

## Training & Capacity Building

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### Summer Interns Explore NIEHS Global Health Priorities through Interactive Seminars

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The developmental origins of health and disease (DOHaD) as well as climate change and human health were the topics of a two-part seminar series for the NIEHS Summer Internship Program (SIP) in June and July. A group of NIEHS postdoctoral fellows spearheaded the design, coordination, and implementation of the SIP seminar series, which provided students with the opportunity to delve into NIEHS priorities and come up with ideas for addressing important global health problems.

The NIEHS SIP, which provides internships to outstanding high school, undergraduate, and graduate students, is committed to providing hands-on

experience in a world-class biomedical research setting. Through partnerships with postdoctoral fellows in the intramural research division, NIEHS strives to not only teach its interns, first-hand, what it means to conduct experiments and analyze data, but also how that information can be translated to address global public health concerns. In the two seminars, postdoctoral researchers provided an overview of each public health topic and guided groups of students through worksheets that honed in on a topic of interest.

In the seminar on June 27, students learned about DoHAD, the concept that exposures occurring while tissues and organs are developing early in life can increase the risk for diseases at all stages of life and sometimes in future generations. They were then broken up into groups that focused on three subtopics related to DoHAD: endocrine disruptors, nutrition, and the growing problem of electronic waste (e-waste). Each group went through a worksheet, which was developed by NIEHS postdoctoral fellows and required them to interpret data from research articles, calculate an odds ratio—a measure of the association between an exposure and an outcome relevant to their topic—and discuss how the issue is relevant to global environmental health.



Students reported their results from the worksheets after discussing concerns and solutions with their group members based on research papers and other information provided in the handout. Here, one group explains how they calculated an odds ratio from the information they were given.

(Photo courtesy of Steve McCaw)

“I haven’t really heard talks like this before about global health. It was very different from the work I am doing here for the summer, and I learned a lot,” said Vicki Wang, a rising senior at William G. Enloe High School, who is working at NIEHS with Greg Travlos, Ph.D., on hematology projects for the summer. “I really enjoyed being able to read the papers and come up with ideas that may help solve issues with global e-waste.”

The July 10 seminar shifted focus to climate change and human health and incorporated categories from the NIEHS report [\*A Human Health Perspective on Climate Change\*](#) as subtopics for breakout groups: airway diseases including asthma, cardiovascular disease and stroke, foodborne diseases and nutrition, vectorborne and zoonotic diseases, waterborne diseases, and weather-related morbidity and mortality. After going through their worksheets, students discussed the concerns they identified from research papers on their assigned subtopic and outlined possible ways to mitigate the problem or adapt to it, both on a personal level and a global scale.

### **Translating research into policy**

After students presented their worksheet results in the DoHAD session, John Balbus, M.D., discussed his work to translate science conducted by NIEHS intramural staff and extramural grantees into global policies and treaties. He specifically discussed the World Health Organization (WHO) Collaborating Centre for Environmental Health Sciences, a new collaboration between NIEHS and the WHO aimed at providing a focal point and resource for NIEHS to fulfill its strategic goals in global environmental health. DoHAD and climate change and human health are two focus areas of the WHO Collaborating Centre.



Bonnie Joubert, Ph.D., (right) a research fellow in the epidemiology branch, was the group lead for the DoHAD session, collaborating with other postdoctoral fellows to develop the overview and the worksheets. She explores DoHAD in her research through the Norwegian Mother and Child Cohort Study (MoBa). In addition to presenting an overview of DoHAD, Joubert also made rounds with other fellows during the group breakout session to answer questions and provide input.

(Photo courtesy of Steve McCaw)



Sara Andres, Ph.D., visiting fellow in the Genome Stability Structural Biology group, led the team of postdoctoral fellows that developed problem-based materials and the presentations for the climate change and health session.

(Photo courtesy of Steve McCaw)



John Balbus, M.D., discussed challenges to translating science to policy and the steps required to move from scientific results to global action.

(Photo courtesy of Steve McCaw)



Students anxiously wait their turn to answer a question for their team on climate change and human health. The competitive Jeopardy and Who Wants to Be a Millionaire team games required students to think back on what they just learned to answer questions correctly.

(Photo courtesy of Steve McCaw)