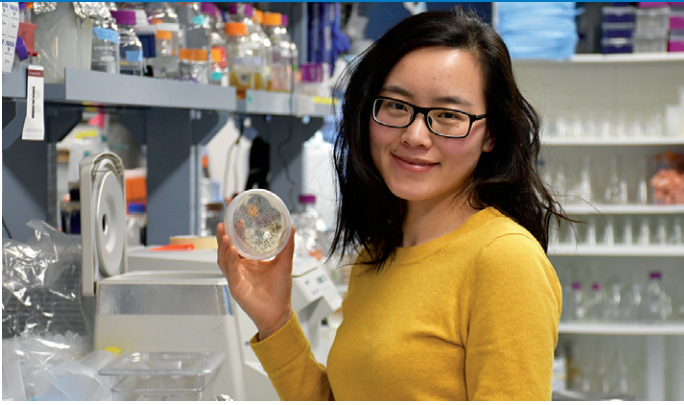




Xiang Research Group
at UNC Charlotte
Relies on Customized
Percival Chambers
for Study of
Coral-Algal Symbiosis



CLIENT STORY



Since the late 1970s, coral reefs have been dying at an alarming rate, and it's predicted that up to 90 percent may die over the next 100 years. Corals rely on the symbiotic relationship with dinoflagellate algae, which is the foundation for the reef ecosystem. Although it's widely understood that climate change has impacted the rapidly bleaching stretches of reef, little research has been done regarding the fundamental biology of this symbiotic association and how it's causing reef decay at a molecular level.

A Developing Research Field Focused on Coral Health

The fact that the molecular and cellular mechanisms underlying the interactions between coral host and symbiont algae have been largely unexplored is what interested Tingting Xiang in this field of study. After completing her graduate degree in plant biology at the National Institute of Biological Sciences in China, she was looking for an understudied area of research to pursue. At a conference in Beijing, she met a Stanford professor who introduced her to the research he was doing within this developing field of host-microbe interaction. She was hooked and moved to the U.S. to assist with his research in the Department of Plant Biology at the Carnegie Institution for Science at Stanford.

Chambers Chosen for Reliability

Based on his preference, Xiang's supervising professor at Stanford ordered four tissue culture chambers from Percival Scientific for her research. Xiang was impressed with their temperature precision and reliability. "Temperature is key for the symbiotic interaction between the host and the algae," she says. "It was important to us that the temperature settings behaved how we wanted them to over time so we could accomplish the goals of our research."



Several years later, as she was preparing to start her own research lab for the study of coral-algal symbiosis at the University of North Carolina at Charlotte, she didn't think twice about ordering chambers from Percival Scientific. "I knew there were a lot of chamber companies out there, but I didn't want to waste my time looking. You don't want to have any problems when all your research is relying on the stability and capacity of your chambers," Xiang says. "I cared most about quality instead of other factors."

LED Lighting Customized for Xiang's Research

For her new lab, Xiang needed tissue culture chambers with LED lighting that would allow her to finely tune the settings for both quantity and quality without impacting the temperature of the environment. "A big part of our research is growing the algae under specific light wavelengths, which affects their metabolism because they are photosynthetic," she says. "We can adjust their metabolism with light and test how light affects the health of the algae and the host."

Xiang called Percival Scientific and discovered the company not only offered a large range of LED colors and configurations with the ability to control intensity in one-percent increments, but they could create the special chambers she needed — one that included tiers of both white and colored LEDs and one with removable tinted barriers between the tiers. "I was really happy with that and appreciated how Percival worked with me to customize the chambers for our lab," says Xiang. "The representative I worked with communicated really well, and whenever I asked for specs, she provided them for my engineers right away."

Xiang's team achieved good results with the first two chambers, and soon their research grew to need two more with the same customization. All it took was a call, and Percival easily replicated them using the specs from Xiang's original order.

Using Better Science Toward a Better World

Corals depend almost completely on the algae Xiang studies to supply them with food. The algae live inside their host coral cells, and through photosynthesis, the algae produce sugars that sustain the coral and help them build. In return, the corals provide the algae with protection and inorganic nutrients, such as carbon, nitrogen and phosphorus. Corals starve and die when conditions, such as high temperatures, make the environment inhospitable for the algae and they exit the corals' cells.

By determining what factors are impacting the health of the algae, Xiang's goal is to help find solutions to improve the natural environment for the algae, which, in turn, will help corals thrive again. "The algae are essential to the survival of corals, and corals are the foundation of the marine ecosystem. They sustain the genetic diversity of the ocean," she explains. "And what many people don't realize is that coral reefs also protect the shorelines by decreasing wave energy by as much as 97 percent. So coral reefs positively affect many aspects of life, such as the beauty of our natural beaches, tourism and the fishing industry."

Xiang expects her research to keep growing and counts on Percival Scientific to help expand her lab: "For sure I see using more Percival chambers in the future — they're a key part of our research."

For more information, visit percival-scientific.com, contact us for a [free consultation](#) or call 800.695.2743.

For more about the Xiang Research Group, visit <https://pages.uncc.edu/txiang/>.

