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## **Astronauts, flies returning to Earth on Monday**

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KENNEDY SPACE CENTER -- When space shuttle Discovery touches down at 9:07 a.m. Monday at the Shuttle Landing Facility, the seven astronauts aboard will be joined by a bunch of fruit flies.

Biologists from the University of Central Florida and University of California sent 10 small containers -- the size of a computer zip disk -- filled with the small creatures along with the crew in hopes of learning how prolonged stays in space could affect the human immune systems. Also aboard will be a small amount of fungus known as *Beauveria bassiana*, an approved pesticide that is not harmful to humans. The two will mix during the flight.

Biologist also kept 10 small containers of fruit flies at Kennedy Space Center to be part of the study while their counterparts flew in space. Upon their return, both sets of flies will be evaluated for bacteria and fungi. The space travelers will then be compared to the ones on Earth that have never been beyond the planet's atmosphere.

"The primary question being asked is whether the immune system is compromised from prolonged space travel," Laurence von Kalm, associate research geneticist at UCF, said. "Are they more susceptible to infection than the flies that don't travel into space?"

After all, fruit flies only have a life cycle of four to six weeks -- so 12 days in space qualifies as "prolonged," the expert said.

Kennedy Space Center is providing a laboratory area for Kalm and her colleagues for a two-week study of the genetic makeup of the flies. NASA's goal is to find out how extended stays in space, such as a trip to Mars, could affect the health of astronauts, von Kalm said.

This STS-121 mission -- the second in the space agency's Return to Flight after the Columbia exploded during re-entry three years ago -- was not only to test the shuttle's

safety improvements and restock supplies at the International Space Station, but also to drop off a European Space Agency astronaut.

Thomas Reiter will join the Russian cosmonaut and the American astronaut for a six-month stay. The station has had two occupants since May 2003.

Once the crew docked with the space station on July 6, more than 28,000 pounds of equipment and supplies were unloaded. There also were two space walks.

**When the shuttle lands Monday, weather permitting, not only the eyes of spectators will be turned upward. High-resolution cameras will watch as the shuttle approaches KSC from thousands of miles away.**

**NASA will track and monitor the shuttle's entire re-entry to Earth. Southern Research Institute, based in Birmingham, Ala., and NASA set up cameras on a WB-57 aircraft to capture images and video of space shuttle Discovery at about the same point Columbia broke up more than three years ago.**

**"This is the area where the shuttle is under the most heat and stress. This is the transition phase where the shuttle turns from being a spacecraft to an airplane," said Tim Taylor, business development manager with Southern Research Institute.**

**During the shuttle's liftoff on the Fourth of July, it was escorted by the same aircraft, flying at 60,000 feet and equipped with the WAVE system, to capture high-density video imagery of the rocket during the ascent phase of the mission.**

**The jet flew 20 miles away from the space shuttle and the WAVE tracked the shuttle for about six minutes, from liftoff to main engine cutoff.**

As the astronauts wait for the OK to come home from mission control in Houston, officials also will be interested in the weather around KSC. The extended forecast for the weekend into Monday is a slight chance of rain in the early afternoon, but at 20 to 30 percent is less than what is normally expected this time of year in Florida, said Tony Cristaldi, senior forecaster with the National Weather Bureau in Melbourne.

"There are no systems out there," he said.