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June Newsletter

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The Exposome Moonshot Forum

Washington D.C. | May 12-15, 2025

Forum Reflections from NEXUS Leadership



Exposome Moonshot Forum participants at the Johns Hopkins University Bloomberg Center.

The inaugural Exposome Moonshot Forum took place in Washington, D.C., from May 12 to 15, bringing together diverse stakeholders from industry, academia, and government to chart the future of the Human Exposome. The Exposome Moonshot Forum employed a broad stakeholder engagement format, comprising panel discussions and breakout sessions. This structure enabled all voices to be heard, ultimately promoting alignment, global efforts, and collaboration throughout the field on its [twenty-year anniversary](#), and moves into a new era. Over the course of three days, participants identified next steps and opportunities necessary to achieve the goals of the exposomics field and establish a global Human Exposome Initiative.

The Exposome Moonshot Forum was hosted at the Johns Hopkins University Bloomberg Center by Fenna Sillé, Ph.D., and Thomas Hartung, M.D., Ph.D., and organized with input from an international [Organizing Committee](#). Sillé and Hartung lead a collaborative hub of NEXUS, and all of the hubs of NEXUS were involved in providing assistance to the team at Hopkins.

The Exposome Moonshot Forum took place on the twentieth anniversary of the introduction of the exposome concept in Christopher Wild's [foundational paper](#). During the meeting's Opening Ceremony, Christopher Wild, Ph.D., remark's about the field and its journey were shared, which emphasized the significance of the Exposome Moonshot Forum as a key milestone in advancing the field of exposomics and highlighted progress and the growing momentum in the field of exposomics over the past two decades. Similarly, the "Charge to Participants" presentation by Gary Miller, Ph.D., Columbia University, helped set the stage for the meeting by showing a timeline of key achievements and breakthroughs of the past 20 years in the field of exposomics, along with a mostly blank timeline for the next 20 years. This visual served as a powerful symbol that there is much to be defined to operationalize the field of exposomics at a global level, and provides opportunities for all stakeholders.

What distinguished this meeting from others was the focus on global collaboration and the opportunity to engage with such a broad range of stakeholders, particularly industry partners and policymakers, who provided valuable insights into methods of translating exposomics from concept into utility. During the panel "Moving the Human Exposome Project into the Policy-Maker's Eye" Jeremy Farrar, Ph.D., Chief Scientist at the World Health Organization, provided a key message that "We must use science to advance equity." This theme resonated throughout the meeting, underscoring the need for exposomics to advance in a manner that benefits the entire global community.

As evidence of the focus on global representation the meeting gathered key leaders from India, Japan, South Africa, Lebanon, Ghana, as well as a significant number of European countries. The wide range of global participation greatly enriched the discussions

throughout the meeting. Leaders from across the globe shared existing human cohort data resources and opportunities to conduct truly globally representative exposomics studies that capture the wide array of risk factors and social and cultural dimensions that determine or shape health and well-being across the world. A key theme raised was the need for greater capacity building, infrastructure networks, and collaboration to advance local scientific leadership and impact.

[Read the full article](#)

NEXUS at the Exposome Moonshot Forum

Arcot Rajasekar, Ph.D., University of North Carolina at Chapel Hill

"I am very humbled to be part of this mighty endeavor. We are at the cusp of a truly new beginning of gaining insights into how the external factors affect our longevity and lifestyle. We are trying to find the "butterfly effect" of minor and cumulative exposomic factors that can lead to large, unpredictable differences in the final life outcomes of individuals and the society. Trying to be proactive instead of being reactive is the hallmark of human existence. It is time to be proactive in finding out the part played by nurture on our arc of life."



Thomas Metz, Ph.D., Pacific Northwest National Laboratory



Thomas Metz, Ph.D., participating in the panel discussion "Road to Success: Learning from Other Major Bold Initiatives."

"The energy and excitement among attendees in support of a Human Exposome Project as a next step towards predicting human health and non-communicable disease was undeniable. The scientific community is ready. Less obvious was whether there are one or more individuals within federal agencies who would champion the creation of such a program in a way that Dr. Charles DeLisi championed the creation of the Human Genome Project in his role as Director of the then U.S. DOE Office of Health and Environmental Research."

Carlos Cardenas-Iniguez, Ph.D., University of Southern California

"The Exposome Moonshot was both humbling and deeply inspiring! Unlike any event I've attended, it brought people together not just to listen, but to dream, build, and imagine a global Human Exposome Project—together. Despite our different backgrounds, there was a shared sense of urgency, hope, and commitment to shaping a more equitable and innovative future. I left feeling energized and moved, hopeful that this moment marks the beginning of something truly transformative for how we think of context and experience and their relationship to health."



Carlos Cardenas-Iniguez, Ph.D., presenting at the Exposome Moonshot Forum.

Carolina Duarte Hospital, Ph.D., Columbia University

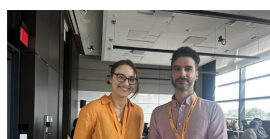


Carolina Duarte Hospital, Ph.D., Carlos Cardenas-Iniguez, Ph.D., and Sylvia Sanchez, Ph.D., Johns Hopkins facilitating a breakout session at the Exposome Moonshot Forum.

"Moonshot was an inspiring experience that showcased the power of interdisciplinary collaboration and bold thinking. It was exciting to see how different teams are approaching major challenges—and to begin to envision the next steps for the field. The experience left me energized and hopeful about where we're heading."

Paulo Reho, Ph.D., Columbia University

"A fantastic and energizing experience! A bold initiative that embraces multiple disciplines to better understand what truly shapes human health, laying the foundation for the Human Exposome Project. I used to be the kind of person



Project, used to be the kind of person you had to convince—the one who believed it was all about genetics. But the evidence is compelling: exposomics isn't just complementary to genetics, it's essential for precision medicine."



Paulo Reho, Ph.D., and Nafsika Papaioannou, Ph.D., Aristotle University of Thessaloniki facilitating a breakout session at the Exposome Moonshot Forum.

NEXUS and the Exposome Moonshot in the News

Environmental Factor

"Human exposome forum marks historic step forward"
By: Caroline Stetler

[Read the article](#)

JAMA Network

"Beyond Genes: Human Exposome Project to Tackle External Drivers of Disease"
By: Samantha Anderer

[Read the article](#)

The Week

"Health isn't shaped by genes alone - it's in the air and all around us"
By: Aparna Bose

[Read the article](#)

Spotlight

Krystal Pollitt, PhD, P.Eng.

Yale University



Dr. Pollitt's research applies exposomic approaches to investigate the influence of environmental factors on disease.

Dr. Pollitt's research team has pioneered technologies for measuring the exposome that leverage high resolution mass spectrometry, including a wearable passive sampler (Fresh Air wristband) to assess personal exposure to thousands of contaminants in the environment and software for non-targeted analysis (FluoroMatch) to expand coverage of emerging chemicals in environmental and biological matrices.

Dr. Pollitt has published over 120 published peer-reviewed papers and this work has been featured national media outlets, including The New York Times, The Washington Post, National Geographic, The Wall Street Journal and Popular Science. She serves on the leadership team of the NIH funded NEXUS (Network of EXposomics in the United States) Center for Exposome Research Coordination, co-directing the ChemBio Analytical Sciences Hub, and as associate editor of multiple journals, including Exposome.

Fun Fact! Krystal wears an iron ring on the little finger of her right hand. The ring is part of a tradition for Canadian-trained engineers and serves as a reminder of their commitment to uphold professional standards and ethical responsibilities.

[Learn more](#)

Thomas Metz, PhD

Pacific Northwest National Laboratory



Dr. Thomas Metz is a Laboratory Fellow and the Chief Science Officer for the Biological Sciences Division at Pacific Northwest National Laboratory (PNNL).

His research has focused primarily on developing and applying high throughput metabolomics and lipidomics methods, in conjunction with proteomics, in studies of chronic and infectious diseases, resulting in over 200 publications.

More recently, his research interests lie in development of multi-dimensional mass spectrometry workflows coupled with computational predictions of molecular signatures for reference-free compound identification. Previously, he led the Metabolomics Core for the NIH Common Fund Undiagnosed Diseases Network, the Proteomics Laboratory for The Environmental Determinants of Diabetes in the Young study, the Pacific Northwest Advanced Compound Identification Core within the NIH Common Fund Metabolomics

Program, and the PNPL [m/g Initiative](#). From 2021-2023 he was President of the [Metabolomics Association of North America](#). Currently, he is Co-Lead of the ChemBio Analytical Sciences Hub of the [Network of Exposomics in the United States \(NEXUS\) for Exposome Research Coordination](#).

Fun Fact! While at PNPL, Tom has been an avid softball player and won 5 consecutive championships in the lab league, as well as a Washington State championship.

[Learn More](#)

NEXUS Hub Feature



ChemBio Analytical Hub

Hub Co-Leads: Dr. Krystal Pollitt and Dr. Thomas Metz

The ChemBio Analytical Sciences Hub team is working collaboratively to coordinate community-developed state-of-the-art tools and resources and to develop best practices to measure the exposome in both biological and environmental samples. The Hub is Co-led by Krystal Pollitt, Ph.D., P.Eng., Yale University, and Thomas Metz, Ph.D., Pacific Northwest National Laboratory, and supported by team members Randolph Singh, Ph.D., Columbia University and Jeremy Koelmel, Ph.D., Yale University. The team is working to standardize the science of exposome research and make it more accessible to researchers everywhere, ensuring that the study of the exposome keeps expanding.

The goals of the ChemBio Analytical Sciences Hub are to develop an Exposome Workbench for the analysis of exposome data, create an Exposome Kit of curated molecules to serve as a physical community resource to democratize exposome measurements, host Interactive Workshops for advancing exposome measurement science, and conduct the NEXUS Exposome Harmonized Measurements Initiative.

[Read the full spotlight](#)



Upcoming Events

The Exposome Boot Camp: Measuring Exposures on an Omic Scale

July 17-18, 2025
New York, New York



A two-day intensive boot camp of seminars and hands-on analytical sessions to provide an overview of concepts, techniques, and data analysis methods used in studies of the exposome. Led by a team of expert scientists in the rapidly growing field of exposomics, the boot camp will integrate seminar lectures with hands-on computer lab sessions to put concepts into practice. Emphasis will be given to leveraging existing resources from ongoing studies and initiating new investigations. The afternoon lab sessions will provide an opportunity to work hands-on with real data. Participants will learn and practice data handling, cleaning, and basic analysis of exposomics data.

2025 Instructors

Training Director: [Gary Miller](#), PhD, Columbia University Mailman School of Public Health
[Rima Habre](#), ScD, USC Keck School of Medicine
[Dean Jones](#), PhD, Emory University School of Medicine
[Vrinda Kalia](#), PhD, Columbia University Mailman School of Public Health
[Yunjia Lai](#), PhD, Columbia University Mailman School of Public Health
[Shuzhao Li](#), PhD, The Jackson Laboratory
[Chirag Patel](#), PhD, Harvard Medical School
[Krystal Pollitt](#), PhD, Yale School of Public Health
[Randolph Singh](#), PhD, Columbia University Mailman School of Public Health
[Douglas Walker](#), PhD, Emory University Rollins School of Public Health

[Learn more](#)

The 4th Latin American Congress of Clinical-Laboratory Toxicology (ToxiLatin 2025)

June 24-27, 2025
Porto Alegre, Brazil

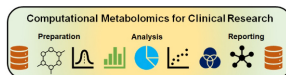


The 4th Latin American Congress of Clinical-Laboratory Toxicology (ToxiLatin 2025) is and is an initiative by the Latin American Association of Environmental, Experimental and Nanomaterials Toxicology (ASTOXILATIN). The theme of this meeting is "Exposome: Challenges Byoond Utopia", and aims to " discuss the challenges of studying the exposome at the environmental, occupational and experimental levels. In this context, primary health care emerges as the first care for individuals chronically exposed to toxic agents."

[Learn more](#)

Course in Computational Metabolomics for Clinical Research by Icahn School of Medicine at Mount Sinai

July 21-25, 2025
Virtual



The Computational Metabolomics for Clinical Research course will cover innovative software, online tools and knowledge bases to analyze metabolomics datasets. Metabolomics enables discoveries of metabolic mechanisms and predictive biomarkers that can be translated into new prevention and treatment strategies for human diseases.

[Learn more](#)

ISES & ISEE Joint Annual Meeting

August 17-20, 2025
Atlanta, Georgia



The annual joint meeting between International Society of Exposure Science and International Society for Environmental Epidemiology is taking place in Atlanta, Georgia this August. The theme of the meeting is "Global Environmental Health Equity across the Lifespan" and NEXUS Collaborator Douglas Walker, PhD, Emory University and NEXUS Chem bio co-lead Krystal Pollitt, PhD, Yale School of Public Health will both be hosting a workshops. Registration is **Open!**

Half Day Workshop

WS09: Wristbands 101: Harnessing Wearable Tech for Personalised Environmental Exposure Assessment (Krystal Pollitt, Ph.D.)

Full Day Workshops:

WS02: High-resolution mass spectrometry workflows to study the exposome (Douglas Walker, Ph.D.)

NEXUS-Related Talks:

"Community Wide Perspectives, Methodologies, and Applications in Exposomics: Results from the Network for Exposomics in the U.S. (NEXUS) Center for Exposome Research Coordination Survey"

[Learn more](#)

ECHO Symposium: Translating Science to Action

September 15, 2025
Bethesda, MD/ Online



The Environmental influences on Child Health Outcomes (ECHO) Program is a research program supported by the National Institutes of Health (NIH), to enhance the health of children for generations to come. The ECHO Translating Science to Action Symposium brings together researchers, policymakers, health professionals, and advocates to translate child health research into impactful solutions.

[Learn more](#)

[Visit the NEXUS Calendar](#)

We want to feature your
exposome-related events on
the NEXUS website and
social media!

Event form

Feature Podcasts

As the NEXUS Podcast is being constructed, please enjoy the recent episode of The Metabolomist by [Biocrates](#) which features NEXUS MPI Gary Miller, PhD, Columbia University.

The Metabolomist is a podcast Hosted by Alice Limonciel which is a [“forum to connect metabolomics scientists and their stories”](#)



“Exposomics & 5P medicine”

Listen to the episode

NEXUS Collaborator Braden Tierney, Ph.D., Harvard University was recently featured on NPR All Things Considered



“The hunt for a microbial
marvel that can help with the
planet's biggest issues”

All Things Considered

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