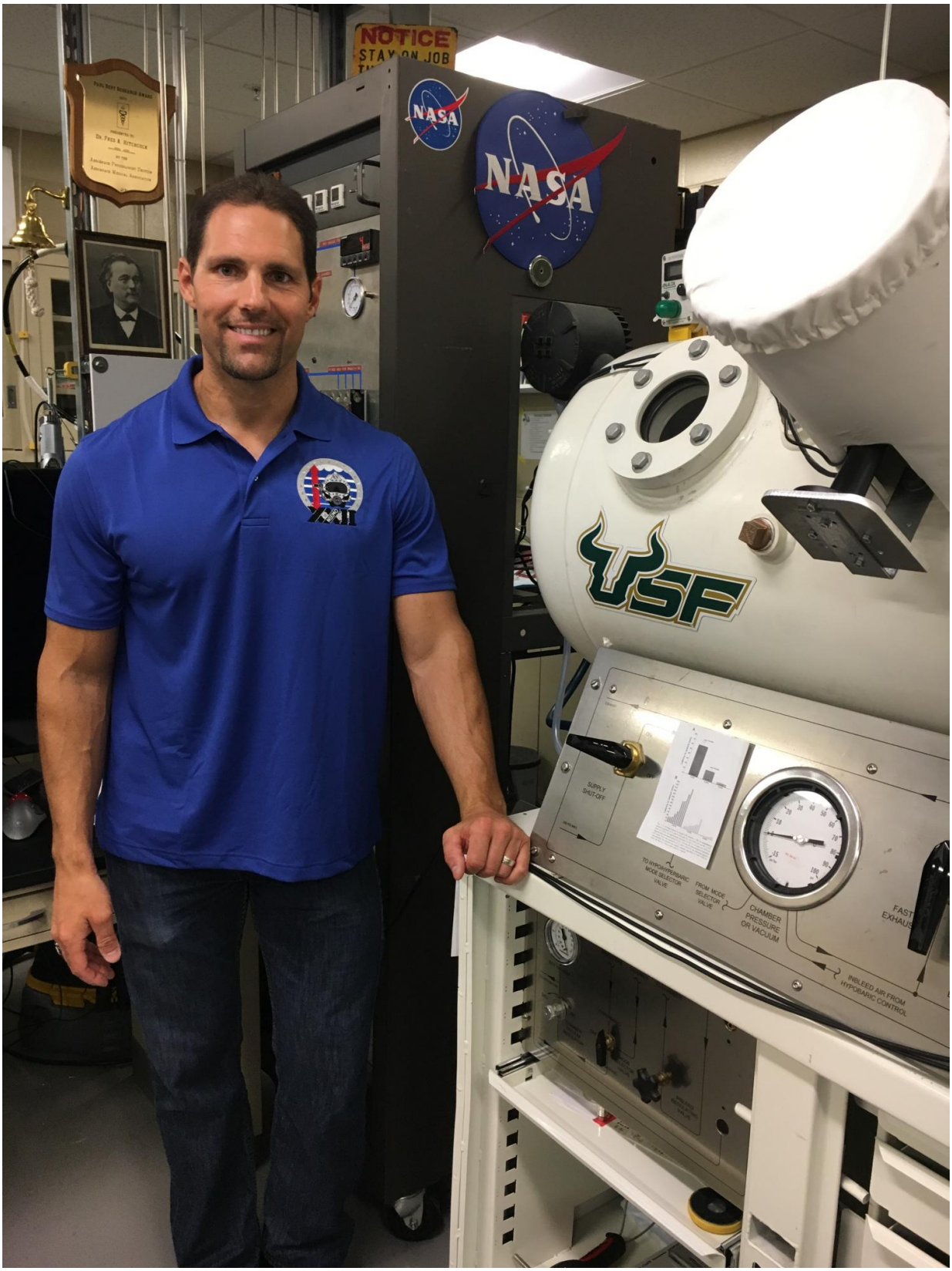
NASA mission tests ketogenic diet undersea, simulating life on Mars

June 9 2017


NOTICE
NASA
NASA
USF
SUPPLY SHUT-OFF
CHAMBER PRESSURE OR VACUUM
FAST EXHAUST
INBLEED AIR FROM HYPOBARIC CONTROL

Dr. Dominic D'Agostino in his laboratory at the University of South Florida in Tampa, FL. Credit: Tina Meketa

University of South Florida associate professor Dominic D'Agostino, PhD, is one of four crew members selected for the NASA Extreme Environment Mission Operations (NEEMO) 22 expedition. He is the only member not affiliated with National Aeronautics and Space Administration (NASA) or European Space Agency (ESA).

The NEEMO 22 crew splash down to the bottom of the Atlantic Ocean June 18th where they'll spend 10 days in the Florida Keys National Marine Sanctuary located six miles off the coast of Key Largo, simulating a deep space mission with similar objectives to exploration on Mars. Living and working at the bottom of the ocean mimics the microgravity (or harsh) environment they will experience in space. They'll conduct simulated spacewalks, test time delays in communication, evaluate a variety of tools and procedures to be used in future space missions.

Dr. D'Agostino was selected for his research conducted at the USF Hyperbaric Biomedical Research Laboratory (HBRL) on how extreme environments impact the human body. One of the countermeasures developed is a method to induce and sustain nutritional ketosis with ketone supplement formulations. Nutritional ketosis shifts the body's metabolic state to burn fat rather than glucose as its primary fuel.

The USF-patented method will play a pivotal role in advancing the objectives of the NEEMO 22 mission. Dr. D'Agostino will be in a constant state of nutritional ketosis, which is proven to preserve the genome, protecting DNA. This is beneficial to NASA as it can countermeasure neurological risks that come with space travel such as

space radiation, lack of oxygen and stress of small spaces.

No other crew members will be in this metabolic state, creating a baseline for how environmental factors impact the human body in such extreme conditions. Data will also be collected from the other crew members on gut microbiome, body composition, cognitive tasks, vision assessment, sleep quality and a variety of other physiological parameters.

Other objectives of the NEEMO 22 crew include testing counter measure equipment, technology for precisely tracking assets and assess hardware sponsored by the ESA that will help crew members evacuate someone who has been injured on a lunar spacewalk.

Provided by University of South Florida

Citation: NASA mission tests ketogenic diet undersea, simulating life on Mars (2017, June 9) retrieved 25 April 2024 from https://phys.org/news/2017-06-nasa-mission-ketogenic-diet-undersea.html