Seven questions for Dante Lauretta, leader of NASA's OSIRIS-REx mission

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The OSIRIS-REx spacecraft will rendezvous with asteroid "Bennu," scoop a sample and bring it back to Earth.

Dante Lauretta, who is leading the UA's OSIRIS-REx NASA mission, talks about what it takes to reach an asteroid and how an electric guitar plays a role in the mission.

Dante Lauretta, a professor in the UA's Department of Planetary Sciences, is leading the biggest NASA mission the UA has ever undertaken. Scheduled to launch in September 2016, the OSIRIS-REx

spacecraft will rendezvous with asteroid "Bennu," scoop up a sample and bring it back to Earth. Lauretta talked to Lo Que Pasa about what makes asteroids interesting, what it takes to get to one and why an electric guitar plays an essential part in the mission.

Can you describe your role in the OSIRIS-REx mission?

My primary job is to define the science objectives, lead the science team and protect the scientific integrity of the mission as we go through the design process. For example, if a certain part turns out to be not working the way it should to give us certain scientific results, I make the decision whether we sacrifice the science and keep going with what we have spend the extra resources it would take to get that component working.

Why should we care about asteroids?

Asteroids are our closest neighbors in space. When they impact, it could be a major natural disaster. But unlike earthquake or a volcanic eruption, an asteroid impact is the only natural disaster we can avert. We think Bennu is a water-rich asteroid that contains platinum and other precious elements. Water and organic compounds together could be used for life support and rocket fuel. Asteroids are interesting because they are the earliest remnants from the formation of the solar system and may have brought the water onto the Earth.

What makes OSIRIS-REx special for the UA?

This is the next mission in the long legacy that UA has had in supporting NASA exploration missions. At $1 billion, OSIRIS-REx is more than twice the budget of the Phoenix Mars Lander. This shows our growth in that area. We are able to provide technology and leadership that are

critical to NASA's objectives. The mission also is an amazing opportunity to educate our students. I started on a NASA space grant internship in 1992; now we have 30-40 undergraduates working on the mission at any given time, in addition to graduate students who are doing their research projects and performing essential work for mission success.

What sparked your interest in asteroids?

As an undergrad at the UA, I majored in theoretical mathematics, considering myself an explorer of inner space, so to speak. In my last semester, I saw a job ad in the Arizona Daily Wildcat for the NASA Space Grant Undergraduate Research Internship Program. I applied and ended up developing a mathematics-based language for communicating with extraterrestrials. The project also made me think about planetary systems other than our own, and I entered grad school with the goal of addressing those big questions.

How did OSIRIS-REx come about and how is it going to unfold?

As a young assistant professor in the UA's department of planetary sciences in 2004, I got a phone call one day from our former department head, Michael Drake, who passed away in Sept. 2011. He said, "I have Lockheed Martin in my office. They want to fly a spacecraft to an asteroid and bring back a sample. Are you in?" I thought for a moment what that would mean for my career – I was a young professor with no tenure, I wouldn't get any of my research done … – so yes! Convincing NASA to fly this mission took seven years. If all goes well, we'll launch OSIRIS-REx in September 2016 and send him on a 7-year journey to rendezvous with asteroid Bennu. He'll spend a year mapping Bennu to select a sample site, then gently approach the asteroid surface to obtain a

piece of solar system history, and depart on the return trip to Earth.

How can the community participate in OSIRIS-REx?

With the starting of the countdown clock on Monday, December 9, 2013 the OSIRIS-REx website kicked off a new video feature called "321Science!," a series of entertaining and engaging videos about planetary science, asteroids and the OSIRIS-REx mission. Regular installments are posted to the OSIRIS-REx YouTube page. We have an information booth at the Tucson Festival of Books; we are available for guest speakers for local conventions and student groups, and we do classroom visits, where we take along hands-on activities for kids. We also host a regular OSIRIS-REx Science Club at the Tucson Boys and Girls Club. In light of NASA's recent budget cuts, we always encourage the public to make their voice heard with legislators if they believe planetary exploration is important.

There is an electric guitar in a stand next to your desk. What's up with that?

My job is very stressful so I need an outlet. I began playing guitar right around the time we started with OSIRIS-REx. At that time I also became a father, so I needed something that allowed me to spend some time just for myself. When I need just five minutes to relax, something to get my mind off for a bit, I'll grab the guitar and play a song or practice a few scales. I have an electric because it's quiet, I can play it with headphones or without, so I don't bother the neighbors. I enjoy playing songs by the Beatles, Van Morrison, The White Stripes, Grateful Dead, and other classic rock stuff … and "Space Oddity" by David Bowie, of course.

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