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MEDIA RELEASE

Worms could hold key to survival in space

November 30, 2011

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A colony of worms that survived six months in space in 2006 could be good indicators of how long humans might manage in space, according to a pair of Simon Fraser University scientists who continue to study them.

A new paper by SFU biologist David Baillie and Bob Johnsen, published Nov. 29 in The Royal Society's journal *Interface*, provides the first published description of the worms in space and the experiments that were carried out.

The 4,000 microscopic worms, known as *C. elegans*, sent to the International Space Station on the 2006 Space Shuttle mission went through a dozen generations while on board and continued to thrive.

The mission was supposed to last only three months. "Our worms lived through the extended, unplanned stay even with inadequate food, showing them to be robust," says Johnsen.

The research was carried out with scientists from the University of Nottingham and U.S. scientists. They developed a compact automated *C. elegans* culturing system that can be monitored remotely to observe the effect of environmental toxins and in-flight radiation.

"It's also important to note that the worms stayed in space for multiple generations thus had many cell divisions," he adds. "This is another reason why these worms are a good model system for humans, because many of our cells – for example blood cells – go through multiple cell divisions during extended trips in space."

SFU's contribution to the study is to look for the genetic effects of space radiation. "*C. elegans* is an excellent model system to study the genetic effects of radiation in deep space (beyond Earth's protective magnetosphere)," says Johnsen. The research is being funded by the Canadian Space Agency.

Among new developments, the researchers have done preliminary whole genome sequencing of a couple of strains of the worms and have advanced their analysis techniques.

This week they are submitting to the Michael Smith Genome Sciences Centre eight additional strains for whole genome sequencing - three of which are from space flown worms, one, a ground control, while another four have been exposed to multiple short bursts of x-rays under controlled conditions. They're testing the effects of multiple doses of different levels of radiation.

The goal of the research is to work towards developing countermeasures that will prolong manned space flights.

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