Like It Hot (But Some Do Not)
Frank E. Muller-Karger, University of South Florida, St. Petersburg

Modeling Earth's Interior from Atomic to Global Scale
Renata M. Wentzcovitch, University of Minnesota, Minneapolis; Rob van de Hilst, Massachusetts Institute of Technology, Cambridge; David Bercovici, Yale University, New Haven, CT

Ocean Acidification and Hypoxia: Planning For Regional Action
Michael J. O’Donnell, California Ocean Science Trust, Oakland

Seeing the Invisible: How Sequencing Diverse Eukaryotes Transforms Ocean Science
Jian Guo and Alexandra Z. Worden, Monterey Bay Aquarium Research Institute, Landing Moss, CA; Adam Monier, University of Exeter, United Kingdom

Severe Weather in a Changing Climate: Informing Risk
Michael E. Mann, Pennsylvania State University, University Park; Michael Wehner, Lawrence Berkeley National Laboratory, CA; Donald J. Wuebbles, University of Illinois, Urbana-Champaign

The Atlantic Ocean: Our Unknown Treasure
Marco Weydert and John Bell, European Commission, Research and Innovation, Brussels, Belgium

Visual Cultures of Prediction: Imaging Climate Change Data
Lynda Walsh, University of Nevada, Reno; Birgit Schneider, University of Potsdam, Germany

Advance Registration Rates

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COMMUNICATION AND PUBLIC PROGRAMS

Citizen Science from the Zooniverse: Cutting-Edge Research with 1 Million Scientists
Ramin A. Skibba, University of California, San Diego

Citizen Science: Advancing Innovations for Science, Information, and Engagement
Meg Domroese, Citizen Science Association/Schoodic Institute, Winter Harbor, ME; Jennifer Shirk, Cornell University, Ithaca, NY

Comics, Zombies, and Hip-Hop: Leveraging Pop Culture for Science Engagement
Kishore Hari and Rebecca L. Smith, University of California, San Francisco

Engagement with Intent? Scientists’ Views of Communication and Why It Matters
John C. Besley, Michigan State University, East Lansing

From Art to Mathematics: A Visual Mode of Communication
George W. Hart, Stony Brook University, NY

Going Public: Investing in Science Communication for Scientists
Keegan Sawyer, National Academy of Sciences, Washington, DC; Brooke Smith, Communication Partnership for Science and the Sea (COMPASS), Portland, OR; Russ Campbell, Burroughs Welcome Fund, Research Triangle Park, NC

National Climate Assessment: Resource for Climate Literacy and Making Decisions
Emily Therese Cloyd, U.S. Global Change Research Program, Washington, DC

Public Engagement with Science: What’s In It for Scientists?
Katherine Nielsen, University of California, San Francisco, CA

Science Visualization: The Art of Making Data Beautiful
Andy Freeberg, SLAC National Accelerator Laboratory, Menlo Park, CA

Scientific Visualization: Collaborations Between Museums and Scientists
Erika C. Shugart, American Society for Microbiology, Washington, DC

Strategies for Effective Broader Impacts Work
Justin Lawrence and Jennifer Yttri, AAAS Science and Technology Policy Fellow, National Science Foundation, Arlington, VA

Tweet and Shout About Science
Erik Van der Goot and Geraldine Barry, European Commission, Joint Research Center, Brussels, Belgium

Using Cartoons To Convey Science
Yoram Bauman, StandUpEconomist.com, Seattle, WA

EDUCATION AND HUMAN RESOURCES

Assessment in Support of K–12 Science Learning
Natalie Nielsen and Heidi Schweingruber, National Academy of Sciences, Washington, DC

Diversity in the Academic STEM Workforce: Understanding Career Experiences
Julia E. Melkers, Georgia Institute of Technology, Atlanta

Gender in STEM Policy, Practice, and Research: Advances in North America and Europe
Wanda Ward, National Science Foundation, Arlington, VA

Graduate Science Education in Flux: Alternate Pathways to Science Careers
Daryl E. Chubin, Independent Consultant, Savannah, GA; Marilyn J. Suiter, National Science Foundation, Arlington, VA

Inclusive STEM High Schools: Innovative Pathways and Partnerships for Success
Edith Gummer, National Science Foundation, Arlington, VA

Innovations in Broadening Participation and Diversifying the Science Workforce
Jessi L. Smith, Montana State University, Bozeman

Learning from Visualization: Insights from STEM and Cognitive Science Collaboration
Mary Hegarty, University of California, Santa Barbara; Thomas F. Shipley, Temple University, Philadelphia, PA

Learning Science from Scientific Data
Cathryn A. Manduca, Carleton College, Northfield, MN

Next-Generation Learning and Assessment Environments for Science Inquiry Practices
Michael A. Sao Pedro, Worcester Polytechnic Institute, MA

Paving Smoother Pathways for All Students: Systemic Undergraduate STEM Reform
Martin Storksdieck, Oregon State University, Corvallis; Michael Feder, National Research Council, Washington, DC

Preparing Researchers for the Quantitative Biology of the Future
Frederick R. Adler, University of Utah, Salt Lake City; M. Gregory Forest, University of North Carolina, Chapel Hill

The Future of Graduate Education in STEM: Thinking Beyond Disciplines
Jay B. Labov, National Academy of Sciences, Washington, DC

Undergraduate Research at the Community College: Models and Sustainability
James Hewlett, Finger Lakes Community College, Canandaigua, NY

ENGINEERING, INDUSTRY, AND TECHNOLOGY

A New Paradigm for Electron Microscopy: Fast Detectors and Extreme Data Experimentation
Frances M. Ross, IBM TJ Watson Research Center, Yorktown Heights, NY; Jim Ciston and Andrew Minor, University of California, Berkeley

Computer-Aided Design of Catalysts for Sustainable Energy Conversion
Jens Norskov, Stanford University, CA

Correlating Properties of Nano-Building Blocks Via Hyperspectral Nano-Optical Imaging
P. James Schuck and Alexander Weber-Bargioni, Lawrence Berkeley National Laboratory, CA

I See, Therefore I Can
Rene Martins, European Commission, Brussels, Belgium

Integrated Computational Materials Engineering Principles for Additive Manufacturing
Sudarsanam Babu, University of Tennessee/Oak Ridge National Laboratory, Knoxville

Next-Generation Batteries for Mobile Devices and the Grid
Johanna Nelson Weker and Glenna Chui, SLAC National Accelerator Laboratory, Menlo Park, CA

Revolutionary Vision: Implants, Prosthetics, Smart Glasses, and the Telescopic Contact Lens
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