

Callaghan Innovation's R&D Experience Grants for summer students

Businesses doing R&D can benefit from Callaghan Innovation's R&D Experience Grants, to employ undergraduate students to help with research. To be eligible for the grants, students must be studying science, technology, engineering, design or business, and be available for 10 weeks in the summer break before or after their final year of study. The student will help with a discrete R&D project or activity.

Six of the food companies which received R&D Experience Grants to employ students over the 2017/18 summer, share their experiences.

ANZCO Foods Ltd

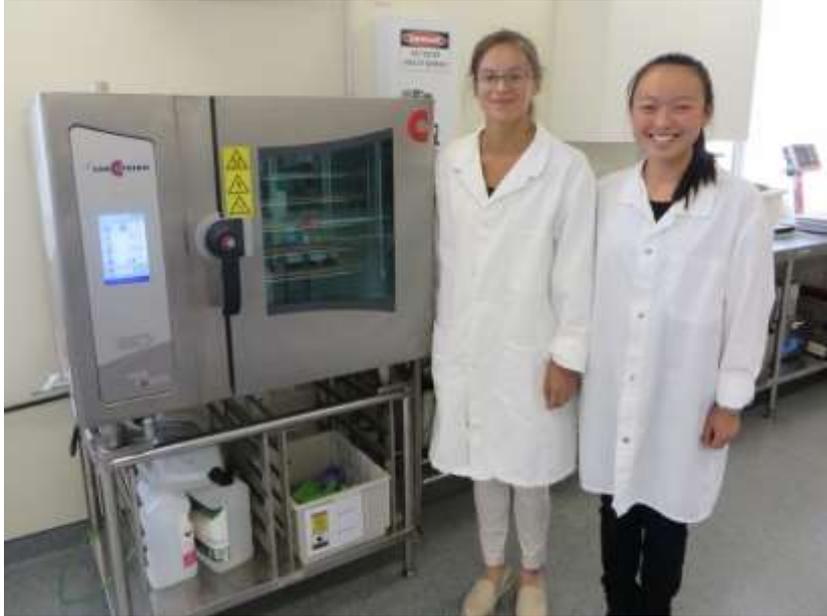
ANZCO Foods had two summer students from Massey University. **Pavinee Watson** had completed her BFood Tech (Hons) and was studying a Masters of Food Technology. **Minzhe Zhang** had completed two years of her BFoodTech (Hons), majoring in Food Process Engineering.

Innovation Centre Manager Paulette Elliott and **R&D Technologist Anna Horgan** supervised both projects.

Pavinee's project was looking at the effect of different preservative options on the shelf life of pet treats. She says "For me, working over the summer is a great opportunity to apply the things I've learnt during my degree to areas of the pet food industry. I know that getting as much experience as possible will not only be worthwhile for me in my future studies but will be something that sets me apart from others when applying for jobs.

Nothing beats having hands on experience in the industry. Plus, there is also the chance to spend the summer away from home which means you can travel a bit of New Zealand as well."

Minzhe's project was testing how burger patties perform under different cooking situations. "Working for ANZCO Foods has given me my first hands on taste of the wide range of work a food technologist undertakes in industry. In these 10 weeks, I've been able to complete my first individual project, which has given me experience in time management and understanding the new product development process. I've also been introduced to many other parts of the company in my time here, including processing sites and the corporate side of things. This has given me a broad view of how the work of a food technologist fits in to the bigger picture. My R&D experience has introduced me to wide range of new skills and situations, but it was also satisfying to be able to put to use the knowledge and skills that had been taught in lectures and project papers. For me, learning happens the best when I'm seeing and doing things in reality, which has made the experience all the more invaluable."



Paulette reports: “Being able to secure food technology students for the summer has been a great benefit to ANZCO. We could have confidence that they had the right background knowledge to get to work quickly on their projects and be able to apply current thinking and technologies to problems as they arose. We have been able to gather a lot of data about two key ANZCO projects.

As a New Zealand food business ANZCO is always looking for ways to promote science and technology careers to young people, and these internships are a great way to give students a taste of our industry. We have enjoyed the opportunity to share our knowledge and teach some new skills to these hard working young women.

The R&D grants provide a very low risk way for businesses to give learning opportunities to students and also have a discrete piece of work completed. The format of the grant application process encourages thorough project scoping and planning which enables the employer to efficiently use the 10 weeks of work.”

Bakels Edible Oils (NZ) Ltd

When **Amy Watson** worked at Bakels Edible Oils, she had completed 3 years of her Massey food tech degree.

Amy developed a new test method for use with Specialty Margarines. This test method, using a Texture Analyser, means that quantitative specifications have been defined, which have enabled QC test limits to be used for product release, rather than subjective data. This has reduced the quantity of product going to waste during product changeover, resulting in a cost benefit from improved yields and consistency of product.

As a consequence of the success of this project, Amy also investigated the use of the Texture Analyser for Table Spreads. Based on her initial findings, Bakels will continue this work and define test limits for another group of products, based on quantitative assessment rather than subjective data.

Amy says her practicum at Bakels has given her a very good insight into the edible oil and fat industry. “Throughout my time at BEO, I was able to observe how a large company carries out their operations and how they maintain products of the highest quality. Not only did I carry out the project, but I learnt some of their in-house laboratory methods. I was able to reinforce prior knowledge learnt through my degree, as well as develop it further. My research and communication skills were key to ensuring the project was undertaken effectively and achieved within deadlines. In my fourth year of study, projects are an integral part of the degree; therefore the research and communication skills I’ve developed, will prove to be invaluable. I believe the time spent at BEO will help me significantly for my future studies and employment.”



Amy’s supervisor, **Technical Manager Joy Thompson**, comments that Amy’s work will be invaluable to Bakels. “She has worked really hard on this project. She used her initiative to interact with our production staff, to understand the manufacture process and apply this knowledge to define specifications and probable causes of out-of-trend data. She has written an Operating Procedure for the Texture Analyser and undertaken training of some of our staff for this test method.

It has been a pleasure having such a hard-working and diligent student at Bakels. Hopefully Amy has improved her knowledge of a 24/7 production facility, and how R&D, Laboratory and Manufacturing staff interact. Her experiences defining Operating Instructions and training staff members will be invaluable in her future career.”

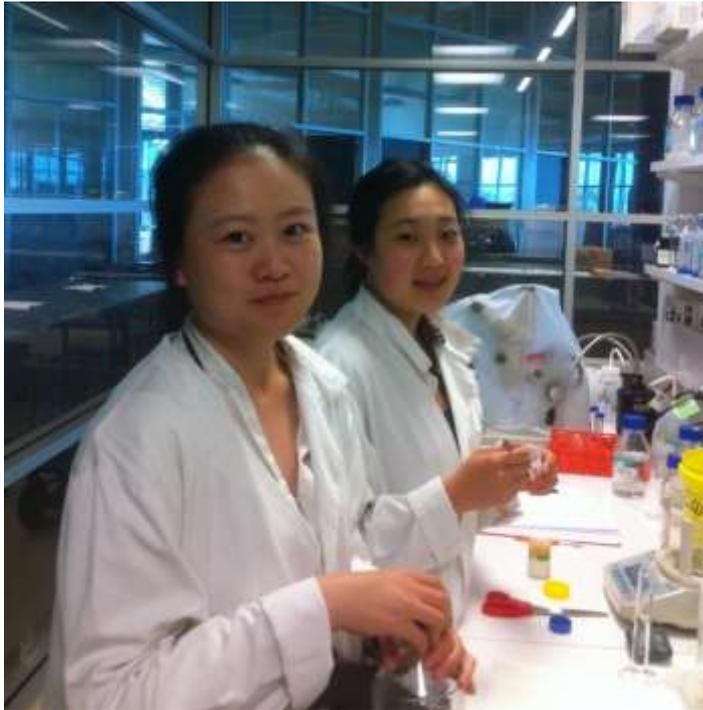
Comvita (NZ) Limited

Comvita had two summer students, **Casey Park** and **Yutong Liu**, both from the University of Auckland. Casey had completed the third year of her BSc majoring in medicinal chemistry, and Yutong Liu had completed three years of a BSc majoring in food science and nutrition. They worked in the Comvita research laboratory at the Institute for Innovation in Biology, School of Biological Sciences, at the University.

Their research project was to investigate alternative internal standards for the current AOAC sugar adulteration test used for honey. This included using analytical techniques, such as solid phase extraction (SPE) and high-performance liquid chromatography (HPLC), and preparing extracts from honey samples to send to the Comvita laboratory in the Bay of Plenty, to analyse the stable carbon isotopic ratio using Isotope-Ratio Mass Spectrometry (IRMS). During the project, they visited the Comvita laboratory to learn IRMS techniques.

Casey says: “While university can teach you the theory behind things, it has limits when it comes to practical skills. This summer studentship has given me an invaluable opportunity for me to learn several key analytical skills, develop academic writing skills and experience an actual research environment. Throughout the studentship, I’ve realised how deep my passion for science is, and I am extremely glad that I have developed many important skills as a future researcher. I have also had the chance to meet one of the best experts in the honey industry, who I ask for advice and guidance.”

Yutong comments: “As I prepare for a career in food industry, I am able to gain a more detailed understanding of the field by collaborating with an experienced team. By doing this summer research, I am able to expand my research experience and knowledge, while working in a team has improved my communication and team-working skills. Overall, this summer research program has provided me a great opportunity to get a good insight of food industry and prepare me for my future career.”



Jonathan Stephens, Head of Honey Research at Comvita, reports the company has arranged many summer research positions over the years, through and funded by Callaghan Innovation. “We see this as a triple opportunity: we explore research questions that are often beyond routine enquiry, we test potential candidates for higher degree positions, and we enjoy the reward of seeing undergraduates perform in what can be demanding research roles. The summer studentships work perfectly for both the company and students.”

Goodman Fielder Limited

When **Emily Syme** worked at Goodman Fielder, she had completed her BAppSc majoring in Consumer Food Science and Marketing Management at Otago, and was going on to complete a one year post-graduate Honours Degree in Consumer Food Science.

Emily assisted the R&D team across the range of development activities, including shelf life evaluation, sensory testing, sample preparation etc. She also had her own specific projects to complete.

Emily says: “This experience has been a once in a lifetime opportunity to learn more than I could ever imagine. I was able to take responsibility for multiple projects which taught me how to plan, manage and organise in a fast paced, complex environment. Being exposed to what goes on behind-the-scenes in ‘the real world’ was invigorating, as you learn first-hand how an idea becomes a product on the shelf.

An R&D grant is an opportunity for passionate and enthusiastic students who are willing to learn and grow, not only your skills in food-tech, but also as a person. It is the chance to learn from incredibly skilled and knowledgeable people in an environment where no day is ever the same. Applying for an R&D grant is one I could not recommend more.”



Emily was supervised by **Nurul Kusumaningrum, Product Development Manager Dairy.**

Nurul says there are a number of benefits of employing Uni students over the summer. “We get a fresh perspective from someone who hasn't been immersed in our world, which helps bring new ideas to us. We get an extra set of hands to work on ideas we've had on the to do list for a long time but not been able to get to, and this is often the first step in leading people for one of the team. For the student, they get to see first-hand what the 'real world' looks like and a chance to impress future employers.

The R&D Experience Grants are a great initiative that strengthens the relationship between students, universities and companies.”

Taranaki Bio Extracts Ltd

Madison Stratton had completed 3 years of her Massey Bachelor of Food Technology majoring in Process Engineering, when she worked at Taranaki Bio Extracts (TBE).

Madison worked on the commissioning stage of a Vibratory Shear Enhanced Processing (VSEP) membrane. This process recovers saleable solids from processing water, increasing product yields, eliminating a waste stream and lowering fresh water use. Madison says: “I am working with plant and project managers and operators to monitor processes, gather

data and make recommendations based on my findings that will be used for commissioning the new process.

It has been great to be able to apply what I have studied the past 3 years in an industrial setting. I have learnt a lot about the rendering process and the challenges of new projects. It's very exciting to be a part of this project, which is a world first for using VSEP technology in the rendering industry."

Madison's supervisors were **Rob Archibald, TBE General Manager**, and Project Manager Craig Coleby from Coleby Process Consulting. Rob reports "The advantage of having a student working on site is that they can focus completely on the task, without any of the normal day-to-day distractions that permanent staff have. Because of this position where they can focus, most students we have employed demonstrate a huge capacity for work and so tasks can get done very quickly. With applicable skills and knowledge from their degree fresh in their minds, a highly motivated student can quickly become involved in the research and make valuable contributions. Depending on the project, they may often initiate work beyond the original scope of work, or flag issues that will impact on the project. This is a significant benefit to the project.

For the student it is a great opportunity to apply knowledge to real manufacturing issues, practice communication skills with different levels in the organization and identify and justify recommendations for improvement."

Madison says that the benefits of this internship are continuing this year: "My work at TBE will extend into my final year at University, as TBE are providing a research proposal for my Honours project. Working alongside TBE staff and project consultants has given me experience that can only be gained through student internships such as the Callaghan Innovation R&D grant. This will not only assist in my final year of study, but means I will graduate with practical experience."

Zespri International Ltd

When she spent the summer working as a Research and Innovation Intern at Zespri, **Briar McGowan** had completed a Bachelor of Agricultural Science at Lincoln University. Briar was supervised by **David Armour, Innovation Leader**.

Briar assisted a PhD student with her kiwifruit trials in Tauranga, spending time in the orchards applying various soil fertilisers and nutrient foliar sprays, and measuring any changes between treatments in fruit and leaf size. She also worked with David and the Innovation team, on optimisation of kiwifruit production in the orchard. This included crop load management and measures of the plant (canopy), driving growth of premium quality

fruit. This work supported research exploring digital approaches to measuring crop load management and plant growth.

Briar applied for this position with next to no experience in horticulture or kiwifruit, but knowing that the kiwifruit industry was one that she was interested in. “This position has been an amazing opportunity to get a foot in the door and be thrown in the deep end, having to learn quickly about kiwifruit and the seasonal practices associated with the industry, and also being able to help and contribute towards research and development that will hopefully be beneficial to the kiwifruit growers of New Zealand. My time at Zespri has allowed me to rub shoulders and network with industry professionals, potentially opening up doors for future positions within the kiwifruit sector.

It’s a great way to utilise your summer, there was a great balance between office and orchard work, and has been an amazing snapshot at the kiwifruit industry. It has been encouraging to know that the work I have done over the past 3 months is contributing to something beneficial to growers. “



David Armour comments: “The benefits of employing uni students over summer are considerable. We get to expose students to a key part of the supply chain - production. At this time of year students are able to see how a premium crop is produced, and are also able to look ahead to understand how this feeds into the post-harvest component of the supply chain. It was great to have Briar with us, as short as 3 months is! It is also great to have Callaghan Innovation’s support in this.”

CallaghanInnovation

Applications for R&D Experience Grants for the 2018/19 summer are open to businesses from April to September. Visit Callaghan Innovation's website for more information about the Student Grants and the updated R&D Experience Grants.

<https://www.callaghaninnovation.govt.nz/grants/student-grants>