Dr. Jodie Wiggins is an associate professor in the Integrative Biology Department at Oklahoma State University. Over the past two semesters, she has taught Physiology and Genetics. Although she is well-known for being a proficient professor, she has also contributed greatly to the world of research, specifically that of Precocial Sexual Selection. I had the opportunity to interview Dr. Wiggins via email, based on her published works, to dig deeper into this field of research and obtain a grasp of what her findings were.

I began with asking Dr. Wiggins what sparked her interest in this area of research. Initially, she was fascinated by an observation her professors had made that the bright orange color of male juvenile collard lizards began to fade as they began to sexually mature. “In the world of sexual selection research this is a huge anomaly,” Wiggins stated. It is highly frequent that adult males have highly developed characteristics, such as horns, or display conspicuous colors, yet juveniles are typically substrate colored. “During my dissertation work I demonstrated that juvenile males with brighter and/or more orange are more successful later as mates,” said Wiggins. While doing this though, she managed to further her investigation within the realm of sex determining mechanisms in collard lizards. Additionally, there is not much known about non-avian reptiles and sex determination for many taxa.

Recently, Wiggins has made some insightful advances involving collard lizards and sex determining mechanisms. Wiggins stated first that lizards with genetic sex determination are closely related to those with temperature-dependent sex determination. She stated that the most important thing is to fill in the gaps of unknowns in a variety of species. Specifically, her team decided to explore the sex determining mechanism of Crotaphytus collaris, which is a species of a collared lizard. From there, a colleague of hers conducted an experiment in which he distributed eggs from multiple mothers across a variety of incubation temperatures in which eggs could be viable. Here, they did not see any of their expected results. Wiggins states there seemed to be an influence in temperature, but at no temperature did it show this influence. Moreover, Wiggins expanded her research to assess the presence of *C.* *collaris* sex chromosomes by using a technique called qPCR. “This analysis rests on the understanding that, if *C. collaris* does have sex chromosomes, the homogametic sex will start with twice as many of the genes that are present on the homomorphic sex chromosome (so XX or ZZ),” Wiggins explains. Furthermore, Wiggins indicated that evidence was found that females start with twice as many genes as they had suspected to be on the X chromosome as do males, which strongly indicates the presence of sex chromosomes.

Wiggins and her colleagues have come across three primary findings within this area, and they are pretty impressive! First, they discovered that juvenile male collared lizards display a color signal that they were able to link to mating success. Wiggins states this is the first discovery of its kind. Second, sex chromosomes appear to be in *C. collaris,* but the sex ratio is influenced by incubation temperature. Wiggins explained that this points to an interaction between the mechanisms of the genetic sex determination and temperature-dependent sex determination. The final findings Wiggins discussed with me are related to incubation temperatures. “We have preliminary evidence that, when incubated at low or high temperatures, collard lizards can develop as the sex opposite their genetic composition. In other words, individuals with gene dosage indicating they are female are developing as male,” says Wiggins.

While anyone can guess that research in a scientific field is not easy, I discussed with Dr. Wiggins on what struggles she has encountered, as well as fun things she’s got to learn about lizards. The struggles she has had to deal with are mostly time related. She states that it takes weeks, if not months, to get the genes of interest to amplify reliably. On the contrary, Dr. Wiggins said “Lizards have SO MUCH personality. I spent 4 years working my field site 5-6 days a week 6-7 hours a day. I got to know many of the lizards by personality. They are so feisty,”

when I asked her about fun facts or cool things she’s gotten to encounter while doing her research.

Works Cited

Wiggins, Jodie & Santoyo-Brito, Enrique & Fox, Stanley. (2020). Gene Dose Indicates Presence of Sex Chromosomes in Collared Lizards (Crotaphytus collaris), a Species with Temperature-Influenced Sex Determination. Herpetologica. 76. 27–30. 10.1655/HERPETOLOGICA-D-19-00036.1.