

**ONE HEALTH, ONE PLANET
PRESENTATION ABSTRACTS**
Phipps Conservatory and Botanical Gardens
Wed., April 5 | 8:30 a.m. – 5 p.m.



8:30 – 8:40 a.m.

Opening Remarks

Richard Piacentini and Dr. Michael Lotze

Session One: Environmental Issues and Human Health

8:40 – 9:05 a.m.

One Health: How Epidemics in Animal Populations Become Epidemics in Human Populations

Dr. Donald Burke

Dean, Graduate School of Public Health; Associate Vice Chancellor for Global Health | University of Pittsburgh

The One Health Initiative was launched to emphasize that epidemic infectious diseases of animals and of humans share much in common. HIV, SARS, influenza, Ebola, and Zika — the main recent epidemics of mankind — all emerged from animal reservoirs to become transmissible among humans. In this lecture, Dr. Burke will discuss research on the process of how diseases emerge through intimate contact of humans and animals, usually during the process of husbandry or hunting for food: HIV from non-human primates, SARS from bats, influenza from birds, Ebola through non-human primates from bats (probably) and Zika from jungle primates.

9:05 – 9:30 a.m.

Connecting the Dots: Impacts of Climate Change on Psychological and Community Health

Dr. Mary Beth Mannarino

Associate Professor of Graduate Psychology | Chatham University

A healthy natural environment is critical for human health and well-being. To thrive as individuals and cultures, at minimum we need consistent access to clean air and water, fresh and nutritious food, and safe shelters. What happens when these basic needs are threatened? Dr. Mannarino will discuss some unexpected ways in which climate change — a global disruption to our natural environment — can affect psychological and community health. She will also describe how we can learn to recognize these impacts and to take steps toward a healthier climate that supports human well-being in all its dimensions.

9:30 – 9:55 a.m.

Lifestyle Medicine and Environmental Health: A Better Planet Quicker Through Epigenetics

Dr. Michael Parkinson

Senior Medical Director of Health and Productivity | UPMC

The emergence of epigenetics (the rapid expression of proteins from our genome under the influence of the environment) is a clinical and environmental game changer. The science, practice and business models being deployed in the growing practice of lifestyle medicine can catalyze healthy improvements in our home, school, worksite and community environments. Dr. Parkinson will review the science and early clinical models that deploy plant-based eating, physical activity and stress reduction to prevent, treat and reverse the leading causes of U.S. chronic disease and premature death. He will also share specific examples of awareness-building, medical education curricula and best practices by employers and health systems. That which is good for one's health is also good for the planet!

9:55 – 10:20 a.m.

One Health: Innate and Adaptive Responses to the Environment – Thinking Fast and Thinking Slow

Dr. Michael Lotze

Vice Chairman of Research, Department of Surgery; Assistant Vice Chancellor, Schools of the Health Sciences | University of Pittsburgh

The extraordinary and rapid changes that have emerged over the last 100 years in the backdrop of our two-million-year evolutionary trajectory as *Homo sapiens* are impacting our health. The emergence of atopic diseases (allergies and asthma) are related in part to the translocation of populations from the rural environment to increasingly urban ones. This balance of so-called Th1 immunity and Th2 immunity has been altered, affecting our well-being and health. The concurrent diseases of affluence, the widespread use of antibiotics and the western diet associated with obesity disturb our internal microbiome and our ability to live long and healthy lives. Dr. Lotze will highlight the parallels between these innate and adaptive immune responses and what the Nobel Laureate, Daniel Kahneman, calls "System 1 and System 2," which are involved with our decision-making ability.

10:20 – 10:35 a.m.

Coffee Break

Session Two: Environmental Issues and Animal Health

10:35 - 11 a.m.

To Thrive in One Healthier Pennsylvania on One Healthier Earth

Val R. Beasley, D.V.M., Ph.D.

Professor of Veterinary, Wildlife, and Ecological Toxicology, Department of Veterinary and Biomedical Sciences, College of Agricultural Sciences | The Pennsylvania State University

In an era of globalization of economies, climate change, environmental contaminants, emerging and re-emerging infectious diseases, the sixth extinction, political dysfunction, and international conflict, a pathway forward that holds promise to synchronously address multiple problems is essential. One Health is a new norm that builds on basic and applied science, translational medicine and environmental sciences to offer timely opportunities for researchers, educators and practitioners in diverse medical disciplines to work together and with others of many walks of life to underpin essential improvements in human, domestic animal, plant and ecosystem health. In order to chart a brighter, healthier future, we must have a greater understanding of challenges from the local to the global level, more efficient collaboration in research, co-teaching of students, career mentoring, and application of traditional technologies to cutting edge ones. Nested efforts are underway and we should expand and build upon them with great determination and vigor.

11 – 11:25 a.m.

The Animal Within: Zoological Medicine's Role in the One Health Movement

Dr. Ginger Sturgeon

Director of Animal Health | Pittsburgh Zoo & PPG Aquarium

Zoological medicine plays an important role in the ever-expanding One Health movement. Zoo veterinarians not only provide healthcare for collection animals, but also free-ranging wildlife during environmental events and disasters. Disease surveillance conducted both on-site and off-grounds allows veterinarians to research how humans, wildlife, domestic animals and environmental factors influence each other. Collaboration with other professionals in veterinary medicine, human medicine and the biological sciences allows for investigation of novel diseases, treatments and pathogens in ways unreached by a traditional, singular viewpoint. Dr. Sturgeon will explore these concepts through several examples, including cold-stunning of sea turtles, the Deepwater Horizon oil spill, West Nile virus in novel species and disease surveillance in local wildlife.

11:25 – 11:50 a.m.

Climate Impacts on Wildlife Health: Lessons from Amphibian Chytridiomycosis

Dr. Corinne L. Richards-Zawacki

Associate Professor, Department of Biological Sciences; Director, Pymatuning Lab of Ecology | University of Pittsburgh

The seasonal cycles exhibited by many infectious diseases are a reminder of the effects of climate on host-pathogen interactions. We need a clearer understanding of how climate affects host-pathogen interactions in order to predict and mitigate the effects of diseases on humans and wildlife. Fungal pathogens are especially climate sensitive and increasingly recognized as drivers of wildlife declines and extinctions. One example is chytridiomycosis, a disease caused by *Batrachochytrium* fungi, which has recently caused declines and even extinctions of amphibian populations on several continents. Temperature has been shown to greatly impact the epidemiology of amphibian chytridiomycosis. However, the mechanisms linking climate variation to the occurrence and severity of outbreaks remain unclear. Dr. Richards-Zawacki's group is working to develop models that enable us to estimate the risk that this disease poses to amphibian populations across space and time. Given the potential impact of climate change on disease dynamics, studies of this nature may be critical in developing strategies to promote the health of threatened wildlife.

11:50 a.m. – 12:15 p.m.

Are Silicone Exposures Safe for Pollinators or Humans?

Dr. Chris Mullin

Professor of Entomology | The Pennsylvania State University

When researchers assess the risk of pesticides, drugs or personal care products, they often only take active ingredients into account without considering the other formulation ingredients and spray adjuvants that are commonly used in their application. When they do this, they miss important toxicity outcomes that are detrimental to non-target species, including pollinators and humans. About a billion pounds of organosilicones from all uses are released into U.S. environments, making this a major component of the chemical landscape to which bees and humans are exposed. These methyl silicones, like most "inerts," are generally recognized as safe and have no mandated tolerances, so their residues are largely unmonitored. It is difficult to accurately evaluate their risk because information is not disclosed to the public and analytical methods are inadequate. At relevant exposure levels, organosilicone surfactants — the most super spreading and penetrating adjuvants available — impair honeybee learning, are acutely toxic and, in combination with bee viruses, cause synergistic mortality. Do honeybees, a model environmental indicator organism, forewarn of hidden risks to humans of ubiquitous silicone exposures?

12:20 – 1:20 p.m.

Lunch

Session Three: Healthy Ecosystems, Healthy Communities

1:20 – 1:45 p.m.

Environmental Impacts and Emerging Health Concerns Associated with Unconventional Natural Gas Extraction

Dr. John Stolz

Director, Center for Environmental Research and Education; Professor of Environmental Microbiology | Duquesne University

The extraction of oil and gas from tight shale reservoirs through horizontal drilling and hydraulic fracturing (“fracking”) has led to a resurgence of the fossil fuel industry. Concurrently, people have become concerned about the risks that workers, communities and the environment face in the areas where fracking occurs. Fracking involves a plethora of chemicals and proppant while the shales themselves contain a variety of salts and metals, including NORMs. Volatile organics can result from condensate tanks, open impoundments and compressor stations associated with the process of fracking. In addition, the disposal of waste water has presented challenges, such as the generation of trihalomethanes in municipal water and brining of rural roads. We have collected and analyzed over 1,000 surface and groundwater samples in southwestern Pennsylvania over the past five years in an effort to assess the environmental impacts and, by extension, the potential health risks. Dr. Stolz will present the results of this work.

1:45 – 2:10 p.m.

Restoring the Sensible City

Julia Africa

Program Leader, Nature, Health, and the Built Environment | Harvard School of Public Health

It is not a new practice to use nature as a mentor, model, medicine and muse. In a distant past (though not beyond the reach of memory), a biome and its inhabitants were expressions of each other — our languages, cuisines and therapies still contain the shadows of this primal connection. As the disruptions of the Anthropocene mount, everything is subject to reorganization. The popular revival of people’s interest in using nature-based environments to restore themselves is part nostalgia and part recognition that the future of health is environmental. Julia Africa will explore the role of forests in supporting healthy communities and will connect trends like forest bathing and biophilic design with the future of conservation practice.

2:10 – 2:35 p.m.

The Next Generation of Air Pollution Measurements and Models

Dr. Peter Adams

Professor of Civil and Environmental Engineering; Professor of Engineering and Public Policy | Carnegie Mellon University

In order to build healthy communities, we must understand intra-urban exposure patterns to pollution and develop accessible tools that allow decision-makers to understand how city planning, transportation and energy systems affect public health. For the past half century, progress on air quality has been underpinned by central site monitoring and three-dimensional air quality models. As valuable as these tools are, their cost and complexity limit their deployment. Recent work at Carnegie Mellon University’s Center for Atmospheric Particle Studies seeks to fill in these gaps. We are in the process of mapping air pollution inside Pittsburgh using a combination of fixed sites, mobile laboratories and less expensive sensors that can be widely deployed around the city. Similarly, we are building simple tools that allow decision-makers to immediately look up the public health damages associated with different air pollutant emissions. We calibrate these tools to complex, three-dimensional models and provide results with negligible human and computer effort.

2:35 – 3 p.m.

Environmental Exposures in Western Pennsylvania and What We Can Do to Address Them

Michelle Naccarati-Chapkis

Executive Director | Women for a Healthy Environment

How does where we live, work, learn and play impact our health? Michelle Naccarati-Chapkis will explore issues surrounding the built environment’s effects on health, and how local groups address them through community outreach, programming and advocacy. Since 2010, Women for a Healthy Environment (WHE) has engaged over 13,000 individuals across western Pennsylvania. The organization’s Healthy Homes, Healthy Schools/Early Learning Centers, and Healthy Communities programming works directly with individuals to ensure that those most at risk receive the information and resources they need to create and promote healthier environments. These programs will be highlighted to demonstrate the need to address health conditions affected by the built environment, and how organizations confront some of the most threatening issues of today.

3 – 3:15 p.m.

Coffee Break

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Session Four: Finding Inspiration in Nature to Promote Health and Improve the Places Where We Live, Work, Learn and Play

3:15 – 3:40 p.m.

Human, Animal and Environmental Health – Are We Treating the Symptoms and Not the Cause?

Richard Piacentini

Executive Director | Phipps Conservatory and Botanical Gardens

Climate change, loss of biodiversity, certain cancers and other chronic diseases are symptoms of the lifestyles we lead and the way we interact with the rest of the world. In response, we often focus on the symptoms and not the underlying cause of these problems. Western medicine is sometimes criticized for treating disease conditions after they occur rather than preventative care and lifestyle or environmental interventions that could prevent the diseases from occurring in the first place. Many parallels can be found in the way we address environmental problems. Nothing in nature works in isolation — everything is connected and influenced by everything else. We need a new paradigm based on a regenerative system's way of thinking to address these health and environmental problems. With the One Health movement, we are beginning to understand the important connections between human, animal and environmental health. By addressing the causes of our problems and emphasizing health across all three areas, we can eliminate the symptoms and pave the way for healthier places, people and animals.

3:40 – 4:05 p.m.

Healthy People, Healthy Planet

Jessica Cooper

Executive Vice President and Director of Sustainability | Delos Solutions

Buildings are responsible for 40 percent of total energy consumption in the US, and they are the places where we spend 90 percent of our time. The green building movement has enabled us to improve resource efficiency and make progress overall towards environment sustainability. The healthy building movement is a natural extension of the green building movement, and identifies specific conditions that can enhance the health and well-being of people. Specifically, the WELL Building Standard™ provides a framework for implementing holistic, innovative and research-backed strategies into architecture, design and operations with the goal to advance health, happiness, mindfulness and productivity in our buildings and communities. During this presentation, Jessica will share emerging innovations and evidence-based research about how we can design buildings to support the well-being of the people who live, work and learn in them. She will explore the relationship between healthy people and a healthy planet, and demonstrate how buildings are critical in optimizing both.

4:05 – 4:30 p.m.

Healing People, Place and Planet through Biophilic Design

Sonja Bochart

Principal | Shepley Bulfinch

The built environment shapes our every human experience — our health, behaviors and actions. Through specific design of the places we inhabit we have the ability to create functional and inspirational spaces that support human, animal and environmental health and well-being. Biophilic design holds the greatest potential as a means for this holistic place-making. Research has demonstrated that biophilic design helps to increase human physiological and physical health, collaborative feelings, happiness, creativity, cognitive function and compassion. It has even been related to higher levels of altruism and stewardship for the planet. Bridging the gap between research and the design of these spaces, together we can harness the potential of this sensory-rich, nature-based approach to designing environments in which we can all thrive.

4:30 – 4:55 p.m.

The Power of Biophilia to Enhance Human Health and Productivity

Vivian Loftness

University Professor of Architecture | Carnegie Mellon University

An entire movement is emerging to harness the principles of biophilic design. This is aimed at improving occupants' quality of life, as well as the environmental and economic performance of the buildings. Designing for the triple bottom line captures the operational economic benefits, the environmental benefits of reducing CO₂, SO_x, NO_x and particulates, and the benefits for human health, productivity and organizational performance. Vivian Loftness will demonstrate the true cost of ownership for our design, engineering and operational decisions, and illustrate the power of deploying the triple bottom line to help make sustainability an imperative.

4:55 – 5 p.m.

Closing Remarks

Richard Piacentini

This document is available for download at
phipps.conservatory.org/OHOP.

ONE HEALTH, ONE PLANET
SPEAKER BIOGRAPHIES
Phipps Conservatory and Botanical Gardens
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Session One: Environmental Issues and Human Health

Dr. Donald Burke

Dean, Graduate School of Public Health; Associate Vice Chancellor for Global Health | University of Pittsburgh

Dr. Donald Burke has been Dean of the Graduate School of Public Health since 2006. A physician specializing in infectious diseases and epidemiology, he has conducted worldwide research on prediction and prevention of epidemic diseases, including HIV, dengue, influenza, hepatitis, Zika and others.

Dr. Mary Beth Mannarino

Associate Professor of Graduate Psychology | Chatham University

Dr. Mary Beth Mannarino is an associate professor and former program director in Chatham University's graduate psychology programs. Her work focuses on teaching psychologists and other healthcare professionals about the impact that climate change and other environmental problems have on health and social justice. She also demonstrates the benefits that individuals and communities experience from having healthy connections with nature.

Dr. Michael Parkinson

Senior Medical Director of Health and Productivity | UPMC

Dr. Parkinson, M.D., M.P.H., F.A.C.P.M., is the senior medical director overseeing employer health and productivity strategies for UPMC Health Plan and WorkPartners. He was a principal founder of Lumenos, a pioneer in consumer-directed health plans acquired by Wellpoint. He is trained in family medicine and preventive medicine at George Washington University, UCLA and Johns Hopkins.

Dr. Michael Lotze

Vice Chairman of Research, Department of Surgery; Assistant Vice Chancellor, Schools of the Health Sciences | University of Pittsburgh

Dr. Michael T. Lotze's research work includes modern immunotherapy and gene therapy. He has worked in the field of immunology and clinical medicine for over 30 years. Dr. Lotze was recently appointed chief scientific officer (CSO) and vice president of research and development of Lion Biotechnologies, Inc., a company developing novel cancer immunotherapies based on tumor-infiltrating lymphocytes.

Session Two: Environmental Issues and Effects on Animal Health

Val R. Beasley, D.V.M., Ph.D.

Professor of Veterinary, Wildlife, and Ecological Toxicology, Department of Veterinary and Biomedical Sciences, College of Agricultural Sciences | The Pennsylvania State University

Before joining Penn State, Val Beasley founded the Envirovet Program, helped establish the first animal poison control center and was chair of pharmacology and toxicology at the University of Illinois. He has studied fungal, cyanobacterial and plant toxins; pesticides; and metals, and developed ideas of Ecosystem Health and One Health.

Dr. Ginger Sturgeon

Director of Animal Health | Pittsburgh Zoo & PPG Aquarium

Dr. Ginger Sturgeon received her doctorate of veterinary medicine from the University of Tennessee, completed a small animal internship in medicine and surgery at Purdue University, and completed a residency in zoological medicine and surgery from the University of Missouri. Recreationally, she enjoys showing her 7-month-old son the wonders of the wild surrounding her 20-acre farmstead.

Dr. Corinne L. Richards-Zawacki

Associate Professor, Department of Biological Sciences; Director, Pymatuning Lab of Ecology | University of Pittsburgh

Dr. Richards-Zawacki completed her undergraduate and graduate work at the University of Michigan and was a postdoctoral researcher with the Smithsonian Tropical Research Institute and University of California at Berkeley. Her research interests include wildlife disease ecology, the evolution of morphological and physiological diversity, speciation, and conservation.

Dr. Chris Mullin

Professor of Entomology | The Pennsylvania State University

Dr. Mullin is a professor of pesticide toxicology in the Department of Entomology at the Penn State University, and focuses on impacts of pesticides and their spray adjuvants on honeybee and pollinator health. As a member of the Center for Pollinator Research, he evaluates associations of agrochemical formulation ingredients in bee food and the hive with colony collapse.

Session Three: Healthy Ecosystems, Healthy Communities

Dr. John Stolz

Director, Center for Environmental Research and Education; Professor of Environmental Microbiology | Duquesne University

Dr. Stolz, Ph.D., is a professor and the Noble J. Dick endowed chair of committee outreach at Duquesne University. He received a B.S. from Fordham University in 1977 and a Ph.D. from Boston University in 1984, and held NRC and NSF postdoctoral fellowships. He has published 81 journal articles, 34 book chapters and author-edited two books.

Julia Africa

Program Leader, Nature, Health, and the Built Environment | Harvard School of Public Health

Julia Kane Africa leads the biophilic design and restorative landscape areas of the nature and health program at the Harvard T.H. Chan School of Public Health. She examines the ways in which nature in urban settings supports psychological and physiological health and resilience. She is a member of the International Living Future Institute Biophilic Design Advisory Board and the Biophilic Cities Network.

Dr. Peter Adams

Professor of Civil and Environmental Engineering; Professor of Engineering and Public Policy | Carnegie Mellon University

Peter Adams is a professor in the Civil and Environmental Engineering Department and the Engineering and Public Policy Department at Carnegie Mellon University. His research focuses on the development of air quality models and their application to decision making. He is also the director of CMU's Center for Atmospheric Particle Studies.

Michelle Naccarati-Chapkis

Executive Director | Women for a Healthy Environment

Ms. Michelle Naccarati-Chapkis is the executive director of Women for a Healthy Environment (WHE). In this role, she leads WHE's education and advocacy initiatives, focusing on environmental exposures that impact public health. Ms. Naccarati-Chapkis works closely with community groups, healthcare professionals, and government agencies. She often speaks at national and regional conferences and has been featured in numerous media outlets.

Session Four: Finding Inspiration in Nature to Promote Health and Improve the Places Where We Live, Work, Learn and Play

Richard Piacentini

Executive Director | Phipps Conservatory and Botanical Gardens

Since 1994, Richard Piacentini has led the green transformation of Phipps, constructing some of the greenest buildings in the world. Piacentini is interested in human and ecological health, particularly at the intersection of the built and natural environments. He is past board chair for the International Living Future Institute and has a B.S. in pharmacy, an M.B.A. and an M.S. in botany.

Sonja Bochart

Principal | Shepley Bulfinch

Sonja Bochart, a principal with Shepley Bulfinch, has over 20 years of experience as a health- and wellness-focused commercial interior designer and biophilic design consultant. Her portfolio includes high education, healthcare, cultural and corporate designs, as well as projects meeting LEED, Living Building Challenge and WELL Building Standard certification.

Jessica Cooper

Executive Vice President and Director of Sustainability | Delos Solutions

As executive vice president of the Delos Solutions group, Jessica's work brings health-related design and policy solutions to the built environment across project typologies around the globe. Jessica also serves as the director of sustainability for Delos, where she encourages using a holistic framework to address social equity, economic and environmental factors.

Vivian Loftness

University Professor of Architecture | Carnegie Mellon University

Vivian Loftness, F.A.I.A., has served as the head of the School of Architecture at Carnegie Mellon and is a key member of CMU's leadership in sustainability research and education, writing extensively on the environmental performance of integrated systems and their impacts on human health and productivity. Vivian received her B.S. and M.S. in architecture from MIT.