

NIEHS trainee honored with Wetterhahn Award

By Sara Mishamandani

The NIEHS Superfund Research Program (SRP) selected Bradley Newsome, Ph.D., of the University of Kentucky (UK) SRP Center, as the 17th recipient of the annual [Karen Wetterhahn Memorial Award](#).

The award, which recognizes outstanding SRP graduates and postdoctoral researchers, was presented at the 2014 SRP Annual Meeting (see [story](#)) in San Jose, California. The program acknowledged Newsome for his contributions at the interface of basic sciences, environmental engineering, and biomedicine for the larger purpose of impacting public health.

Newsome received his doctoral degree in May 2014 under the guidance of Bernhard Hennig, Ph.D., a UK professor of nutrition and toxicology at the university and director of its SRP center. During his doctoral work, Newsome investigated how nutrition could modulate the effects of exposure to environmental chemicals and conducted research to develop systems that use nanomaterials for removal of contaminants in water supplies. He is continuing this research at the university as a postdoctoral scholar and will also serve as the graduate and postdoctoral training coordinator for the center.

“Newsome is unique because of his combination of intellect, adept communication ability, and leadership skills, as well as his ability to translate complex knowledge into applied assistance to stakeholders locally and internationally,” said Hennig. “I am convinced that Brad Newsome will continue to display the legacy of Dr. Wetterhahn by continued contribution to research and educational needs related to integrating science, technology, and public health needs with diplomatic and development-related goals.”

Reducing health effects from environmental contaminants — from nutrition to remediation

Newsome’s doctoral work sought to address problems related to chlorinated organic pollutants that pollute waterways, soil, and food sources. Newsome investigated the ways nutrition can decrease inflammation and oxidative stress associated with exposure to these pollutants. His work at the center showed that diet supplementation of polyphenols, which are found in green tea, upregulates a variety of antioxidant enzymes that effectively protect against the toxicities of environmental pollutants, such as polychlorinated biphenyls. This work adds weight to the current center research paradigm that nutrition can positively affect the negative human health effects related to chemical exposures near Superfund sites.

Newsome’s current research combines his work with nutrient polyphenols, which have an affinity for chlorinated organic pollutants, with nanomaterial systems for simple and fast removal of contaminants from contaminated water sources. Newsome and his research team have combined quercetin and curcumin, potent antioxidant polyphenols, with magnetic nanoparticles to form nanocomposite materials that quickly bind water-borne organic pollutants in a polymeric matrix. They can then apply a magnetic field to the system to rapidly remove the material-bound pollutants, leaving the water detoxified.

Improving global public health outside of the lab

In 2010, Newsome halted his graduate work to spend a year in the African kingdom of Swaziland, where he designed and directed the construction of a large clean water collection system for a local community to battle drought and widespread health issues associated with contaminated drinking water. He also taught math and science to students and teachers, and worked with the local hospital and the University of Cape Town on a public health advocacy research project.

“This experience served to refocus my research efforts upon returning to graduate school toward the development of innovative strategies to address the major global health concerns associated with water pollution,” said Newsome.



“Although my research interests have evolved over the last decade, the overarching goal has remained steady — to develop strategies and tools that impact public health, with a special focus on the needs of the developing world,” said Newsome. (Photo courtesy of Brad Newsome)



Newsome, second from right, accepts his Wetterhahn Award from Gwen Collman, Ph.D., right, director of the NIEHS Division of Extramural Research and Training, with, from left, NIEHS SRP Director Bill Suk, Ph.D., and Hennig. (Photo courtesy of Carol Kelly)

As a result of Newsome's global humanitarian work and scientific research, he hopes to become involved in global health policy to continue to promote public health. Newsome completed an education policy internship with the Council of State Governments, which familiarized him with science and technology research, education policy needs, and translation of research findings for development-related goals. He is also working as part of the center's Training and Research Translation Cores to more effectively apply multidisciplinary research and training with effective communication and stakeholder engagement.

(Sara Mishamandani is a research and communication specialist for MDB Inc., a contractor for the NIEHS Superfund Research Program and Division of Extramural Research and Training.)

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(bruskec@niehs.nih.gov)

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