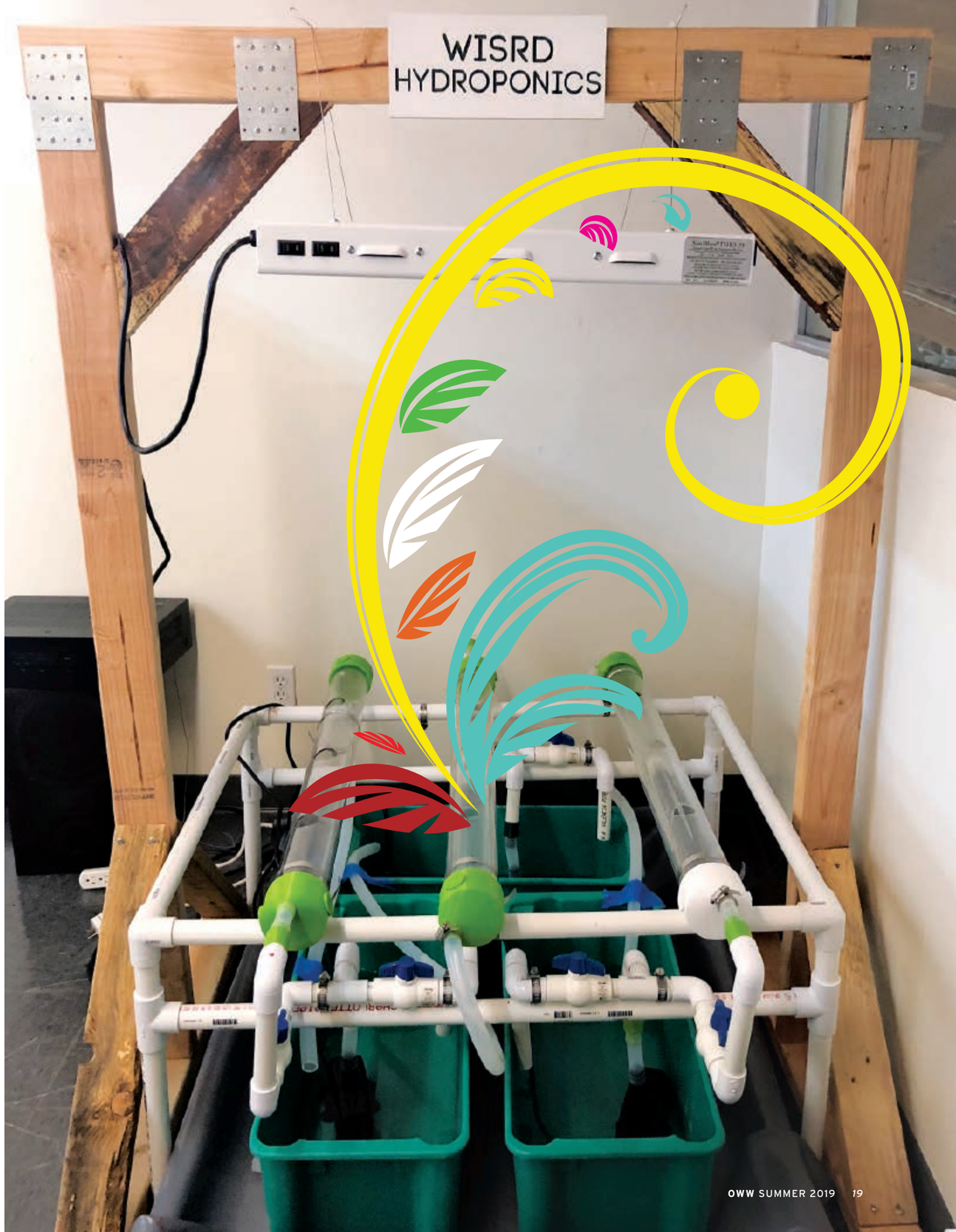
FEATURE
by Ximena P. '21

The WISRDing World of Wildwood

My first year at the Wildwood Institute for STEM Research and Development (WISRD) was terrifying. I was a freshman thrown into a world of endless possibilities and brilliantly creative people. The Wildwood Institutes use contextual-based learning, meaning it's up to the students to decide what's important to learn or research. I chose to focus my time at WISRD on hydroponics, a subset of hydroculture that focuses on cultivating plants without soil.



The WISRDing World of Wildwood



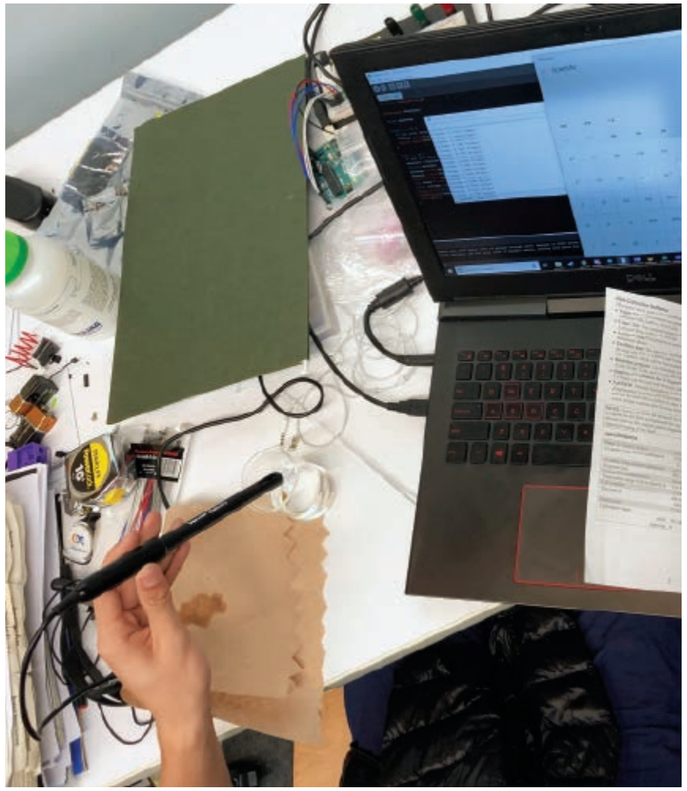
With time, I grew comfortable with the freedom granted by WISRD and learned to make use of the resources it offered. I learned to use the Habits of Perspective, Connection, and Evidence to delve into and solve issues, and I quickly understood that WISRD embraces the lessons of failure. After that first year, I realized that the freedom to fail was my favorite part of WISRD. The hydroponics team and I failed countless times. We were sometimes forced to start over, or we would reach a dead end and have to stop and go back and do more research. We conducted many experiments only to realize that a lot of the work we were planning wasn't valuable or suitable to the degree we hoped. Instead of dwelling on our failures, we learned to think of them as experiences that would help us create a better thought-out and more accurate lab, and we focused on our goal: drought-resistant agriculture.

HYDROPONICS LAB: SAVING OUR FOOD SOURCE

I have served as a principal investigator (PI) on the hydroponics team since I joined WISRD two years ago. The group includes me, Sadie G. '21 (also a PI), Nicholas N. '20, and Jack S. '20. Our project was inspired by the major drought in the San Joaquin Valley. Because the valley's soil has a natural balance of salt and other minerals, for decades farms there were able to produce high yields of an array of crops. This earned the valley its nickname "The Food Basket of the World." However, as Central California's drought intensifies, more water is contaminated with exponentially growing concentrations of salt.

The San Joaquin Valley aquifer, which is responsible for transporting most of the area's water, is sinking up to 2 feet per year. There aren't enough exits for the salt water, which causes accumulation and further contamination. Rising salinity levels decrease chances of sustainable and healthy growth patterns for crops, resulting in a negative impact on agriculture. This crisis is important to research because it could eventually cause the crops to become unsafe for consumption, die, and ultimately lead to a food crisis. The overarching mission of the WISRD hydroponics team is to assess how destructive the situation currently is and then propose a solution.

The first year was characterized by growing comfortable in all the freedom we were granted and learning to make use of our resources as well as reshaping the vision of hydroponics. After that first year, I realized that the freedom to fail was my favorite part of WISRD.



THE VISION BECOMES REAL

The hydroponics team and I have successfully constructed a working lab and are ready to start experiments in the upcoming school year. This is the most rewarding part of the project thus far. A lot of the work we did my first year was researching how to create a well-established lab. Having something tangible that allows us to see all our hard work realized is incredible. All the hours we spent on our project—combing through research journals, feeling defeated because a 3D print didn't come out the way we hoped, conducting extensive research only to find it was inapplicable, completing difficult math problems, creating and editing Google Docs, and journaling about our failures at the end of class every day—was worth it. We made visible progress and had something to show for it. Our hydroponics vision is no longer just a vision; it is a real lab expected to yield real results.

Because of WISRD and my work on the hydroponics team, I have become more adaptive to challenges and creative innovation, and I have a newfound perspective on failure. The freedom to fail and start again is the best part of the Wildwood Institute for STEM Research and Development. It's a place for people willing and motivated to take on the challenge of conducting breakthrough research using hard work and creativity. The WISRDing world of Wildwood, if you will, has opened me up to a world where dedication and perseverance make good scientists and accomplishments are unquestionably worth the struggle.