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How were you drawn into virology and become familiar with the GVN?

My childhood fascination with pathogens started with a news story about a cholera outbreak, which sparked my curiosity and desire to learn more about this disease. As I delved deeper into the study of pathogens, my attention was increasingly drawn to the captivating and intricate world of virology. The astounding biology of viruses and their profound impact on human life left an indelible impression on me. So I committed myself to earning a PhD in Immunology, which was driven by a passion to better understand these complex agents and to develop innovative strategies to prevent and combat infectious diseases on a global scale. During my post-doctoral journey, I had the privilege of meeting Professor Erica Ollmann Saphire, a world-renowned virologist and President/CEO of the La Jolla Institute for Immunology. Her enthusiasm for the Global Virus Network was inspiring and piqued my interest in joining. I am honored to be a part of this amazing and powerful community.

What do you hope to gain from—and contribute to—GVN's Rising Stars Mentorship Program?

My personal aspiration is to alleviate the burden of infectious diseases worldwide, with a special focus on under-resourced countries. I have always been drawn towards a problem-solving approach that encompasses a holistic perspective. This unwavering conviction is particularly applicable to my current pursuit in infectious disease research. I am hopeful that by fostering collaboration among scientific communities across continents, we can develop innovative and pragmatic solutions to global health challenges.

I am confident that the GVN offers me the optimal platform to pursue my career aspirations and collaborate with brilliant scientists from diverse backgrounds. I firmly believe that mentorship is crucial for a scientist's development, and I am delighted that the GVN has recognized this need and developed this program, which is just the start of my enriching journey in virology.

In a few years, it would be a privilege for me to give back to the GVN community by serving as a mentor and inspiring the next generation of aspiring scientists within the network. I am hopeful that together we can make a significant impact in the field of infectious diseases and contribute towards a healthier world.

Research Interest/Professional Summary

During my doctoral studies, I successfully developed innovative techniques to assess the frequency and role of autoreactive B and T lymphocytes in patients diagnosed with Multiple Sclerosis (MS), an autoimmune disease. First, I created a novel method to determine and describe antigen-specific B cells in MS patients' peripheral blood. This approach has since been implemented in vaccination, transplantation, and infection contexts. Second, utilizing this analytical technique, I identified a decreased frequency of myelin oligodendrocyte glycoprotein-specific B cells in MS patients compared to healthy individuals. This discovery underscored the potential significance of antigen-specific B cells in MS pathogenesis, stimulating scientific inquiry. Lastly, I contributed to the development of the T cell Recognition of Antigen Presenting cells (TRAP) method to quantify autoreactive T cells. The TRAP method's diagnostic efficiency was evaluated as part of a national project involving 300 MS patients in France. In addition, engaging with clinicians and MS patients at the hospital in translational research contributed to my scientific development.

As a postdoctoral fellow, my research has been focused on emerging infectious diseases and mouse models. My efforts have been directed towards understanding adaptive immunity to flaviviruses, with a particular emphasis on dengue and Zika viruses. The immunological perspective of the flavivirus field is especially captivating due to cross-reactive anti-flaviviral immunity that can either protect against or exacerbate clinical disease, depending on the context of subsequent infection. So I have developed several mouse models to examine and define the role of flavivirus-specific or cross-reactive T cells in various settings, such as Zika virus transmission through sexual contact or during pregnancy. My investigations demonstrate that T cells, particularly polyfunctional CD8 T cells, play a critical role in protecting against primary or subsequent flavivirus infections. These findings are essential for developing the next generation of vaccines, including a pan-flavivirus vaccine.

As a research instructor, I contribute to the SARS-CoV2 task force by developing SARS-CoV2 mouse models that reproduce a spectrum of the COVID-19 illnesses to be used as critical tools for deciphering mechanisms of SARS-CoV2 pathogenesis and immunity in the context of primary infection or pre-existing immunity to common cold coronaviruses. In parallel, I am developing scientific collaborations with researchers from endemic countries such as Vietnam, Thailand, and Nepal to investigate flavivirus and coronavirus biology, immunogenicity, and pathogenicity using patient-derived samples. I firmly believe that combining cutting edge technology and local researcher expertise will enable us, working together, to combat the global burden of infectious diseases. Finally, in my transition as an independent investigator, I will continue to develop and apply interdisciplinary tools and approaches to investigate protective and pathogenic host immune response to viral infection using mouse models and human-derived samples.

Overview of your current Institution

La Jolla institute for Immunology (LJI) is a non-profit research organization located in La Jolla, California, USA, dedicated to understanding the immune system and its role in various diseases, including cancer, infectious diseases, and autoimmune disorders. LJI was founded in 1988 and has since become one of the largest independent research institutes in the world dedicated to Immunology. LJI was recently ranked among the top five molecular biology and genetics research institutions in the world, and its work has the potential to significantly impact the development of new treatments and therapies for a wide range of diseases.

Handpicked for their pioneering spirit, creativity, and collaborative approach, twenty-two world leaders in immunology head independent laboratories at LJL, working to improve understanding on different aspects of the immune system using the latest biomedical research tools and technologies. These researchers regularly come together to share their expertise while pursuing novel approaches to shed light on the role of the immune system in nearly every disease, from viral infections to autoimmune diseases to cancer. Together, they are working toward a new era in human health where life without disease is within reach.