2024

Mitacs Globalink Research Internship

PRESENTED BY

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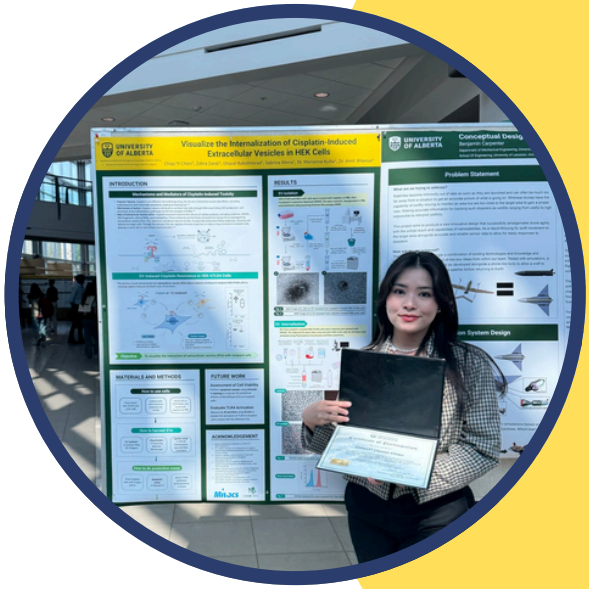
Introducing

Background

My name is Chiao-Yi Chien, currently pursuing a bachelor's degree in Pharmacy at National Cheng Kung University. Throughout my academic journey, I have been actively involved in various research projects, including a summer research program focused on identifying receptors that promote fibronectin assembly on cancer cell surfaces and a Mendelian Randomization study examining the causal relationship between dyslipidemia and Parkinson's disease. These experiences have solidified my passion for scientific research and its practical applications.



Goal

Building on this foundation, I was selected for the Mitacs Globalink Research Internship at the University of Alberta during the summer of 2024. The primary goal of my internship was to further investigate drug toxicity mechanisms and explore potential pathways to mitigate adverse drug reactions through in vitro models. Working under the guidance of Professor Amit Bhavsar, this opportunity allowed me to refine my technical skills and engage in international research collaboration, broadening my academic and professional horizons.

Application and Pre-Departure Preparation

Application Process

The application process for the Mitacs Globalink Research Internship began when a Canadian professor recommended the program to me. Although I was not ultimately paired with that professor, I was thrilled to be accepted into the program and matched with my current research supervisor. This initial recommendation sparked my interest and motivated me to apply.

To strengthen my application, I sought a recommendation letter from my previous mentor, who had supervised my research on cancer metastasis. Having worked closely with me on that project, my mentor was familiar with my research skills and academic potential. With their support, I was able to submit a strong letter of recommendation.
One of the major challenges during the application process was preparing for the IELTS exam. Over the course of a month, I dedicated myself to improving my language skills by reading academic articles and practicing test questions. I also worked with foreign friends to improve my speaking proficiency, engaging in daily conversation practice to ensure I was ready for the exam.

Another critical part of the application was preparing my CV. I spent a considerable amount of time working on it, unsure of how to present my academic background, research experiences, and skills in a concise yet impactful way. Adding to the pressure, I didn't use the standard template provided by Mitacs, which made me anxious about whether my CV would meet the program's expectations. However, after several revisions and feedback from my professors, I was able to finalize a version that I felt confident submitting.

I completed my application on the Mitacs portal, where I uploaded all the required documents, including my CV, transcripts, and language proficiency certificates. After submitting the application, I waited anxiously for the results, and was overjoyed to be accepted into the program.

Application and Pre-Departure Preparation

Pre-Departure Challenges

Once I was accepted into the Mitacs Globalink Research Internship, I faced several logistical challenges before departing for Canada. The first major task was applying for the necessary travel authorizations. While the process for obtaining the Electronic Travel Authorization (eTA) for Canada was relatively simple, I still worried about missing some critical detail that might prevent me from entering the country. Additionally, since my flight included a layover in the United States, I also needed to apply for an ESTA to transit through the U.S. As it was my first time traveling abroad alone for an extended period, these preparations added to my anxiety.

Booking flights was another area of concern. I knew that ticket prices could increase dramatically if I didn't book early enough, and there was the risk of not finding flights at convenient times. Coordinating my flight schedule with the start of the internship was crucial, so I made sure to book as early as possible to avoid potential price hikes and to secure a reasonable travel time.

One of the biggest challenges was that the school I was assigned to didn't initially provide a mentor. This left me feeling quite lost and uncertain about how to prepare. Without a mentor to ask for guidance, I relied heavily on discussions with my current professor, asking whether I should start reading relevant papers from the lab or how to prepare for my research topic. These conversations helped me address some of the uncertainties, such as coordinating the first meeting and planning for the research. Aside from research preparations, I also had to navigate practical matters like finding accommodation, setting up a bank account, and understanding the local transportation system in Canada. Since I was handling these details on my own, it felt overwhelming at times. However, with careful research and planning, I gradually figured things out, even though the process took longer than I anticipated. Despite the fears and challenges, the excitement of embarking on this new adventure kept me motivated.

Internship Execution Process

WORK CONTENT

During my internship at the University of Alberta, I was primarily involved in research focused on identifying and targeting drug toxicity pathways in vitro. This work required me to conduct a series of laboratory experiments, including cell culture and various assays to test the effects of different compounds on cell viability. My responsibilities included preparing and maintaining cell cultures, executing experimental designs, and collecting and analyzing data. I was also responsible for writing detailed reports on the progress of the experiments, summarizing the results, and contributing to the overall research objectives.

An essential part of my daily routine was keeping a detailed lab notebook. Writing in this notebook helped me document every step of my experiments, ensuring I could easily revisit previous procedures when needed. This practice was especially useful for preparing for upcoming experiments, as I could review my notes to avoid repeating errors and ensure accuracy. The notebook became an invaluable tool for troubleshooting issues, streamlining my experimental workflow, and maintaining consistency across different stages of the project.

INTERACTION WITH COLLEAGUES

Every two weeks, we held lab meetings where I presented my research progress to the entire team. These meetings provided valuable feedback and allowed me to learn from others' work. In addition, I had bi-weekly individual meetings with my professor to discuss my research progress in more detail and address any challenges I encountered.

Since my project required collaboration with other labs, I was also responsible for coordinating meetings and discussions with researchers from different teams. This helped ensure smooth collaboration and progress across all aspects of the research.

Internship Execution Process

SKILLS LEARNED

Throughout the internship, I gained a range of technical and soft skills. On the technical side, I became proficient in **cell culture techniques**, learning how to handle delicate cell lines, ensure sterility in the lab, and troubleshoot issues such as contamination. I also gained experience in performing assays and using laboratory equipment to measure cell responses, which allowed me to collect and analyze data more effectively.

In addition to these technical skills, I made significant progress in my **communication skills**. At the beginning of the internship, I was hesitant and nervous about giving presentations in English, unsure of my ability to clearly express my ideas. However, through continuous practice and feedback during lab meetings, I gradually became more confident. By the end of the internship, I could comfortably present my research findings, respond to challenging questions from my professor, and even received praise for my clarity and precision.

Another key skill I developed was creating visually appealing presentations using **BioRender.** I learned how to design experiment flowcharts and other visuals that effectively communicated complex processes in a simple and aesthetically pleasing way. This skill proved invaluable not only for my lab presentations but also for the poster symposium, where the visual aspect of my presentation played a crucial role in capturing the audience's attention.

Participating in my first **poster symposium** was a key milestone. I had to condense months of research into a clear, concise format that was accessible to a diverse audience. The biggest challenge was summarizing this information into a five-minute presentation while keeping it simple yet engaging. I used visuals and relatable examples to capture the audience's attention, which pushed me to think creatively and improved both my **public speaking and presentation skills**.

Cultural and Life Experience

Cultural Insights

Adapting to life in Canada was both exciting and challenging. One of the first cultural differences I noticed was the work environment. In the lab, the communication style was much more direct and informal compared to what I was used to in Taiwan. Colleagues were comfortable expressing their ideas freely and challenging each other's opinions, which fostered a collaborative and dynamic atmosphere.

Another noticeable difference was the flexibility in working hours. Unlike the more rigid schedules I was familiar with, lab members in Canada had highly flexible schedules—each person managed their own time and could arrive or leave at different hours, as long as they completed their tasks. This required a great deal of self-discipline but also allowed for a better work-life balance. I found this flexibility refreshing, as it encouraged efficiency and personal responsibility, which was quite different from the more structured environments in Taiwan.

In the lab, I was also expected to manage my own experiments and take full responsibility for troubleshooting and problem-solving, with minimal supervision. While guidance was always available, the emphasis on independence pushed me to develop stronger problem-solving skills and grow both personally and professionally.

Life Outside of Work

Outside the lab, life in Canada was a blend of exploration and learning. Since it was my first time living abroad alone, I had to quickly learn practical life skills like cooking and grocery shopping. Navigating the local supermarkets and finding familiar ingredients was sometimes challenging, but it also gave me the chance to try new foods and cook more creatively.

In my free time, I made the most of Canada's natural beauty by visiting local parks and exploring the outdoors. I particularly enjoyed hiking and discovering scenic spots, which gave me a break from research and helped me appreciate the vast landscapes that Canada is known for. I also attended social events organized by the university, which provided a great opportunity to meet students from different countries and learn about their cultures. These interactions broadened my perspective and helped me feel more connected in a foreign environment.

Overall, my time in Canada was not just about research but also about personal growth. From adapting to a new culture to learning how to live independently, these experiences enriched my understanding of the world and allowed me to grow both as a researcher and as an individual.

Reflections and Conclusion

Key Takeaways

This internship had a profound impact on both my personal and professional growth. One of the most significant lessons I learned was the value of independence. Managing my experiments and troubleshooting problems without constant supervision pushed me to develop stronger critical thinking skills and a deeper understanding of the research process. This experience not only improved my technical skills but also helped me become more confident in my abilities as a researcher. The challenges I faced—whether in managing my time, solving complex problems, or collaborating with others—taught me resilience and adaptability, qualities that will be invaluable in my future career.

Looking Forward

Moving forward, I plan to apply the skills and knowledge I gained during this internship to both my ongoing studies and future research. The ability to work independently, combined with the practical lab skills I honed, will help me approach future projects with more confidence and precision. Additionally, this experience has sparked an interest in pursuing further research collaborations, particularly those involving interdisciplinary teams and international partnerships. I hope to build on the relationships I formed during this internship and explore opportunities for future research that could have a meaningful impact in the field of pharmaceutical technology.