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Worms in space expected to touch down

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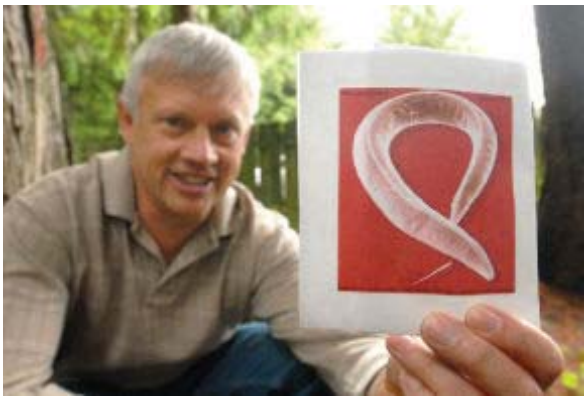

Simon Fraser University researcher Bob Johnsen holds up an image depicting the type of worm he works with called c. elegans. A container of the worms have been in space for six months and are due to arrive in Florida this week. JENNA HAUCK/ PROGRESS

Cultus Lake resident Bob Johnsen is an SFU scientist who is eager to get his worms safely back to the laboratory.

The arrival of the incubator containing his research worms was delayed again recently by a freak hailstorm, and the space shuttle landing date just got pushed ahead again to later this week.

"The worms were supposed to come down in March," Johnsen told The Progress. "We're anxious to get them back to the lab. The longer they're up there, the more likely it is something could happen to them."

Johnsen is an associate researcher in molecular biology and biochemistry at Simon Fraser University, who did his PhD thesis on a mutagen-testing system which allows researchers to analyse genetic mutations recorded in worms' DNA.

The study will allow them to capture mutations passed down through the generations that would normally be lost in other situations.

"Only by analyzing the extent of their genetic mutations will we be able to understand the impact of lengthy exposure to radiation in space," Johnsen explained. "Before we can mitigate the impact of radiation we have to understand the biological changes it causes."

The research worms, c. elegans, measure about a millimetre long and have about a two-week lifespan. They have been orbiting space in a special medium for months, producing

more than 20 generations of descendants from the original 60 grams of worms that were launched into space.

"Hopefully we'll get hundreds of thousands of them back," Johnsen said.

Although the research project is a preliminary one, he said the scientific data may one day lead to a better understanding of the impacts of radiation in space. This is key information since NASA scientists want to know more about the impacts of space radiation before sending a crew to Mars by 2035.

"That's the long-term goal," he said. "But first we have to determine what sort of damage occurs and how much. From there we'll look at how to mitigate damage for longer-term space flights."

One in eight travellers taking a round trip to Mars could die from radiation poisoning and the rest would likely be very ill, according to current research. What's unique about the project is that it represents "the longest space trip ever" for the worms, Johnsen said.

"It allows us to work with 20 per cent of the genome, which is a big chunk of it," he said. "Nomally, worms lose their genetic mutations as they grow."

The real work starts when Johnsen gets his precious cargo back to the lab he shares with SFU biology professor David Baillie, who holds the Canada Research Chair in genomics.

The team was approved for a three-year $150,000 study funded by the Canadian Space Agency using the system Johnsen co-developed, called eT1, after the particular strain of worms used.

The project has recently attracted a fair bit of media interest as the scientist prepares to fly to Cape Canaveral, Florida this week to pick up his precious cargo. The container of worms is now expected to arrive on terra firma on June 21 after hitching a ride back with the Space Shuttle Discovery.

Why is there a need to set foot on Mars?

"It's about expanding the human frontier," said Johnsen. "Six hundred years ago, we would have asked why do humans need to go to North America? The answer is the same as it was then: to find new resources, to give us more options for places to exist and to satisfy human curiosity."

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