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Dr. Margaret Bynoe Honored with 2009 Pfizer Animal Health Award

Margaret Bynoe, PhD, assistant professor of immunology at Cornell University's College of Veterinary Medicine, has been named as the 2009 recipient of the Pfizer Animal Health Award for Research Excellence, which recognizes the outstanding research efforts and productivity of faculty members in the early stages of their careers. An award ceremony has been scheduled for September 22, 2009, at which time Dr. Bynoe will also present a seminar on her research findings.

An immunologist, Dr. Bynoe's research focuses on auto-immune diseases, such as multiple sclerosis (MS) and inflammatory bowel diseases. Dr. Bynoe's goal is to understand how the immune system works.

"The immune system is comprised of a mosaic of cells equipped with specialized functions that act in concert to protect the host from foreign invaders, such as viruses and bacteria, that can cause irreparable harm and even death. In some cases, the immune system malfunctions and mistakes host tissue as foreign, acting against it to cause damage in what is commonly referred to as autoimmune disease," said Dr. Bynoe. "Understanding how the immune system operates normally will enable us to identify problems, such as those resulting in autoimmune diseases, and devise ways to fix them."

A major part of Dr. Bynoe's studies centers around the molecule adenosine, a purine nucleoside that is involved in regulating immune system responses. At the Experimental Biology 2008 meeting in April 2008, Dr. Bynoe's team presented the novel finding that, in addition to its role in immune regulation, adenosine controls the entry of immune cells through the blood brain barrier into the central nervous system. The blood brain barrier is comprised of specialized endothelial cells that selectively permit the entry of specific molecules that the brain needs to function normally, while excluding all else. Their findings showed that blocking adenosine receptors with drugs, such as caffeine, prevented the development of a multiple sclerosis-like disease in mice. According to Dr. Bynoe, if the entry of cells and/or molecules into the brain can be selectively blocked by modulating extracellular adenosine levels, this can have a profound impact on treatment of a wide range of neurological disorders, including MS and Alzheimer's disease. Using these research findings, Dr. Bynoe is coordinating efforts to investigate other diseases that affect the brain, such as Alzheimer's disease, by studying adenosine's role in regulating blood brain barrier permeability.

"Dr. Bynoe is a phenomenal force," said Dr. David Russell, professor and chair of Microbiology and Immunology. "She's very excited about her research and fires off new ideas all the time. When she gets unusual results from an experiment, she doesn't just throw them away. Being open to making new observations is what makes her a successful scientist."

Dr. Bynoe received her PhD from Albert Einstein College of Medicine. She completed her postdoctoral research training at Yale University, before joining Cornell's Department of Microbiology and Immunology faculty in September 2005.



Dr. Margaret Bynoe