

## Researchers bring environmental health perspective to pediatrics meeting

By Eddy Ball

NIEHS and NTP director Linda Birnbaum, Ph.D., and Institute grantees were plenary presenters at the high-profile Pediatric Academic Societies (PAS) [annual meeting](http://www.pas-meeting.org/2013DC/about_us.asp) ([http://www.pas-meeting.org/2013DC/about\\_us.asp](http://www.pas-meeting.org/2013DC/about_us.asp)) May 4-7 in Washington, D.C. The PAS meeting is the largest international meeting focused on research in child health, attended by some 7,000 pediatricians and academics from around the world.

Birnbaum and Mount Sinai School of Medicine (MSSM) lead researcher [Philip Landrigan, M.D.](http://www.mountsinai.org/profiles/philip-j-landrigan), (<http://www.mountsinai.org/profiles/philip-j-landrigan>) were featured speakers May 4 at the PAS State of the Art Plenary, "Contemporary Issues in Environmental Health for Pediatricians." NIEHS-supported environmental scientist [Leonardo Trasande, M.D.](https://files.nyu.edu/trasalo1/public/), (<https://files.nyu.edu/trasalo1/public/>) of the New York University School of Medicine, was also part of the program.

University of Cincinnati (UC) lead researcher [Aimin Chen, M.D., Ph.D.](http://www.eh.uc.edu/dir_individual_details_full.asp?qcontactid=895), ([http://www.eh.uc.edu/dir\\_individual\\_details\\_full.asp?qcontactid=895](http://www.eh.uc.edu/dir_individual_details_full.asp?qcontactid=895)) presented, as yet, unpublished findings from his group's newest study, "Cognitive Deficits and Behavior Problems in Children with Prenatal PBDE [polybrominated diphenyl ether] Exposure," May 6 in the Academic Pediatric Association Presidential Plenary. As part of the program, one of the members of that group, Simon Fraser University lead researcher and former UC professor [Bruce Lanphear, M.D.](http://www.sfuexperts.ca/member.aspx?subscriberid=851), (<http://www.sfuexperts.ca/member.aspx?subscriberid=851>) received the 2013 American Pediatric Association Public Policy and Advocacy Award.

### Framing the conversation about children's environmental health

For traditionally trained pediatricians, children's environmental health is too often a poorly mapped frontier. So it was fitting that Birnbaum's presentation, "Developmental Perspectives on Environmental Stressors and Children's Health," offered a useful primer for the uninitiated and a solid refresher course for the more experienced.

The talk opened with shocking statistics about the decline of children's health, as the number of children with developmental disability or delay continues to grow, up 17 percent in the past decade alone, and even more suffer from asthma and overweight or obesity.

If those trends weren't sufficient cause for concern, Birnbaum added, "Today nearly one-half of children are allergic to something." Paralleling these trends in health is an equally dramatic increase in the many chemicals in the environment that have been linked to those very diseases and health conditions.

As Birnbaum explained, NIEHS has committed enormous support for research, to better understand the effects of environmental exposures on children's diseases, and conditions individuals may not develop until much later in life. She said those adult-onset illnesses, such as diabetes and cardiovascular disease, are increasingly associated with environmental exposures during early-life critical developmental windows of susceptibility.

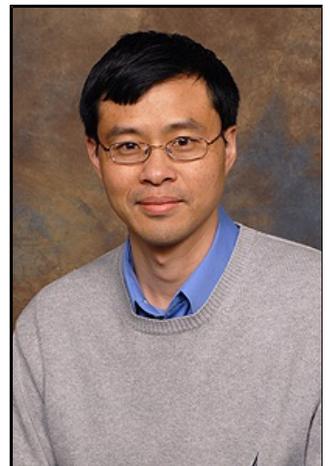
### Fire retardant chemicals and children's neurological health

Research by Chen, Lanphear, and a group of their UC colleagues, in what they call the Home Observation for Measurement of the Environment (HOME) study, represented the most recent evidence of the link Birnbaum had described between early exposure to environmental chemicals and persistent adverse health effects. Chen's group measured levels of fire retardant chemicals from the group of PBDEs used widely in consumer products over the past 30 years. They tested 309 women at 16 weeks of gestation, and evaluated their children over the next five years for cognitive and motor abilities, and behavioral deficits.

Their findings indicated that higher levels of one of the PBDEs, BDE-47, in maternal serum was associated with neurological deficit. A ten-fold increase over U.S. adult national reference levels translated into a 4.5-point decrement in full-scale intelligence quotient (IQ) at age 5, and a 2.9-point increase in the hyperactivity score at age 2-5 years.



*Birnbaum urged pediatricians to take the offensive, to prevent adverse effects on children's environmental health. "Educate yourself and others on the major exposures of concern. Ask parents, especially expectant mothers, about their exposures; encourage use of prenatal vitamins, such as folic acid; and counsel parents to avoid prenatal and early life exposures." (Photo courtesy of Steve McCaw)*



*In addition to his work with the HOME study, Chen is also regarded as a leading authority on the health effects of electronic waste recycling, a growing environmental health problem in developing countries (see [story](#)). As his research has shown, televisions, computers, and other electronics contain a host of hazardous chemicals and metals. (Photo courtesy of UC)*

“A four-point IQ difference in an individual child may not be perceivable in ... ordinary life,” Chen was quoted as saying in a Scientific American [interview](http://www.scientificamerican.com/article.cfm?id=flame-retardants-linked-lower-iq-hyperactivity-children). (<http://www.scientificamerican.com/article.cfm?id=flame-retardants-linked-lower-iq-hyperactivity-children>) with writer Dina Maron. “However, in a population, if many children are affected, the social and economic impact can be huge, due to the shift of IQ distribution and productivity.”

In her comments for the story, Birnbaum, who is also an authority on PBDEs, conceded that more research is needed to understand the long-term effects of exposure. “We don’t have data [yet] on whether or not the cognitive or behavioral impacts will reverse,” she said. “We know from many other exposures to different kinds of environmental compounds that impact behavior or intelligence that [the impact] doesn’t go away.”

*Citation:* Chen A, Yolton K, Rauch S, Webster GM, Hornung R, Sjodin A, Dietrich KN, Lanphear BP. 2013. Cognitive Deficits and Behavior Problems in Children with Prenatal PBDE Exposure. Manuscript in republication review.



*According to PAS, Lanphear’s Public Policy and Advocacy Award recognizes his cumulative contributions toward public policy advocacy efforts at the state, regional, national, or international level that have improved the health and well-being of infants, children, and adolescents. (Photo courtesy of UC)*



*Landrigan is the director of one of the first sites established as part of the National Children’s Study (see [story](#)). His talk, “How Do We Effectively Translate Science to Public Health Policy,” addressed a central issue in the promotion of primary prevention in children’s environmental health. (Photo courtesy of MSSM)*

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