- SPACE

Axiom Space's civilian launch to space station gives UCF scientists chance to study eyes & brains

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ORLANDO SENTINEL |

APR 03, 2022 AT 7:00 AM

UCF Health ophthalmologist Dr. Mehul Patel performs a pre-flight eye exam at the UCF Health clinic on Eytan Stibbe, a mission specialist on the all-civilian Axiom Space mission to the International Space Station. (UCF College of Medicine)

This week all eyes will be on the Axiom Space civilian crew rocketing up to the International Space Station from Kennedy Space Center, but University of Central Florida researchers will be more interested in the eyes, and other organs, of the four space travelers when they return to Earth.

UCF Health professors are collaborating with Israeli researchers to better understand the human body in a microgravity environment by studying the four space participants, three of which paid for the flight and one of which is a former NASA astronaut. The quartet are set to blast off Wednesday from Kennedy Space Center hitching a ride on a SpaceX Crew Dragon, which has been contracted by Axiom Space making its first trip to the ISS on a 10-day mission.

The studies could lead to huge leaps in space travel and medicinal knowledge bases, but for UCF the studies open an even larger opportunity for research and a nexus between its medical school and the Space Coast. The details are still being worked out, but UCF's Medical Center has arranged a partnership with Axiom supporting human research studies in future flights including Axiom 2 next year, said Amoy Fraser, the UCF manager of clinical research.

"As the closest medical school to the Space Coast, we are optimally positioned to support these studies. And I think we'll have a very fruitful partnership

going forward," she said.

UCF Health physicians Drs. Ali Rizvi, Mehul Patel and Joyce Paulson. (UCF College of Medicine)

The heart of UCF's study is focused on changes to the astronauts' eyes and brains.

The latter stands uniquely as the first human study of a microgravity environment's effect on the "blood-brain barrier," or the coated protection around a brain that filters out harmful toxins carried in the bloodstream, which is good, said Dr. Ali Rizvi one of the main investigators in the study and a UCF professor.

"This means that not only the eyes are involved, but pretty much every organ system in the body changes because of displace flight," Antman said.
SANS studies have occurred before, but what makes UCF and Rabin Medical Center's collaboration unique is the tools they'll be using. New imaging devices will enable researchers to see the structure of the eyes, the blood flow and how space flight might change them. Even during a short time in space changes could make differences in glasses prescriptions, Patel said. A longer

example would include NASA astronaut Scott Kelly who experienced weaker vision after spending a year in space between 2015 and 2016.

It remains to be seen if any large changes will occur, but if there are microscopic changes, Antman and Patel are hoping to catch them since understanding this phenomenon will govern how future space travel occurs. “This is one of the exciting parts of doing the study, we’re going to be able to see microscopic changes, perhaps, for the first time ever, in someone that has left Earth and is returning 10 days later,” Patel said.
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