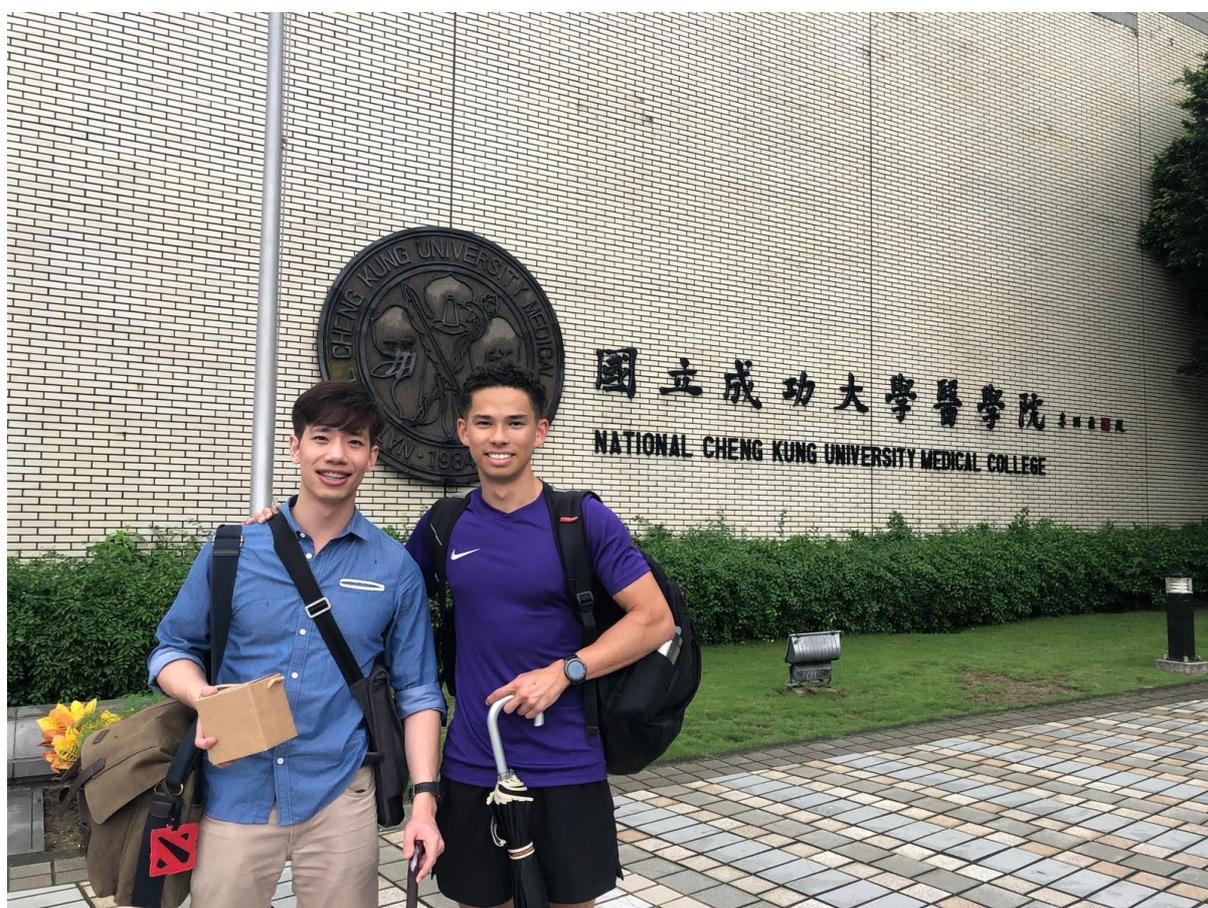




## British Association of Dermatologists

### Undergraduate Elective Prize/Project Grant Report - Summer 2019



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This summer, I was fortunate enough to have secured a four-week international research project at the Keloid and GenoDermatoses Lab (KGD) in the National Cheng Kung University Hospital, where I continued to collaborate with a group that I have previously worked with. This elective was uniquely both clinical and research based and thus, allowed me to experience the “bed to bedside” process in the research of rare genetic skin diseases in a new culture and society that I have never experienced before.

The KGD lab undertake research into both keloid and genodermatoses, such as epidermolysis bullosa (EB), and is led by Associate Professor Chao-Kai Hsu. Since its establishment, the group has produced a large number of high-quality publications and continue to do so, particularly focusing on the pathogenesis of keloid (its epigenetics, genetics and mechanobiology); the treatment and genetic diagnosis of EB; and next generation sequencing of varying genodermatoses. The group consists not only of qualified dermatologists, but also of medical students such as myself, masters students, undergraduate students, trainee dermatologists, and post-doctoral fellows. Through this work, it has gained a prestigious reputation within Taiwan and worldwide, and continues to push the boundaries of dermatological research.

Through this elective I was able to visit the dermatology clinic twice a week, where I saw various skin diseases including pemphigus vulgaris, keloid and ichthyosis vulgaris. What particularly intrigued me is the system in which the clinic worked, whereby the consultant sees the patients first, takes a history and comes up with differential diagnoses, before referring them onto the trainees who performed the necessary treatments. For example, if the consultant decided that a skin biopsy was needed to identify a potential diagnosis, he or she would refer the patients to a trainee in one of the adjacent treatment rooms, who would perform this procedure. The biopsy would then be sent off to the labs where I or other scientists would perform further analysis, before returning the results to the consultant. The consultant was always supported by two or three nurses, who would handle the administrative work to do with the patient as well as perform any minor dressings or procedures where necessary. This meant that, although extremely busy, the consultant was able to efficiently see up to fifty patients per morning and afternoon clinic.



*Attending the morning clinic*

In the laboratory-based aspect of my elective, I was involved in numerous projects across the four weeks which meant that I gained a good breadth of understanding in how research is conducted for various skin diseases. One project I found particularly interesting was in general pustular psoriasis (GPP), where I was involved in attempting to identify the pathogenesis of this disease and how it may be genetically distinct from psoriasis. To do this, I sequenced the DNA of numerous GPP patients in a particular gene called IL36RN, which allowed me to perfect my Sangar sequencing technique and learn how to analyse its results. Following sequencing, I also learned how to perform immunohistochemistry on the same patient samples, linking the genetic aberration to the clinical phenotype. As a result of this, we were able to identify mutations which we hypothesize to explain the disparate clinical phenotype between the presence of pustules in GPP and its lack of in psoriasis. Since my time in Taiwan was considerably short, I was not able to see this project to the end, however, I hope that my completed data and experimental suggestions have formed the basis of what might be a very profound publication in the research of GPP.



*Performing a Sangar sequencing reaction in the labs*

Although much of my time in Taiwan was spent undertaking these clinical and research attachments, I also gained a huge deal from what took place outside of it. I spent the evenings and weekends with the people I met in the hospital who were kind enough to teach me their local culture, language and lifestyle and show me around their beautiful country. As much as medicine is about developing one's clinical acumen and forming a foundation in which to treat patients, I believe that it is equally important to spend time on personal growth in areas such as these. Being a doctor is more than just knowledge but is also about being able to speak to people from different backgrounds and being as open minded as possible. This trip taught me exactly that, and I was able to share my journey to my followers on Youtube, in an attempt to inspire others to do the same.



*Dinner with part of the KGD group*

The experience that I had in Taiwan is indescribable and has motivated me even further to continue down a path in clinical dermatological research. This trip would not have been possible had it not have been for the generosity of others and in particular, the British Association of Dermatologists who awarded me this grant to facilitate this work. I would also like to thank my supervisor, Dr. Chao-Kai Hsu, and the rest of the KGD group for welcoming me into their lab with open arms and for making my time in Taiwan the best so far in my life. And finally, I would like to express my gratitude to Professor John McGrath, who made this collaboration possible.