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April Newsletter

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Monthly Blog

NEXUS U.S and Global Connections within the Field of Exposomics



Leaders from NEXUS, EIRENE and IHEN in Utrecht, Netherlands for a collaboration meeting. [Photo Credit](#):

One of the core objectives established at the outset of Network for Exposomics in the United States (NEXUS) is to advance global and community engagement within the field of exposomics. Since September 2024, when the NIH-wide exposome research coordinating center launched, the NEXUS team has worked to foster several long-standing collaborations and engagements in the United States and around the globe across the field of exposomics, and public health. NEXUS aims to develop impactful partnerships in an effort to solve some of the most pressing health challenges of our time. In the United States, NEXUS has cultivated impactful partnerships with key research networks including [CAFÉ](#) Research Coordinating Center, Connecting Health Outcomes Research and Data Systems ([CHORDS](#)), Environmental Health Language Collaborative ([EHLCo](#)), the Gateway Exposome Coordinating Center ([GEOCC](#)), Exposome in Autoimmune Disease Collaborating Teams ([EXACT](#)), and Human Health Exposure Analysis Resource ([HHEAR](#)). These impactful partnerships aim to advance the understanding of environmental impacts on health and disease and the tools and methods needed to accomplish the mission of NEXUS. NEXUS aims to connect with the exposome research community globally and has engaged in meaningful partnerships throughout Europe, including the Environmental Exposure Assessment Research Infrastructure ([EIRENE](#)), the European Scientific Research Infrastructure ([ESFRI](#)), that supports exposome research in Europe. NEXUS is also highly aligned with the International Human Exposome Network ([IHEN](#)). IHEN, in part, builds off the European Human Exposome Network ([EHEN](#)). NEXUS is also proud to be a part of the organizing committee, and to support the inaugural [Exposome Moonshot Forum](#) which will bring together global leaders in exposomics and will be an opportunity to further establish partnerships within the field, and make meaningful contributions and advancements to the study of the exposome.

Read the full article

Spotlight

Rima Habre, ScD

Department of Population and Public Health Sciences at the USC Keck School of Medicine and the Dornsife Spatial Sciences Institute



Dr. Habre is a NEXUS MPI and Associate Professor of Environmental Health and Spatial Sciences at USC, with joint appointments in the Department of Population and Public Health Sciences at the Keck School of Medicine and the Dornsife Spatial Sciences Institute. In NEXUS, in addition to her role as MPI, Dr. Habre co-leads the NEXUS Geospatial Hub.

Dr. Habre leads the Exposure Sciences Research Program in the Southern California Environmental Health Sciences Center and the CLIMA Climate-Related Exposures, Adaptation, and Health Equity Center at USC. Her lab's research focuses on advancing precision environmental health by developing state-of-the-art exposure science (or "exposomics") methods and understanding the health effects of co-exposure to complex air pollution mixtures and social stressors across the life course.

[Learn more](#)

Fun Fact! During Dr. Habre's trip to India as a guest at the Indo-US Conference on Climate Change Impacts on Occupational and Environmental Health (CICCON OE2025), she visited Mahatma Gandhi's Sabarmati Ashram and the Adalaj stepwell in Ahmedabad, Gujarat. Dr. Habre comments that "Gandhi's wheel of life was a brilliant reminder of how when we talk about environmental and social determinants of health - the basic tenets of health, community, and dignity unite us all - within very beautiful and critically important local cultures and contexts. The stepwell is a mind-blowing, intricate work of art centered around water as a source of life. There is no clearer example of how water and ecosystem health = human health and vice versa."



Photos of Mahatma Gandhi's wheel of life in Sabarmati Ashram and the Adalaj stepwell in Ahmedabad, Gujarat taken by Dr. Habre during her trip.

[Read more](#)

NEXUS Ring Trial Survey

The deadline to complete this survey has been **extended to April 30, 2025!**

[Ring Trial Survey](#)

The ChemBio Analytical Sciences Hub is planning a collaborative, community-based exposome ring trial to assess the chemical space covered by current and emerging technologies in biological and environmental matrices. As a first step, The ChemBio Hub is requesting the community's input via a survey on methods and tools used to measure molecular features of the exposome. The survey results will be used in part to design the exposome ring trial. Ultimately, we hope that the results of this survey and the ring trial will inform the development of a harmonized method for measuring the exposome.



Upcoming Events

Exposome Moonshot Forum

May 12-15, 2025
Washington, D.C



A multi-stakeholder forum plotting the future of the Human Exposome. The inaugural Exposome Moonshot Forum aims to gather these diverse stakeholders to collaboratively translate the exposome from concept to utility. NEXUS collaborator and Center for Alternatives to Animal Testing (CAAT) director Thomas Hartung, PhD, John Hopkins Bloomberg School of Public Health, joined a group of researchers, dignitaries, and representatives for a first-of-its-kind gathering in Oxford, England on March 31- April 1st for the **INGSA-EUROPE** Inaugural Conference. Dr. Hartung was in attendance to make connections and build interest in the Exposome Moonshot Forum.

[Learn more](#)

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

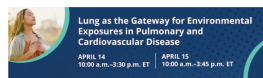
Randolph Singh, PhD, Columbia University Mailman School of Public Health

Douglas Walker, PhD, Emory University Rollins School of Public Health

[Learn more](#)

NEXUS Community Events

Lung as the Gateway for Environmental Exposures in Pulmonary and Cardiovascular Disease Workshop



April 14 – 15, 2025
Virtual

The Lung as the Gateway for Environmental Exposures in Pulmonary and Cardiovascular Disease Workshop is being hosted by The Division of Lung Disease at the National Heart, Lung, and Blood Institute (NHLBI) and co-chaired by Mary B. Rice, PhD, Harvard Medical School and Nadia N Hansel, PhD, Johns Hopkins University School of Medicine. This workshop aims to explore how the lungs serve as an interface between inhaled environmental exposure and pulmonary and cardiovascular diseases.

[Learn more](#)

6th Annual Canadian Metabolomics Conference



April 24 – 25, 2025
Montreal, Quebec

NEXUS ChemBio Hub Co-lead Tom Metz, PhD, Pacific Northwest National Laboratory, is presenting at the 6th Annual Canadian Metabolomics Conference being held at McGill University. The theme of this year's conference is "Clinical Metabolomics" and will bring together researchers, professionals, and students in the field of metabolomics. This conference offers a platform to explore the latest advancements, share innovative research, and foster collaborations through plenary and keynote presentations, poster sessions, and networking opportunities. Dr. Metz will present during the Computational Metabolomics and Machine Learning session on "Integrating multiple spectrometries and computational predictions of molecular properties for reference-free identification." Dr. Metz will also participate in the review of The Metabolomics Innovation Centre (TMIC) as a member of their International Scientific Advisory Committee.

[Learn more](#)

American Association for Cancer Research 2025 Annual Meeting



April 25 - 30, 2025
Chicago, Illinois

The AACR Annual Meeting 2025, is a global event that aims to highlight breakthroughs and innovations in cancer research, and bring together the international cancer research community, share knowledge, and promote collaboration. The event is anticipated to attract over 23,000 professionals, including laboratory scientists and clinical investigators, from around the world. NEXUS will be in attendance at this conference.

[Learn more](#)

Predictive Phenomics Conference



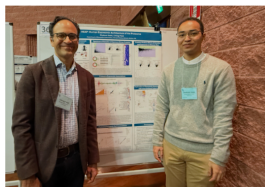
April 29 – May 1, 2025
Richland, Washington

NEXUS ChemBio Hub Co-lead Tom Metz, PhD, Pacific Northwest National Laboratory is on the organizing committee of the 2025 Predictive Phenomics conference. The theme is advancing molecular science for the characterization and manipulation of the phenome. This conference will be a forum for scientists to present research on approaches to study the molecular basis of biological function with a vision to better understand and predict how genomes interact with their environment to produce phenomes. The conference will also feature keynotes, invited talks, poster sessions, and PNNL tours.

[Learn more](#)

NEXUS in the Scientific Community

Expanding the Frontier of GxE: Reflections from the 2025 GRC on Quantitative Genetics and Genomics



February 16- 21, 2025
Lucca, Italy

NEXUS MPI Chirag Patel, PhD, Harvard Medical School, attended the 2025 Gordon Research Conference on Quantitative Genetics and Genomics. Dr. Patel was accompanied by his students, Shakson Isaac, PhD, student in bioinformatics and Integrative genomics, and Siveteja Tangirala, research associate in biomedical informatics, who delivered talks on the functional exposome—highlighting how our environment shapes biology in ways we're only beginning to quantify. In this blog post, Dr. Patel reflects on the conference and the Gene-by-environment (GxE) interaction.

[Head more](#)

Dr. Rima Habre attended the Conference on Climate Change Impacts on Occupational and Environmental Health (CliCON OEh2025)



Gujarat, India
February 26 - 28, 2025

NEXUS MPI Rima Habre, ScD, University of Southern California Keck School of Medicine, visited the city of Gujarat in Ahmedabad, India in February 2025 as a guest at the Indo-US Conference on Climate Change Impacts on Occupational and Environmental Health (CliCON OEh2025). The meeting convened leaders and researchers from India and the United States around the need to increase global coordination and collaboration to understand the health challenges posed by rising temperatures, extreme weather events, heat stress, and vector-borne diseases especially for workers and occupational groups. Dr. Habre discussed geospatial and measurement approaches to assessing climate-related exposures and vulnerability factors, especially the use of geospatial data, remote sensing data, machine learning models, and personal monitoring. Dr. Habre also discussed with thought leaders in a panel regarding the need for breaking knowledge domes, increasing global data representation and access, and co-creation and co-learning for increasing global scientific collaboration.

[Read more](#)

2025 Cancer Grand Challenge Summit

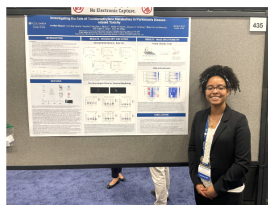


March 5- 7, 2025
Boston, Massachusetts

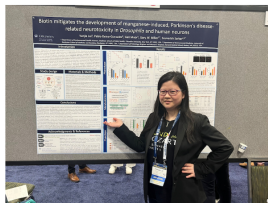
This year's Cancer Grand Challenge Summit was held in Boston, Massachusetts, on March 5-7th, 2025 for the announcement of the new teams of researchers that were selected to receive funding for cancer research. NEXUS MPI Gary Miller, PhD, Columbia University Mailman School of Public Health, was in attendance and discussed the use of exposomics in cancer studies as part of a panel on emerging technologies with Stephen Elledge, PhD, Harvard Medical School, Emma Lundberg, PhD, Stanford University, and KJ Patel, PhD, University of Oxford. NEXUS Collaborator Randolph Singh, PhD, Columbia University Mailman School of Public Health, presented on the work that the Columbia group has done as a part of the SAMBAI (Social, Ancestry, Molecular and Biological Analysis of Inequalities) Cancer Grand Challenge team which is led by Melissa Davis, PhD, Morehouse School of Medicine.

[Read more](#)

Columbia University Center for Innovative Exposomics's Miller Lab at Society of Toxicology 2025 Conference



March 16- 20, 2025
Orlando, Florida



The Society of Toxicology (SOT) 2025 Annual Meeting was held in Orlando, Florida, from March 16-20, 2025, and featured presentations by Jocelyn Dient, a third-year PhD student, and Yunjia Lai, PhD, postdoctoral research scientist, both from the Miller Lab in the Center for Innovative Exposomics at Columbia University Mailman School of Public Health. Their poster presentations highlighted exciting developments in chemical exposomics, and showcased novel approaches using high-resolution mass spectrometry (HRMS) and advanced informatics to map complex exposure profiles linked to neurodegenerative diseases like Parkinson's and Alzheimer's, and study the mechanistic underpinnings of exposure-disease interplay. Both studies illustrate the power of exposomics in uncovering novel metabolic

...mechanisms and therapeutic targets against environmentally induced neurodegenerative diseases—with unparalleled precision, sensitivity, and coverage.

[Read more](#)

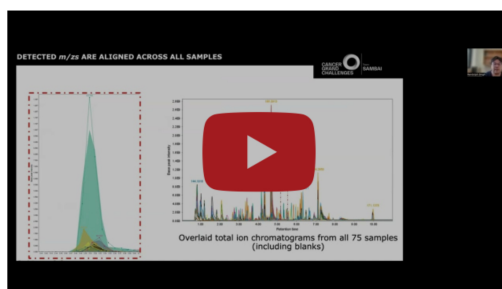
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[Survey form](#)

Feature Podcast

As the NEXUS Podcast is being constructed, please enjoy these recent podcasts and presentations. Please contact [us](#) if you have any topics you would be interested in having NEXUS explore!

Gary Miller, PhD, and Randolph Singh, PhD, from Columbia University's Mailman School of Public Health, presented their work as part of [SAMBAI](#) (Social, Ancestry, Molecular, and Biological Analysis of Inequalities) at the 3rd International Meeting of the Pan African Cancer Research Institute ([PACRI](#)).



NEXUS MPI Gary Miller, PhD, Columbia University Mailman school of Public Health, was recently interviewed for the [Mind & Matter with Nick Jikome](#) podcast. Listen to the podcast "Chemical Exposures, Neurodegenerative Disease & Exposomics"



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