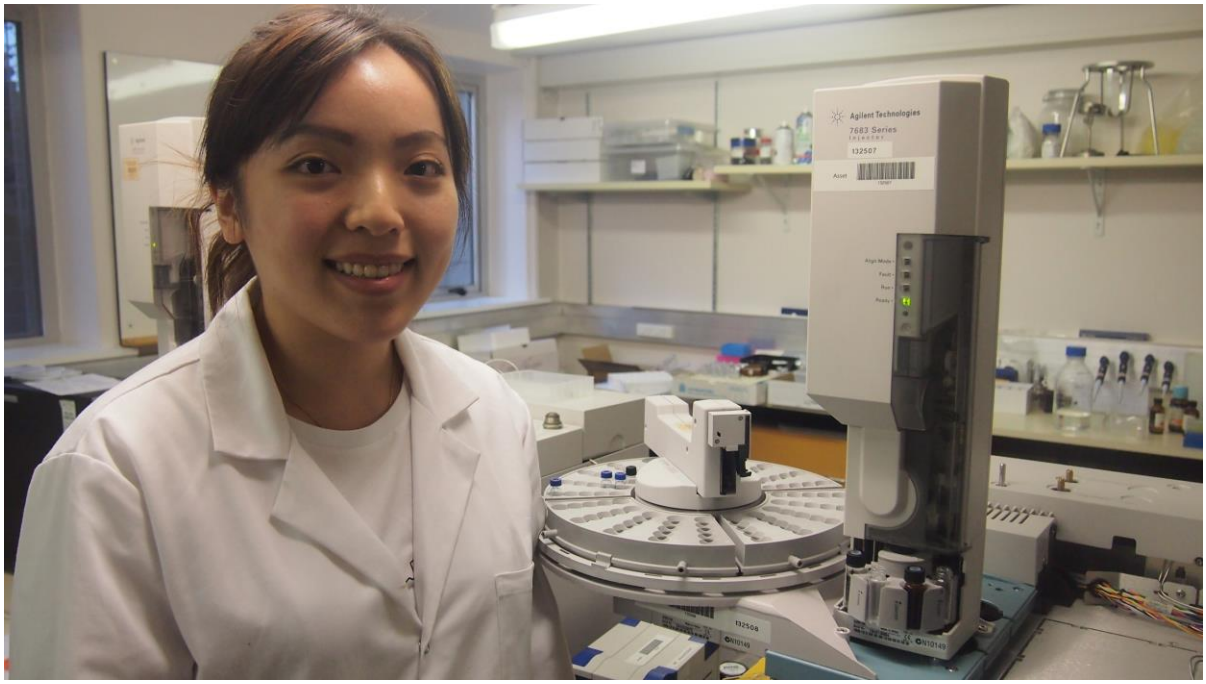
Summer research studentships at the University of Otago

Two students who had completed their food science degrees at the **University of Otago**, spent the summer working on research projects in the **Department of Food Science** at the university.

Vivien Ting's project involved determination of cyanogenic glycosides in flaxseed meal. It was supervised by **Dr Dominic Agyei** and **Fiona Nyhof**, and supported by a bequest to the Department, from E O Naylor.



Vivien says: *"*Even though this studentship lasted only 8 weeks, I have found it especially rewarding towards my 4th year Honours. It has allowed me to gain a better understanding on published works and conducting scientific literature reviews. I also learn to balance my time between research and personal life so that's a big bonus for me as I have always wanted to fine tune my time management skills.

When I first got accepted into this summer studentship I was worried that I couldn't cope with it as it was going to involve a lot of "research" which will require dedication and time. It requires "thinking outside the box" while maintaining a level of sensibility, in order to discover and pursue new knowledge. I found this takes some time to get used to it. To be completely honest, I often thought to myself like: " what if my question sounded stupid?" and "what if I don't understand a single thing my supervisor has told me?"

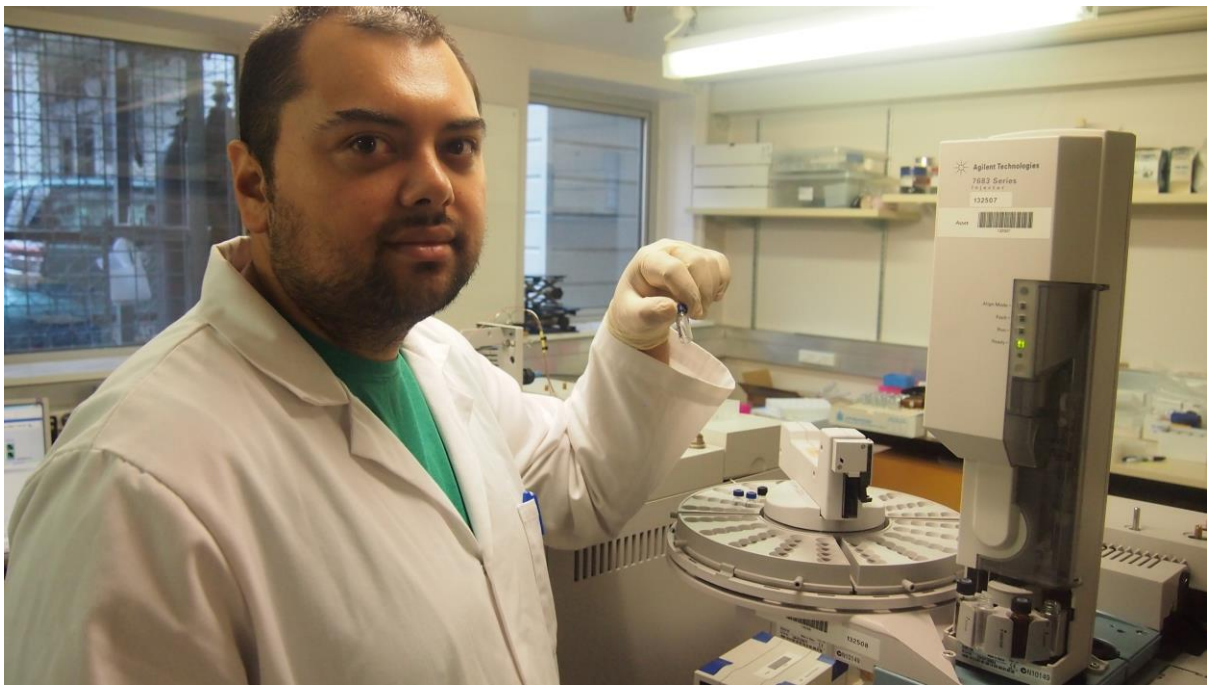
But, I would like to assure all of you students out there that the purpose of summer studentship is to learn and ask. Just like my co-supervisor, Fiona Nyhof says: 'There is no stupid question.' Through this exposure, I was able to determine what field of interest I would see myself in the future and also allow me to discover my strengths and build up my confidence over time.

My studentship also involved the use of some toxic chemicals (i.e cyanide), which was an unnerving experience. With the help of lab technicians, I was able to learn all the necessary

protocols and techniques in handling the chemicals and how to properly dispose them off after use. Protecting the environment is also part of the responsibility I learnt along the way.

There are also times where I got stuck in a particular step due to the toxicity and availability of chemicals. My supervisors provided guidance that helped me to find alternative approaches that result in similar or better outcomes. All in all, I'm especially grateful to receive this studentship and would recommend students who wanted to get into postgraduate to give this a try. While you may find this challenging, the results that you will achieve in the end are worth all of the hard work that you put in!"

Fiona Nyhof comments: "The chemistry and processing of oilseed products have been studied extensively at the Department of Food Science, but a recent application study to develop food products to better utilize and add value to flaxseed meal incurred a problem. Although food products with potential health benefits arising from the unique composition of flaxseed fibre and protein components are possible, the safety and quality of food products made with flaxseed meal could not be assured without better understanding and control over the concentration of naturally occurring and potentially toxic cyanoglycoside compounds. Vivien's summer project has been immensely helpful because her carefully conducted experiments have enabled us to identify innovative strategies for removal of cyanoglycoside compounds from the flaxseed meal, and develop standardized test method protocols. This will help us help our food industry clients promote their flaxseed meal to discerning health food industry clients in NZ and worldwide with confidence."



Jordan Taylor's research studentship involved investigating the prebiotic potential of New Zealand flaxseed mucilage. His project, sponsored by *Microbiome Otago*, was supervised by **Dr Dominic Agyei, Associate Professor John Birch, Professor Gerald Tannock** (Microbiome Otago and University of Otago) and **Dr Ian Sims**, Ferrier Research Institute, Victoria University of Wellington.

Jordan reports that this project was challenging, but also very rewarding. "As I come to completing my project, I now feel confident in my knowledge and abilities as a graduate."

He explains the project in more detail: “The mucilage layer on the surface of flaxseed contains some complex carbohydrates, such as arabinoxylans, that could be of interest to the human gut microbiome. The first stage of my project used cold-pressed flaxseed meal (the by-product of flaxseed oil production) and developed a protocol to optimise extraction of flaxseed mucilage, and also the removal of other constituents such as residual lipids and proteins from the seed. This proved to be an interesting challenge, as much of the literature avoided using cold-pressed seeds due to the high levels of protein being released from the inside of the seed. After trying different protocols and some literature investigation, I was able to develop techniques to solve issues such as this and other situations that developed.

What is amazing about a summer studentship is the ability to solidify the knowledge and techniques you have acquired from university. Throughout my time at Otago, I have learned many protocols. Being able to propose these protocols to investigate and solve problems during this project not only helped me understand what I have learned in new contexts, but also built my confidence in the knowledge I have acquired. It is an amazing feeling to recall an experiment that you performed in a lab, and adapt it to your project and have it actually work. Because of this opportunity, I am more determined to pursue post-graduate studies as the exposure to research has been incredible and exciting.

I would recommend any student to give a summer studentship a go. It is a challenging experience but is very rewarding. In particular, I think a summer studentship would be helpful to someone about to graduate as it can give you the confidence you need and help elevate your skills before you enter the industry. It can also give you a solid foundation to understand the role of research and help you better prepare for an honours or masters project.“

Dominic Agyei comments: “Exploring the prebiotic potential of flaxseed polysaccharides is one of the research activities aimed at expanding the work done on flaxseed at the Department of Food Science, University of Otago. Jordan explored a number of avenues for the extraction and fractionation of flaxseed polysaccharides. The purpose is to explore the prebiotic potential of these carbohydrates. His work lays the foundation for obtaining flaxseed polysaccharides that can be used as ingredients in health foods.”