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February Newsletter

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Advancing Exposome Research in Neurological Disorders and Stroke

National Institutes of Health National Institute of Neurological Disorders and Stroke

By: NEXUS Leadership Team



Over two days in January, experts in exposomics, environmental health, toxicology, neuroscience, and neurology gathered in Rockville, Maryland, for the meeting "Advancing Exposome Research in Neurological Disorders and Stroke." This meeting was hosted by the National Institutes of Health National Institute of Neurological Disorders and Stroke (NINDS), and co-chaired by Pamela J. Lein, PhD, of the University of California, Davis, and Gina Poe, PhD, of the University of California, Los Angeles. The goal of this workshop was to understand how exposome factors interact and how their combined effects across the lifespan affect neurological disorders and neurological resilience. To contextualize the meeting, the neural exposome is the integrated compilation of all physical, chemical, biological, and psychosocial influences that affect nervous system health and disease.

This meeting builds off of the [The NINDS Council Neural Exposome Top \(NEXT\) Priorities Working Group Report](#) by The National Advisory Neurological Disorders and Stroke Council, which developed research priorities, and identified the most tractable and highest impact research opportunities across the three exposome categories (exogenous, endogenous, and social factors), including short and medium-term priorities. This group was chaired by Pamela J. Lein, PhD, of the University of California, Davis, and included NINDS Council Member Gina Poe, PhD, of the University of California, Los Angeles and Ekemini A. U. Riley, PhD, [Aligning Science Across Parkinson's \(ASAP\)](#).

Overall, this meeting provided a platform for idea exchange, collaboration, and networking and covered three key sessions, including "Vulnerable Life Stages, Critical Windows that Degrade Neurological Health, and Cumulative Effects of Exposure History," "Model Systems and Technological Advancements to Study the Neural Exposome," and "Mechanisms and Therapeutic Approaches to Promote Neurological Resilience Across the Lifespan." Each session included engaging presentations from leaders in the field and concluded with an interactive panel discussion.

Continue reading



Watch the workshop Day 1 recording here

Watch the workshop Day 2 recording here

Spotlight

Douglas Walker, Ph.D.

Emory University



Douglas Walker, PhD, is an Associate Professor in the Gangarosa Department of Environmental Health at Emory University, where he leads the Comprehensive Laboratory for Untargeted Exposome Science (CLUES). He also serves as adjunct Assistant Professor at Utrecht University and co-leads the NEXUS Emory University Collaborative Hub. Before joining Emory, he was an Assistant Professor at the Icahn School of Medicine at Mount Sinai in New York and a member of their Institute for Exposomics Research.

Dr. Walker is an environmental engineer and analytical chemist whose research has focused on operationalizing new analytical strategies for measuring the exposome. The exposome represents a paradigm shift in how we understand environmental contributions to human health; however, realizing this vision requires analytical methods capable of capturing the chemical complexity of human exposures.

Dr. Walker's laboratory has addressed this challenge by developing high-throughput, untargeted high-resolution mass spectrometry approaches that can simultaneously measure over 50,000 chemical signals in biological samples, including exposure biomarkers, nutrients, dietary chemicals, endogenous metabolites, and markers of biological response. These methods enable discovery-based research through exposome-wide association studies (ExWAS), which are better suited to capture complex, real-world exposures to reveal novel exposure-disease relationships and provide new insights into the mechanisms underlying diseases in humans.

Fun Fact: Dr. Gary Miller (NEXUS MPI) provided Dr. Walker's first introduction to the exposome ~14 years ago when he helped him receive funding to visit Dr. Dean Jones's (NEXUS Co-I) laboratory as a PhD student to study the exposome and neurodegenerative diseases.

[Read the full spotlight](#)

[Learn more](#)

Dr. Walker's Podcast Highlights

Scalable exposure assessment for micro and nano- plastics



[Watch Here](#)

The Exposome



[Listen Here](#)

Material world: should you worry about microplastics



[Listen Here](#)

Exposomics In the Scientific Community



Autism Data Science Initiative Funded Research Project Highlight: Douglas Walker, PhD, Emory University

Autism is an increasing public health concern in the U.S., with current estimates indicating that 1 in 31 school-aged children are autistic. The rise in prevalence over recent decades suggests environmental factors may be key contributors; however, no study has systematically examined the breadth of environmental exposures that may influence autism outcomes. To address this gap, Dr. Walker's team at Emory University and collaborators at Johns Hopkins University were recently awarded one of thirteen Autism Data Science Initiative (ADSI) projects.

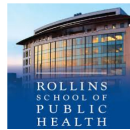
The project, "[Mapping Internal Exposome-Metabolome Dynamics with Advanced Data Science to Identify Environmental Determinants of Autism](#)," will conduct the largest internal exposome study of autism to date. Using high-throughput, high-resolution mass

spectrometry, the team will profile thousands of endogenous metabolites and tens of thousands of potential exposures in approximately 8,000 blood samples collected during pregnancy, at birth, from siblings and parents of autistic children, and from recently diagnosed autistic children and matched controls.

This dataset of exposome profiles will be used to assemble the Autism Exposome Atlas, establishing the largest exposome database for autism research to date. The atlas will be well-powered for discovery analyses of non-genetic factors influencing autism outcomes, including the role of critical developmental windows and differentiation of shared environmental versus genetic influences through familial comparisons. Results have the potential to identify exposome biomarkers for autism and reveal how environmental exposures and related biological responses contribute to neurodevelopment and symptom heterogeneity, providing evidence needed to prioritize public health interventions that support child neurodevelopment.

The technology platforms enabling this effort were developed through the ARPA-H-funded IndiPHARM project, which supported advances in high-throughput sample preparation, automated sample cataloging and processing workflows, fast pharmacoexposomic methods, and large-scale annotation of environmental exposures, drugs, dietary chemicals, and related metabolites. The ADSI project represents a key demonstration of these approaches at scale and will provide a foundation for future large-scale exposome studies.

[Read the article](#)



MSPH in Data Science with Environmental Health Concentration at Emory University, Rollins School of Public Health

Emory University's Rollins School of Public Health is launching a new Master of Science in Public Health in Data Science with an Environmental Health Concentration, a full-time, in-person program designed to meet the growing demand for data-driven expertise in environmental health research and practice. This innovative two-year (48 credit hour) program integrates rigorous training in applied data science with a strong foundation in environmental health science, preparing graduates to address complex public health challenges at the intersection of environmental exposures, biology, and population health. Students gain foundational public health knowledge while developing advanced computational and statistical skills to analyze large, complex environmental and health datasets. Courses, including Intro to Exposomics and Precision Environmental Health, Environmental Mixtures, and Environmental Omics, will provide students with in-depth training to address complex environment-health relationships using advanced analytical and data science approaches.

The curriculum emphasizes practical, hands-on training in core data science competencies such as R coding, database development and management, reproducible workflows, and applied machine learning, alongside in-depth coursework in toxicology, complex environmental exposures, the exposome, and biological responses in health and disease. Through integrated and applied learning experiences, students examine how environmental factors, and biological systems interact to influence health outcomes, while gaining the technical skills needed to lead interdisciplinary research, inform policy, and translate data into actionable insights. This program equips graduates to contribute meaningfully to environmental health science in academic, governmental, and applied research settings.

Applications are open now for the inaugural Fall 2026 cohort.

[Learn more about the program](#)

[Read the full article](#)



HHEAR January 2026 Newsletter

This month, HHEAR is excited to highlight publications that focus on HHEAR's work in ontology and data harmonization. These publications are either HHEAR-funded or utilize HHEAR data sets. Ontology and data harmonization are critical for advancing environmental health research because they ensure that diverse data sources can be integrated, compared, and interpreted consistently. By establishing common standards and structured vocabularies, ontology enables researchers to link complex concepts across studies, while harmonization reduces variability and improves data quality. Together, these efforts fuel more robust insights, accelerate discovery, and foster collaboration across disciplines.

[Read the January 2026 Newsletter](#)



2026 NIH ECHO Science to Action Symposium

Registration is [now open](#) for the **NIH Environmental Influences on Child Health Outcomes (ECHO) Translating Science to Action Symposium on May 6, 2026**. This free event will bring together researchers, policymakers, health professionals, and advocates to examine how **chemical exposures affect child health and development** and how

science is being translated into meaningful action.

The symposium will focus on two critical areas of chemical exposure: plastics and air quality. Through expert-led sessions and a crosscutting panel discussion, participants will explore how evidence on chemical exposures can inform and is informing **programs, policy, and practice**. Panelists will also address strategies for building trust and communicating scientific findings to policymakers, health care providers, parents, and communities.

This is a **hybrid event, with a robust in-person experience** designed to support connection and collaboration. Attendees joining onsite will have the opportunity to engage and network at **interactive information stations** hosted by researchers, advocates, professional organizations, and community partners.

Whether you attend in person or virtually, the symposium offers evidence-based insights and practical perspectives to support healthier futures for children.

Register today, and view the event website to explore the **full agenda and speaker lineup**. The event website also includes a promotional toolkit, and we hope you will share the event with your networks.

[Register here](#)



A Message from IHEN: Final Form for the Global Exposome Cohorts Catalog

Dear colleagues,

I hope this email finds you well.

We are writing to share some exciting updates regarding the **Global Exposome Cohorts Catalogue**. This initiative, promoted by the **International Human Exposome Network (IHEN)**, **EIRENE RI**, and **UMCG**, has now reached a new level of global impact by joining forces with the **Global Exposome Forum**.

Our mission is to build the most comprehensive FAIR resource for exposome research worldwide. By hosting your cohort's **metadata** in this catalogue, you will position your research at the forefront of the international scientific community, facilitating high-impact collaborations and global visibility.

Be Part of the Global Map – Only 5 Minutes Required We have launched the **definitive registration form** for the catalogue. We kindly ask you to dedicate just **5 minutes** to provide the specific information required for this global resource (e.g., cohort description, contact points, and exposome domains):

← **[Complete the Global Catalogue Form Here](#)**

Note: Even if you previously provided information for our early demonstrator projects, it is essential to complete this specific form to ensure your cohort is accurately represented in the official Global Catalogue.

Thank you for being a vital part of this global effort to map the human exposome. We are thrilled to continue this journey with you.

Should you have any questions, please feel free to reach out.

Best regards,
Augusto Anguita-Ruiz
Junior Researcher Leader
ISGlobal
Barcelona Institute for Global Health - Campus MAR
Barcelona Biomedical Research Park (PRBB)
Doctor Aiguader, 88

[Complete the Global Catalogue Form Here](#)

NEXUS Podcast

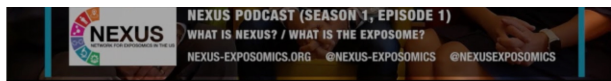
What is Exposomics?

In this episode NEXUS MPIs Gary Miller, PhD, Columbia University, Rima Habre, ScD, University of Southern California, and Chirag Patel, PhD, Harvard University discuss “What is Exposomics?” where they share their individual career paths in the field, as well as the history and current state of exposomics.

The objective of the NEXUS Podcast is to bring together stakeholders of the field of exposomics to foster dialogue around key topics, further the understanding, facilitate the advancement of the field of exposomics along with identifying ways that exposomics can support other scientific fields.

[Listen to the episode on Spotify](#)





[Visit the NEXUS Youtube Channel](#)

Community Podcasts

Food, We Need to Talk



"It's Not Your Genes. It Might Be Your Water."

Featuring: Gary Miller, PhD, Columbia University

[Listen to the Episode](#)

In this episode of the podcast "Food, We Need To Talk" Dr. Gary Miller discusses with Juna Gjata and Dr. Eddie Phillips the science of the "exposome," why diseases like Parkinson's and obesity are rising so fast, and what everyday chemicals might be doing inside your body. This podcast also discusses how the air we breathe, the water we drink, and the products we use every day may be shaping our health more than our genes ever could, among much more!

[Exposomics Community Podcasts](#)

NEXUS In The News



Scientists Thought Parkinson's Was in Our Genes. It Might Be in the Water

[Read Article Here](#)



Mapping the Exposome: Science Broadens Focus to Environmental Disease Triggers

[Read Article Here](#)



Exposome research comes of age

[Read Article Here](#)

[More news about Exposomics](#)



Upcoming Events

NEXUS Community Events

AAAS Meeting: How the Human Exposome Will Unlock Better Health and Medicine

February 14, 2026 | Phoenix, AZ



At the AAAS Annual Meeting, the Exposome will be featured during a discussion panel "How the Human Exposome Will Unlock Better Health and Medicine" organized by NEXUS Collaborator Thomas Hartung, MD, PhD, Johns Hopkins University, co-organized by Aidan Gilligan, SciCom - Making Sense of Science, and the discussion will be moderated

by Clive Cookson, Financial Times Kingdom. Panelists include NEXUS MPI Gary Miller, PhD, Columbia University, Thomas Hartung, MD, PhD, Johns Hopkins University and Jana Klánová, PhD, Masaryk University, EIRENE. This panel brings together architects of the Exposome Moonshot Forum, an event setting the foundation for The Human Exposome Project, to give a mapping progress update. Speakers will discuss how newly established exposomic committees are maximizing science at scale via inherent advantages such as the convergence of artificial intelligence, advanced sensors, metabolomics, and big data analytics. They will show how this consortium is embracing the challenge of implementing science and policy at scale for the benefit of society. Speakers will also discuss the craft of feeding in complex advice into policymaking on hotly contested new technologies.

[Learn more](#)

Global Exposome Summit

April 27-29, 2026 | Sitges, Spain



The Global Exposome Summit 2026 will promote international research and coordination on the exposome. It will bring together researchers, policymakers, industry, funders, and other stakeholders working on advancing human health through exposome research and practice. The International Human Exposome Network ([IHEN](#)) and the Global Exposome Forum ([GEF](#)) are joining forces to organize the Global Exposome Summit 2026.

[Learn more](#)

Bordeaux Exposome Symposium

June 17-19, 2026 | Bordeaux, France



The Bordeaux Symposium hosted and organized by Mount Sinai Icahn School of Medicine Institute for Exposomic Research will convene leading scientists and trainees dedicated to advancing the integration of environmental exposures into research on Alzheimer's Disease and Related Dementias (AD/ADRD). Drawing on a global network of researchers with complementary expertise in exposomics, data science, and neurodegenerative disease, the meeting provides a powerful foundation for discovery.

[Learn more](#)

ISES 2026 Annual Meeting

October 4- 8, 2026 | Vancouver, Canada



The ISES 2026 Annual Meeting aims to explore groundbreaking research in exposure science, epidemiology, toxicology, and risk assessments, and will be bringing together researchers, students, academics, government and private sector attendees from around the world in the exposure science field.

[Learn more](#)

[Visit the NEXUS Calendar](#)

**We want to feature your
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[Event Form](#)

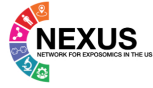
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