

---

## Matthew Ishahak

Matthew was born and raised in South Florida. He entered the University of Miami in 2010 as an undergraduate student in Biomedical Engineering. After completing the 5-year BS/MS program, he joined Dr. Agarwal's lab as a PhD student. In the PhD program, his research focused on combining microfluidics and tissue engineering to develop organ-on-chip devices. The goal was to develop new models of human organ function to improve methods for studying diseases and testing therapeutics. Matthew was received the Ruth L. Kirschstein Predoctoral Individual National Research Service Award Fellowship (F31) from the National Institutes of Health National Institute of Diabetes and Digestive and Kidney Diseases to fund his work developing a glomerulus-on-chip. Additionally, Matthew co-founded a Bio-Vitro, a startup aimed at commercializing the organ-on-chip technology developed in Dr. Agarwal's lab at BioNIUM. Following his completion of the PhD program at UM, Matthew was awarded a Rita Levi-Montalcini Postdoctoral Fellowship in the Center of Regenerative Medicine at Washington University in St. Louis.

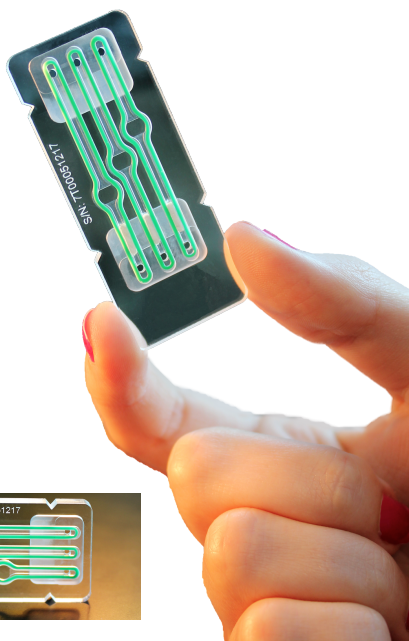


### 1)Q: What made you choose the University of Miami?

A: Growing up in South Florida and being a sports fan, the University of Miami was always high on my list for college. The ability to be involved in exciting research is what really convinced me to attain my PhD at the University. Organ-on-chip is an amazing technology that is still in its early stages of development. It was a great opportunity to be able to work with Dr. Agarwal who is one of the leaders in the field.

### 2)Q: Tell me about your training process.

A: As a biomedical engineer, my training process was highly inter-disciplinary. I would say about half my time was spent doing traditional engineering. Things like, device design and fabrication. The other half of my training was focused on biology, like cell culture and various assays for understanding how cells are doing.



**3)Q: What did you particularly enjoy most?**

A: One of my favorites was being able to share my work to a variety of people. People throughout the community were interested in our work, and I enjoyed giving tours of our lab to all our visitors. Especially the younger students from local middle schools and high schools. It was great to see them learn and become excited about aspects of science and engineering, that they may not normally come across in school.

**4)Q: Tell me about your most exciting scientific breakthrough?**

A: My most exciting breakthrough is actually one of my more recent ones. Our collaborators in nephrology identified a specific type of molecule that may cause dysfunction in the kidneys. My main project was developing a functional model of kidney filtration. So, we wanted to see if we could recreate dysfunction by exposing the cells in my model to their compound. We did this and were able to demonstrate that the exposure did cause an increase in albumin filtration, which is the key clinical marker of kidney dysfunction.

**5)Q: How do you think the research has impacted you as a scientist/engineer and how has it influenced your career path?**

A: The research I was conducting at UM has a lot of commercial potential. As a lab we recognized that, and it pushed me toward understanding entrepreneurship. So, understanding the translational aspects helped frame our research and it gave me a broader perspective on how developing new technologies fit in society.

**6)Q: Tell me what your next steps will be and career goals.**

A: Now that my PhD is done, I've accepted a postdoctoral fellowship at Washington University in St. Louis. My focus will shift to working with stem cells. But, I hope to continue working on the startup I co-founded based on the work I did in Miami.

**7)Q: Is there anything else you would like us to know about you?**

A: I am really excited about the progress we have made with our startup company, Bio-Vitro. The collaborators we have worked with have loved our technology and ready to become customers. We've also received some interest from pharmaceutical companies looking to implement our platform in the research and development pipeline. So, I'm hoping we can continue to grow things and successfully translate our research into a successful company.