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To Boldly Go

Interstellar travel, light-driven spacecraft, suspended animation. It sounds like the formula for countless science fiction stories, but it could be reality in the not-so-far future if UC Santa Barbara researchers Philip Lubin and Joel Rothman get their way.

“Humanity has dreamed of interstellar flight for more than 100 years. We are working on bringing this dream to reality for all of us, but particularly for the next generation,” said Lubin, a physicist. He leads the UCSB Experimental Cosmology Group, which investigates, among many things, travel in deep space and searches for extraterrestrial intelligence.

Through the UCSB NASA Project Starlight program, Lubin’s team plans to use laser-propelled miniature spaceships (or “spacechips,” as they have been called) to transport the Rothman Group’s miniature lab animals across vast interstellar distances. These humble microscopic creatures — nematodes and tardigrades — are extremely hardy and can be placed in suspended animation to withstand the cold of space and the rigors of near light-speed travel through the cosmos.

“Following the longest voyage ever taken by a terrestrial creature, we can wake them up and ask how they’re enjoying the trip, whether they reproduce normally and how well they remember what we taught them on Earth,” noted Rothman, a biologist.

With the (very delicious) possibility of turning science fiction into fact just around the corner, it’s no wonder Lubin and Rothman’s labs have become key participants in

the upcoming Raw Science Film Festival (RSFF), taking place Jan. 5-7 at the Lobero Theater in Santa Barbara. It's where science meets Hollywood in a series of thought-provoking film screenings, scientific and media workshops and exhibits that focus on the intersection of science and storytelling. The festival is in its fourth year.

Lubin and Rothman agree that "this festival will create a wonderful opportunity for cross-fertilization between filmmakers, scientists and the public, stoking the imaginations of all who participate." Both UCSB scientists and collaborator Michael Waltemathe from Ruhr-University in Bochum, Germany, will be speaking about their visions for interstellar travel at the awards ceremony for best film on Saturday evening, Jan. 6, at the Lobero. Waltemathe will discuss the ethics and sociology of interstellar exploration, as well as the settlement of the moon and Mars, the following day at the Santa Barbara Museum of Natural History.

Meanwhile, students and staff from both the Lubin and Rothman labs will host an exhibit about their interstellar projects, with information on the technology of laser arrays, wafer-scale spacecraft and light sails. They will also bring the future interstellar astronauts: everyone's favorite nematode, C. elegans, and tardigrades, also known as "water bears" or "moss piglets" — both of which are already veteran space travelers. Visitors can view the displays and peer through microscopes at the Lobero Saturday, Jan. 6, from 10 a.m. to 5 p.m.

"We are particularly excited about this group's work and their initiatives to ensure that all of humanity has a voice in interstellar space," said Raw Science founder and CEO Keri Kukral. "Also – tardigrades."

Jatila van der Veen, a project scientist working with Lubin, Rothman and Waltemathe, will share plans for the first-ever Interdisciplinary Center for Interstellar Exploration proposed for UCSB, an effort she is helping to coordinate.

In addition, van der Veen will perform with award-winning La Boheme Dance Company in the festival's opening act Saturday night. Choreographed by artistic director Teresa Kuskey Nowak, a former ballerina with NYC Ballet and American Ballet Theater, the piece pays musical tribute to the great sci-fi films "2001: A Space Odyssey" and "Close Encounters of the Third Kind," and celebrates all races, nations and genders in the future of space exploration.

Among RSFF's other boundary-pushing speakers and workshop presenters are gravitational waves expert and 2017 Nobel Laureate Kip Thorne; Fatemah Qaderyan,

captain of the Afghan Girls' Robotics Team; John Spaihts, screenwriter for the 2017 film "Passengers," and movies in the "Alien" franchise; and Caltech microbiologist Dianne Newman.

For more information, and to purchase tickets for all or part of the festival, including student tickets, visit https://filmfreeway.com/RawScienceFilmFestival

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About UC Santa Barbara

The University of California, Santa Barbara is a leading research institution that also provides a comprehensive liberal arts learning experience. Our academic community of faculty, students, and staff is characterized by a culture of interdisciplinary collaboration that is responsive to the needs of our multicultural and global society. All of this takes place within a living and learning environment like no other, as we draw inspiration from the beauty and resources of our extraordinary location at the edge of the Pacific Ocean.