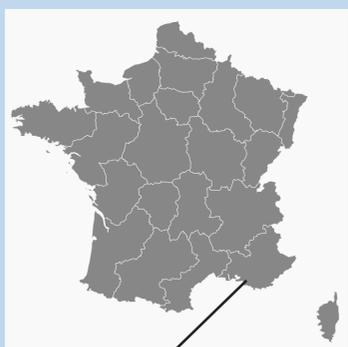




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While studying abroad last year in Montpellier, France, I discovered URMITE, a research group that studies infectious disease control and tropical medicine in a laboratory at the medical school of La Timone in Marseille. URMITE scientists were developing cutting-edge techniques for controlling insect vectors, which lined up perfectly with my career goals. I dreamt of working at URMITE; it was the perfect way to blend my love of the French language with a valuable experience in insect vector-related infectious disease research. The Burch Fellowship provided me with the resources I needed to realize my dream, and I returned to France last summer for two amazing months spent working and learning in Marseille.

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Marseille, France

Alexandra Willcox

## MOSQUITO MONITORING IN MARSEILLE

My Burch Fellowship experience was exhilarating, stressful, sometimes scary, but always extremely rewarding. It was the most important two months of my life, both for my professional development but also — more importantly, I believe — for my personal growth.

I spent my days using MALDI-TOF mass spectrometry to identify insect species that act as vectors of infectious disease. This emerging tool provides rapid and low-cost identification, and it worked well to identify insects reared in the lab. My goal was to show that the MALDI-TOF machine can correctly identify field-caught bugs, such as mosquito larvae from Marseille's urban areas, which are much more complicated than lab-reared populations due to their diverse diets and environments. This technology could then be used in infectious disease



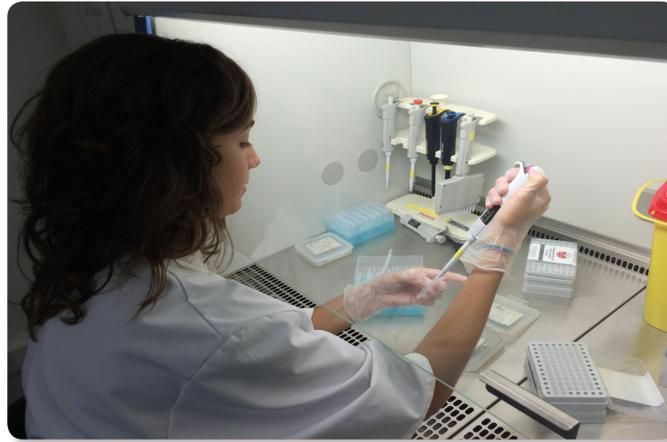
control to monitor populations of insects that carry deadly pathogens.

I had carefully planned out every aspect of my summer, hoping to avoid running into any difficulties that could halt my project's progress, but I soon realized that surprises and stressful situations are inherent to any Burch Fellowship and are part of what make the experience so rewarding. My first week in the lab was the hardest; I had to quickly learn a completely new set of scientific vocabulary in French,



while trying to figure out the social norms of the professional world at the same time. My supervisor explained and demonstrated the procedure I would follow to prepare the larvae for MALDI-TOF analysis, then left me to

my own devices. I was completely lost and I started to get frustrated with how inadequate and unprepared I felt. I wasn't used to being the foreigner in every sense of the word. I was the only American in sight, and I was also the only undergraduate student working in the lab. I had never felt so alone. It was an extremely humbling feeling,



and it could have overwhelmed and discouraged me, but I worked hard to overcome the steep learning curve. I went to the graduate students for help: as many of them lived in the same residence as I did, I spent my first few evenings with them, asking a million questions about life in the lab and seeking a background understanding of the research that was being done. They were patient and they helped me tremendously, sending me links to publications and presentations that related to the research I would be doing. Every night, I stayed up late making flashcards for the new terminology I was learning.

I also experienced frustrations with my results once I started performing the analyses. I was following the larvae preparation procedure word-for-word, but the images produced by the MALDI-TOF machine simply weren't coming out right. At this point I learned something about science: nothing is ever proven or discovered, and we must constantly ask questions if we want to make progress. I experimented with changes to the procedure, and by the end of the summer I had finally figured out how to produce high-quality results. My version of the procedure is now the accepted standard used by other students in the lab!

I was fortunate enough to also participate in the larvae collection. Every morning at 7:30 am I set out

with a pair of graduate students to visit mosquito breeding sites all across Marseille, where we collected larvae and measured environmental conditions. We saw the pretty touristic developments on the coast, as well as the dilapidated neighborhoods that house the city's poorest inhabitants in the depths of the city. I developed a unique perspective, and I got to see firsthand the diversity that makes Marseille into a wonderful mixing pot of heritage and culture. Immigrants, especially those from North African countries, make up a huge proportion of the city's population, and the resulting diversity made it easier to feel less out of place as a foreigner in the big city.

Marseille is the most dangerous and crime-ridden city in France. I had always felt safe growing up in a quiet neighborhood of a small town, so I had to quickly develop a precautionary attitude in order to navigate my way through Marseille. I learned which neighborhoods to bypass and I strictly avoided eye contact with strangers. Most importantly, I adopted a French style and confidence that helped me blend in. I figured out that if I pretended to be self-assured, eventually I started to feel as fearless as I looked.



My Burch Fellowship experience taught me a lot about responsibility. I was completely alone in a foreign world, and I had more independence than ever before. My success was in my own hands and I'm proud of how I used my newfound autonomy. My summer in Marseille shaped me profoundly as a scientist and as a human being, and I know I have just begun to see the benefits of this amazing experience on my career and on my personal development.