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## March Newsletter

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## Exposomics in Focus at AAAS 2026 Annual Meeting



The 2026 Annual Meeting of the American Association for the Advancement of Science (AAAS) brought together global leaders in science, public health, policy, and innovation to address key scientific challenges facing the world today. The NEXUS team was pleased that the field of exposomics was part of the lineup.

The panel "[How the Human Exposome Will Unlock Better Health and Medicine](#)" convened leaders in the field of exposomics to discuss the latest advances in understanding the impact of environmental exposures across the lifespan, and highlights the developments that have been made in the field since the signing of the [Washington, D.C. Declaration on the Human Exposome](#) at the [Exposome Moonshot Forum](#) in Washington D.C in May of 2025.

This panel included NEXUS MPI Gary Miller, PhD, Columbia University, Jana Klánová, PhD, Masaryk University who leads the [EIRENE RI](#), and Thomas Hartung, MD, PhD, Johns Hopkins University, who serves as a joint leader of the [Global Exposome Forum](#) alongside an interdisciplinary [leadership committee](#). The panel was moderated by Clive Cookson from the Financial Times, and co-organized by Aidan Gilligan, SciCom, and Dr. Hartung. It was quite the showing for NEXUS given that Dr. Miller is MPI, Dr. Hartung leads the NEXUS Hopkins Hub, and Dr. Klánová is a member of the NEXUS External Advisory Committee.

This panel aimed to discuss the opportunities afforded by exposomics science, outline the roadmap of actions needed from the global community, and the strategies needed to address future challenges.

Read more about the mission of the panel in [this press release](#).

Read the full article

## In the News

Building on the momentum of the Exposome Moonshot Forum and the American Association for the Advancement of Science 2026 Annual Meeting, the field of exposomics was featured in the February 18, 2026 issue of [The Economist](#).



Clive Cookson, Moderator  
Financial Times



Aidan Gilligan  
Co-Organizer, SciCom



Gary Miller, Panelist  
Columbia University



Jana Klánová, Panelist  
Masaryk University



Thomas Hartung  
Co-Organizer/Moderator  
Johns Hopkins University

### How the Human Exposome will Unlock Better Health and Medicine

NEXUS MPI Dr. Gary Miller commented:

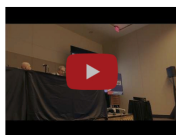
*"It has been great seeing the exposome receive attention from many news outlets, but for the most part these have been top-tier scientific outlets. Getting coverage in a global financial magazine is on a different level. We were thrilled to see a feature article in the Economist that emerged from the American Association for the Advancement of Science 2026 panel."*

Read more about The Exposome Featured in The Economist

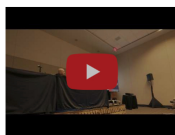
## Watch the Panel Presentations

“How the Human Exposome Will Unlock Better Health and Medicine”

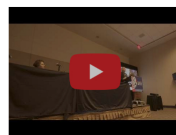
Dr. Gary Miller



Dr. Jana Klánová



Dr. Thomas Hartung



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## Spotlight

### Thomas Hartung, MD, Ph.D.

Johns Hopkins University



Thomas Hartung, MD, Ph.D., steers the revolution in toxicology to move away from 50+ year-old animal tests to organoid cultures and the use of artificial intelligence. The main goal of Dr. Hartung's work is to move toward a paradigm shift in toxicity testing to improve public health. Because of his past role as head of the European Center for the Validation of Alternative Methods of the European Commission (2002-2008), Dr. Hartung has long been involved in the implementation of the 2007 NRC vision document “Toxicity Testing in the 21st Century – a vision and a strategy.”

More recently, he has served as Field Chief editor for *Frontiers in AI*, the machine learning-focused journal by open-access publisher, *Frontiers in Science*. For many years now Dr. Hartung championed the use of computational tools within toxicology as an alternative to animal models. He has furthered the translation of concepts of evidence-based medicine to toxicology (evidence-based toxicology). This aims for systematic assessment of the quality of all tools for regulatory toxicology and the development of new approaches based on annotated pathways of toxicity (the Human Toxome). Dr. Hartung has a broad background in clinical and experimental pharmacology and toxicology documented in more than 760 publications, (h-index 129 with 56,000+ citations). Previous work centered on the immune recognition of bacteria, including pyrogen testing, and the induced inflammatory response. In experimental and clinical approaches, the pharmacological modulation of these responses was studied. Dr. Hartung relocated to the US in early 2009 to lead the [Center for Alternatives to Animal Testing \(CAAT\)](#) and a laboratory for developmental neurotoxicity research based on genomics and metabolomics. Recent advances use big data and artificial intelligence for predictive toxicology, Green Toxicology as part of Green Chemistry, and the envisaged Human Exposome. He sees the exposomics as a critical partner to in vitro toxicity testing.

**Fun Fact:** Dr. Hartung was a standup comedian for many years—this is actually how he funded his graduate studies—and learned much of what he knows about public speaking from this experience.

[Read the full spotlight](#)

### Dr. Hartung's Podcast Highlights

Decoding the Exposome, AI, and Policy with Dr. Thomas Hartung



The dual Revolution of AI and Animal Free Science



Your Exposome, Kavli awards and more improbable research



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 **NEXUS Podcast**

**Intensive Personalized Monitoring for Exposomics**  
(featuring Dr. Mike Snyder)

## Featuring Dr. Mike Snyder

In this episode NEXUS MPI Gary Miller, PhD, Columbia University sits down with Mike Snyder, PhD, Stanford University to discuss the future of the field of exposomics and personalized medicine. Their conversation highlights the transformative role of wearable technologies.

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.



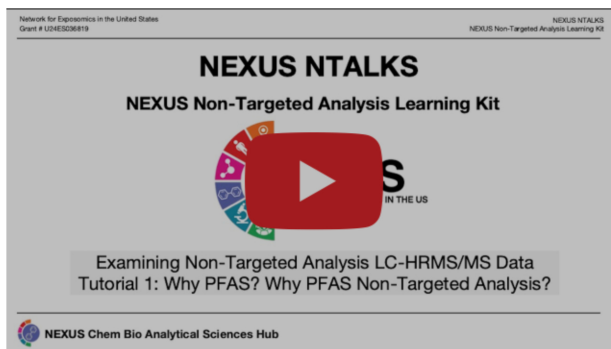
Visit the NEXUS Youtube Channel

Listen to the episode on Spotify

## NEXUS Education

NEXUS is excited to announce the release of the first video in our educational series. Throughout this series, the [Chem Bio Analytical Science Hub](#) will explore Non-Targeted Analysis using LC-HRMS/MS data.

The first tutorial, "Why PFAS? Why PFAS Non-Targeted Analysis?" is presented by NEXUS Chem Bio Analytical Sciences Hub Investigator Dr. Jeremy Koelmel from Yale University.



We welcome input from our community, please reach out to us if you have any suggestions for exposome topics you would like us to cover in future episodes.

Email NEXUS

## Exposomics Project Feature

### Exposome Burden Scores & The PFAS Exposure Burden Calculator

By: Shelley Liu, PhD, Icahn School of Medicine at Mount Sinai



Because people are exposed to many environmental exposures simultaneously (e.g. mixtures), it can be helpful to have summary scores of cumulative exposure. Summary scores have been shown to be useful in other fields (e.g. IQ scores in neurobehavioral research). We conceptualized using "exposome burden

- Environmental justice
- Exposure assessment
- Biomonitoring



**scores** to quantify cumulative exposure to mixtures, independent of a health endpoint.

These summary scores can be used for biomonitoring, risk assessment and report-back to study participants. Our team has been developing the PFAS exposure burden calculator, an example of exposure burden scores applied to per- and polyfluoroalkyl substances (PFAS) mixtures.

#### How can I use the PFAS Exposure Burden Calculator for my research?

You can access our free, point-and-click R/Shiny app [here](#), for the 2017-2018 U.S. PFAS Exposure Burden Calculator. You can input the serum/plasma PFAS concentrations of your participants, and/or upload an Excel file, and our calculator will output a PFAS exposure burden score and standard error for each participant. It's okay if you don't have the concentrations of all the PFAS analytes – just leave those blank. We wrote a tutorial paper on using the PFAS Exposure Burden calculator.

Access the PFAS Exposure Burden Calculator

Read Full Article

## Exposomics In the Scientific Community



### EXPOSIM 1st Symposium: Cumulative Exposures, Collective Impact: Advancing Public Health Through Exposome Research

In February, EXPOSIM hosted its first symposium, convening experts to explore how exposome research can inform public health, environmental, and equity-focused decision-making. EXPOSIM is one of seven research projects of [ExpoHealthNet](#) cluster, which aims to provide a strong evidence base to better understand the impact of environmental stressors on immune health. This meeting brought together policymakers and scientists to discuss "Cumulative Exposures, Collective Impact: Advancing Public Health Through Exposome Research." NEXUS MPI Gary Miller, PhD, Columbia University was one of three presenters during this symposium. Dr. Miller's presentation "Exposomics: from wild concept to scientific reality" discussed the history of the exposomics field, the role of NEXUS, and key research that is being conducted. Dr. Miller also discussed how exposomics fits into the one health model, emphasizing that the genome and exposome should be used together to study all biology. Additionally, Gerardo Sanchez, PhD, European Environment Agency, presented on "The kind of exposome research we could use at the EEA." Alex M. Indrayanti, a Policy Officer at European Commission also spoke about "EU-funded research and innovation on the human exposome: looking within and beyond." This symposium highlights the growing exposomics community along with the necessary integration of the field into policy and the key scientific developments that have been made in the field.

Watch the Symposium



### MS in Environmental Health Data Science at Columbia University Mailman School of Public Health

Columbia University's Mailman School of Public Health offers a distinctive **Master of Science in Environmental Health Data Science**, a full-time, **one-year (12-month) program** designed to train the next generation of leaders at the intersection of environmental health, data science, and public health decision-making. Housed in the Department of Environmental Health Sciences, this interdisciplinary program responds to the rapidly growing demand for professionals who can integrate large-scale data, advanced analytics, and domain expertise to address pressing environmental and climate-related health challenges. Students are immersed in a rigorous curriculum that combines foundational environmental health science with modern data science, statistical modeling, and computational methods.

The program emphasizes **hands-on, applied training** in core data science skills alongside advanced coursework in environmental exposures, toxicology, climate and health, and population-level health impacts, with thoughtfully selected electives that allow students to tailor their studies to specific interests. Through coursework projects, real-world datasets, and a culminating **Applied Practice Experience (APEX)**, students reinforce classroom learning through application in a real-world research or professional context, supported by faculty mentorship. Located in **New York City**, students also benefit from unparalleled opportunities to engage with leading researchers, public agencies, and global organizations addressing environmental health challenges locally and worldwide.

Graduates of the MS in Environmental Health Data Science are well prepared for careers in academia, government, industry, non-profits, and global health organizations, as well as for further doctoral training. With its accelerated pace, applied focus, and integration of data science and environmental health expertise, this program offers a unique pathway for students seeking to make an immediate impact at the intersection of data and health.

Learn more

Read the full article

[Learn more](#)

[Read the full article](#)

## EIRENE RI

### SIRENE and EIRENE Project Announcements

"The European research community has taken a landmark step toward advancing infrastructure for environmental health and exposome science. The EIRENE Implementation Project (EIRENE IMP) has been officially selected for funding under the Horizon Europe Research Infrastructures call, marking the beginning of the infrastructure's transition from planning to full operational readiness.

Coordinated by Masaryk University's RECETOX Centre (Czech Republic), EIRENE IMP unites 25 partners from across Europe and global research leaders from the United States, Canada, Japan, and Australia. Over three years, the project will build the structures, frameworks, and technological foundations required to establish EIRENE as a European Research Infrastructure Consortium (ERIC)—the highest and most sustainable legal form for EU research infrastructures."

"The SIRENE project (Services for environmental Exposure and health assessment in Europe) represents a major step forward in Europe's ability to understand how environmental factors influence human health across the life course. As a newly funded Horizon Europe Research Infrastructure Action, SIRENE connects an unprecedented network of research infrastructures, cohorts, biobanks, laboratories, and data services to operationalise the exposome—the totality of environmental exposures and their biological effects. Coordinated by Masaryk University, SIRENE brings together 56 partners, including 10 ESFRI Landmarks, national nodes, and international collaborators. The project aims to create a seamless, integrated ecosystem of services that support environmental and health research, enabling scientists and policymakers to address some of Europe's most pressing public health and environmental challenges."

[Learn more](#)

[Learn more](#)



**Global Alliance**  
for Genomics & Health  
*Collaborate. Innovate. Accelerate.*

### NEXUS Investigator Dr. Carlos Cardenas-Iniguez named new co-lead of the 2026 Exposome Workstream

NEXUS Investigator Carlos Cardenas-Iniguez, PhD, University of Southern California joined the Global Alliance for Genomics and Health (GA4GH) as a new co-lead of the 2026 Exposome Work stream. Dr. Cardenas-Iniguez is an investigator in the NEXUS GeoSpatial Hub working to develop a scalable geospatial data framework for place-based exposures and health outcomes at both the population and personal levels. The GA4GH Exposome Study Group is led by Amy Forman, PhD, European Bioinformatics Institute (EMBL-EBI) and aims to build standards to help researchers share and combine data on environmental exposures that affect human health. The larger GA4GH organization unites an international community dedicated to advancing human health through genomic data. Dr. Carlos Cardenas-Iniguez's work focuses on using large cohort datasets, such as the ABCD Study, to explore the impact of social and structural stratification on the environments in which people live, and how these environments, in turn, impact neural and cognitive development and mental health.

[Learn more](#)



### 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.

[Register here](#)

## NEXUS In The News

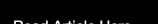


Scientists Thought Parkinson's Was in Our Genes. It Might Be in the Water

[Read Article Here](#)



Mapping the Exposome:



[More news about Exposomics](#)

## Upcoming Events

### NEXUS Community Events

#### 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](#)

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