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Alumna Fighting Disease One Germ at a Time

October 10, 2007

BLOOMINGTON, Ill.— Emily Richter admits her childhood fantasies differed from other children. “I’ve been thinking about going off and fighting diseases since I was about nine years old,” said Richter, a 2005 Illinois Wesleyan University graduate with a degree in biology. Unlike many who dreamed of being ballerinas or rock stars, Richter’s dream is coming true.

Currently a graduate student in microbiology at Arizona State University in Tempe, Richter is part of a team at the Biodesign Institute housed at ASU, which is studying the effects of *Salmonella typhimurium*, the bacteria known for causing food poisoning. The team, headed by Dr. Cheryl Nickerson, recently made international headlines with research that sent samples of the bacteria aboard the Space Shuttle Atlantis. Recently published data found the bacteria became more virulent after the trip into space.

According to the research, spaceflight conditions, including fluid shear dynamics, can affect the genetics of the bacteria, making it more virulent. “When you get into space, there is less gravity, so there is nothing pressing on the sides of the bacteria,” said Richter. “Bacteria tends to grow in the intestinal track for the same reason, there is less fluid shear on the bacteria slowing it down. In space, without that weight of gravity that pulls on all human, the fluid shear is even less, and the bacteria can grow faster.”

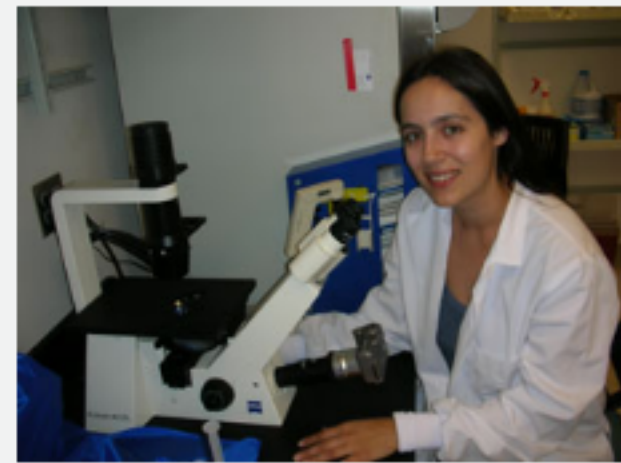
Richter, who utilizes novel 3-D tissue culture models to study how *Salmonella* attacks human tissues, revels in the chance to work on the team. “This is an incredible experience, both with the research and meeting people who work in the space program,” she said. “Dr. Nickerson’s work is so fantastic and has a chance for a real, global impact.”

Though *Salmonella* is rarely a serious threat in the United States, it can be life threatening in other parts of the world. “Yes, this is the same bug that gets you sick if you go to a sketchy restaurant,” said Richter, “but millions of infants worldwide die each year from diseases linked to *Salmonella*. If we can gain any understanding of the mechanism that causes people to get sick, it would make a difference.”

Richter said she feels lucky to be working at the Biodesign Institute, and attributes part of her success to Illinois Wesleyan. “I don’t think I could have received better preparation for graduate school than I did at Illinois Wesleyan,” said Richter. “The professors in the biology department taught science at a deep level and inspired a wonderful work ethic.” Being able to do research since her sophomore year at IWU also helped, said Richter. “I’ve done the lab work. The combination of a strong academic environment with hands-on research really puts you ahead of the game.”

While studying at Illinois Wesleyan, a trip to Costa Rica with biology Professor Given Harper helped expand Richter’s horizons. “Travel like that is always good, because it develops a global perspective, and offers a better understanding of the world,” said Richter. “I always had an interest in assisting developing countries, IWU helped me shape my direction.”

More research is planned from the data at the Biodesign Institute, and plans are in place to hopefully send another set of bacteria in a space shuttle flight in 2008. “There is a lot to be done, and I’m glad to be a part of it,” said Richter.



Emily Richter