**Recent events**

**Physiological Management Procedures with Dr Ricardo Da Costa**
**23 - 24 October 2018**

In late October Dr Da Costa ran a laboratory workshop based on theoretical and practical methods for all GRIP students.

The workshop provided students with a general understanding of essential and transferable laboratory skills in the collection and analysis of a variety of physiological markers commonly used within animal and human research models, including clinical trials.

Considering food components have a potent ability to influencing the activity of biological systems, the knowledge and skills of accurate and standardised physiological mark management procedure, with or without additional stress models or nutritional interventions, is essential in the food and dairy industry to inform product development, reformulation, and/or product impact on health in the target population.

This workshop is for Food & Dairy GRIP students only

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**INTRODUCING THE FOOD AND DAIRY GRADUATE RESEARCH INDUSTRY PARTNERSHIPS PROGRAM**

The Monash University Food and Dairy Graduate Research Industry Partnerships (GRIP) program was established in recognition of global demand, especially from Asia, for high quality western foods - a demand that will continue to grow beyond the current $3 billion generated in exports. The Food and Dairy GRIP is responding to this rising demand by creating researchers with interdisciplinary capabilities and a readiness to apply their expertise to solve real-world problems.

Increased demand provides challenges and opportunities as manufacturers seek ways to respond to scalability and sustainability. The Food and Dairy GRIP recognises the opportunities available and has brought together a team of leading international and interdisciplinary researchers with expertise in engineering, science, and medicine. These researchers work with industry partners to explore the next frontiers in the manufacturing of new products, efficient distribution and sustainable resource use.

The Food and Dairy GRIP is under the leadership of internationally recognised researchers Professor Cordelia Selomulya and Dr Ricardo Da Costa. Cordelia and Ricardo lead two key program areas that (a) support the whole value chain of the dairy and food industry, and (b) train high-level graduates with relevant skills.

Currently 14 PhD researchers are working on collaborative and embedded R&D projects in the industry partners’ specific areas of interest.

Each PhD researcher is supervised by at least one member of the Food and Dairy GRIP’s interdisciplinary team, plus a mentor from an industry partner. This unique collaborative approach provides forums for knowledge exchange allowing the PhD researchers to be challenged by real-world projects, providing them with the skills to understand market challenges and the need to be innovative to ensure competitiveness.

Our partners include leading organisations in the Australian food and dairy sector: Agriculture Victoria, Bega, CSIRO, Dollar Sweets, Meat and Livestock Australia, Nutrition Innovation, Lion Dairy and Drink, Simplot Australia, Tamu Innovations, Tatura, and Treasury Wine Estates.

Our expertise in examining the whole value chain of the dairy and food industry means that Australian food processes can stay abreast of the latest research and technology in product manufacturing, novel materials, and sustainable practices in water, energy and waste management. This means improvements in processing and development of new products, packaging, wastewater management and optimisation, process control, distribution and marketing.

Through this newsletter we will showcase our research and the people behind it.
MEET OUR CO-DIRECTOR DR RICARDO DA COSTA

Dr Ricardo Da Costa is Co-Director of the Food and Dairy GRIP, leading the Medicine Program based within Monash University’s Department of Nutrition and Dietetics with the Faculty of Medicine, Nursing and Health Science.

To meet the Food and Dairy GRIP’s vision requires a leadership team with networks within the dairy and food industry to build collaborative research activities. As a former professional triathlete/duathlete competing worldwide, Ricardo has a thorough understanding of the health and nutrition industry. His research interests include exercise, nutrition and environmental physiology and immunology; sports and exercise nutrition; clinical and public health nutrition; and dietetics. His recent work focused on the impact of multi-stressor activity on immune, thermoregulatory, and gastrointestinal responses; and additionally, the impact of ultra-marathon competition on nutrition and hydration status.

Ricardo’s expertise underpins the Food and Dairy GRIP’s commitment to drive innovation and develop a pipeline of research talent that will feed Australia’s food processing industry with the skills to continue growing.

Ricardo believes it is the learning outside the classroom that highlights the advantage of the GRIP.

“It is just not what our students can learn from the classrooms that is important. This program provides much more than that,” Ricardo said.

“Alongside the advanced learning and development of research skills, there is an adjunct with translation into industry and other targeted populations”.

“Through collaboration with our industry partners our PhD researchers gain knowledge and skill development, along with product development and commercialisation pathways and procedures. This is a unique mix. Our graduates will not only have the science/engineering skills but understanding of the business model, understanding of new product development, product formulation and so much more,” Ricardo said.

Ricardo’s research projects examine enhanced sports recovery and enhanced strength, power and performance in master athletes.

Two specific projects with two PhD researchers are supervised by Ricardo, and include collaboration with a leading Australian dairy company, Lion Dairy and Drinks.

STUDENT RESEARCH

Postgraduate student Isabella Russo is interested in nutrition and dietetics. With a Bachelor of Science and Masters of Nutrition and Dietetics already under her belt, she is now working with a leading food processor, Lion Dairy and Drinks, to develop a sports recovery beverage for her PhD.

Isabella’s PhD, New Product Development (NPD) Sports Nutrition, focuses on developing novel products for recovery nutrition following sport and exercise. The product will combine the goodness of dairy with other active ingredients for the development of a scientifically validated functional product to optimise all aspects of recovery. Isabella’s main PhD supervisor is the Centre’s Co-Director Dr Ricardo Da Costa.

“The aim of my research is to develop a product with clinically proven benefits for recovery from prolonged exercise. It is a most exciting project and trials have commenced with elite and recreational level athletes”, Isabella said.

The product utilises the natural nutritional benefits of dairy to target specific physiological aspects of recovery, and deliver a functional benefit to Australian athletes.

For Isabella, being a part of the Food and Dairy GRIP provides her with unique learning experiences.

“The program facilitates the development of my research, project management and leadership skills. We participate in ongoing training and professional development workshops. This includes an industry-based internship that provides an insight into the commercial applications of research and future career opportunities”, Isabella said. “Most excitingly, at the end of my PhD, I may see my research translated into a product that will benefit Australian athletes, and add to the product portfolio of one of Australia’s leading food industries – and that is very exciting for me, it is an opportunity I would not have had outside of the Food and Dairy GRIP program”.

Isabella has her eyes clearly focused on the future. Her goal is to continue working at the forefront of sports nutrition, as well as other areas of nutrition research, in collaboration with the food industry. “Our understanding of human health and nutrition is continually evolving. So too is our population health, cultural diversity and consumer demands. I hope to contribute to delivering quality, nutritious, evidenced-based products that fill these emerging “gaps” in the Australian food supply”. 
Postgraduate student Grace Talbot-Walsh hopes for a career in the food processing sector. With a Masters of Advanced Engineering and more than seven years experience in the food processing industry in Mexico, he is now working with an Australian heritage company Dollar Sweets to improve their panning operation.

His project with Dollar Sweets is aimed at developing a deeper scientific understanding of the panning process in producing sugar nonpareils typically used in the preparation of cakes and desserts. This deeper understanding will translate to a more efficient panning operation and provides the basis for future product development using the process. His project is indeed multidisciplinary and is jointly supervised by Dr Bernard Chen (Mechanical Engineering) and Dr Meng Wai Woo (Chemical Engineering) at Monash University.

“This project has allowed me to experience the dynamic confectionery possibilities with the integration of scientific research to the industry”, Fernando said. For Fernando, whom has significant confectionery operation and project management experience, the GRIP program provided the opportunity to experience how deeper scientific advancement can be achieved for the food industry. This clearly illustrates how the GRIP program benefits engineers whom are already in the field, upgrading their skills and knowledge.

Fernando is enjoying his close interaction with Dollar Sweets. “Sometimes, to capture important operation parameters for the project, I had to come into the plant in Pakenham very early in the morning before the sun is up, but I enjoy the interaction with the operators on the floor” he said. One of the key objectives of the program is for the postgraduate student to be working closely with the industry partner. “Learning the communication style in the industry in Australia has been very beneficial for me” he quoted.

When asked about his future plans for the confectionery industry in Australia, he cheekily revealed the following, “We definitely need more chili chocolates in Australia. I would like to introduce more of that in the future … and I mean the really spicy ones”. That was certainly not a surprise coming from an international postgraduate from Mexico!

Postgraduate student Grace Talbot-Walsh hopes for a career in the food processing sector. The experience she continues to gain during her PhD within the Food and Dairy GRIP is providing her with the skills for this industry.

In the third year of her PhD, Optimization of processed cheese formulation for improved sensorial and functional properties, yield increase, and cost reduction, the aim of Grace’s project is to determine the effects that processing and new ingredients have on the final product. In April 2018, Grace won the best poster presentation at the INRA’s Cheese Symposium in Rennes, France. She also recently has a paper published in the prestigious Trends in Food Science and Technology, titled A review on technological parameters and recent advances in the fortification of processed cheese.

With Grace’s interest in identifying how changes to manufacturing and formulation affect the final product, it’s ideal that the Food and Dairy GRIP program facilitates a three-month internship with an industry partner.

For Grace her placement at Bega Cheese Ltd is providing her with the first-hand knowledge that is helping her understand the food formulation process, while also teaching her the skills and knowledge of project management and food R&D end to end, these being essential in the understanding of the food industry business environment.

The unique industry-research opportunity offered to PhD candidates through the Food and Dairy GRIP have provided Grace with the technical and operational skills that will benefit her career.

“I enjoy the workshops that are put on for the PhD students”, she said. “Through this unique learning environment, I have learned about so many aspects of food technology. As an example, in the most recent workshop our GRIP Co-Director Dr Ricardo Da Costa provided insights into biosample management. This topic is definitely outside of my current field, but this workshop provided me with new knowledge, and I am hungry for knowledge and how I can translate it into real world scenarios”.

“The workshops plus the field trips and internship programs has broadened my knowledge. When I finish my PhD in 2019, I will have the relevant experience to find a job within a food processing company, and the ability to add value”.

Ms Grace Talbot-Walsh

Mr Fernando Toledo Hernandez
Site visit to Ellinbank Research Facility with Dr Cameron Gourley from Agriculture Victoria

Earlier this year a number of our students had the opportunity to visit the Ellinbank Research Facility in West Gippsland and home to the National Centre for Dairy Research and Development.

The students heard a number of presentations, including an overview of the business operation of Burra Foods by Bernie Harrison before he conducted a tour of the site. Dr Cameron Gourley from Agriculture Victoria gave a high level presentation to the students covering global population explosion, demand for protein with less arable land and higher use of fertilisers. Participation was sought from the students during the session as they discussed the continuum of ‘soils, pasture, cows, milk, manure, and the environment’. Professor Peter Moate took the students on a tour of the dairy and animal house chambers, including a high tech dairy milking session, and discussed his field of research in methane capture.

Site visits such as these, made possible through the GRIP program, provide students with an invaluable insight into challenges and opportunities in a ‘real world’ setting.

Designing Functional Foods

This practical session, organised by Dr Da Costa, gave students an understanding of the processes involved in developing functional foods for a specific population.

The workshop was attended by the GRIP Cohort together with staff from CSIRO, My Other Kitchen and other Monash staff.

Leadership workshop with Linda Betts

Melbourne based mentoring and leadership consultant Linda Betts presented an interactive workshop covering topics including transformation leadership vs transactional leadership style, leading clever people and working with different types of people.

The students participated in skills practice, role playing difficult/important conversations, and learned how to build relationships through a flexible approach.