Scientists at UH partner with NASA, astronauts to study immune system

April 5 2013

Fighting viruses is a regular battle for your body, one it routinely wins if it has a healthy immune system. But compromised systems, as experienced occasionally by astronauts during space flights, can allow viruses to return.

A research study from the University of Houston Department of Health and Human Performance (HHP) partners with NASA and astronauts aboard the International Space Station to examine how spaceflight affects the immune system.

"All of us have viruses that we're already infected with, and our immune system does a very good job of controlling them," said Rickie Simpson, principle investigator and assistant professor of exercise and immunology. "When astronauts are in space, those viruses reactivate a lot. What we don't know is if altered immunity and viral reactivation pose a significant risk to the health of astronauts when they're in space for a prolonged period of time." Simpson and his research team will collect blood, saliva and urine from two astronauts before, during and after an upcoming mission. They'll be measuring natural killer cells, potent cells capable of killing even cancer cells, and monitoring their health for several months.

"Space flight is this unique environment that is very stressful. We know that these viruses come back, but we don't know if it's because of the stress or if it's because they're in space," Simpson said. "This may be very helpful in understanding how this works for stressful environments

on Earth. Students' examination stress, medical students taking final exams, psychological stress—caregivers for example—those are stressful situations capable of triggering latent viral reactivations."

Blood and saliva samples will be collected from the astronauts 180 days before launch for a baseline measure, then again 60 days before launch. While aboard the International Space Station, the astronauts will collect further samples several times before coming back to Earth. They'll then be monitored for six months.

"Our goal is to have six astronauts enrolled in the study, which will take several years," Simpson said. The University of Houston has partnered with NASA on other HHP research projects, including the creation of a microfiber sweat patch to study bone loss in astronauts.

Provided by University of Houston

Citation: Scientists at UH partner with NASA, astronauts to study immune system (2013, April 5) retrieved 10 April 2024 from https://phys.org/news/2013-04-scientists-uh-partner-nasa-astronauts.html

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