**Tracing Humanity Through Botany**

One could argue that Associate Professor Arielle Cooley knows a lot about monkeys, but her expertise is not the primate kind.

Cooley is an evolutionary and developmental geneticist whose area of research involves the monkey flower, a group of flowering plants that can be found in Southeast Asia, Australia, the Bering Straits, Patagonia, the western coast of North America, and South America.

“I’m interested in how the genes inside our body contribute to changes within our lifetime,” Cooley said.

Cooley has been teaching and conducting research at Whitman for six years. Most of her research is done out of the Cooley Lab in the Hall of Science. “Whitman is an amazing place to do research. I love to teach, and I love to do research and it’s hard to find a place where you can really do both to a very full extent, and Whitman is a place where I can,” Cooley said.

Whitman supplies Cooley with scientific instrumentation and shared equipment, but Whitman’s greatest contribution to the research she conducts is the students. “This is an undergraduate powered lab and my students do the research. I really couldn’t do it without them,” Cooley said.

During the academic year, Cooley is assisted by four or five students working in the lab, with an additional three to four students working full time over the summer. Student researchers perform duties such as extracting DNA, building Trans genes, and analyzing transcriptomes. The roles assigned to Whitman students in the Cooley Lab are tasks performed in masters or PhD programs.

“A student flew to my colleague’s’ lab in Virginia this summer to learn computational approaches,” Cooley said. “The student learned how to use genetic mapping software called Mat Lab and is capable of doing the computational analysis that my lab couldn’t do otherwise.”

**How Human Are We?**

Mimulus, or monkey flower, received its moniker from Swedish botanist Carl Linnaeus, creator of the binomial classification system, who thought the flower petals resembled the face of a monkey.

Cooley completed her graduate work on monkey flowers while at Duke University in North Carolina. She did her post doctorate work on fruit flies but decided to return to the monkey flower. “Monkey flowers are a wonderful system for undergrads because they are so charismatic and compelling. They are really biologically diverse and less studied than the fruit fly,” Cooley said.

Whether it is the study of insects, such as the fruit fly or plants like the monkey flower, Cooley’s research provides insight to the human experience.

“Humans are a very small part of the functioning planet. From a selfish perspective, it’s important to understand species that are not us because it would be very difficult for us to live without many of them,” Cooley said. “About five pounds of our body is not actually human cells its bacterial cells. There are, by some estimates, more bacterial cells in your body than there are human cells in your body because bacterial cells are so much smaller.”

Along with its benefits to humankind, the study other species highlights the intricacy of various living systems that also inhabit our planet.

 “Plants can do a lot of things that humans can only dream of in terms of producing chemical arsenals and making ways of reproduction that would never cross your mind in your wildest imagination,” Cooley said.

**Finding Community**

Another appealing aspect of the study of monkey flowers is the community that has grown around the research of this unique flower.

“It’s an especially collegial research community. Every once in a while, someone will sort of organize an informal mimulus meeting around another conference that’s happening. We have a day of appreciating and admiring monkey flowers,” Cooley said.

Though the monkey flower community is small, it is very welcoming and supportive of new members. “It’s quite friendly,” Cooley said, “I think it is because the founders of mimulus research are very generous and friendly people who established a great tone for their labs.”

Cooley and her colleagues have published their findings about the monkey flower in “Current Biology,” “American Journal of Botany” and “Annals of Botany.” Like her lab work, Cooley acknowledges that the papers she publishes with her fellow biologists are an equally collaborative process.

**Benefits of Science**

As a biologist and professor, Cooley is tasked to ask and answer complex questions about our world and is quick to point out the questions raised in science are universal. For instance, Biology classes aide students in developing their experimental creativity, analytical thinking, and quantitative skills.

 “As we speak, climate change is perturbing biological systems and exacerbating social inequality around the world,” Cooley said. “Statistics, as always, are used both to reveal truth and to hide it, and it is important to be able to sort out which is which.”