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Dr. Barbara Pierce of the Biology Department at Sacred Heart University, in collaboration with Dr. Scott McWilliams of the Department of Natural Resources Science at the University of Rhode Island (URI), has been awarded a $420,000 grant from the Division of Integrative Organismal Systems of the National Science Foundation (NSF).

Dr. Pierce's portion of the grant is a $110,000 sub-award to conduct research examining the interactive effects of dietary fatty acids and antioxidants on diet choices, metabolism, and exercise performance of migratory songbirds.

"It's wonderful, because integrated organismal biology is definitely a very competitive field, and we submitted the grant a couple times in order to get the study funded," says Dr. Pierce, an assistant professor at SHU. "This is a unique grant for this institution to get — it definitely shows that Sacred Heart is growing in the biology research field."

The study will be conducted by a research team comprised of post-doctoral assistants and Ph.D. students from URI and undergraduates from SHU. The research will take place partially at the universities' campuses in Rhode Island and Connecticut, but primarily at the Max Planck Institute for Ornithology in Seewiesen, Germany.

"The nice thing is that the research will be a collaboration between a large, mostly graduate research institution in URI, and a smaller, primarily undergraduate institution in Sacred Heart. This really gives our SHU undergrads an opportunity that they would normally not have at an institution like this, an opportunity to do big research in other places while still enjoying the intimate-sized classes and small-school feel to their education."

Students from both universities will be given the opportunity to work and study for a few semesters in Germany. First overseas will be Michelle Boyles, a biology major graduating from SHU this May, who will spend the summer at Max Planck before starting graduate school in the fall.

"It's definitely a unique thing for Sacred Heart students to be able to do this," Dr. Pierce says, "because they're going to be working at not only URI, which is a great large research university, but also at Max Planck, which is one of the premier scientific research institutions in the world. Our students are going to be exposed to people who are tops in their field."

The researchers plan to measure the metabolism and energy expenditure of two species of migratory songbird that have been fed diets with different fats and antioxidants during two types of exercise: short-intense exercise, like that used to escape predators, and long-duration exercise, like that used during migration. The researchers will employ the use of a hover-flight wheel for short-intense flights and a wind tunnel for long-duration flights.

“Society at large will benefit from this research because there is much current interest in dietary antioxidants and how they may promote human health,” Dr. Pierce says. “Migratory birds offer an interesting model system for studying the effects of dietary antioxidants and fat composition on exercise performance of a vertebrate.”

Dr. Pierce points out another group that will benefit from the research: the birds themselves. “Understanding the nutritional ecology of migratory songbirds is critical because many songbird populations are declining,” she says. “Migratory birds are implicated as dispersers of disease, and many of the sites used by birds during their migration are threatened by development or disturbance by humans. Thus, this fundamental research on diet choices and exercise performance has important implications for both wildlife conservation and human health.”

The National Science Foundation is an independent federal agency created by Congress in 1950 “to promote the progress of science; to advance the national health, prosperity, and welfare; [and] to secure the national defense.” With an annual budget of over $6 billion, the NSF is the funding source for approximately 20 percent of all federally supported basic research conducted by America’s colleges and universities.