

icomos 2018

“Science and Policy at the Interface of Environment, Agriculture and Medicine”

CONFERENCE SCIENTIFIC PROGRAM

Sunday, April 29, 2018

3:00 p.m.	Registration opens	Mezzanine Level
5:00–8:45	Opening Session	Meridian Ballroom
5:00-5:15	Conference Welcome and Introductions <i>Srirama Rao</i> , Chair, iCOMOS, University of Minnesota	
5:15–5:45	Plenary talk	
5:45 – 7:15	Laureate Panel Discussion: “Science and Policy at the Interface of Environment, Agriculture and Medicine” – Global challenges and opportunities. Moderator: <i>Kerri Miller</i> , Minnesota Public Radio Session Panelists: <i>Peter Agre</i> , Nobel Laureate in Chemistry, United States <i>Peter Doherty</i> , Nobel Laureate in Physiology or Medicine, Australia <i>Hualan Chen</i> , UNESCO Women-in-Science Laureate, China <i>Robert Mwanga</i> , World Food Prize Laureate, Uganda	
7:15–8:45	Opening Reception and Networking	Meridian Foyer

Monday, April 30, 2018

7:00–8:00 a.m.	Continental Breakfast	Meridian Foyer
8:00–8:15	University Welcome <i>Eric Kaler</i> , President, University of Minnesota,	Meridian Ballroom
8:15–9:00	Plenary Presentation: Opening Doors Worldwide through Medical Science Nobel Laureate <i>Peter Agre</i> , University Professor & Director, Johns Hopkins Malaria Research Institute, Johns Hopkins University, United States	
9:00–12:00 pm 9:00–9:05	Session I: Social and Economic Impacts on Health Moderators: <i>Laura Bloomberg</i> , <i>Kaylee Errecaborde</i> , University of Minnesota	
	Session summary: The structural determinants and conditions in which people are born, grow, live, work and age. These social determinants of health include factors like socioeconomic status, education, the physical environment, employment, and social support networks, as well as access to health care. Within this conference we will focus specifically on migration, age, poverty/well-being and the challenges of antimicrobial resistance and how these topics influence health and policy.	
09:05–9:35	Migration and health <i>Eric Schwartz</i> , President and CEO designate, Refugees International, United States	
9:35–10:05	Familial early onset Alzheimer Disease in Colombia: An opportunity for prevention <i>Francisco Lopera</i> , Universidad de Antioquia, Colombia	
10:05–10:30	Networking Break	
10:30–11:00	Social and behavioral drivers of antimicrobial resistance <i>Ramanan Laxminarayan</i> , The Center for Disease Dynamics, Economics & Policy; Princeton University, United States	
11:00–11:30	Addressing societal norms that affect well-being through transectoral collaboration: examples from the field <i>Lynne Gaffikin</i> , Stanford University, United States	
11:30– noon	Panel Discussion	
Noon–1:00 p.m.	Networking Lunch (and/or Special Lecture)	Pinnacle Ballroom

1:00–4:00

Session II: Infectious Disease and Environmental Disturbance

Meridian Ballroom

1:00-1:05

Moderators: *Srinand Sreevatsan*, Michigan State University; *Nick Phelps*, University of Minnesota

Session summary: Speakers will present science issues surrounding infectious diseases as they pertain to emerging, zoonotic and other infectious diseases. The session will end with a panel discussion of issues. A major outcome of this session is expected to be a monograph on problems and expert suggestions of mitigation strategies.

1:05–1:35

Predicting & preventing emerging infectious diseases

Jonna Mazet, University of California, Davis, United States

1:35–2:05

Pandemic avian influenza: the Chinese experience

Hualan Chen, UNESCO Women-in-Science Laureate, Harbin Veterinary Research Institute, China

2:05–2:35

Viral biocontrol of invasive vertebrates: An Australian perspective.

Ken McColl, CSIRO, Australia

2:35–3:00

Networking Break

3:00–3:30

Biocontrol of mosquito borne infections

Hadyn Parry, Oxitec, United Kingdom

3:30–5:45

Poster Presentations

Summit and Meridian Foyer

6:00–6:30

Social Hour

McNamara Alumni Center

6:30–7:30

Dinner

McNamara Alumni Center

7:30–8:15

Featured Presentation:

Introduction: *Karen Hanson*, Executive Vice President and Provost, University of Minnesota

The Killer Defense

Nobel Laureate *Peter Doherty*, University of Melbourne, Australia

Tuesday, May 1, 2018

7:30–8:25 a.m. Continental Breakfast **Meridian Foyer**

8:00–8:05 **Welcome to Day 2**
Trevor Ames, Dean, College of Veterinary Medicine, University of Minnesota

8:05–noon **Session III: Agriculture Advancing Health**

Session summary: The future of global health is inextricably linked to agriculture, the key source of human and animal nutrition and energy. The session highlights the central role of agriculture in improving health, along with economic and policy issues that intersect with science. Speakers in this session will explore engineering and genetic selection of plants for production of medicines and vaccine delivery in food, growing healthy food in stressed environments, and enhancement of food qualities that limit waste, increase nutrition, and increase economic return.

8:05 - 8:10 Moderators: *Greg Cuomo and Dan Voytas*, University of Minnesota

8:10-8:40 **Plant modification to reduce hunger and improve health**
Robert Mwanga, World Food Prize Laureate, Uganda

8:40–9:10 **Public sector constraints to plant biotechnology for human health: the Golden Rice experience**
Adrian Dubock, Golden Rice Project, Switzerland

9:10–9:40 **Plants engineered to improve health**
Dan Voytas, University of Minnesota, United States

9:40-10:20 Networking Break

10:20–10:50 **The science and politics of livestock production in the era of gene editing**
Alison Van Eenennaam, University of California, Davis, United States

10:50–11:20 **Unravelling the food–health nexus**
Cecilia Rocha, Director and Professor, Ryerson University, Canada

11:20–11:50 **Moderated Panel: International aspects of food enhancement and nourishment**

11:50-12:00 **Break and Lunch Set-up**

12:00–1:30 p.m. **Lunch and Featured Speaker** **Meridian Ballroom**

Space, environment and health
Pamela Melroy, NASA Astronaut and Space Shuttle Commander, USA

1:30-5:00

Session IV: New Paradigms at the Environment-Health Interface

Session summary: All health problems have an environmental component at some level, yet recognizing and focusing solutions on environmental linkages remains a challenge. Speakers in this session will highlight emerging scientific paradigms – new methods, approaches or policies that offer new ways of exploring connections between human, animal and environmental health – and the potential for fostering discovery and novel solutions to complex one health problems. Speakers and panel discussants will present emerging approaches directed toward long-term, multi-disciplinary, intersectoral health research and policy making.

1:30-1:35

Moderators: *Bruce Alexander*, University of Minnesota; *Kimberly Thigpen Tart*, National Institute of Environmental Health Sciences, NIH

1:35-2:05

Environmental Health Without and Within: from Ecosystems to Communities to the Microbiome

Linda Birnbaum, Director, National Institute of Environmental Health Sciences, National Institutes of Health, US Department of Health and Human Services, United States

2:05–2:35

Environmental Health Through the Lens of Global Urbanization

Maria Neira, Director, Department of Public Health, Environmental and Social Determinants of Health, World Health Organization, Switzerland

2:35–3:00

Climate Change and Health

Kristie Ebi, Director of the Center for Health and the Global Environment, University of Washington, Seattle, United States

3:00–3:20

Networking Break

3:25-3:50

Planetary Health: Protecting Global Health on a Rapidly Changing Planet

Samuel Myers, Director, Planetary Health Alliance, United States

3:50–4:40

Panel discussion: New Education and Policy Paradigms at the Interface of Environment and Health

Moderators: *Jessica Hellmann* and *Dominic Travis*, University of Minnesota

4:40-4:55

Overview of iCOMOS-2019 and iCOMOS-2020

Chiang Mai University, Thailand (iCOMOS 2019)
Universidad Andres Bello, Chile (iCOMOS 2020)

4:50-5:00

Outlook for the Future and Overview of the Concurrent Interactive Sessions

Mike Murtaugh, Co-Chair, iCOMOS 2018, University of Minnesota

5:00

Free time (on your own)

Wednesday, May 2, 2018

7:30–8:25 am Continental Breakfast **Meridian Foyer**

8:30-9:00 am **Plenary Talk: Local to Global Prediction of Weather, Pestilence, Plagues and Famine**
Juli Trtanj, Climate and Health Lead, National Oceanic and Atmospheric Administration, USA

9:00-9:15 am Rearrangement of rooms for Concurrent Interactive Sessions

9:15 am – 5:00 PM Concurrent Interactive Sessions (Workshops)

CIS1: One Medicine One Science Approaches to Health at Two NIH Institutes

CIS2: Effective Policy when Consumer Preferences (Food and Health) Do Not Match Actions

CIS3: Breaking Silos and Building Bridges Within and Across Geographies for One Medicine One Science Policy

CIS4: Precision Medicine and Genome Editing: Science and Ethics

CIS5: Science Communication and Strategic Engagement of Policy Makers

CIS #1: One Medicine One Science Approaches to Health at Two NIH Institutes

Coordinators: *Hortencia Hornbeak, Peter Jackson, Kimberly Thigpen Tart, Heather Henry*
National Institutes of Health (NIAID, and NIEHS – Joint)

This workshop will explore One Medicine One Science (OMOS) approaches applied at two NIH institutes to complex human health issues requiring coordinated, multi-disciplinary research programs and teams. Senior institute staff and funded investigators of the National Institute of Allergy and Infectious Disease (NIAID) and the National Institute of Environmental Health Sciences (NIEHS) will lead discussions of (a) Zika as a case study of an emerging disease and pandemic threat, and (b) studies of chronic disease resulting from the interactions of living systems with environmental threats such as chemicals and other contaminants that affect human health. Presentations will feature diverse NIH-supported OMOS-related research studies and will discuss methods and resources for integrating OMOS approaches into aspects of infectious disease and environmental research including surveillance, epidemiology, prevention and intervention, data collection and analysis, partnership building, and training and capacity building.

9:15 - 9:30 **Introduction: One Medicine, One Science at Two Institutes of the NIH**

Hortencia Hornbeak, NIAID, NIH; Linda Birnbaum, Director, NIEHS, NIH

OMOS at NIAID: Zika Case Study, Moderator: *Peter Jackson or Hortencia Hornbeak, NIAID*

9:30-9:55 **Zika epi/control/pathology**

Esper Kallas, U of Sao Paolo, Brazil

9:55–10:20 **Zika in Infants and Pregnancy Study**

José Cordero, University of Georgia, United States

10:20–10:45 **Global Viral Pandemic Threats**

Scott Weaver, University of Texas Medical Branch Galveston, United States

Preclinical and clinical development of Zika virus vaccines.

Dan Barouch, Harvard Medical School, United States

10:45–11:10 **Vaccine preparedness for viral pandemics**

Barney Graham, NIAID, NIH Vaccine Research Center, United States

11:10-11:35 **Panel discussion and Q&A**

OMOS in Environmental Health Research, Moderator: *Heather Henry, NIEHS*

11:35–12:00 **Using Sentinel Species as Health Indicators in Native American Populations**

Frank Von Hippel, Northern Arizona University, United States.

12:00-12:25 **Chronic kidney disease, pollution and sentinel species in Sri Lanka.**

Nishad Jayasundara, University of Maine, United States.

12:25-12:50 **One Health Approach to the Impacts of the Deepwater Horizon Oil Spill**

Maureen Lichtveld, Tulane University, United States.

- 12:50-1:10 **Q&A/Discussion**
- 1:10-2:10 **Networking Lunch**
- 2:10-3:45 **Programs, Resources, and Tools for Integrating One Medicine, One Science Approaches to Health** - Moderator: *Kimberly Thigpen Tart*, NIEHS
- 2:10-2:30 **Mechanisms and language that NIAID uses to support research in a OMOS framework**
Peter Jackson, NIAID, NIH
and
Programs and funding mechanisms used to support research in a OMOS framework: SRP (incl. SBIR/STTR, DR2)
Heather Henry, NIEHS, NIH
- 2:30-2:55 **Global training and capacity building**
John Balbus, NIEHS, Global Environmental Health Program and WHO Collaborating Centre, United States,
- 2:55-3:20 **Building clinical and research capacity**
Gray Handley, NIAID OGR, United States
- 3:20-3:45 **Global perspectives on access to bio-samples and data sharing**
Yaffa Rubinstein, U.S. National Library of Medicine, United States
- 3:45-4:05 **Q&A/Discussion**
- 3:40-3:45 **Wrap Up**
- 4:00-5:00 **Small meetings with NIH administrators**

CIS #2: Effective Policy when Consumer Preferences (Food and Health) Do Not Match Actions

Coordinators: *Shaun Kennedy, Amy McMillan*, University of Minnesota

The public in general or a significant subset often drive specific food and health policies as governments and the private sector attempt to meet their expressed desires. The challenge for effective policy implementation, however, is that consumers do not always choose health behaviors or foods that are consistent with their priorities. This is especially challenging when consumers make choices based on one priority that appears to conflict with other expressed priorities. While not a new concept in philosophy or what is sometimes called moral mathematics, it is not generally applied when developing and implementing health and food policies. This is easy to understand when it is an economic priority, cost, overriding a personal priority, enhanced food safety, with simple choices such as not purchasing irradiated ground beef for food safety due to the cost of irradiation. It becomes far more complicated to implement effective policy when it is more nuanced such as consumers making health or food choices that are demonstrably less favorable to their own family's health or the environment than alternatives. This workshop will look at how to consider health or food policies in the face of competitive, unexpressed or conflicting priorities and the extent to which the policies can achieve their objectives. It will draw beyond policy experts to include experts in consumer behavior, individual to group dynamics, game theory and economics from the academic, public and private sectors to consider policy differently.

Anticipated Outcome from the Session and group discussion include at least two papers: (1) On the similarities between outwardly very different policy areas (obesity, food safety, food security and autism; (2) Proposed new strategies to address these important policy areas.

Keynote

- 9:15-10:55 **Food and health policy in a time of unprecedented challenges**
Case Studies in Priorities and Choices Conflicts
- 10:00-10:30 **How consumers really make food purchasing decisions, not how they say they do**
Darren Seifer, Industry Analyst - Food Consumption, The NPD Group
- 10:30-10:40 **Break**
- 10:40-11:10 **Consumer behavior, policy and obesity (pending)**
Sara Bleich, Radcliffe Institute for Advanced Study, Harvard University
- 11:10-11:40 **The politics surrounding autism**
Dana Baker, California State University Channel Islands
- 11:40-12:10 **Non-regulatory policy approaches for food security in Brazil**
Cecelia Rocha, Ryerson University
- 12:10-1:00 **Networking Lunch**
- 1:00-1:30 **Game Theory and Public Policy (pending)**
Steven Brams, New York University

- 2:30-3:15 **Exploring the gaps between policy and behavior**
Small Group Discussions
- 3:15-3:35 **Reporting Back**
3:35-4:30 **New strategies for regulatory and non-regulatory policy**
Small Group Discussions
- 4:30-5:00 **Reporting Back and Conclusions**
- 5:00 **Session ends**

CIS#3: Breaking Silos and Building Bridges Within and Across Geographies for One Medicine, One Science: Workforce development needs and implementation programs.

Coordinators: *Andres Perez and Katey Pelican* University of Minnesota;
Aziz Arda Sancak, Ankara University, Turkey

Despite an increasingly popular One Health rhetoric, authentic examples of multiple disciplinary efforts to transcend the traditional silos of public, animal, and environmental health are still rare. The ultimate goal of COMOS is to contribute to securing food and protecting health of human, animals, and the environment through a network of equal partners. Prerequisite for accomplishing that goal is the development of the required workforce to identify problems and provide solutions to recurrent and emerging grand challenges regionally and globally. In this workshop, we will provide an overview of needs assessment and implementation programs in the areas of food animal trade and one health. Capacity building programs, including issues related with needs assessment, implementation, and evaluation, for veterinary and public health will be presented. Multisectoral approaches to identify and address emerging needs and issues will be introduced. Regional perspectives on gaps and challenges will be discussed. Finally, a debate focused on particular opportunities identified during the session for workforce development at regional and global scales will be promoted.

Audience	Scientists, intergovernmental organizations, students, industry partners, and stakeholders engaged or interested in workforce development and education on ecosystems health, agribusiness, food production, economics and policy regionally and globally.
Outcome	<ol style="list-style-type: none">1. A “perspective” paper outlining the vision for workforce development in the context of COMOS2. Proposals for workforce development and capacity building of veterinary services and One Health, promoting regional and global alliances3. Outline plans for the organization of iCOMOS in the Ibero-American region in 2020
Timeline	Completion of paper within 3 months of the workshop to be shared with funding agencies and sponsors. Continue to support regional activities for COMOS.
Scientific value	Outline of a plan for development of educational and outreach programs in the context of COMOS

Program –

SESSION 1. Unfolding the OMOS paradigm shift through capacity building programs -

Moderator: *Andres Perez*, University of Minnesota

9.15-9.30: **Presentation, introduction, and expectations.**
Andres Perez

9.30-10.05: **Implementing programs for capacity building at a global scale – Joint presentation.**
Speakers from the OIE collaborating centers on capacity building:
Olivier Faugier, ENSV, Lyon, France;
Emilio León, CEBASEV, Buenos Aires, Argentina

- 10.05-10.20: **Break**
- 10.20-10.50: **Field Epidemiology Training Program (FETP) and Field Epidemiology Training Program for Veterinarians (FETPV): Expanding the Global Public Health Workforce across human and animal health**
Sean Shadomy, CDC, United States
- 10.50-11.20: **Building global and national capacity to meet international public health standards**
Stephan De La Rocque, WHO, France
- 11.20-11.50: **Challenges and opportunities on building a global One Health Workforce**
Katey Pelican, One Health Workforce, University of Minnesota
- 11.50-12.00: **Conclusions and introduction to Session 2**
Andres Perez, University of Minnesota

12.00 – 1.30: LUNCH BREAK

SESSION 2. Diagnosing regional gaps and emerging challenges to prioritize multisectoral opportunities

Moderators: *Aziz Arda Sancak, Ankara University, Turkey and Katey Pelican University of Minnesota*

- 1.30-1.40: **Emerging issues in Latin America and emerging needs for workforce development**
Enrique Perez, PAHO
- 1.40-1.50: **Improving Multisectoral Health Responsibility in Turkey: opportunities and challenges for health**
Irfan Sencan, Turkish Public Health Institute, Ministry of Health, Turkey
- 1.50-2.00: **Emerging needs and opportunities for capacity building in aquaculture.**
Fernando Mardones, Universidad Andres Bello, Chile
- 2.00-2.10: **Emerging needs and opportunities for capacity building in Western Africa**
Ouri Bassa Gbati, Ecole Inter Etats des Sciences et Medecine Veterinaires, Dakar, Senegal
- 2.10-2.20: **Emerging needs and opportunities for capacity building in Southern Asia**
Tongkorn Meeyam, Chiang Mai University, Thailand
- 2.20-3.00: **Interactive discussion - Table topics**
- 3.45-4.15: **Roundtable synthesis & reflections / Final remarks**

CIS #4: Precision Medicine and Genome Editing: Science and Ethics

Coordinators: *Clifford Steer, Pamala Jacobson, University of Minnesota, and Kavita Berger, Gryphon Scientific*

According to the NIH, precision medicine is "an emerging approach for disease treatment and prevention that takes into account individual variability in genes, environment, and lifestyle for each person." It refers to the tailoring of medical treatment to the individual characteristics of each patient and the ability to classify individuals into subpopulations that differ in the biology, susceptibility and response to treatment for a particular disease. In January 2015, the US President launched the Precision Medicine Initiative (PMI), a bold new research effort to revolutionize how we improve health and treat disease, empowering health care providers to tailor treatment and prevention strategies to individuals' unique characteristics. Gene editing uses engineered nucleases or so-called "molecular scissors" to make changes to specific DNA sequences in the genome of a living organism. They include meganucleases, zinc finger nucleases (ZFNs), transcription activator-like effector-based nucleases (TALENs), and the clustered regularly interspaced short palindromic repeats (CRISPR)-Cas system. Genome editing is being developed to treat not only genetic diseases but also infectious diseases and those that have both a genetic and an environmental component. It is now widely used in biomedical research, including creation of disease models with desired genetic mutations, screening in a high-throughput manner for drug resistance genes, and making appropriate editions to genes in vivo for disease treatment. All of these applications have been facilitating the development of precision medicine research.

- 9:15am **Welcome**
Clifford Steer, University of Minnesota
- 9:30am **Rewriting the Genome**
Speakers will discuss the state-of-the-science for precision medicine and genome editing, highlighting the key advances and limitations of each. Speakers will discuss new applications enabled by precision medicine and/or genome editing.
- Moderator:** *Clifford Steer, University of Minnesota*
- 9:35am **Gene Editing enters the food supply**
Dan Voytas, University of Minnesota.
- 10:00am **Precision swine models of human disease by gene editing.**
Dan Carlson, Recombinetics, Inc, St. Paul, MN.
- 10:25am **Targeted nucleases for finding cancer drivers and vulnerabilities.**
David Largaespada, University of Minnesota.
- 10:45am **Coffee Break**
- 11:00am **Precision Public Health? The Evolving Paradigm in Health and Medicine**
Speakers will discuss the implications of precision medicine on public health, describing specific examples where precision medicine limit or enhance public health. Speakers will highlight specific challenges and describe approaches for addressing those challenges.

Moderator: *Pamala Jacobson*, University of Minnesota

11:10am **Personalized medicine vs. public health: contradictory or complementary?**
Nancy Cox, Vanderbilt University, United States

11:35am **Integrating genomic information into practice – when can we expect it as a standard of care**
Richard Weinshilboum, Mayo Clinic, United States

12:00pm **To be determined**

12:30pm **Lunch**

1:30pm **Societal Considerations of Ethics, Safety, and Security**
Speakers will discuss the ethical, safety, and security concerns associated with precision medicine and/or genome editing.

Moderator: *Kavita Berger*, Gryphon Scientific

1:40pm **Can we ethically modify our genomes?**
Debra Mathews, Johns Hopkins University, United States

2:05pm **Safeguarding the economy**
Edward You, U.S. Federal Bureau of Investigation, United States

2:30pm **Ensuring the safety of human genome editing at home and abroad.**
Gary Marchant, Arizona State University, United States

3:00pm **Coffee Break**

3:20pm **Pros and Cons: Applications of Precision Medicine and Genome Editing**
The moderator will prompt discussants to consider and describe the pros and cons of precision medicine, genome editing, and the integration of both fields towards human health.

Moderator: To be determined

Panelists will be selected from speaker pool.

4:30pm **Adjourn**

CIS #5: Science Communication and Strategic Engagement of Policy Makers

Coordinators: *Dominic Travis*, University of Minnesota; *Emily Cloyd*, American Association for the Advancement of Science (AAAS)

Science Communication will help scientists develop their public communication and outreach skills. Effective scientist-communicators who foster information-sharing and respect between science and the public are essential for true public communication of and engagement with science. Scientists are increasingly requested by their institutions and funding agencies to extend beyond the scientific community and communicate their research directly to public audiences, but traditional scientific training typically does not prepare scientists to be effective public communicators. However, there currently are too few effective emissaries for science. Communication is typically an acquired, not an innate skill.

Strategic Engagement of Policy Makers will provide guidance in navigating engagements with key decision makers. Participants will discuss successful methods within an ever-changing landscape. It will include facilitator presentations and attendee exercises.

9:15 am **Introduction**

Dominic Travis, University of Minnesota

9:30 am *Emily Cloyd*, AAAS

Part 1: Science Communication Fundamentals includes both facilitator presentations and attendee exercises, for example:

- why your involvement in public communication of science and is valuable, and options for participation in engagement and outreach activities
- understanding and connecting with public audiences
- developing targeted research engagement strategies for target audiences, including practice
- identifying individual strategic communications goals
- handling interaction with stakeholder audiences, including soliciting and answering questions
- attendee practice on video (using flip-cams provided by AAAS) and peer critique
- using PowerPoint slides and other visuals to communicate science effectively
- using social media and creating an effective online presence
- resources for communicating science
- how to find outreach opportunities

Part 2: Strategic Engagement of Policymakers provides guidance in navigating engagements with key decision makers. Participants will discuss successful methods within an ever-changing landscape. Each workshop includes both facilitator presentations and attendee exercises, for example:

- overview of science policy landscape
- strategies for effective targeting of policymakers
- discussion of the role of the scientist in the policy process
- participating in mock briefings, including giving a talk and fielding questions