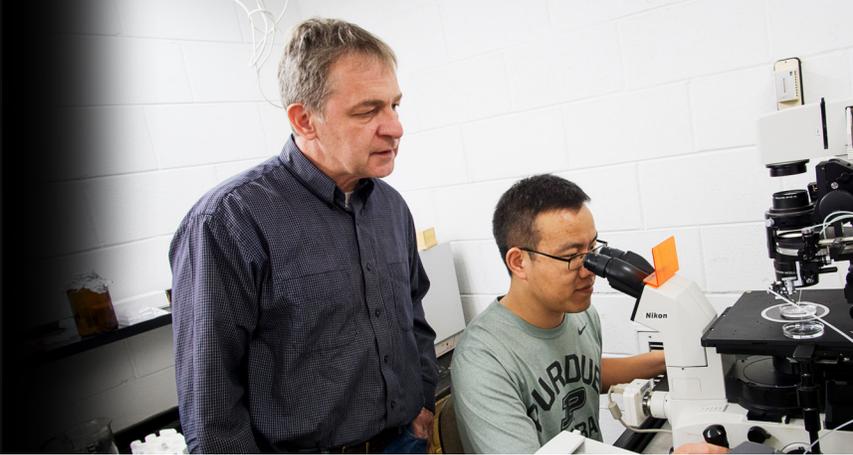


AG RESEARCH SPOTLIGHT



Zoltan Machaty

"It's always fascinating to look into a microscope and see an embryo develop. It is alive —this has the potential to become a new animal."

Zoltan Machaty, Professor of Animal Sciences

The Ag Research Spotlight shines each month on an individual whose work reflects our commitment to the six strategic themes that guide Agricultural Research at Purdue. Our spotlight for September 2016 underscores the theme, "Utilizing molecular approaches to expand the frontiers of agriculture and life sciences."

THE RESEARCHER: Zoltan Machaty traces his affinity for animals to the variety of pets he cared for while growing up in Hungary's second largest city of Debrecen. His city was home to Debrecen University, and after earning a bachelor's degree from its agricultural college, Machaty worked with research veterinarians at an artificial insemination station for two years. While pursuing master's and doctoral degrees in Animal Science at Szent Istvan University, he moved to a biotechnology lab that specialized in embryology—and he was hooked. Nearing the completion of his graduate study, and fascinated by an article he'd read by University of Missouri researcher Randy Prather, Machaty contacted Prather, who offered him a postdoctoral position. Machaty moved his wife and young daughters to Columbia for a planned two-year stay that stretched to much more. "It was a big decision to continue our lives here," he recalls. Machaty completed the postdoc and stayed on as a research assistant professor until 2000. He then went to a pharmaceutical company interested in xenotransplantation and specifically in making transgenic pigs whose organs might be used for human transplant. When the company discontinued that particular research, Machaty came to Purdue in fall 2003. "Purdue's reputation was very important and also, the position that was available, in reproductive physiology, was a very good fit," he says.

THE RESEARCH: Machaty's research focuses on the cellular and molecular mechanisms that regulate early embryonic development. "If we understand, under normal physiology, conditions in the egg, we can help when nature fails," he says. "In agriculture, it is possible to improve productivity, produce embryos in a laboratory and transfer them into recipient females." His research could not only improve reproductive efficiency in domestic animals but also has applicability in human medicine.

CONTINUUM OF STUDY: Machaty's lab specifically measures calcium changes in the egg, because calcium signals are important during fertilization, he explains: "This is how the sperm cell stimulates the egg to develop." His work fits well into the research pattern of other members of his department, he adds: "I can work with others who are doing molecular research, and I also have colleagues who are more field-oriented, so they can help with applying these results on an animal farm."

GIVING STUDENTS SPACE: Machaty spends much of his time writing grant proposals and polishing the drafts of research results his graduate students write for publication. Meanwhile, his students have leeway to come up with their own new ideas. "I try to give them enough room to be independent researchers," he says. In his leisure time, Machaty bakes bread and makes cheese, yogurt and beer. "The common denominator is fermentation," he observes. He also enjoys photography combined with travel, and time spent with his family.