



Giselle Barbosa-Lima, Researcher, Lab of Immunopharmacology, Oswaldo Cruz Institute, Brazil

Dengue virus-activated platelets modulate monocyte immunometabolic response through lipid droplet biogenesis and cytokine signaling (<https://doi.org/10.1002/JLB.4MA0620-658R>)

Q: Where did your journey in science begin?

A: My journey in science began as an undergrad student. I studied Pharmacy and was curious about how our body reacts during infection and how medicines could improve (or not) the disease. I decided that I wanted to be in a lab, designing experiments to have answers for problems.

Q: How did you choose your current research topic?

A: When I was in the first year of my Pharmacy bachelor course, I was looking for my first experience in a scientific lab and I had the opportunity to start in the Immunopharmacology laboratory, under the supervision of Patricia Bozza. As an undergrad, I worked closely to my co-supervisor Patricia Pacheco (a PosDoc student) trying to understand the biogenesis and functions of specific cellular organelles (named lipid droplets) in leukotriene production during sepsis. For my PhD, I had a new challenge that was to study mechanisms of immunometabolic regulation in dengue virus disease. Dengue is characterized as one of the most important arthropod-borne human viral diseases, representing a public health problem, and I felt excited to work with this topic.

Q: Could you use a few lay sentences to summarize your findings in this paper?

A: During dengue disease, platelets interact with other blood cells, like monocytes, and induce the release of several molecules that contribute to the progression of the disease. Importantly, platelets also induce the formation of lipid droplets (LD) in monocytes. They exist inside the cells and have many functions, including regulation of lipid metabolism, control and synthesis of inflammatory substances, sites for dengue virus protein accumulation, involvement in replication of dengue virus inside the host, etc. LD formation in monocytes is partially dependent on a platelet-secreted molecule (called MIF). Additionally, LD formation is higher in monocytes which have platelets in close contact, suggesting that beyond the secretion of substances that induce LD formation, platelet adhesion is an important event that modulates lipid metabolism in monocytes. These events may contribute to dengue illness and might represent an attractive therapeutic target.

Q: What was the most exciting moment during this research?

A: With the experience obtained with dengue virus, I also got involved in research related to Zika virus, under the supervision of Thiago Moreno. We investigated drugs (new or clinically approved to treat other viral diseases) that were able to inhibit virus replication, showing therapeutic

options to treat Zika. It was a moment of hard work that generated many publications for our group. During this research I had a little daughter waiting for me at home and she motivated me to get better results.

Q: What was the biggest challenge associated with this story?

A: The biggest challenge was to leave my daughter at home to go back to work. But after the adaptation period, I established an important collaboration with Eugenio Hottz and we worked hard together on the bench to obtain this relevant work.

Q: Besides your PI is there anyone that significantly helped you in your path to become a scientist?

A: Besides Dr. Bozza, Drs Kuriyama, Pacheco and Moreno helped in my path to become a scientist. Sergio, a family friend, is a scientist too and introduced me to Dr. Pacheco. She was my first co-supervisor in Dr. Bozza's lab and taught me what was necessary to become a scientist. Dr. Moreno was my last supervisor and contributed a lot to the development of my career. Dr. Bozza consolidated all this with her supervision, patience, brilliance, and huge experience in the field.

Q: What is next for you?

A: I am now keen to gain experience in more applied aspects of drug development. I had a new opportunity as a researcher in a Pharmaceutical company. It was like starting over; it is so different from academia. I am working on the development of new pharmaceuticals to treat important diseases.

Q: What would your advice be for junior or incoming Ph.D. Students who want to pursue a career in your field?

A: Scientific careers bring satisfaction but are not perfect. It is important to love what you do because the path is not easy. Find a supervisor that contributes to your development (this could make the difference and I really thank Drs. Bozza and Moreno). Study not only things related to your research, but also from different areas. Design your experiments, try them several times, build collaborations, discuss results, and publish. And most importantly, believe in yourself.

Q: Tell us something interesting outside of being a scientist about yourself.

A: My other passion, besides science, is to dance.