To explore the fascinating world of glycobiology and the crucial role of glycans (sugars) in living systems, we'll learn about the work of Dr. Megna Tiwari. Driven by a curiosity for how pathogens exploit host resources, her doctoral work investigated the biochemistry, cell biology, and molecular biology of a novel sugar modification in parasites. During this time, she developed a deep appreciation for the complexity of sugars and a commitment to making science accessible to all learners. Now as a postdoctoral researcher at the University of Georgia under the mentorship of Dr. Erin Dolan, Megna is developing educational resources as part of BioF GREAT. These resources aim to broaden awareness and understanding of glycoscience for a wide audience, including scientists, students, and the public. Through these resources, she hopes to spark interest in glycoscience among curious minds who, like her before her PhD, may not know the field exists. She is excited to share the thrilling mysteries of life that glycoscience helps us understand.

Learn more about Megna's journey in this interview with her:

Did you always want to be a scientist? How did you get interested in glycoscience in particular? I have always been interested in science. In high school I started volunteering at a hospital because my mom was a nurse and her doctor friends recommended that I get familiar with hospital settings to prepare for a career in medicine. I started in the ER department (too overwhelming!) then switched to pathology, which I found more appealing because the focus was on understanding the "why" of medical issues rather than the "what." I enjoyed dissecting the samples for doctors to make diagnoses, but I did not yet recognize that I could do this kind of hands-on, problem-solving work as a career. It wasn't until college that I understood that research was a thing I could do. I attended a lecture on fungal pathogens by Dr. Jason Stajich and was immediately intrigued. A friend encouraged me to contact him to ask about working in his lab. I did and, luckily, he was actively recruiting undergraduates excited about research. This initial research experience convinced me that I wanted to do research for a living because I really liked the idea of what research encompassed as a whole – problem solving, critical thinking, discovering new things, and pushing the boundaries of my knowledge. When doing research, you are always learning something new! With Jason's encouragement, I decided to explore other career paths before making the big commitment to graduate school. I worked in industry as a blood bank technician where my primary job was to collect, label, prepare, and analyze blood samples for blood type and pathogens. Little did I know my entire job relied on glycoscience because blood groups are dictated by glycans. My time at the blood bank solidified my decision to pursue grad school. I knew this additional training would open opportunities for me to grow scientifically and have more of an impact on people around me. I went on to complete a thesis-based masters in Dr. Veronica Jimenez-Ortiz's lab where I worked on *Trypanosoma cruzi*, the parasite that causes Chagas Disease. I went the thesis-based route over a course-based master's degree because it gave me experience with research, which resulted in a publication. Plus, I got to mentor undergraduate students and teach upper division Microbiology labs. It turns out that glycans are also important in trypanosome biology, but I didn't know that at the time. I

did know that I was interested in parasitology, so I went to the University of Georgia to earn a PhD doing parasite research.

Can you tell me a bit about your journey? Were there any unexpected twists? My journey has not been linear. I worked 2-3 jobs to pay my way through my undergrad and master's degrees. Once I got to UGA for my PhD, I finally felt financially stable because my tuition was covered and I was on a research assistantship. I joined a lab because it was a good fit with my interest in pathogens, but I quickly learned it was not a good fit for me personally. I switched labs to work with Dr. Chris West, who studies the biochemistry and cell biology of parasitic pathogens and protists. This was actually my first formal introduction to glycoscience, where I learned how parasites exploit host glycosylation. I learned that parasites use their own and their host's glycosylation machinery to evade host immune responses and establish their intracellular lifestyles. I also worked to develop tools for assessing a novel sugar modification in protists, bacteria, and plants. Before I knew it, I was a glycoscientist! Looking back, my decision to change labs, which seemed like a setback at the time, led me to places I hadn't known even existed and onto my current position.

How did you know that glycoscience was the right field for you? The mentorship I received convinced me that my scientific home was glycoscience. Through my research journey I have I had incredible mentors – the people who teach and support you make all the difference. For my PhD I was a part of lab with an open and collaborative dynamic. I can recall countless one-on-one meetings where my PI took the time to walk me through the fundamentals of glycoscience, making sure I felt confident in the work I produced. Working with people who cared about the things I did (in science and in life!), who invested in me as a person, and who gave me opportunities to do the same for others has reinforced that this was the right path for me.

Is there anything else you think is important for people to know about glycoscience or being a glycoscientist? It's important to approach glycoscience with an open mind. You are always learning and it's okay to not have all the answers. Even seasoned researchers have remarked on how scary sugars seem. I think these fears stem from misconceptions about the field that contradict the realities of glycoscience. For instance, there is no "blueprint" for glycosylation like there is for the central dogma (DNA to RNA to proteins). This can make studying glycosylation feel impossible. But that's not the case. Once you grasp the fundamentals, glycoscience is not only accessible but very rewarding. It takes time and effort – like anything that is worth doing – but I think that the payoff is great.

Could you tell me about some hobbies or interests you have outside of the lab? As much as I am a champion for glycoscience, I have lots of other interests. For instance, I love collecting records! I have a huge record collection I started about 14 years ago. I have three dogs, two Corgis and a German Shepard. I love taking them on hikes. I am very extroverted, and I seek out opportunities to connect with others and

learn something new. Whether that's painting, visiting museums, or exploring other creative pursuits, I enjoy activities that bring people together.