

News

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****UT cardiologist researches in space

DALLAS--After seven and one-half years of waiting, Dr. Drew Gaffney's dream of trailblazing human research in space is blasting off. Yet from the scientific view, Gaffney and the members of the space research team at The University of Texas Southwestern Medical Center at Dallas agree that the research following touchdown is even more critical. That's when the real investigatory work begins.

Gaffney, associate professor of internal medicine at UT Southwestern, was scheduled for blastoff May 22 aboard Spacelab Life Sciences 1, the first NASA flight dedicated to human medical research. He is part of a research team that includes two other physicians, a biochemist, an astrophysicist and the two pilots, who will also act as research subjects.

UT Southwestern's research project--the largest of the approximately 20 on the flight--will investigate the effect of weightlessness on the circulatory system by studying physiological changes in the body that occur during space travel and following return to earth. Working along with the space research crew is an earth-bound scientific team, including many researchers from UT Southwestern.

Gaffney said much of the flight's research has applications on earth including:

- * New insights into the ability of the circulatory system to adjust to new and unusual physiological conditions.
- * Understanding why blood pressure often drops in the elderly when they get up from a sitting or lying position.
- * Understanding the changing patterns of circulation in patients who undergo long periods of bedrest, a condition believed similar to the changes space travelers experience.

* Applying new exact measurement techniques for echocardiography, a method using high-frequency sound waves to form pictures of the internal structure of the heart, used with cardiology patients.

Of major concern to the Dallas researchers are the effects of weightlessness on central venous pressure--the driving force in blood pressure. To carry out this experiment in space, Gaffney will wear a catheter attached to a small pump developed by Dr. Jay Buckey, assistant professor of internal medicine at UT Southwestern and part of the scientific ground team. This instrument will both measure the blood pressure and keep the catheter line open.

Research by other schools includes monitoring kidney function before and after space travel and weighing in a "scale" for weightless people, actually an oscillating chair that measures body mass. Other experiments will seek answers to questions about humans in space, such as why space travelers faint and lose bone density.

For Gaffney, the wait has been long. Chosen in 1985 as a civilian scientist participant in SLS-1, the cardiologist has seen many launch dates come and go. "I've had more launch dates than birthdays," Gaffney jokes.

Gaffney first became involved in the space program in 1978 when NASA invited scientists to submit research proposals to be conducted in space. He and his boss, Dr. Gunnar Blomqvist, professor of internal medicine at UT Southwestern, proposed a project to study the effects of weightlessness on heart and lung function. Blomqvist was already studying the effects of gravity on body function. Their proposal was one of the few accepted from hundreds proposed. However, at that time opportunities to participate as a crew member during space flights were severely limited by the agency, and "I made a conscious decision not to apply as an astronaut," Gaffney said.

A few years later NASA opened applications for scientists to travel as "payload specialists" in a special research bay attached to the space ship. Blomqvist nominated his junior research partner, and Gaffney was chosen for the life-sciences flight. "When they said you can fly and keep your career, I said that's too good to pass up. Like many things, when it seems too good to be true, it usually is," he said with a wry smile.

The UT scientist was originally scheduled to go up in late 1985 on the Challenger. But scheduling problems, the Challenger disaster the following year and, more recently, hydrogen leaks on the Columbia kept postponing what had begun as a two-year project to more than seven. Although the waiting has been a strain, "You almost can't complain--there are a million people out there who want your job," Gaffney said with a grin.

Gaffney will continue living his double life--as UT Southwestern cardiologist and NASA researcher--for at least the next year, working with his fellow researchers to decode data gathered and beginning to publish the findings in scientific journals. At the same time NASA and the UT Southwestern group will begin working with German and other European space agencies and a large group of European scientists in preparation for D-2, the next major scientific research flight. D-2 will include experiments ranging from biology to medicine to materials science.

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NOTE: The University of Texas Southwestern Medical Center at Dallas comprises Southwestern Medical School, Southwestern Graduate School of Biomedical Sciences and Southwestern Allied Health Sciences School.