

Hennig receives prestigious professorship at the University of Kentucky

By Carol Kelly

Bernhard Hennig, Ph.D., director of the [University of Kentucky \(UK\) Superfund Research Center](http://www.uky.edu/Research/Superfund/index.htm) (<http://www.uky.edu/Research/Superfund/index.htm>) (SRC) and professor of nutrition and toxicology in the College of Agriculture, is the recipient of a University Research Professorship. These professorships recognize outstanding UK researchers who have established a national reputation for sustained contributions to their field, and carry an award of \$40,000.

Hennig's distinguished research program is broadly focused on understanding mechanisms underlying the positive effects of selected nutrients on human health. Although [Hennig](http://www.mc.uky.edu/cvrc/faculty/hennig-bernard/) (<http://www.mc.uky.edu/cvrc/faculty/hennig-bernard/>) has always been interested in how nutrition can affect health and disease, his work with the SRC has driven discoveries about how nutritional sciences and toxicology can overlap or be interrelated scientific disciplines.

"The concept that nutrition can modulate how people respond to disease risks associated with exposures to Superfund pollutants is fascinating," said Hennig.

Blending nutritional and toxicological environmental research

Hennig's research provides evidence that people may reduce their risk to environmental pollutant exposures through healthy nutrition. He contends the research supports a paradigm shift where nutrition or dietary health is a critical player in overall vulnerability to environmental stressors.

Hennig's research group is well known for a finding that suggests the type of fat we eat can alter how our bodies respond to environmental stressors. They found that diets rich in omega-6 fatty acids, found in plant-derived oils, such as corn and safflower, can further promote the pro-oxidative and proinflammatory effects of certain polychlorinated biphenyl compounds (PCBs), prevalent environmental pollutants. In contrast, Hennig's group also found that diets rich in omega-3 fatty acids and antioxidant polyphenols, compounds found in many fruits, vegetables, and whole grains, can lessen toxicity of PCBs to the cell layer that line blood vessels.

"These beneficial compounds work in the body to help repair damaged cells and prevent certain disease mechanisms from occurring. Nutrition should be considered in overall risk assessment," said Hennig.

Hennig believes that nutritional interventions may provide the most sensible means to develop primary prevention strategies of diseases associated with many environmental toxic insults.

Envisioning future research

"This professorship will allow me to address future issues related to nutritional modulation of toxicological insults," said Hennig.

He envisions future research to include human intervention studies that try to mitigate Superfund pollutant-mediated toxicological risks and pathologies with positive lifestyle changes. For example, a nutrition-based therapeutic approach could reduce vulnerability to environmental stressors.

"In the United States, we like to take pills for everything, to treat diseases and improve health, but you cannot take a pill to mitigate exposure to environmental pollutants or to decrease body burdens of pollutants," said Hennig. "Why not stay healthier with good nutrition to fight environmental insults?"

Hennig has been a member of the University of Kentucky faculty since 1984. Since 2001, he has served as editor in chief of the *Journal of Nutritional Biochemistry*, a highly respected journal for research into the biochemical basis of nutrition. Since 2003, he has directed the SRC, funded by the National Institute of Environmental Health Sciences. His research has produced a steady series of publications in prominent journals and has earned him other national awards. Hennig also regularly participates in national and international conferences as an invited speaker.

(Carol Kelly is a health communication specialist with MDB Inc., a contractor for the NIEHS Division of Extramural Research and Training.)



Hennig, left, receives a University Research Professorship award plaque from Eli Capilouto, D.M.D., Sc.D., president of the University of Kentucky. (Photo courtesy of Bernhard Hennig)



"Since the hallmark of PCB-related vascular toxicity is also increased oxidative stress and inflammation, omega-3 polyunsaturated fatty acids and certain polyphenols are prime nutritional candidates to reduce toxicity to cells caused by PCBs," said Hennig. (Photo courtesy of Bernhard Hennig)

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