

Researchers help uncover and restore massive cold-water coral reef in Argentina

by Jonny Hart

PHOTO: SCHMIDT OCEAN INSTITUTE

Erik Cordes, professor and Biology Department chair, and PhD candidate Morgan Will are part of a deep-sea research project in Argentina focused on discovering and restoring largely unknown cold-water coral reefs. Little is known about these reefs, and the deep-sea research community only recently gained the tools to properly explore them.

"We now think Argentina is home to one of the largest reef systems on earth," said Cordes. "Something that we didn't really know existed a year ago now turns out to be one of the largest cold-water coral ecosystems on the planet."

Cordes and Will are part of a $1.5 million research project by the G20 Coral Research and Development Accelerator Platform (CORDAP) to locate, characterize and restore cold-water coral reefs off the coast of Argentina. They're conducting the project in collaboration with the University of Buenos Aires and the Argentine Museum of Natural Sciences.

As part of the CORDAP project, Will participated in a research cruise to Argentina's deep sea. "We wanted to create a baseline, so that if we come back and see effects of human impacts, we know how to measure that against what a healthy reef should look like," said Cordes.

The Argentina cruise's main feature was the remotely operated vehicle (ROV) SuBastian used by researchers to dive to the ocean floor and search for ecosystems like coral reefs. Until recently, the scale and prevalence of cold-water reefs remained largely unknown, but cruises outfitted with ROVs and advanced mapping tools are revealing how expansive and important the ecosystems are.

Hotspots of biodiversity, these reefs play an important role in sequestering carbon from the environment and cycling nutrients from the deep sea to the ocean's surface, which plays a role in food production.

Beyond exploration, the researchers are tackling an even greater challenge: restoring damaged cold-water reefs. "The issue in the deep sea is that reef restoration hasn't really ever been done before," Cordes said. "We have to create the methods for restoring these communities while we're in the middle of exploring the deep ocean to find them."





PHOTO: RYAN S. BRANDENBERG

EE&B MAJOR EARNS MOST PRESTIGIOUS HONOR FOR STEM UNDERGRADUATES

by Khalil Bullock

Jack Brownfield, a senior majoring in evolution, ecology and biodiversity, earned a 2026-27 Goldwater Scholarship, the most prestigious award for undergraduates in STEM fields.

For Brownfield, the path to becoming a Goldwater Scholar started with a simple goal: get into research as early as possible. "I knew coming out of high school that the main thing I wanted to do in college was research," said Brownfield, who has participated in CST's Research Scholars Program. "Seeing that I could start as a first-year at Temple was a huge factor for me."

Brownfield has immersed himself in field-based ecological research at Temple's Ambler Campus, where he studies how ecosystems respond to environmental disruption. His Goldwater-recognized project focuses on a forest impacted by a rare tornado in 2021, an event that created new, temporary freshwater habitats known as ephemeral pools.

By tracking these pools over time, Brownfield gains insight into how species interact, compete and coexist in rapidly changing environments—questions that are becoming increasingly urgent as extreme weather events become more common.

"It's like watching an ecosystem form in real time," he said. "You don't usually get to see that process, especially in response to a disaster."

BRAIN DEVELOPMENT RESEARCH EARNS BLUE SKY INITIATIVE AWARD

Assistant Professor David Chen earned a $100,000 Blue Sky Initiative grant from Temple's Office of the Vice President for Research to support the development of innovative tools for studying how the brain is built.

The one-year award—intended for high-risk, high-reward research—will fund a project focused on creating an RNA-based split-GAL4 system designed to precisely target specific cell types as they form during development.

Understanding how the brain develops requires the ability to identify and experimentally access individual cell types. While advances in gene expression profiling have made it possible to catalog diverse brain cells, linking those molecular identities to function during development remains a major challenge.

Chen's lab is addressing this gap by adapting a recently developed RNA-sensing technology known as CellREADR for use in the model organism Drosophila. This approach enables researchers to detect which genes are active within a cell and use that information to activate genetic tools selectively.

"This work builds on recent innovations in RNA sensing while expanding what we can do in established model systems," Chen said. "Ultimately, it will allow us to better understand how neural circuits are assembled and how developmental disruptions may lead to neurological disorders."

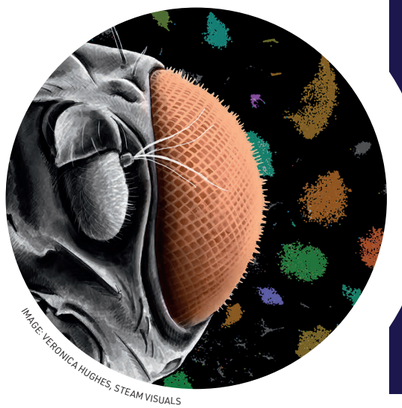


IMAGE: VERONICA HUGHES, STEAM VISUALS



PHOTO: RYAN S. BRANDENBERG

RESEARCH MAY HELP SCIENTISTS BETTER PREPARE FOR FUTURE PANDEMICS

by Jonny Hart

In the aftermath of COVID-19, there was speculation over how the virus called SARS-CoV-2 came to infect humans. Some suggested it evolved normally, originating in animals and then jumping to humans after a period of mutating. Others believed humans manipulated the virus in a lab.

But new research published in the journal *Cell* and co-authored by Sergei Pond, professor of biology, found that SARS-CoV-2 evolved normally and showed no signs of human manipulation. At least, not the kind of human manipulation that scientists have seen before.

"There was nothing remarkable about SARS-CoV-2's evolution from what we could tell," said Pond, who has spent two decades researching viral evolution.

Pond and the article's co-authors analyzed seven viruses, including SARS-CoV-2, Ebola and influenza A, looking for clues about how they evolved. The findings suggests many viruses can spread to humans with less adaptation than was previously thought, a conclusion that can help scientists better prepare for viral threats.

"SARS-CoV-2 demonstrated pretty dramatically that whatever mechanisms we had in place for predicting and managing pandemics were inadequate," Pond said. "Our research suggests we don't necessarily have to wait for a virus to do something extraordinary for it to be a threat."