Many areas of study within the field of plant biology play very important roles in agriculture and biology. One of these fields is plant metabolism and immunity. I got the chance to talk to Dr. Heejin Yoo of the Plant Biology, Ecology, and Evolution Department in order to gain some insight in on the research being conducted on plant metabolism and immunity at Oklahoma State.

I started off the interview by asking Dr. Yoo if she could provide a brief summary of her research. She explained that her research is centered around “understanding the different layers of regulatory mechanisms for plant immunity”. She is particularly interested in salicylic acid (SA), a plant hormone, and its biosynthetic pathways along with its role in the immune response in the model plant Arabidopsis. Although she recently expanded her study to include other crops as well.

Specifically, Dr. Yoo is interested in understanding the growth-defense tradeoff. This is the phenomenon that explains the halt in growth that occurs when plants are exposed to pathogens and activate their defense mode. By understanding this process, she is hoping to “make crops with improved resistance to pathogens without significant yield loss”. Her interest in the growth-defense tradeoff is what sparked her interest in plant metabolism and immunity. One of Dr. Yoo’s most recent publications examines the relationship between metabolism and immunity by discussing metabolic dynamics and effector triggered immunity (Yoo et al. 2020). By studying the metabolism and immune response of plants, she will be better equipped to understand the growth-defense tradeoff in a more detailed light.

I also got the chance to talk to Dr. Yoo about research in general and the qualities a person must possess in order to run a successful lab. She informed me that “motivation, passion, and independence are key factors [one needs to possess in order] to become a good researcher”. She also explained to me that a good researcher needs to be able to find a “missing gap of knowledge” in their respective field in order to develop a legitimate hypothesis and design an experiment.

Dr. Yoo also took the time to talk to me about some of her undergraduate career and how it inspired her current research. She took a class on plant breeding and found that her interest in plant biology piqued. The class discussed traditional breeding methods of plants along with more modern techniques. She found herself intrigued by the notion that humans can control plant breeding in a way that can “improve crop productivity and quality”.

I finished up my interview with Dr. Yoo by asking her why she decided to study plant biology. She explained to me that plants are stationary organisms and are incapable of running away from predators or moving to food sources as animals do. Plants are required to use various mechanisms for defense such as toxins, shapes/colors of flowers, and volatiles, more commonly known as scents. By using these mechanisms, plants are capable of improving their fitness within the environment. She ultimately said,

“I am fascinated with [the] plant system [as it] is distinct from [the] animal system”.

I really enjoyed my time interviewing Dr. Yoo. I learned a lot about her research and how she’s making a difference in the fields of plant biology and agriculture. I am really looking forward to seeing how her research unfolds in the years to come.

References

Yoo, H., Green, G. H., Yuan M., Xu, G., Burton, D., Liu, L., Marques, J., and Dong, X. 2020. Translational regulation of metabolic dynamics during effector-triggered immunity. *Molecular Plant* 13:1 (88-98).