

UNIVERSITY OF MARYLAND MEDICAL **News**



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UM SCHOOL OF MEDICINE INSTITUTE FOR GENOME SCIENCES RESEARCHER WINS NIH NEW INNOVATOR AWARD

\$2.5 Million Award Supports Creative, Unique Approaches to Major Scientific Challenges

Julie Dunning Hotopp, Ph.D., assistant professor of microbiology and immunology and a research scientist at the Institute for Genome Sciences at the University of Maryland School of Medicine (UMSOM), has received a \$2.5 million award from the National Institutes of Health's New Innovator program. The annual awards recognize scientists of extraordinary creativity who have devised innovative approaches to major challenges in medical research. The New Innovator Award is part of the NIH Pioneer Award program created in the NIH Roadmap of 2004. Francis Collins, M.D., Ph.D., director of the National Institutes of Health, will announce the awards at the Sixth Annual NIH Director's Pioneer Award Symposium in Bethesda on September 30.

Dr. Hotopp, who joined the UMSOM's Institute for Genome Sciences at its founding in 2007, focuses her studies on the genetic interaction between microbes and their hosts. Although scientists previously believed bacteria could not exchange genes with animals, Dr. Hotopp and her colleagues discovered in 2007 that some bacteria do indeed alter the genes of their hosts.

"This is a relatively new field that is difficult to fund through traditional grant mechanisms that tend to prefer more established science," says Dr. Hotopp. "It's a thrill to have the NIH recognize our work as innovative and important to the future of medicine and genomics research."

The funding from the New Innovator Award will support Dr. Hotopp's research on how DNA transfers between the microbiome — the microbes that live on and in the human body — and the human genome. She will examine how frequently these transfers occur and the mechanisms by which they work. Specifically, she is interested in how certain bacterial infections can be related to the development of cancer as long as 20 years after the infection was treated.

Dr. Hotopp also will use the award for another component of her work — studying the gene transfer that occurs between bacteria and filarial nematodes, which are worms found in the tropics that cause a disease in humans known as lymphatic filariasis. The worms invade the lymphatic system of their host and cause elephantiasis. Dr. Hotopp will examine how the bacteria that live within the worms exchange genes with the worm genome. She hopes the work will eventually lead to the development of a drug that targets this bacterial component of the worm genome, treating the disease in its human host. “The advantage of targeting the bacterial component of the worm genome versus targeting the worms is that bacteria and humans are more distantly related organisms,” says Dr. Hotopp. “It's more difficult to find drugs that target the worms directly that don't cause toxicity problems in humans.”

Earlier this year, Dr. Hotopp earned a \$100,000 Grand Challenges Explorations grant from the Bill and Melinda Gates Foundation to support similar research.

“We are extremely pleased that the NIH has recognized the innovation and creativity of Dr. Hotopp's research,” says E. Albert Reece, M.D., Ph.D., M.B.A., vice president for medical affairs at the University of Maryland and John Z. and Akiko K. Bowers Distinguished Professor and dean of the University of Maryland School of Medicine. “Her unique approach to these problems represents the kind of exceptional thinking we hope for in all of our young investigators. I am confident her work will help advance our world-class programs in genomics and also advance our understanding of the human genome and disease.”

“NIH is pleased to be supporting early-stage investigators from across the country who are taking considered risks in a wide range of areas in order to accelerate research,” said Francis S. Collins, M.D., Ph.D., director of the National Institutes of Health. “We look forward to the results of their work.”

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