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Isle biotech research heads for new heights

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The Shuttle Endeavour will carry a bit of Hawai'i-based biotechnology with it when it blasts off on a 14-day mission in August.

Tissue Genesis Inc. and Hawaii Chitopure, two Honolulu-based companies with cutting-edge medical treatments, have been chosen to participate in a U.S. Department of Defense experiment carried aboard the shuttle in a suitcase-sized research module. The companies will test the effects of zero gravity on cellular growth and are two of about 25 experiments scheduled on the flight.

"We are pushing the envelope on really good, exciting technologies," said Tom Cannon, Tissue Genesis vice president. "It's an exciting thing that's going on in Hawai'i."



Jamie Horton, left, Shannon Iwami and others at Tissue Genesis "are pushing the envelope on really good, exciting technologies."

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Located on the 11th floor of the old Gold Bond building, Tissue Genesis is developing tissue engineering and cell-therapy solutions. This includes harvesting therapeutic cells from fat tissue and using them in repairing damaged tissue and coating of implants. The cells can be used in wound dressings or be injected into damaged tissue.

Hawaii Chitopure opened here more than a year ago and has ties with HemCon Medical Technologies Inc., an Oregon company that's developed a bandage manufactured using chitosan, a substance found in the shells of shrimp, crab and other crustaceans. HemCon bandages are designed to control life-threatening bleeding and are carried by all soldiers in Iraq and Afghanistan.

Hawaii Chitopure is gearing up to develop standardized procedures for large-scale manufacture of ultra-pure chitosan for an internal bandage being developed by HemCon. The local company operates in 3,500 square feet of laboratory space in the Bougainville Industrial Park.

Both companies were co-founded by Dr. William Weismann, who has 20 patents awarded or pending, and has held medical research positions with the U.S. Army and with the Walter Reed Institute of Research. The companies also have links through Weismann and others to the Department of Defense's Space Test Program and the Walter Reed Army Institute of Research's military casualty program in Silver Spring, Md.

It was through these programs that Tissue Genesis and Hawaii Chitopure were selected to conduct tests in a cell culture experiment aboard the Endeavour, Cannon said.

Tissue Genesis' research project involves studying how using stem cells derived from fat tissue react in a zero-gravity environment. Hawaii Chitopure's experiment will look at the effectiveness of chitosan-based antibacterials to modulate and improve immune response.

Data yielded from the flight could play a role in advancing the companies' work, said Keiki-Pua Dancil, Hawaii Chitopure executive vice president of business operations. She said the experiment also may shed light into healing processes in space, where wounds are slower to mend.

"You can learn a lot by studying things in different environments," Dancil said. "It helps shed light on some of the questions we have on the ground."

Cannon said space in the Department of Defense cell culture module on the Endeavour is designed so that it requires minimal astronaut time. The crew will have to push some buttons to initiate some processes, but it will operate on its own thereafter.

Space in the experiment module will be divided between Tissue Genesis and Hawaii Chitopure's experiments. Cannon said the module will be taken aboard the shuttle within 24 hours of its launch and be removed within three hours after it returns from space.

The experiments are part of the 11 that will be carried out by shuttle crew members during the shuttle flight. The remainder will be undertaken when it reaches the International Space Station. NASA spokeswoman Lynnette Madison said other experiments to be carried out involve bacterial cultures and a possible drug to prevent muscle atrophy.

The liftoff of Endeavour has been tentatively scheduled for Aug. 9. Its main mission is the delivery of a truss segment and other materials to the space station.

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