

University of Florida professor to fly Blue Origin New Shepard on mission for NASA

August 30 2024, by Richard Tribou, Orlando Sentinel



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University of Florida horticulture science professor Rob Ferl is going where some men have gone before, including William Shatner and Jeff Bezos, but he's bringing along some experimental plant life for NASA.

Ferl, a researcher within UF's Institute of Food and Agricultural Sciences, is also the director of UF's new Astraeus Space Institute. He is joining five other people on the launch of Blue Origin's suborbital New

Shepard rocket today for what will be its eighth human spaceflight. Dubbed NS-26, the capsule is set for liftoff as early as 9:00 a.m. EDT from Blue Origin's West Texas launch facility.

Along for the ride will be a species of plant called *Arabidopsis thaliana*. Ferl will be looking at how its genes adapt on the way to space.

"Space is a challenging environment, one that we're not evolutionarily designed for," he said during a phone interview from the launch site. "And so the question is, what tools can we bring to bear to understand how much adaptation, how much physiological change has to occur in order to survive and thrive in space."

Ferl has used the plant on previous experiments on board the International Space Station and the [space shuttle](#).

"It turns out, we know a fair bit about what it's like to be on the [space station](#) or on the space shuttle compared to Earth, but we actually know very little about that transition from going from the ground up into space," he said.

"Science just hasn't had that many opportunities to do biology experiments of the kind—that we do on the way or in the first few minutes, or even the first few seconds of getting into space."

The plants are the representative for what terrestrial biology has to go through when it travels off-world.

He was able to test it out once already during a suborbital flight of Blue Origin competitor Virgin Galactic in 2021, although Ferl didn't get to fly alongside the plants on that mission.

The Blue Origin flight, though, mimics more the sort of human

spaceflight seen across other launch vehicles like Soyuz or SpaceX's Crew Dragon, and this flight on New Shepard allows for a more complete version of the experiment, he said. It's also part of the original pitch to NASA doing the experiment on two different kinds of space vehicles.

"We learned a lot from that flight," he said. But this flight will make it easier to interpret the biological responses.

What he's found already has been eye-opening.

"One of the things that we were, in a sense, surprised about was the amount of gene activity that occurred even in these early parts of entry into space," he said. "To put it in a different way, biochemically speaking, plants know when they're on a rocket, and they know when they're going into space and they know when they're coming back."

He said being able to measure the changes has been "biologically astounding."

"The simple fact that a plant, terrestrial biology, and I use this term very loosely, knows that it's taking a rocket ride, I think, is actually pretty cool, and that we can interpret them and then try to understand basically what it takes for terrestrial biology to transition into space," he said.

For this return to space, the plants will once again be encapsulated within a device called a Kennedy Space Center Fixation Tube. Ferl's UF colleague and co-investigator Anna-Lisa Paul will be on site and remain on the ground to take control measurements at the same moments he performs his while on the way up, during weightlessness and on the way back down.

The suborbital trip will take about 10–12 minutes during which the New

Shepard capsule will fly above the Karman line, which is 62 miles (100 km) altitude, the internationally recognized limit for having gone into space. It will experience weightlessness for a few minutes and then return to Earth with a parachute-assisted landing close to the launch site.

Ferl's involvement, for an undisclosed cost, comes thanks to grants from NASA's Flight Opportunities and the Biological and Physical Sciences division, along with UF Research funding.

"Everything's paid up. The government has chosen this as an opportunity to send scientists into space, but there are others on their way too," he said. "NASA's already funded upcoming flights for other people. ... This is the beginning of NASA trying to understand how much and how best to leverage the ability to fly scientists with their experiments as part of their exploration goals."

He will be joined on the flight by Nicolina Elrick, Eugene Grin, Eiman Jahangir, Karsen Kitchen and Ephraim Rabin. Ferl will become Blue Origin's first NASA-funded flight participant.

The headline-grabbing event comes in the first year of UF's new space institute being formed, something Ferl said was the university's effort to pull in all the various space-related research already happening among the school's multiple disciplines.

"There's space research occurring in astronomy and mechanical and aerospace, in health and human performance. I mean, the number of people that are doing space-related research at the University of Florida is actually pretty amazing," he said.

He said it gives more weight to UF's efforts "sort of aggregated together with a bright light shone upon it so that our role as an institution can increase in its sort of presence within the state and within the nation."

The next step, though, would be intermixing disciplines "to take our space-related research to the next level, if you will, to look for larger mission proposals, opportunities to bring together physiology and propulsion sciences, to bring together different colleges into a bigger collective to look for bigger, more challenging and even more far-reaching projects for space exploration."

His chance through the NASA grants to be hands-on, is also not something he takes lightly.

"I am like every other, I think, space-curious human being, interested to know what the view from space will do for me, emotionally and philosophically," he said. "No question about it. I want that experience, and I expect to have that experience, but I think one of the primary things as an educator and as a scientist at UF, I want the world to understand that there is now another way, another route, another reason to go to space."

He points out as a parallel example, that for a scientist that was an ocean expert, how much more deeply they can understand their subject by just going out to and underneath the ocean.

"I'm hoping, expecting, even, that this spaceflight will do that for me and for other scientists like me that want to understand what space exploration science data we get back, and I want to be able to understand it with the experience of having been there and understanding it better because I've been there," he said.

After this flight, New Shepard will have flown 43 humans into space.

New Shepard's first flight came in 2021 when company founder Jeff Bezos took to space. Successive flights have featured celebrities such as Shatner of "Star Trek" fame, NFL Hall of Famer and broadcast star

Michael Strahan.

Others have been affluent customers, including Winter Park power couple Marc and Sharon Hagle and Brevard County millionaire Steve Young. While even more have been individuals whose trips were awarded through foundations such as MoonDAO that look to open the door to space to those of lesser means.

New Shepard is Bezos' entry into the space rocket business, and this marks its 28th launch. Blue Origin has its heavy lift New Glenn rocket gearing up for an inaugural launch from Cape Canaveral as early as Oct. 13. New Glenn is constructed at Blue Origin's factory on Merritt Island and launches will occur from Canaveral's Launch Complex 36.

Blue Origin is also tasked by NASA as one of two commercial providers for its human landing system for the Artemis program using its Blue Moon lander.

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Citation: University of Florida professor to fly Blue Origin New Shepard on mission for NASA (2024, August 30) retrieved 31 August 2024 from <https://phys.org/news/2024-08-university-florida-professor-fly-blue.html>

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