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**Space research comes to
the First Coast at UF Proton Therapy Institute
Astrobiologists to study effects of protons on bacterial spores May 8**

JACKSONVILLE, Fla. – In the search for life on other planets, scientists want to be sure they are not detecting stowaway life forms from Earth.

That’s why researchers from the University of Florida and the German Aerospace Center (DLR) plan to meet at the UF Proton Therapy Institute this weekend—to test whether certain harmless but hardy Earth microorganisms could survive a type of cosmic radiation encountered during interplanetary flight.

The space environment is filled with radiation, such as X-rays, gamma rays, protons, electrons and heavy ions. High-energy protons are the most abundant type of charged particle in deep space outside the Earth’s magnetic field. The proton accelerator used to produce therapeutic doses of radiation for cancer patients also can be used to simulate the conditions of outer space.

“Patients and visitors to UF Proton Therapy Institute often remark that our treatment rooms look like something from the television series ‘Star Trek,’” said Stuart Klein, executive director of UF Proton Therapy Institute. “The sophisticated science and engineering used every day in treating patients is awe-inspiring. This collaboration with UF, NASA and the DLR adds another level of significance to the truly unique resource we have here in Jacksonville.”

Working together on the research, funded in part by NASA’s Office of Planetary Protection, are Wayne Nicholson, a UF Institute of Food and Agricultural Sciences astrobiologist who works from NASA’s Space Life Sciences Laboratory at the Kennedy

Space Center, and Ralf Moeller, a scientist from the German Aerospace Center, Institute of Aerospace Medicine Radiation Biology, in Cologne, Germany.

They will study the effects of high-energy protons on two types of bacterial spores: *Bacillus subtilis* and *Bacillus pumilus*.

These harmless bacteria are found in abundance on Earth and have survived past space expeditions as hitchhikers on such notable spacecraft as Apollo 16, Spacelab 1 and the International Space Station.

“Future missions to other planets such as Mars are designed to look for life,” said Nicholson. “Earth is completely covered with life, and Mars life could be very different. We want to eliminate the possibility of forward contamination of Earth life to other planets. That way, if we do discover life on Mars, we will be confident that we have indeed found Martian life, not Earth life.”

So far, the bacterial spores have proven to be very resistant to the harsh conditions of outer space and have survived exposure to chemicals, heat, ultraviolet rays and cosmic rays. The researchers plan to test the spores’ ability to withstand extended exposure to high-energy protons and study the bacteria’s remarkable ability to repair its DNA when damaged.

The study will begin Saturday at the UF Proton Therapy Institute. The facility is not in use for cancer patient treatment on weekends.

UF Proton Therapy Institute is a nonprofit 501(c)3 organization affiliated with the UF College of Medicine and the UF Shands Cancer Center, dedicated to delivering state-of-the-art cancer treatment and setting new standards for treating and curing the disease. The cancer treatment facility houses both conventional radiation and proton therapy, and delivers proton therapy to 100 patients a day. For more information about UF Proton Therapy Institute, please visit www.floridaproton.org, or call toll-free 877-686-6009.