

SOUTHWESTERN NEWS

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UT SOUTHWESTERN SCIENTIST MAKING ANTARCTICA RESEARCH INTERACTIVE

DALLAS – Sept. 17, 2002 – Dr. Shane Kanatous, who is leaving for a research expedition to Antarctica in late September, plans to take some Dallas schoolchildren along with him – via the World Wide Web.

Kanatous, a postdoctoral research fellow in internal medicine at UT Southwestern Medical Center at Dallas, has made two previous Antarctic visits. He may be traveling halfway around the world, but he will stay in touch electronically with regular Web updates on his research and personal observations on what life is like in one of the world's coldest places. He's hoping his journey, research and the Web site will spark the interest of local children whom he has connected with in the Science Teacher Access to Resources at Southwestern (STARS) program.

STARS was developed in 1991 by a group of UT Southwestern faculty members as a way to improve the quality of education in Texas. With 20 different, active programs, STARS has served more than 4,000 students, 20,000 teachers and almost 1,000 schools in Texas.

Kanatous has studied seals and sea lions for several years. He is interested in the animals' capacity to withstand the harmful effects normally associated with oxygen deprivation and the control and regulation of myoglobin in their muscles, both of which allow them to dive underwater without breathing for up to two hours. Myoglobin control and regulation in humans plays a key role in protecting the heart from disease, and Kanatous and other researchers hope animals like the seal can provide some clues to preventing or treating heart disease.

His goal during the 10-week trip is to take biopsies of seals' muscles, analyze them for myoglobin and isolate their ribonucleic acids (RNA) and protein. Via a Web site located at http://www.utsouthwestern.edu/home_pages/stars/index.html, Kanatous will answer selected questions from STARS students, post a weekly question to the students and explain his research through e-mails and electronic pictures sent from Antarctica.

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“The wonderful thing is that the animal we want to study is right there in nature. Seals routinely exercise while holding their breath without side effects normally associated with low oxygen conditions,” said Kanatous, who earned his doctorate in physiology from Texas A&M University. “We don’t have to create a model to study how animals will adapt to low oxygen – the perfect model already exists.”

His journey is funded by a grant from the National Science Foundation and begins Sept. 28. The grant pays for everything involved in his trip, from funding for his research study and scientific equipment in Antarctica to required parkas and his room and board in McMurdo station.

“There’s a lab bench with everything I need waiting for me when I get there,” he said. “I don’t have to bring anything down there with me.”

Kanatous will travel on commercial airlines through Los Angeles, Auckland, New Zealand, and finally Christchurch, New Zealand. He will then hop on an Air Force plane for the final leg, which ends at McMurdo station’s ice runway.

Once in Antarctica, the UT Southwestern scientist will set up camp with several other researchers in a tented area several miles from McMurdo station. The camp is located on the sea ice and allows the researchers direct access to the seals. With no natural land predators, the seals are docile. The team Kanatous will be working with plans to study animals from newborns to full-sized adults, which can weigh as much as 1,000 pounds.

The challenge for outreach to students, Kanatous said, is not in simplifying the science enough for them to understand – it’s keeping details of the research interesting enough to captivate the students.

“Kids are so advanced now,” he said. “They ask hard and detailed questions, and they don’t want things overly simplified.”

He will arrive at the start of spring in Antarctica, which means winds can be as high as 90 mph and temperatures are about minus 30 degrees, or about 60 degrees below freezing.

“By December, the temperature begins to approach freezing (32 degrees), and by then

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that feels so warm we're working outside in T-shirts," he said.

The environment's rigors do take their toll. Researchers must eat much more than usual to make up for additional calories spent trying to stay warm, and Kanatous expects to lose as much as 20 pounds on the trip. The group prepares its own food, and camp electricity comes from a generator. From October to December, Antarctica experiences constant daylight.

Kanatous said he hopes that the glimpse of his research and life in Antarctica through the Web site will start more children on the path to scientific careers.

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