

Juliano Tiburcio de Freitas

Postdoctoral Associate

Field of Study*Dermatology***What impact do you want your research to have?**

My research will lead to the creation of novel therapeutic strategies to boost the immune response against melanoma, particularly for patients resistant to immunotherapy.

What inspired you to pursue your area of research?

My fight for a cure for melanoma stems from my family experience – my grandparents and mother battled different forms of cancer. While in high school, I lost one grandmother. In college, I lost the other, and recently I lost my grandfather to cancer. While I was in graduate school, my mother was diagnosed with breast cancer. It was almost enough to break my spirit, but my mother's fight inspired me to press on. She won her battle and today is cancer-free. My mom is a survivor in part because someone has not given up on studying treatments for breast cancer. So, I am not giving up on treatments for melanoma.

What is most exciting about your research?

My research is exciting because I use a novel neutralizing antibody (anti-N1) against Notch1 that my laboratory has developed. I have demonstrated that anti-N1 simultaneously impairs melanoma cells and pro-tumorigenic immune cells while anti-tumorigenic cells remain functional in the melanoma tumor microenvironment. Anti-N1 has a potential therapeutic use because it is capable of triggering melanoma cell death, as well as decreasing the immunosuppression in the melanoma microenvironment.

What setbacks or obstacles have you experienced while doing your research?

I have been working on this project for almost 2 years. It took me several months to optimize the protocol for anti-N1 purification. I have also done several trial experiments to find out the best regimen of treatment of anti-N1 as well as to figure out the optimal antibody concentration to treat melanoma-bearing mice. Of course, working during the pandemic impacted many of my experiments, but I was able to overcome these challenges by staying focused and having the support of my mentor (Dr. Barbara Bedogni) and lab mates.

What makes your research unique?

There are few other groups working with different neutralizing antibodies against Notch1. However, these other antibodies were designed to bypass a mutation in the negative regulatory region of the Notch1 receptor, which is commonly found in leukemia patients. The antibody developed in my lab is different because it blocks the ligand binding to Notch1. Moreover, my project is investigating for the first time if the inhibition of Notch1 can improve immunotherapy outcomes for melanoma patients.

What are your plans after finishing your postdoc at the University?

After finishing my postdoc at UM, I am planning to obtain an academic position and set up my own laboratory to better understand how the development of an immunosuppressive tumor microenvironment results in evasion from immune detection and ultimately metastasis formation.

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