

MBCRC Researcher Capability Map

Who are we?






Where are we?

What are our capabilities?

How can we help?

MBCRC Researcher Capability Index

The following researchers have put themselves forward as having capabilities of value to the MBCRC.

Details on each can be obtained by viewing either individual Profiles  where researchers provide in their own words a short plain language elevator pitch outlining MBCRC relevant research skills and interests, or alternatively via Online links (Institution Page  vs LinkedIn , Google Scholar  vs ResearchGate ) which provide a more discipline, career and publication centric account.

Name	Profile	Online	Programs			
			P1	P2	P3	
Flinders			3	3	7	13
Jillian Carr			x		x	
Vi Khanh Truong			x	x	x	
Munish Puri			x	x	x	
Tim Chattaway				x	x	
Ardulino Mangoni					x	
Qi Liang					x	
Vincent Bulone					x	
CSU			1	1	8	10
Jessica Tout-Lyon			x			
Esther Callcott				x	x	
Brian McSharry					x	
Chris Parkinson					x	
Paul Prenzler					x	
Leslie Weston					x	
Bing Wang					x	
Susan Robertson					x	
Russ Barrow					x	
UTas			8	3	11	22
Catriona Macleod			x			
Wouter Visch			x			
Peter Nichols			x		x	
Camille White			x		x	
Jeffrey Wright			x		x	
Christopher Bolch			x		x	
Michael Breadmore			x	x		
Brett Paull			x	x	x	
Fernando Maya Alejandro				x	x	
Vanni Caruso					x	
Jason Smith					x	
Stuart Thickett					x	
Harriet Walker					x	
James Crane					x	
UTS			0	1	2	3
Unnikrishnan Kuzhiumparambil				x	x	
Mathieu Pernice					x	
Griffith			1	5	12	18
Miaomiao Liu			x	x	x	
Prasad Kaparaju				x		
Charles Lawson				x	x	
Qin Li				x	x	
Guillermo Diaz-Pulido				x	x	
Amanda Cox					x	
Linlin Ma					x	
Bernd Rehm					x	
Joe Tiralongo					x	
Jean Giacomotto					x	
Nic West					x	
Kathy Andrews					x	
Yun Feng					x	
SARDI/PIRSA			1	1	2	4
Sasi Nayar			x	x	x	
Bryony Tucker					x	
Paul Verma					x	

Name	Profile	Online	Programs			
			P1	P2	P3	
UQ			5	10	14	29
Markus Muttenthaler			x		x	
Rob Capon			x	x	x	
Ben Hankamer			x	x	x	
Juliane Wolf			x	x	x	
Michael Netzel			x	x	x	
Mark Butler				x	x	
Daniel Cozzolino				x	x	
Angela Salim				x	x	
Heather Smyth				x	x	
Zeinab Khalil				x	x	
Edgar Brea				x	x	
Yasmina Sultanbawa					x	
Mark Morrison					x	
Timothy Mahoney					x	
Ian Henderson					x	
Deakin			3	8	15	26
Matthew Jago			x		x	
Thomas Mock			x		x	
Alecia Bellgrove			x			
Hoang Chinh Nguyen				x		
Colin Barrow				x	x	
Wenrong Yang				x	x	
Sachin Talekar				x	x	
Motilal Shanmugam				x	x	
Rangam Rajkhowa				x	x	
Svetha Venkatesh				x	x	
Xavier Conlan				x	x	
Surya Subianto					x	
Shoaib Siddik					x	
Richard Williams					x	
David Francis					x	
Alessandra Sutti					x	
Michael Salini					x	
USC			3	2	7	12
Saowaros Suwansa-ard (Mai)			x		x	
Abigail Elizur			x		x	
Tomer Ventura			x		x	
Trong Tran				x	x	
Tianfang Wang				x	x	
David McMillan					x	
Lauchlan Dennis					x	
UniSA			1	2	8	11
Zoe Doubleday			x			
Peter Hoffmann				x	x	
Binoy Sarkar				x	x	
Yevgeniya Grebneva					x	
Allison Cowin					x	
Clive Prestidge					x	
David Beattie					x	
Anton Blencowe					x	
Paul Joyce					x	



Charles Sturt
University

Name	Bing Wang
Position	Professor of Physiology and Nutrition
Organisation	Charles Sturt University, Gulbali Institute for Agricultural Water and Environment, School of Agricultural, Environmental and Veterinary Science
Research Capability	<p>Molecular Nutrition and Clinical Nutrition in both pre-clinical studies in pig and sheep, and human clinical trials with a focus on paediatric nutrition, pregnant women, and animal production/reproduction. Characterization of bioactive compound focusing on food glycans, function evaluation and discovery of underlying molecular mechanism. Functional food development focusing on food that promote brain, gut and immunity function and growth.</p> <p>Skills: Pre-clinical piglet model: piglet behavior and cognitive function assessment using 8 arm radial maze, open field and novel objectives, and working memory tests, double-blind randomized control human clinical trial, multiple omics technologies, in particular RNAseq, metagenomic, metabolomics assay to elucidate the molecular basis of how nutrient components alter metabolic responses important in neuro-dependent functions from fetus to late life and translate basic science discovery to clinical studies and industry.</p> <p>Infrastructure: Charles Sturt University (CSU) has built a world standard Piglet Learning Behaviour lab (PLBL) that is one of only 3-4 centers worldwide using piglets for functional ingredients assessment. CSU has provided space within the new (opened 2012) \$45M National Life Sciences Hub on the Wagga campus with state-of-the-art facilities for biological, and chemical research, including molecular biology, biochemistry, medicinal chemistry, and also contains the cell culture and microscopy facilities.</p>
MBCRC Relevance	<ul style="list-style-type: none"> functional marine bioproduct characterization, evaluation, ingredient discovery, product formulation to the market

Name	Brian McSharry
Position	Lecturer in Virology
Organisation	Charles Sturt University, School of Dentistry and Medical Sciences, Faculty of Science and Health
Research Capability	<p>Dr Brian McSharry is a molecular virologist with a specific interest in mechanisms of viral immune modulation and defining novel anti-microbial activities. He graduated with a BSc in Biotechnology from the National University of Ireland, Galway (NUIG) before pursuing a PhD in at Cardiff University studying human cytomegalovirus infection. Following subsequent postdoctoral work at NUIG, Cardiff University and Trinity College Dublin, Brian moved to the University of Sydney in 2011 where he continued his studies into molecular mechanisms encoded by viral infections to regulate host response pathways. Brian was then recruited to take up a lecturer position in the School of Microbiology at University College Cork before returning to Australia in 2021 to undertake a lecturer in virology position at CSU. Brian is a molecular virologist with a specific interest in infections of DNA viruses, in particular, the herpesviruses; Human Cytomegalovirus (HCMV), Varicella Zoster Virus (VZV), the causative agent of chicken pox and shingles, and Herpes Simplex Virus (HSV). A focus of his research has been the definition of mechanisms that these viruses use to regulate innate immunity, cells as well as the host response to such infections identifying novel anti-viral responses. He has have also studied the immunomodulatory activity of adenovirus infection as well as the generation and use of replication deficient adenovirus vector systems.</p>
MBCRC Relevance	<ul style="list-style-type: none"> identify and characterise marine bioproducts for their therapeutic properties or potential test the in vitro anti-inflammatory/immunomodulatory activity of marine bioproducts assay the therapeutic potential of antimicrobial marine bioproducts

Name	Christopher J Parkinson
Position	Snr Lecturer, Medicinal Chemistry
Organisation	Charles Sturt University, Pharmacy
Research Capability	<p>Training relates to synthetic and medicinal chemistry. Broad based expertise in small molecule drug discovery and subsequent development. Currently have synthetic (medicinal) chemistry laboratory facility and mammalian tissue culture facility (generally used for growth of cancer cells). Broad- based suite of analytical equipment including plate readers, flow cytometry, image analysis, microscopy (including fluorescence), HPLC, HPLC-MS, some NMR capability (limited), IR etc. Rodent housing and handling available on campus.</p>
MBCRC Relevance	<ul style="list-style-type: none"> Extraction and purification of marine bioactives Scale up bioprocessing of marine bioproducts – e.g. algal carotenoids Drug discovery of small molecule anticancer and antiparasitic marine bioactives. in vitro anticancer assay

Name	Esther Callcott
Position	Lecturer in Veterinary Technology Medical Biochemist
Organisation	Charles Sturt University, School of Agricultural, Environment, and Veterinary Sciences (SAEVS),
Research Capability	Esther is a multi-disciplinary researcher with experience in both veterinary and human medicine, investigating the therapeutic benefits of naturally derived bioactive compounds. Esther is a researcher in Prof. Leslie Weston's laboratory group based at the National Life Sciences Hub (NaLSH) on Charles Sturt University's Wagga Wagga campus. In addition to her biomedical training, Esther joins the team with over 15 years clinical veterinary experience enabling her to broaden her research in human and animal health. Esther has worked on projects conducting animal and nationally registered human clinical trials investigating the feasibility and efficacy of natural bioactive compounds for the development of nutraceutical products and functional foods. She has also worked on clinical trials involving stem cell regenerative medicine technology. Esther is well versed with various laboratory techniques including analytical methods to identify and characterise bioactive compounds, cell culture, bioassays, molecular techniques and clinical trial design and implementation. Esther has supervised the successful completion of Honours students and is currently supervising PhD students on current projects related to the MB-CRC in characterising bioactive compounds and identifying potential therapeutic properties associated with macroalgae for human, veterinary and agricultural use.
MBCRC Relevance	<ul style="list-style-type: none"> • identify and characterise bioactives in marine bioproducts • using cell based assays to assess the therapeutic potential of bioactives in marine bioproducts • develop agricultural, animal feed and veterinary marine bioproducts • develop nutraceutical or functional food marine bioproducts

Name	Leslie Ann Weston
Position	Research Professor of Plant Biology and Natural Products
Organisation	Charles Sturt University
Research Capability	Our laboratory has focused on the use and development of molecular and analytical methods including metabolomics, transcriptomics and genomics, to isolate and characterise key biosynthetic pathways and mode(s) of action of bioactive natural products, including medicinals, phytotoxins, mycotoxins, bioherbicides, fungicides and insecticides as well as nutraceuticals, foods and flavours. We specialise in design of unique bioassays for activity assessment, in both terrestrial and aquatic ecosystems. In addition, we perform GLP evaluation of crop protectants, fertilisers, inoculants and crop protectants in field and controlled conditions and study the chemical ecology of plant, microbial and livestock interactions. We have recently focused on the study of marine and terrestrial algae and their novel uses/mode(s) of action for foods, feeds, nutraceuticals, cosmetics and agrichemicals.
MBCRC Relevance	Our capability in metabolomics, mass spectrometry, NMR and isolation/structural elucidation of unique natural products for foods, feed and agrichemicals, nutraceuticals and agrichemicals/crop protectants has led to the development of novel methods for isolation and evaluation of mode of action of key metabolites and bioactive molecules. We also study plant defense chemistry, toxins, allelochemicals, fertilisers, inoculants and food/flavours for commercial development. We see ourselves working to assist industry partners isolate and identify unique bioactive molecules and biosynthetic pathways in organisms of interest for commercialisation. We also perform molecular biology and genomics experimentation for identification of novel organisms, isolation of key genes and pathway optimisation as well as determination of phylogenetic relationships. We can also perform laboratory or field evaluation of biological activity or mode(s) of action.

Name	Paul Prenzler
Position	Associate Professor in Chemistry
Organisation	Charles Sturt University, School of Agricultural, Environmental and Veterinary Sciences
Research Capability	I have 25+ years' experience in the study of antioxidants and other bioactive compounds in foods, beverages and medicinal plants. During this time I have contributed to major advances in the understanding of the chemistry and bioactivity of: olive and canola oils; red wine; and alperujo – the solid waste from olive oil production. I have access to state-of-the-art instrumentation in analytical chemistry through the National Life Sciences Hub of Charles Sturt University, including several liquid and gas chromatography instruments coupled to mass spectrometers. These provide the capacity for characterisation of complex food, plant or other matrices for identification and quantification of small molecule bioactives. In addition, I have experience in running various antioxidant assays and the development of high-throughput techniques. I have successfully worked with industry partners in olive, wine and canola, developing analytical methodology to answer questions of importance to these industries. I am passionate about developing early career researchers through mentoring and supervising PhD candidates.
MBCRC Relevance	<ul style="list-style-type: none"> • testing of antioxidant marine bioproducts • separation and quantification of bioactives in marine bioproducts

Name	Susan Robertson
Position	Senior Research Fellow
Organisation	Charles Sturt University, Gulbali Institute
Research Capability	I am a sheep production specialist with over 30 years experience in conducting pen and field studies evaluating production outcomes from management or nutritional interventions with direct on-farm application. Most work has focussed on increasing reproductive performance (number of lambs born; lamb survival), lamb growth rates, wool production and quality, which directly impact on-farm profitability. I have access to small pens, paddocks and sheep through CSU, although often collaborate with farmers where on-farm trials are required. CSU has extensive laboratories, diagnostic and veterinary expertise with whom I collaborate when analytical methods are needed.
MBCRC Relevance	<ul style="list-style-type: none"> testing of marine bioproducts for livestock performance (e.g. feed supplements)

Name	Jessica Tout-Lyon
Position	Early Career Researcher and Lecturer
Organisation	Charles Sturt University
Research Capability	Areas of expertise include the ecology of marine microbes, that is, their interaction with the marine environment and other organisms. I use molecular tools to study interactions in the marine environment such as using environmental DNA from vertebrates including fish and turtles. I have previously characterised the interactions between marine microbes and animals including sponges and corals and I have studied the impact of future climate change scenarios on coral-associated marine microbial pathogens using simulated mesocosm environments. Methods I have used include the fabrication of microfluidic devices to study microscale interactions between microbes and the marine environment and host species, the measurement of algal physiology using PAM fluorometry, the use of molecular methods including metagenomics, PCR, qPCR, flow cytometry to characterise and count marine organisms. Equipment that is relevant and complementary to field-based studies include the Smith-Root environmental DNA backpack, and the Dartmouth Ocean Tech automated environmental DNA sampler (First in Southern Hemisphere). I have previously worked outside academia, in industry as a microbiologist with Nestle, in Government as a research officer and I have been employed by First Nations Elders. The experience outside academia allows me to better understand the unique drivers in industry, government and to work respectfully and collaboratively with and for First Nations People.
MBCRC Relevance	<ul style="list-style-type: none"> characterise biofouling communities associated with oyster leases interactions between microbes and the marine environment physiology and health of marine algae impact of external radiation to marine algae colonising subsea pipelines

Name	Russ Barrow
Position	Associate Professor
Organisation	Charles Sturt University, Gulbali Institute
Research Capability	I have over 25 years' experience working across both the academic and private sectors where my work has focussed on the organic chemistry of natural systems. Starting in marine natural products chemistry my interests have expanded to work in both the marine and terrestrial ecosystems. My experience ranges from research project management working with Big Pharma to establishing and running a SME. My expertise are summarised under the following areas; <ul style="list-style-type: none"> chemical ecology – behaviour of complex organisms mediated by small molecules; agricultural management – role of beneficial insects in providing valuable ecosystem services in the circular economy; ethnomycology/ethnobotany – scientific basis behind ethnic group use of natural materials (plants, fungi, animals); analytical chemistry – spectroscopic and synthetic techniques to determine molecular structure.
MBCRC Relevance	<ul style="list-style-type: none"> environmental fate of marine bioproducts in agriculture identifying the bioactives in marine bioproducts (e.g. plant growth inhibitory and stimulatory, and anthelmintics) data analysis, market investigation and value chain mapping of marine bioproducts



DEAKIN
UNIVERSITY

Name	Alecia Bellgrove
Position	Senior Lecturer in Marine Biology
Organisation	Deakin University, School of Life and Environmental Sciences
Research Capability	My research interests and expertise lie broadly within marine ecology, with a particular emphasis on (1) the roles of habitat-forming seaweeds in ecological systems (2) life history dynamics of seaweeds (3) impact of anthropogenic disturbances on habitat-forming seaweeds and ecosystems (4) the role macroalgae play in carbon sequestration and (5) application of seaweed for sustainable food, fibre and health benefits. I am a past President of the Australasian Society of Phycology & Aquatic Botany (ASPAB) and have collaborations with Tasmanian Sea Vegetables, Victorian Fisheries, Parks Victoria and Victoria Shellfish Hatchery. I am also the Deakin lead for a CRC-P with TASSAL.
MBCRC Relevance	<ul style="list-style-type: none"> • seaweed ecological systems, identification and impact on carbon sequestration • development of food, fibre and health marine bioproducts from seaweed

Name	Alessandra Sutti
Position	Associate Professor
Organisation	Deakin University, Institute for Frontier Materials.
Research Capability	I have BSc, MSc and PhD in materials science and head the Short Polymer Fibres team at IFM, Deakin University. My expertise includes polymer chemistry, polymer physics, fluid-dynamics and biomaterials for medical applications. I have won various internal Deakin awards (e.g. VC Awards in 2021, 2020 and 2019) for industry engagement in research and have been working with the MBCRC partner HeiQ since 2015. I have lead projects and contributed to projects in the areas of nanofibers, textile science, soft matter hydrogels, polymer science and biomaterials. I have expertise in a range of characterisation techniques including EM, OM, confocal M, x-ray diffraction, FTIR and thermal analysis.
MBCRC Relevance	<ul style="list-style-type: none"> • short fibre and textile expertise • polymer science and characterisation

Name	Colin Barrow
Position	Alfred Deakin Professor and Director Centre for Sustainable Bioproducts.
Organisation	Deakin University, Centre for Sustainable Bioproducts
Research Capability	My primary research area is agricultural, marine and food biotechnology, particularly bioprocessing and conversion of a range of biomass into bioproducts. I have both industry and academic experience and have managed several large multidisciplinary project and programs. My background is natural products and organic chemistry and I have experience with various types of chemical analysis. At Deakin I have 3 research laboratories equipped primarily for chemistry and the Deakin BioFactory, which is a purpose built pilot scale bioprocessing facility. The Deakin BioFactory has a range of drying, grinding, extraction and downstream processing capability for bioproduct production.
MBCRC Relevance	<ul style="list-style-type: none"> • bioprocessing of marine bioproducts • product validation of marine bioproducts, particularly in cosmetics and nutritional supplements

Name	David Francis
Position	Associate Professor and Head of the NuSea Lab at Deakin University
Organisation	Deakin University, School of Life and Environmental Sciences
Research Capability	My training is in marine sciences and aquaculture. I have expertise in sustainable aquafeed development, nutritional biomarkers and organism health and the establishment of new aquaculture species. I work closely with the aquaculture industry towards the production of fish and seafood and manage one of the largest finfish aquaculture facilities in Australia. I manage the Nutrition and Seafood Laboratory (NuSea.Lab) at Deakin University where we focus on the nutrition-based sciences for aquaculture, and aquafeed development in particular. I have led large projects and am currently Associate Head of School, Waurin Ponds and Queenscliff. I am involved in the MBCRC through projects with Ridley and Yumba and have led a CRC-P with Ridley on aquafeed development previously.
MBCRC Relevance	<ul style="list-style-type: none"> • development of aquafeed and links to a wide range of aquafeed and aquaculture industry partners • largest and most well-resourced aquaculture facilities in Australia, particularly for finfish • aquafeed extrusion and comprehensive testing capabilities

Name	Hoang Chinh Nguyen
Position	Research Fellow
Organisation	Deakin University
Research Capability	I have > 8 years experience in the field of organic recycling, bioproduct production, and process optimization. My works mainly focus on developing novel green processes for (1) extraction, purification, and bioactivity evaluation of natural compounds from various materials; (2) production of various bioproducts (bioplastics, biofuels, biopesticides, biofertilizer, etc). I am a postdoctoral research fellow based in Prof Colin Barrow' research group and have access to state-of-the-art equipment and instrument in his lab, especially Biofactory at the Centre for Sustainable Bioproducts. I have led and co-led of several projects funded by different organisations in Australia and Vietnam (total income of >\$ 1 million). The outcomes of several projects involving production of bioproducts have been adopted by industry partners for commercialization. Currently, I am now working on the valorisation of seaweed residues to product multiple bioproducts (phenolic ingredients, sulphated polysaccharides-derived hydrogel, bioplastic film, and biocomposite materials).
MBCRC Relevance	<ul style="list-style-type: none"> • bioprocessing technologies to recover different marine bioproducts (e.g. bioactives, cellulose, protein) • production of marine bioproducts (e.g. omega-3 oil, hydrogel, biocomposite, bioplastic, biofertilizer, paper) • characterise and evaluate the biological activity of marine bioproducts • isolate and develop efficient methods for the cultivation of microalgae to enhance productivity

Name	Matt Jago
Position	Associate Research Fellow
Organisation	Deakin University
Research Capability	I have 10 years research experience in the field of aquaculture nutrition, having generally worked on interactions between finfish nutritional performance and their environment. My research has had a centre around developing novel nutritional solution for fish experiencing thermal strain, with various focal points including environmental monitoring relating to nutritional status, developing diets to condition fish prior to stress, altering diets to aid in digestibility and assimilation of nutrients, refining feed formulations based on micro and macro nutrient changes, and improving appetite and diet performance. My work has primarily involved industry collaborations with producers and suppliers, working to refine husbandry practices and inform business decisions. I have helped manage a research program over the past 3 years for a large CRC-P project, involving collaborators from multiple universities and government institutions as well as industry partners. My current work includes supporting and supervising five PhD candidates and four research assistants. I also have some experience in refining/developing laboratory techniques using HPLC and transferring laboratory techniques to use in a microplate format. I am well versed in the laboratory techniques required to analyse nutritional composition of feeds, raw materials and animals. I have also established strong project management and research trial design skills, working on upwards of 30 live animal feeding trials in recent years.
MBCRC Relevance	<ul style="list-style-type: none"> • nutritional characterisation of marine bioproducts • analysis of marine bioproducts during processing • dietary solutions for the aquaculture industry • diet nutrition and formulation of marine bioproducts in aquaculture (e.g. Atlantic salmon)

Name	Michael Salini
Position	Research Fellow, Aquaculture Nutrition
Organisation	Deakin University, School of Life and Environmental Sciences.
Research Capability	I am part of the Deakin NuSea.Lab where I lead the area of aquafeed development. I have carried out research across a variety of marine and freshwater species and have in-depth commercial knowledge of the Australian aquaculture and commercial feed industry, including extrusion technology. I have 6 years of product development experience in industry as a product development manager in the aquafeed industry. I am involved in a range of work with the MBCRC partner Ridley.
MBCRC Relevance	<ul style="list-style-type: none"> • aquafeed formulation including lipid and protein • aquafeed expertise and capability in feed extrusion

Name	Motilal Shanmugam
Position	Research Fellow, Centre for Sustainable Bioproducts
Organisation	Deakin University, School of Life and Environmental Sciences.
Research Capability	I have been leading the setup and equipment purchase for the Deakin BioFactory and have developed some expertise in modular bioprocessing. My core research expertise is in nanomaterials and nanocatalysis, including the use of graphene for enzyme function modification. I have previously been an Alfred Deakin Postdoctoral Research Fellow at Deakin University and a Marie Curie Postdoctoral Research Fellow at Radboud University.
MBCRC Relevance	<ul style="list-style-type: none"> • equipment selection for bioprocessing • delivery technology and nanotechnology expertise for formulation of marine bioproducts

Name	Rangam Rajkhowa
Position	Associate Professor
Organisation	Deakin University, Institute for Frontier Materials.
Research Capability	I have a B.Sc. in Textile Technology and a M.Sc. in Fibre Science and Technology from India and a PhD in Engineering from Deakin University. I lead the silk and natural fibre particle stream of research at IFM, Deakin University. My research interests include silk-based biomaterials, value additional to fibre waste, sustainable fibres and textiles and circular economy. I have specific expertise in fibre and particle structures and properties. I have participated and led projects in textile recycling and sustainable fibres and have worked with the MBCRC partner HeiQ on various fibre applications and technologies.
MBCRC Relevance	<ul style="list-style-type: none"> • seaweed cellulose and polymers as recyclable fibres with textile applications • textile and polymer characterisation and structure-function • wet fibre spinning, 3D printing of organic powders, natural fibres and recycling technologies

Name	Richard Williams
Position	Associate Professor in Medical Biotechnology
Organisation	Deakin University, School of Medicine
Research Capability	I have developed significant skills in the presentation, delivery and characterisation of biopolymers; using cell, tissue and organoid cultures to understand their safety, function, bioavailability and their potential development as drugs, cosmetics and therapeutics
MBCRC Relevance	<ul style="list-style-type: none"> • assess potential of healthcare and cosmetic marine bioproducts • assaying anti-inflammatory and antibacterial marine bioproducts • use of molecular biology to assess effects of marine bioproducts on gene expression and stem cell fate

Name	Sachin Talekar
Position	Research Fellow
Organisation	Deakin University, Centre for Sustainable Bioproducts and ITTC for Green Chemistry in Manufacturing.
Research Capability	I am a biochemical engineer with a background in enzyme technology and bioprocessing. My PhD is in integrated biorefining for green and sustainable conversion of agro-processing waste into bioproducts. My work now is focused on a range of green chemistry bioprocessing including seaweed. I have expertise in enzyme bioprocessing, nano-stabilization and CO2 conversion. My current projects include application of circular economy approaches to food waste, microencapsulation of astaxanthin for aquafeed, conversion of apple pomace into cellulose for textile applications, and optimised bioactive extraction from seaweed.
MBCRC Relevance	<ul style="list-style-type: none"> • bioprocessing strategies based on biorefineries • seaweed bioprocessing for complete utilisation of material • microencapsulation and stabilisation of marine bioproducts

Name	Shoaib M. Siddik
Position	Research Fellow
Organisation	Deakin University, School of Molecular and Life Sciences
Research Capability	I have over 15 years of research experience in the field of aquaculture nutrition, working on alternative feed ingredients (marine seaweeds, seafood by-products, terrestrial plants) for aquafeed, feed formulations, and aquaculture production systems. I am a postdoctoral researcher based in David Francis's research group, and have access to state-of-the-art scientific equipment in his NuSea.Lab at the School of Molecular and Life Sciences. Over the past years, I have successfully completed several projects with academic and industry partners in various projects, including "Development of seaweed-based diets for barramundi", and "Upcycling of fishery waste into protein hydrolysate utilizing as aquafeed supplement for fish" in the field of aquaculture nutrition. I am well versed with investigating fish growth, feed intake, satiation feeding, water quality monitoring at rearing facility, and operation of various aquaculture systems for carrying out feeding trials for fish. I have investigated a range of parameters to assess fish health after feeding novel feed ingredients to fish. These includes nutritional composition of feed ingredients and fish samples, histomorphology of specific organs of fish, qPCR, microbiome etc.
MBCRC Relevance	<ul style="list-style-type: none"> • processing, nutritional analyses and formulation of marine bioproduct fish feeds • assessing efficacy of marine bioproduct fish feeds for growth, utilization, digestibility and gut health

Name	Surya Subianto
Position	Research Fellow
Organisation	Deakin University, Institute for Frontier Materials,
Research Capability	I am a material scientist with 16 years work experience in developing new materials and applications for various industry partners in Australia and Europe. As a Research Fellow in the Future Fibres Group within IFM, I have access to all the material fabrication and characterisation facilities in the institute. IFM also possess state of the art facilities for material processing, including the Future Fibres Facility and Carbon Nexus that are unique in the southern hemisphere. My expertise lies in the development of new polymer materials towards commercial applications, from designing new materials, assessing their suitability and potential applications, product development and validation, as well as formulation and process optimisation. I have worked on a wide range of industry-driven projects including developing a new water-repellent formulation from concept to prototype, making customised formulation for pigment dispersions, developing composite membranes to improve performance and stability of hydrogen fuel cells, enabling scale production of fibre dispersion through material and process optimisation, finding new applications for recycled textile product, and process solutions for textile recycling.
MBCRC Relevance	<ul style="list-style-type: none"> • characterisation, testing and validation of marine bioproducts with applications in the material space • new material and product applications for marine bioproducts • scientific and technical analysis of marine products and processes to enhance know-how and optimise process efficiency • quality control techniques and product differentiation of marine bioproducts

Name	Svetha Venkatesh
Position	Alfred Deakin Professor and Co-Director of A2I2
Organisation	Deakin University, Applied Artificial Intel Inst (A2I2).
Research Capability	I am ranked as one of the top 15 women in the world in artificial intelligence (Nesta UK Innovation firm 2019) and am the founding Director of the A2I2, which develops new technology that recognised patterns in big data and applies machine learning. From 2017 to 2022 I was an ARC Laureate Fellow with the aim of undertaking significant scientific and translational research to advance both the theory and practice of pattern recognition through machine learning algorithms.
MBCRC Relevance	<ul style="list-style-type: none"> • application of machine learning to bioprocess and production optimisation of marine bioproducts • big data management and adaptive design to optimise personalised health treatment using marine bioproducts

Name	Thomas Mock
Position	Associate Research Fellow
Organisation	Deakin University, School of Life and Environmental Sciences, The Nutrition and Seafood Laboratory
Research Capability	Since completion of his PhD which investigated the fatty acid metabolism and nutritional quality of farm-reared Atlantic salmon, Thomas has worked with numerous commercially important fish and shellfish species through his work with NuSea.Lab, particularly in the areas of fatty acid and amino acid metabolism and product quality. Thomas has also worked previously in the commercial sector as an aquaculture technician in the abalone aquaculture industry. Thomas brings technical skills such as feed manufacturing, experimental design and implementation of fish nutrition studies and statistical analysis. Thomas also has proficiency in laboratory skills including the analysis of fatty acid, lipid class and amino acid profiles. Thomas is currently collaborating on numerous research projects investigating the use of terrestrial and marine derived feed ingredients and novel technologies to improve the sustainability of the aquaculture and seafood sectors and supervises multiple honours and PhD students at Deakin University in the field of aquaculture nutrition.
MBCRC Relevance	<ul style="list-style-type: none"> • efficacy of the physical and chemical properties of aquafeed marine bioproducts • impact of marine bioproducts on the growth and nutritional quality of commercial aquaculture species

Name	Wenrong Yang
Position	Associate Professor, Biotechnology and Chemistry
Organisation	Deakin University, Centre for Sustainable Bioproducts and School of Life and Environmental Sciences.
Research Capability	My research interests are in nano bioelectronics, electrochemistry of carbon nanomaterials and the chemistry of self-assembled systems. I have expertise in a range of chemical methods including electron microscopy, atomic force microscopy, Raman spectroscopy and electrochemistry. Applications of interest to me include sensor development and enzyme control through nanomaterials.
MBCRC Relevance	<ul style="list-style-type: none"> • sensor development for biological sensing during bioprocessing or marine bioproduct application • microscopy and spectroscopic analysis of nanoformulations of marine bioproducts

Name	Xavier Conlan
Position	Professor in Forensic Chemistry
Organisation	Deakin University, Centre for Sustainable Bioproducts and School of Life and Environmental Sciences
Research Capability	I am trained as an analytic chemist with specialisation in LC and LCMS. I currently lead the Deakin University forensic science chemistry program and work closely with Victoria Police in the following areas: analytical chemistry, chemical profiling of illicit drug manufacture, crime scene analysis and biomedical diagnostics. I have a range of collaborations in medical, agricultural, food and related areas where I provide analysis expertise and capability. I have led projects and has senior research roles including Associate Head of School Research in the School of Life and Environmental Sciences at Deakin University.
MBCRC Relevance	<ul style="list-style-type: none"> • innovative analytic methods for process monitoring and for product quality during marine bioproduct bioprocessing • LCMS and LC methods for minor component identification in marine bioproducts • analytic methods useful for development of bioactives in marine bioproducts



**Flinders
University**

Name	Arduino A Mangoni
Position	Strategic Professor of Clinical Pharmacology
Organisation	Flinders University, College of Medicine and Public Health,
Research Capability	I have a 30-year experience in investigating the effects of pharmacological and non-pharmacological interventions on vascular reactivity, blood pressure, and biomarkers of cardiovascular risk in humans. As a result, I've got access to relevant techniques to conduct these assessments. I have a 10-year experience in drug discovery targeting specific enzymes that modulate the synthesis of nitric oxide. In this context, we routinely use <i>in vitro</i> models of cancer cell-mediated angiogenesis, vasculogenic mimicry, proliferation, and migration.
MBCRC Relevance	<ul style="list-style-type: none"> • using markers for human cardiovascular function to assess marine bioproducts • using enzyme-activity in models of cancer and neovascularization to assess marine bioproducts

Name	Jillian Carr
Position	Professor of Virology
Organisation	Flinders University, College of Medicine and Public Health, Flinders Health and Medical Research Institute
Research Capability	My research expertise extends >25 years on viruses such as dengue virus, SARS-CoV-2, enteric viruses (norovirus and adenovirus) and HIV, studying viral replication and pathogenesis, specifically vascular leakage, inflammatory eye, lung and brain disease and innate immunity. My expertise is in fundamental virology, cellular and molecular biology analysis of responses to viral infection. I manage a laboratory of grant funded staff and students that undertake in-lab experimental research. This uses culture of cells and small laboratory animal models. My research team can study viral replication, quantitate levels of viruses by a number of methods as well as study changes in cell viability and function. We use methods that isolate cells from blood and study tissues such as the brain, eye, gastrointestinal tract and lung. We use techniques such as PCR, western blot and ELISA, microscopy techniques and molecular methods such as cloning, sequencing, overexpression and knockdown of cellular and viral genes. Flinders University has approved physical containment facilities, core facilities in microscopy and animal husbandry to enable these studies. I have expert trained and proficient research assistants available to undertake these studies with technical rigour. I have an academic and diagnostic background with an understanding of education and training, compliance, quality assurance and standardisation, ethics and confidentiality that is necessary also for industry-linked research projects. I have the supervisory and management skills to efficiently co-ordinate large research projects and the communication skills to ensure effective interactions with industry and external supporting partners. My past interactions with industry includes diagnostics (SA Pathology), government bodies (SA Water) and private companies including existing partners in the MB-CRC. I pride myself on my professionalism and integrity, and this is reflected by my standing in the microbiology community as a Fellow of the Australian Society for Microbiology, and long-time service on the Flinders University Institutional Biosafety Committee.
MBCRC Relevance	<ul style="list-style-type: none"> • antiviral marine bioproducts • toxicity, growth promoting or anti-inflammatory properties of marine bioproducts in systems representing the cells of the blood, brain, eye, lung and gastrointestinal tract • quantitative analysis of bacterial and viral pathogens in tissues, biological samples and water sources and develop systems for monitoring pathogens relevant to marine bioproducts. This could include quantitation of environmental non-pathogenic organisms to determine relevance to growth of marine organisms.

Name	Munish Puri
Position	Associate Professor
Organisation	Flinders University
Research Capability	I have 20+ years research experience and have successfully led a range of multidisciplinary industry funded projects, multi-institutional, and direct company funding. Currently, I spearhead a research team that uses bioprocessing (precision fermentation and downstream processing) to address global challenges in sustainability, food security and human wellbeing. My lab has four major research programs: a) <i>metabolite production</i> such as proteins, enzymes and lipids, b) <i>food biotechnology</i> for nutraceutical extraction, functional foods and novel foods rich in Omega 3 fatty acids, c) <i>nanotechnology</i> for enhancing thermostability of enzymes with applications for health products and d) <i>health substantiation</i> by validating of bioactives functionality. My research is recognised for pioneering single cell oil production (omega-3 fatty acids, plant like microbial oils and carotenoids), evolving enzyme extraction technologies for bioactives and protein purification using variety of biochemical and analytic techniques.
MBCRC Relevance	<ul style="list-style-type: none"> • optimise biomass production (heterotrophic, and mixotrophic production) • non-genetic modification of marine microbes for producing high value lipids, enzymes and proteins • genomic assessment of microbial strains and new strain development • extraction of wet biomass for lipid and carotenoid production • downstream processing for secondary products such as proteins for food and feed applications • integration of the downstream biorefinery processes • enzymatic process improvements to yield high quality bioactives from macroalgae and microalgae • encapsulation technology for stabilising marine bioactives

Name	Qi Liang
Position	Research Fellow in Biotechnology. Associated Prof of Chinese Medicine.
Organisation	Flinders University
Research Capability	Competitive and interested in academic literature review and developing healthy products based on traditional medicine theory. Good at engaging, communicating, and negotiating with diverse stakeholders. My research interests/capabilities include: <ul style="list-style-type: none"> • Health-related fields research and nutrition functional foods development • Evidence-based medicine and omics technologies • Pharmaco-toxicological study of traditional medicines and formula
MBCRC Relevance	<ul style="list-style-type: none"> • marine bioproducts that benefit health and well-being

Name	Tim Chataway
Position	A/Prof, Principle Research Fellow
Organisation	Flinders University
Research Capability	I have >30 years of experience in a wide range of protein analytical techniques. I established the Flinders Proteomics Facility in the school of medicine at Flinders University in 2002-2004. Initially it focussed on providing equipment access and training in 1D/2D SDS PAGE and western blotting/imaging, sample preparation and protein quantification. Over time it has incorporated protein purification by FPLC and HPLC, ELISA and custom polyclonal antibody production. In 2007, I established protein analysis by mass spectrometry, originally using ion trap mass spectrometry but over the years, I have incorporated Orbitrap and qTOF mass spectrometry. Currently my lab has a suite of Thermo mass spectrometers incorporating Tribid, Orbitrap and triple quadrupole mass spectrometers. These instruments can identify and quantify thousands of proteins in less than a microgram of protein. My lab has expertise in preparing and analysing samples from a very wide range of organisms, ranging from bacteria, wheat and sea anemone and plants to most human tissues and fluids. I have published >90 papers in international journals. We can study almost any extract that contains protein.
MBCRC Relevance	<ul style="list-style-type: none"> • purifying proteins from marine biomass • quantifying differentially expressed proteins by mass spectrometry

Name	Vi Khanh Truong
Position	Senior Lecturer
Organisation	Flinders University, College of Medicine and Public Health, Biomedical Nanoengineering Laboratory
Research Capability	I specialize in designing biomaterials and analyzing their biological activity, particularly their antimicrobial properties and cytotoxicity. My expertise in materials science extends over a decade, during which I have engaged in numerous collaborations with industry giants such as BASF, BlueScope, and Allegra. These partnerships have not only been academically fruitful but have also led to the commercialization of several products now available on the market. The scope of my projects with these industrial partners is broad, encompassing polymers, metals, to coatings. My team is proficient in conducting a full spectrum of tests from material characterization to bioassay analysis. I am confident that my extensive experience in research with practical applications will greatly benefit industrial partners seeking to efficiently develop cutting-edge products.
MBCRC Relevance	<ul style="list-style-type: none"> • biomaterials for high-end to low-end value marine bioproducts • marine bioproduct formulations for skin care • antimicrobial and cytotoxicity analysis of marine bioproducts

Name	Vincent Bulone
Position	Professor
Organisation	Flinders University, College of Medicine & Public Health,
Research Capability	Bioactive natural products (e.g. polyphenolic compounds), analytical biochemistry, bioassays (e.g., anti-inflammatory, antimicrobial, antioxidant, anticancer assays), material sciences, carbohydrate polymers (cellulose, alginates, fucoidans, laminarans, etc)
MBCRC Relevance	<ul style="list-style-type: none"> • extraction, purification, characterisation and formulation of natural products and carbohydrate polymers



Name	Amanda Cox
Position	Senior Lecturer
Organisation	Griffith University
Research Capability	I am an experienced biomedical scientist with >20 years experience in academic research settings both in Australia and internationally. My research has been largely focused on human clinical and intervention studies exploring contributions of immune and inflammatory pathways and the gut microbiota to various states of health and disease. My work employs a range of techniques to measure immune and inflammatory markers to assess individual risk and responses to intervention(s), and has evolved to extend traditional biomarker assessment to multiparametric risk scoring approaches, newer direct-counting gene expression analyses and in situ spatial proteomic and transcriptomic analyses. I have a history of collaboration with clinical (across a range of specialties), industry (including diagnostics development and pharma) and academic partners, and extensive experience in the conduct of human clinical and intervention studies (>20 studies in the last 10 years alone), leading teams of trial nurses/coordinators, scientists, bioinformaticians and clinical partners, and fostering productive cross-disciplinary collaboration.
MBCRC Relevance	<ul style="list-style-type: none"> immune and inflammatory markers in human biospecimens in response to different interventions gut microbial compositional profiling in response to different interventions

Name	Bernd Rehm
Position	Professor, Director
Organisation	Griffith University, Centre for Cell Factories and Biopolymers
Research Capability	We devised a disruptive bioseparation platform technology that enables development of tailored affinity bioseparation resins that can be biotechnologically manufactured at low cost and large scale. Our resin platform technology can be tuned to any research partners needs in bioseparation and downstream processing of bioproducts. We have infrastructure and capacity to produce tailored resins at kg scale for validation in bioprocess environments. Resins low cost allows for single use but also withstand 300 cycles including CIP at every 10 th cycle. Resin performance
MBCRC Relevance	<ul style="list-style-type: none"> customized bioseparation resins and their implementation (magnetic, flow through) in downstream processing advanced manufacture of marine bioproducts

Name	Charles Lawson
Position	Professor
Organisation	Griffith University, Griffith Law School
Research Capability	Legal aspects of regulating biology and law with expertise in intellectual property (patents and plant breeder's rights), access and benefit sharing genetic resources (ABS), genetically modified organisms (GMO), ag and vet chemicals, therapeutic regulation, synthetic biology and philosophy of science. We also have a dedicated BioLawHub team at the Griffith Law School with access and benefit sharing genetic resources (and information) expertise among my colleagues Dr Fran Humphries on aquaculture and oceans and Dr Michelle Rourke on viruses, pandemics and health.
MBCRC Relevance	<ul style="list-style-type: none"> international and national laws about the biological material, research and development, and commercialisation realising the legal matrix along the innovation pathways in agriculture, aquaculture, health and biodiversity conservation

Name	Guillermo Diaz-Pulido
Position	Associate Professor
Organisation	Griffith University, School of Environment & Science, Coastal and Marine Research Centre, Nathan Campus
Research Capability	The Research team lead by Diaz-Pulido (the Coral Reef Algae Lab at Griffith) has conducted studies on the biology, ecophysiology and ecology of macroalgae (or seaweeds) in the Great Barrier Reef (GBR) Australia and the Caribbean. The knowledge acquired from these studies allows us to understand the influence of local (e.g. nutrient runoff) and global (ocean acidification and warming) processes on the distribution and abundance of algal species and communities, and the natural seasonality of seaweeds due to environmental variability. We have developed expertise in the taxonomic identification of macroalgae using current morpho-anatomical and molecular evidence. We offer accurate identifications of prospective species in the field of aquaculture. Assess whether proposed species may represent a risk to the natural communities, for example in the case of non-natives (invasive) taxa. Our lab is also an important generator of knowledge on coralline red algae, a group of calcareous seaweeds with potential for nutraceuticals, climate change mitigation, and reef restoration. The lab is interested in the chemical ecology of seaweeds, in particular the roles of seaweed compounds in influencing the settlement of invertebrate larvae, including coral and crown-of-thorn star fish larvae. Discovery of chemical compounds, characterization of the compounds, and their influence in reef ecology is also of interest to our lab. Accurate taxonomic identifications for seaweeds chemical ecology are critical.
MBCRC Relevance	<ul style="list-style-type: none"> chemistry behind induction of coral larval settlement by coralline algae coral reef restoration chemical ecology of seaweed marine bioproducts assessing variability in natural seaweed populations and communities nutraceutical potential of coralline algae

Name	Jean Giacomotto
Position	Group Leader, ZebraCLINICS Head
Organisation	Griffith University, Griffith University for Drug Discovery (GRIDD)
Research Capability	We have 20 years of experience in Phenotypic Screening using small animal models such as the Zebrafish. A number of different commercial and custom-made automatic devices are available in our lab to characterise the bioactivity and toxicity of small molecules as well as any soluble products. We can offer several standardised assays to characterise the bioactivity of Natural products or any resources of interest. We can also offer custom-based assays on demand.
MBCRC Relevance	<ul style="list-style-type: none"> discover, isolate and characterise marine bioproducts

Name	Joe Tiralongo
Position	Professor, Research Leader, Institute for Glycomics, Deputy Head of School Research, School of Environment and Science
Organisation	Griffith University, Institute for Glycomics and School of Environment and Science
Research Capability	My research expertise is focused on studying the function and biosynthesis of carbohydrates (glycobiology), as well as the use of microarray, and glyco-nano and microtechnology to study complex glyco-interactions important in health and disease. Recently my work has concentrated on fungal glycobiology and developing glycomics nano- and micro-technologies. My interests in fungal glycobiology include antifungal drug discovery and identifying immune-modulating molecules (predominantly polysaccharides) from edible mushrooms. Our work on fungal polysaccharides involves the extraction, isolation, structural characterisation of polysaccharides from natural sources and the evaluation of their bioactivity particularly relating to impact on cytokine and chemokine expression using ELISA and microarray formats. As such we have access to infrastructure and methodologies for the isolation and structural characterisation of polysaccharides (FPLC, HPLC, NMR, MS, IR, etc.), as well as dedicated infrastructure and facilities for biological evaluation including microarray printing and scanning, as well as SPR, ITC, Flow cytometry. Our recent work in nano- and micro-technology has focussed on developing novel micro- to nanotechnology glyco-tools. We have now developed a simple and versatile self-assembled glycan monolayer (SAGM) method for linker functionalization of sugars permitting attachment to various 3D-nanoparticles that we were then able to apply to the study of diverse glyco-interactions. We have now further extended the application of our SAGM method to diverse 2D-surfaces for use in microelectromechanical systems (MEMS) and microplasmonics platforms, as well as for potential biomedical applications including biosensing.
MBCRC Relevance	<ul style="list-style-type: none"> the role of fungi in the production of seaweed polysaccharides nano and microtechnology to develop new marine bioproducts marine algal lipids, enzymes, vitamins and active ingredients for use in nutrition, cosmetics and medicine

Name	Katherine Andrews
Position	Professor, Director, Griffith Institute for Drug Discovery, Head, Tropical Parasitology Lab
Organisation	Griffith University
Research Capability	I have ~25 years' experience in antiparasitic discovery and target identification, with a focus on Plasmodium malaria parasites. My research focuses on both synthetic compounds and compounds derived from nature. I have built up a suite of enabling capabilities that span early-stage screening of bioactive fractions/extracts/compounds, mode of action studies, state-of-the-art target identification approaches (e.g., in vitro resistance selection, CRISPR/Cas9) and mouse models (e.g., in vivo toxicity, ex vivo and in vivo antiplasmodial testing). I am highly experienced in leading projects and meeting milestone indicators.
MBCRC Relevance	<ul style="list-style-type: none"> low-medium throughput screening different cell types for bioactivity (e.g., human cell toxicity assays, antimalarial assays) in vivo murine malaria models

Name	Linlin Ma
Position	Senior Lecturer
Organisation	Griffith University, School of Environment and Science, GRIDD
Research Capability	I am a molecular biologist, cell biologist, and electrophysiologist with over 15 years of research experience. My relevant research expertise is anchored in the identification and functional studies of natural bioproducts. This encompasses peptide toxins derived from venomous creatures, components of traditional Chinese medicines, and active elements sourced from plant and sea animals. The human medical conditions that I have been researching include pain, epilepsy, myotonia (neuromuscular condition featuring abnormally prolonged contraction of skeletal muscle), and Parkinson's disease. My laboratory at GRIDD is outfitted with cutting-edge scientific infrastructure essential for such specialised work. We have established both cellular and animal models, various biological assays, and behavioural studies to assess the biological functions of bioproducts, especially in the domains of peripheral inflammation (activation of the immune system in response to injury, infection, or harmful stimuli outside of the central nervous system), neuroinflammation (inflammatory response within the brain and spinal cord; a primary driver for many neurological diseases) and neuron functionality.
MBCRC Relevance	<ul style="list-style-type: none"> evaluating marine bioproducts in mitigating inflammation and fostering neuron protection enhancing product optimisation to augment market value of marine bioproducts boost the efficiency of the production of marine bioproducts

Name	Miaomiao Liu
Position	NHMRC Fellow
Organisation	Griffith University, Griffith Institute for Drug Discovery
Research Capability	<p>Natural Product Drug Discovery: I explore the vast array of compounds produced by nature, such as those found in plants, microbes, and other living organisms. These natural products often possess unique chemical structures and biological activities that make them promising candidates for drug development. By systematically investigating these compounds, I aim to uncover novel drugs with therapeutic potential, offering innovative solutions to address unmet medical needs.</p> <p>Target Identification Using Native Mass Spectrometry: Using cutting-edge techniques like native mass spectrometry, I identify specific targets within the body for drug action. This involves studying how molecules interact within their native environments without altering their structures. By precisely characterising these interactions at the molecular level, I can pinpoint potential drug targets, facilitating the design of medications that are not only effective but also minimise unintended side effects.</p> <p>Drug Discovery Against Membrane Proteins: Membrane proteins play a crucial role in various diseases, but they pose unique challenges for drug discovery due to their location within cell membranes. My research focuses on overcoming these challenges by developing strategies to effectively target membrane proteins. This involves understanding the intricacies of their structures and functions, paving the way for the development of drugs that can penetrate cell membranes and specifically modulate these proteins to treat a range of diseases.</p>
MBCRC Relevance	<ul style="list-style-type: none"> • pharmaceutical or nutraceutical marine bioproducts • ecological impact of utilising marine resources for drug discovery (i.e. sustainability and conservation) • biosynthesis of marine bioactives, for a more sustainable and scalable production • native mass spectrometry to optimise bioprocessing workflows • enhancing protein purification and characterisation for pharmaceutical or biotechnological applications • bioprocessing of membrane proteins, addressing extraction, purification, and formulation for therapeutic purposes

Name	Nicholas West
Position	Senior Lecturer; Academic Lead Central Facility for Genomics
Organisation	Griffith University
Research Capability	I have 15 years of human clinical trial and immunology research experience and have run small, medium and large clinical trials in gut health, the microbiome and inflammation. I have strong experience in immunoassay, gene expression and spatial transcriptomics along with bioinformatics
MBCRC Relevance	<ul style="list-style-type: none"> • pre-clinical and clinical trials for marine bioproducts • understanding phenotypes through RNA sequencing, spatial transcriptomics and single cell sequencing • microbiome and immune profiling

Name	Prasad Kaparaju
Position	Professor
Organisation	Griffith University
Research Capability	<p>Has 22 years of research experience in biomass to biofuels conversion technology, anaerobic digestion, biomass pre-treatment, biogas upgrading to bioCNG, biogas and biohydrogen production, and circular bioeconomy. Prof. Kaparaju is the leading Australian researcher in anaerobic digestion and biogas/biohydrogen technology. Previously, Prof. Kaparaju has worked as an academic and researcher in University of Jyväskylä, Finland, Technical University of Denmark and University of Copenhagen, Denmark, and as visiting researcher in Laboratoire de Biotechnologie de l'Environnement (LBE), Institut National de la Recherche Agronomique, LBE-INRA, Narbonne, France and Arizona State University, USA. Prof. Kaparaju is an active member of Bioenergy Australia and Member of Taskforce on Waste Management and Biogas in Australia. He had successfully completed EU FP7 projects on valorisation of food waste to bioCNG production and several Danish and Finnish projects and consultancies related to biogas and anaerobic digestion technologies for nutrient recovery, bioCNG production. Environmental biotechnology; anaerobic digestion; biomass to biofuel conversion technologies, biohydrogen, biogas, bioethanol production, biogas upgrading to biomethane for grid injection (bioRNG) or vehicle fuel (BioCNG); Direct capture and use of CO₂ for biomass production, circular bioeconomy; biofertilizer production, biochemical production; nutrient recycling and reuse.</p>
MBCRC Relevance	<ul style="list-style-type: none"> • high value pigments and biofuels (eg biohydrogen, biogas, bioethanol) from marine microalgae and seaweeds • application of microalgae-bacteria interactions to improve biomass and biofuel production • capturing and recycling CO₂ as a substrate for cultivating microalgae in photobioreactors

Name	Qin Li
Position	Professor
Organisation	Griffith University, Queensland Micro- and Nanotechnology Centre & School of Engineering and Built Environment
Research Capability	Dr. Qin Li is a Professor of Environmental Engineering at Griffith University. She obtained her PhD in Chemical Engineering from the University of Queensland (2002) and BEng (1994) and MEng degrees (1997) from Zhejiang University. A chemical engineer and nanotech scientist, Prof. Qin Li conducts research on functional materials and applied nanotechnology to provide solutions for environmental monitoring, water purification, waste reformation and renewable energy. Prof. Li was a Marie Curie Fellow from 2006 – 2008 hosted by the Max Planck Institute for Polymer Research, winner of Curtin Innovation Award 2009, and the finalist of Women in Technology Research Award in 2015 and 2020. Prof. Li has edited two books and co-authored 6 book chapters, over 130 journal papers and 4 international patents with an h-index of 51 (Google Scholar). She is named in the Stanford analysis of top 2% of researchers across all disciplines in the world. Prof. Li is the co-Founding Chair of the Green and Sustainable Chemistry National Interest Group at RACI, and advocates for Innovating Sustainably.
MBCRC Relevance	<ul style="list-style-type: none">• converting biowaste into functional nanocarbons for applications in energy conversion and storage, environmental monitoring and remediation, as well as biomedical diagnostics• upcycling bioresource and bioprocessing waste streams to support clean and green sustainable practices

Name	Yun Feng
Position	Associate Professor
Organisation	Griffith University, Griffith Institute for Drug Discovery
Research Capability	I have over 25 years research experience in the field of natural product chemistry, focusing on the isolation, structure determination, and activity evaluation of compounds derived from plants, marine organisms, and microbes. Currently, I serve as a research leader and head the Natural Product and Traditional Medicine Group at the Griffith Institute for Drug Discovery. I have led projects in collaboration with academics, specifically in drug discovery for Parkinson's Disease and Aging. I collaborate with industry partners, contributing to the integration of probiotics into animal feed supplements and the development of natural skin depigmentation products. Our team maintains close collaboration with Indigenous communities and business leaders, particularly in the realm of medicinal botanicals. We possess extensive expertise in bioassays, having established assays for evaluating cell and mitochondrial function, skin depigmentation, antimicrobial, and anti-inflammatory activities. Our expertise extends to chemical marker profiling of crude extracts and the identification of novel natural products.
MBCRC Relevance	<ul style="list-style-type: none">• bioassays to assess the health benefits of marine bioproducts• identifying the chemical basis behind health benefit claims of marine bioproducts



**Government
of South Australia**

Department of Primary
Industries and Regions

SARDI



**SOUTH AUSTRALIAN
RESEARCH AND
DEVELOPMENT
INSTITUTE**

Name	Sasi Nayar
Position	Program Leader – SARDI; Associate Professor – Flinders University
Organisation	South Australian Research and Development Institute, Aquatic and Livestock Sciences
Research Capability	<p>Dr Sasi Nayar leads SARDI’s Aquaculture program and manages the Algal Production Group at the South Australian Research and Development Institute (SARDI). He has for over a decade led an applied, industry focused, research program developing micro- and macro-algal production systems for high value applications of the sustainably cultivated biomass. Using a multidisciplinary and collaborative state-of-the-art approach, the team acquire new knowledge, that inspires and informs new solutions to important scientific and societal challenges such as bioremediation of wastewater and biosludge, bioassimilation of carbon, nitrogen and phosphorus, valorisation of food wastes, circular economy, and application of algal biomass for novel bio-products and high value marine natural products. Sasi and his team work closely with government and industry clients to meet their needs. He provides scientific and technical advice to government and industry for sustainable development of the algal biomass industry. He has built a strong collaborative consortium of industry groups across the value chain to develop a sustainable seaweed industry in South Australia supported by funding from the South Australian government.</p> <p>The Aquaculture Program at SARDI hosts the SARDI Aquatic Sciences Environment and Analytical Laboratories (SEAL), a state-of-the-art, fee-for-service commercial analytical and bioprocessing capability. The facility also has infrastructure and expertise supporting research into microalgae and macroalgae strain optimisation, mass cultivation, biomass production and bioprocessing of biomass for various end use applications. The facility provides its clients with concept design, laboratory testing, proof-of-concept scale trials and assist with scaling commercial scale trials in both microalgae and macroalgae, providing practical and cost-effective algal production systems for: aquaculture, functional food, nutraceuticals, cosmeceuticals, bioenergy, biofixation of carbon and nutrient remediation. The program also operates pilot scale hatcheries for finfish, shellfish and seaweeds. The program also has access to a pool farm, which has more than 80 tanks of varying size and volumes for research. The group has access to inhouse expertise in phycology, finfish and shellfish genetics, hatchery and production technology, molecular sciences, aquaculture biotechnology and nutrition and feed technology.</p>
MBCRC Relevance	<ul style="list-style-type: none"> • hatchery at-sea and land cultivation systems for microalgae, seaweeds, finfish, shellfish and other marine species • screening, characterisation and quantification of marine bioactives, pigments, peptides, fatty acids and other components • pilot scale bioprocessing capabilities including stirred vat bioreactors for production of marine bioproducts

Name	Bryony Tucker
Position	Senior Research Officer (ECR), (APRIL Postdoctoral Fellow)
Organisation	South Australian Research and Development Institute
Research Capability	<p>I have ~7 years of diverse experience in a number of roles within the pig industry, spanning research, technical roles, and hands-on farming. My expertise initially centred on piglet survival and gestational animal management, evolving through my academic journey. Currently, my research is pivoting towards lactational management and gastrointestinal health in pigs. I have a keen interest in exploring natural alternatives to antimicrobials, especially during high-stress periods in pig production, a focus supported by the APRIL Postdoctoral Program. As an early career researcher in the Pig and Poultry Division at SARDI, I work under the guidance of Dr. Reza Barekatin. SARDI boasts a rich history of leading-edge pig research, backed by significant industry support over the last two decades. My direct industry connections, coupled with SARDI's state-of-the-art capabilities and facilities, poise us uniquely for producing high-quality, industry-relevant analytical research and outcomes. I possess comprehensive knowledge in pig production and associated research methodologies. My role includes mentoring the next generation of researchers, evidenced by my supervision of two honours students from the University of Adelaide in 2023 in the areas of embryology and piglet gut health. Further to this I am an affiliate researcher at both the university of Adelaide and Flinders University, working with a large range of researchers and capabilities to produce high quality research.</p>
MBCRC Relevance	<ul style="list-style-type: none"> • marine bioproducts for application in the pig production chain, focusing specifically on reproductive and gut health • waster utilisation and reduction through sustainable and circular production systems

Name	Paul Verma
Position	Professor, Program Leader Livestock Science
Organisation	Aquatics & Livestock Sciences Division, South Australian Research & Development Institute
Research Capability	<p>I’m a reproductive biologist with >30yrs experience and a research focus on assisted reproductive technologies and stem cell biology and translation of research from human to large animals.</p> <p>I work with pigs and sheep, using reproductive technologies and precise genome editing (CRISPR-Cas9) to manipulate livestock production traits and develop biomedical models for animal and human disease.</p>
MBCRC Relevance	<ul style="list-style-type: none"> • effect of marine bioproducts on large animal growth, health, production and reproduction



University of South Australia

Name	Allison Cowin
Position	Research Professor and Deputy Director Future Industries Institute
Organisation	University of South Australia
Research Capability	<p>I have over 30 years of experience in developing in vitro and in vivo skin models particularly in relation to wound healing. I lead a large team of researchers and PhD students who investigate mechanism of action and/or develop innovative approaches for the treatment of skin conditions and wounds. This includes developing antibody therapies, cell therapies, diagnostics and sensors for treatment, prediction, and prevention if impaired healing responses.</p> <p>Research I have led, has been translated from the bench into human clinical trials including a patent-protected stem cell patch for the treatment of diabetic foot ulcers.</p> <p>I regularly work closely with industry and end-users and have been involved in 5 CRCs.</p>
MBCRC Relevance	<ul style="list-style-type: none"> marine bioproducts for skin and wound conditions

Name	Anton Blencowe
Position	A/Prof. and Group Leader (Applied Chemistry and Translational Biomaterials Group)
Organisation	University of South Australia, Clinical and Health Sciences
Research Capability	<p>I am a chemist with 20+ years research experience in chemical synthesis, polymer engineering and characterisation, and materials chemistry. My research group has a major focus on the development of controlled release/capture systems for biomedical, pharmaceutical, food, environmental and ecological applications. Other areas of research include the development of novel food-safe surfactants, small molecule antibiotics and bioconjugation chemistries, and value-adding to food waste. Our capabilities in polymer chemistry include:</p> <ul style="list-style-type: none"> Synthesis and modification (including characterisation) of (bio)polymers to tune their properties. Polymer processing, including film and fibre production, coatings and 3D printing, and testing of product properties Synthesis of (bio)polymer-based materials (e.g., hydrogels for tissue engineering, formulations for oral delivery, implants for controlled delivery, baits for animal control, extraction/separation resins for purification and remediation, microencapsulation for bioactive preservation, antimicrobial agents and coatings). <p>In my lab we have facilities for chemical synthesis, purification and characterisation. Including analytical facilities for small molecule detection and quantification, polymer characterisation, processing and testing, and photophysical characterisation. We also have access to state-of-the-art molecular characterisation and materials testing facilities in the university, as well as manufacturing facilities through the South Australian node of the Australian National Fabrication facility. My group are also regular users of the Australian Nuclear Science and Technology Organisation (ANSTO) facilities for characterisation of polymeric systems in the solid and solution states. Previously, I have managed projects with various CRCs, including the CRC for Polymers (polymers for mineral extraction), Cotton Catchment Communities CRC (surfactants to prevent water evaporation), Vision CRC (injectable polymer contact lenses), Wound Management Innovation CRC (wound dressings) and Cell Therapy Manufacturing CRC (hydrogels for cell delivery). I have also had extensive experience working and managing projects with local and international partners in the biomedical (Carina Biotech), pharmaceutical (Vetter Pharma, Fleet Bioprocessing), food (Fonterra, Ashton Valley) and resources (BHP Billiton, Magotteaux) industries, and philanthropic organisations in the area of ecology and conservation management (Ecological Horizons, Foundation for Australia's Most Endangered, Landscape SA).</p>
MBCRC Relevance	<ul style="list-style-type: none"> characterisation and application of marine biopolymers seaweed-derived polysaccharides as wound dressings, drug-polysaccharide conjugates, microparticles for oral delivery of sensitive payloads, food emulsifiers and a range of applications

Name	Binoy Sarkar
Position	Senior Research Fellow
Organisation	University of South Australia, Future Industries Institute
Research Capability	<p>My group's work is underpinned by the fundamental principles of soil science, environmental biogeochemistry, applied mineralogy and material science. Collaborating with academia, industry partners and policy makers, we work on land-based methods for atmospheric CO₂ removal, soil carbon sequestration and crop/forestry production, and fate, transport and remediation of emerging contaminants. Our work spans from simple laboratory or glasshouse tests to large scale field trials at end users' site. In addition to conducting routine analysis of soil, water, plant, mineral and other environmental samples, we use a range of micro-analytical techniques in our research including ICP-MS/OES, LC-MS, scintillation counter, XRD, FTIR, TGA, SEM-EDX, TEM, XPS, NMR, DLS (particle size), surface area and pore size distribution analyser – all available within the Future Industries Institute (FII). We have a digitally programmable biochar making unit and a microwave assisted reactor. Our research also benefits from the technical expertise that comes from hosting nodes of two National Collaborative Research Infrastructure Strategy (NCRIS) facilities, including Microscopy Australia and Australian National Fabrication Facility at FII. We conduct research using synchrotron radiation-based methods such as SXTM and FTIR. We often combine experimental results with biogeochemical and/or life cycle and financial modelling approaches to deliver impactful research outcomes.</p>
MBCRC Relevance	<ul style="list-style-type: none"> marine bioproducts for carbon capture/sequestration, and crop nutrition and stress reduction glasshouse and field trials of marine bioproducts for crop production and soil improvement

Name	Clive Prestidge
Position	Professor and Centre Director
Organisation	University of South Australia, Centre for Pharmaceutical Innovation
Research Capability	Clive is the University of South Australia's Professor of Pharmaceutical Science; he leads the internationally recognised Nanostructure and Drug Delivery research group and is Director for the Centre for Pharmaceutical Innovation. He has an extensive track record in the development of biomaterials for outcomes in Health and Medicine. His research broadly focuses on nanomaterials for drug delivery, oral delivery with specific focus on lipid-based systems, nanoparticles for improved cancer therapy, overcoming clinical infections and vaccines. He has supervised over 50 PhD and MSc students and authored around 300 international journal articles. He is an inventor of several technology platforms for drug delivery, gut health, anti-obesity and infection control, and has been extensively involved in patenting, licencing, spin off companies and partnering with industry to advance commercialisation of these technologies. He has access to world class infrastructure in pharmaceutical/nutraceutical/food sciences: formulation, characterisation and delivery. He co-leads the Adelaide Biofilm facility.
MBCRC Relevance	<ul style="list-style-type: none"> • formulation and delivery of marine bioproducts • micro and nanoencapsulation systems for marine bioproducts • antimicrobial marine bioproducts

Name	David Beattie
Position	Research Professor in Physical Chemistry
Organisation	University of South Australia
Research Capability	Colloid and interface science. Biopolymer applications in material science, food science, and biomedical science. Group leader and manager for research facilities including vibrational spectroscopy and quartz crystal microbalance. I have been using polysaccharide polymers in physical chemistry research and aligned industry-linked research for over twenty years. Fucoidan and other seaweed polysaccharides have featured heavily in this work, and this was the basis for my ARC Future Fellowship, which I held from 2011 to 2015. My work on polysaccharide polymers was also the basis for me becoming a finalist for the Australian Museum Eureka prize for Environmental Research in 2015. I have studied fucoidan (and related) polymers as components of surface coatings for lubricity, for colloid stability, and for encapsulation of bioactives.
MBCRC Relevance	<ul style="list-style-type: none"> • seaweed biopolymers in industrial applications (such as mineral processing) • seaweed biopolymers as components in foods (e.g. beverage emulsions, dairy and dairy substitute products) • seaweed biopolymers as components in smart surface coatings for lubrication and controlled drug release applications

Name	Paul Joyce
Position	Senior Research Fellow
Organisation	University of South Australia, Centre for Pharmaceutical Innovation, Clinical & Health Sciences
Research Capability	I am a formulation and materials scientist with expert capabilities in maximising the functionality of materials, specifically for health applications, through the creation of innovative formulations. My work is largely focused on overcoming biological and pharmaceutical challenges of bioactive compounds. As a result, I have access to key research infrastructure that is dedicated to bioactive formulation development, characterisation, analysis and preclinical evaluation. This includes in vitro (lab-based) and in vivo (animal-based) preclinical models.
MBCRC Relevance	<ul style="list-style-type: none"> • seaweed marine bioproducts as nutraceuticals • formulation of nutraceutical marine bioproducts • encapsulation of volatile bioactives in marine bioproducts

Name	Peter Hoffmann
	Professor and Lloyd Sansom Chair, President Australasian Proteomics Society
Organisation	University of South Australia, Clinical Health Sciences
Research Capability	The Mass Spectrometry (MS) and Proteomics group uses high-end high-resolution mass spectrometry to identify and quantify molecules (proteins, peptides, glycans, lipids, metabolites, small molecules, elements) in biological samples. Our main strength is Proteomics and we are the leading group in Australia for Mass Spectrometry Imaging (MSI) a technology which can analyse above specified molecules spatially resolved in tissue section or sections of any biological material. We are the best equipped MS laboratory in South Australia and have almost all types of MS instrumentation available and the expertise to use them. We use MALDI-TOF-MS, LC-QQQ-MS, LC-QTOF-MS, LC-Orbitrap-MS, TimsTOF-MS which uses MALDI or ESI and features ion mobility separation. We are using GC-ECD and GC-MS to analyse volatile compounds as well as ICP-MS for elemental analysis for example to quantify heavy metals.
MBCRC Relevance	<ul style="list-style-type: none"> • mass spectroscopic methods to identify and quantify small molecules, lipids, glycans, proteins, peptides, metabolites etc... • quantify seaweed bromoform (GC-ECD) and iodide (ICP-MS)

Name	Yevgeniya Grebneva
Position	Research Associate
Organisation	University of South Australia, Clinical & Health Sciences
Research Capability	<p>I am an interdisciplinary scientist with profound experience in food chemistry and environmental science. Successfully collaborated across scientific and industry-focused disciplines, I am passionate about science communication and about making science approachable to the industry.</p> <p>My expert research skills include the development of analytical methodologies and establishment of mass spectrometry assays for specific analytes such as bromoform and iodine/bromide in seaweed, perfluoroalkyl and polyfluoroalkyl substances, PFAS (the ‘forever chemicals’) in solid and fluid samples. Also, I am specialised using high-resolution mass spectrometry-based techniques (LC-QQQ & LC- QTOF MS, GC/MS & GC/MS-headspace techniques, statistical methods (R, Unscrambler and Minitab) and interpretation to develop and validate complex interaction of cleavage products as well as their precursors in complex biological matrices.</p> <p>I am a postdoctoral researcher based in Prof. Peter Hoffmann’s research group (Mass Spectrometry and Proteomics) and I have access to state-of-the-art scientific equipment in his laboratory and infrastructure at the Clinical & Health Sciences located within the University of South Australia.</p>
MBCRC Relevance	<ul style="list-style-type: none"> • high-resolution mass spectrometry (GC and LC) for detection and quantification of bioactives in marine bioproducts • analyse marine bioproducts across developmental stages • isolation, identification and characterisation of bioactive in marine bioproducts

Name	Zoe Doubleday
Position	Australian Research Council Future Fellow
Organisation	University of South Australia, Future Industries Institute
Research Capability	<p>I have more than 15 years research experience working in the field of marine and fisheries ecology in southern Australia, with specialist expertise in marine invertebrates. I have an in-depth understanding of the seafood sector in Australia, examining environmental risks and shocks to both aquaculture and wild capture production. I use mass spectrometry to analyse the trace element and isotope chemistry of marine biological tissues, particularly biominerals (i.e. shells), as well as a range of other lab methods. I have experience designing and running controlled experiments in aquaria and working with fishers in the field. I have co-designed projects with industry, as well as mentored and supervised a range of postgraduate projects. I am a passionate advocate for accessible science and I work regularly with radio, TV, and print media in Australia and overseas. I have delivered 100+ media interviews broadcast across 15 countries and I have written training workshops on accessible scientific writing.</p>
MBCRC Relevance	<ul style="list-style-type: none"> • design aquaria and field experiments (e.g. influence of substrate on biofouling communities) • re-purpose biomineral waste products (e.g. shells from shellfish farming) • media and science communication training (or research) to maximise uptake and public engagement



**THE UNIVERSITY
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A U S T R A L I A

Name	Angela Salim
Position	Senior Research Officer
Organisation	The University of Queensland, Institute for Molecular Bioscience
Research Capability	I have >20 years research experience in the field of natural product chemistry, working on the isolation and characterisation of bioactive and novel compounds produced by various biodiversity (terrestrial plants, algae, marine sponges and microorganism). I am a postdoctoral researcher based in Prof. Rob Capon's research group; and have access to state-of-the-art scientific equipment in his laboratory and infrastructure at the Institute for Molecular Bioscience. I have managed several projects and liaise with academic and industry partners in various projects, including in the field of anthelmintics discovery to safeguard animal health. I am well versed with various analytical methods to detect, identify, characterise, and quantify small bioactive molecules present in complex marine extracts. I have used a range of analytical tools and methods to analyse and visualize complex microbial extracts to differentiate new molecules from known, and rare chemical scaffold from common, in a mixture of thousands of natural product compounds. I have isolated and purified bioactives from complex matrices using various chromatographic methods, followed by characterisation of the metabolites using various spectroscopic methods.
MBCRC Relevance	<ul style="list-style-type: none"> • detect and quantify the small molecule bioactives in marine extracts during bioprocessing • analyse the fate of marine bioactives during biorefining • discover, isolate and characterise new marine bioactives to inspire the development of new classes of marine bioproduct

Name	Ben Hankamer
Position	Professor, Director of the Centre for Solar Biotechnology
Organisation	The University of Queensland, Institute for Molecular Bioscience
Research Capability	Microalgae/cyanobacteria isolation, Cryo preservation, High throughput nutrients optimisation screens, High throughput light optimisation screens, Molecular Biology, Structural biology of membrane proteins and macromolecular assemblies, System scale up to pilot scale, Simulation guided systems design (Pilot and demo), Technoeconomic and life cycle assessment, Biorefinery process development (Proteins, lipids, carbohydrates, biopolymers and nanomaterials, marine bioactives), Value chain development
MBCRC Relevance	I am the founding Director of the Centre for Solar Biotechnology which, since its launch in 2017, has expanded to connect 30 international research teams (EU, US, Asia, Australia, and New Zealand) and its industry partners (>35). The Centre Chief Investigator Team has over ¼ million citations and is well positioned to accelerate the innovation and translation of new light driven biotechnologies and industries. It provides multi-disciplinary/multi-scale experience from atomic resolution cryo-electron microscopy through to commercial scale systems design (500 hectares). Our light driven biotechnologies tap into the vast energy resource of the sun (5000 times the annual global energy demand) and absorb CO ₂ . They are designed to provide economic solar driven solutions for the production of high value pharmaceuticals (protein biologics, small molecule drugs, light driven wound oxygenation patch) through to functional foods (specialist proteins, nutraceuticals) and renewable fuels (e.g., H ₂ and aviation fuel) to supply the world's growing energy demand, as well as a path for CO ₂ utilisation and capture and clean water production. The Centre actively supports the development of new job opportunities, sustainable regional development, export industries and a clean, sustainable future. This is critical as, by 2050, our population is forecast to expand from 7.9 to 9.7 billion people requiring 70% more food (United Nations), 50% more fuel (International Energy Agency), and 50% more water (Organization for Economic Co-operation and Development) than in ~2005 and 100% CO ₂ emissions reductions (Intergovernmental Panel on Climate Change) to ensure economic, social, political, climate, fuel, food, and water security. My team can assist industry partners in these areas using the above research capabilities.

Name	Daniel Cozzolino
Position	Associate Professor
Organisation	The University of Queensland, Queensland Alliance for Agriculture and Food Innovation (QAAFI)
Research Capability	I have >30 years research experience in the field of rapid analytical methods (spectroscopy), food chemistry, processing (on-line and in-line analysis) and food traceability. I have been involved in the development of non-destructive methods to analyse the composition and provenance of natural products, food ingredients and agricultural commodities. Currently, I am the team leader of the spectroscopy research group at QAAFI, with access to state-of-the-art equipment in our laboratory (e.g. portable infrared, bench top instruments, hyperspectral portable camera) and other infrastructure at QAAFI. I have managed several projects and liaise with academic and industry partners in various Projects (Team leader of the rapid methods assessment unit at The Australian Wine Research Institute, barley breeding program at The University of Adelaide, Food Chemistry unit at RMIT). Recently I have completed a project in collaboration with partners in Indonesia on the use of rapid analytical methods to monitor and evaluate the quality and provenance of seaweed from the South Sulawesi, Lombok and Java regions.
MBCRC Relevance	<ul style="list-style-type: none"> • rapid and non-invasive methods to monitor composition, process, provenance and authenticity of marine bioproducts • analytical methods for in-line and on-line process, fermentation and bioprocess monitoring • data analytics and machine learning

Name	Edgar Brea
Position	Specialist Data Scientist
Organisation	The University of Queensland, Business School and Food and Beverage Accelerator (FaBA)
Research Capability	I have >15 years of industry and research experience in the field of technology and innovation management. I have a background in computer systems, a Master and a PhD in technological innovation management. I have worked as technology consultant in a range of industries from energy and manufacturing, to finance and bioinformatics. My research area is the adoption of data-driven technology (e.g. machine learning) in research and innovation processes. Currently I work as a Data Scientist, leading projects using data and advanced analytics to discover opportunities for novel food and beverage products. I have managed several applied research projects with industry, including assessments of the potential market value a suite of automation solutions, discovery of new business models for mining and manufacturing sectors, and identification of opportunities for product innovation in the food and beverages sector. I have used a range of data science and computational methods to analyse, visualise and present complex technological, market and economic data, which has supported decisions on what market a product or technology should target, what user and industry needs are emerging, and what strategy should be implemented to turn research ideas into novel products and services.
MBCRC Relevance	<ul style="list-style-type: none"> • data-driven techniques and tools for market analysis to inform new marine bioproduct development • machine learning and artificial intelligence technology to better understand industry need for marine bioproducts • assess business viability of new marine bioproducts

Name	Heather Smyth
Position	Associate Professor, Principal Research Fellow
Organisation	The University of Queensland, Queensland Alliance for Agriculture and Food Innovation (QAAFI)
Research Capability	I am a flavour chemist and sensory scientist who has been working with premium food and beverage products for the past twenty+ years. I have a background in wine flavour chemistry, and my expertise is in understanding the compositional basis of food/beverage quality and consumer enjoyment. I have a special interest in exploring where flavour originates from in foods in terms of production factors and regionality that leads to distinctive quality and brand characteristics. I also specialise in researching how human physiology, such as saliva and chewing behaviour, can impact sensory perception and therefore food choice. Current projects involve specialty coffee, beer, wine, native plant foods, cocoa, meat and seafood, tropical fruits, cereals, dairy products, algae, plant-based products, emerging and novel foods. I have active collaboration with numerous food and ingredient companies and my research aids in the design and production of superior products with increased consumer value.
MBCRC Relevance	<ul style="list-style-type: none"> • analytical chemistry to detect and quantify key components during bioprocessing of marine bioproducts • develop innovative premium, nutritious and flavoursome marine bioproduct foods/ingredients from marine algae • determine and optimize the technofunctional properties of marine bioproduct foods/ingredients from marine algae

Name	Juliane Wolf
Position	Research Fellow
Organisation	The University of Queensland, Institute for Molecular Bioscience
Research Capability	I have specialised in the development of high-efficiency microalgae production systems, automated robotic screening assays, and the integration of microalgae biotechnologies into industries that support a circular economy. My focus is on multi-disciplinary, mostly industry-led research programmes, to which I contribute scientific expertise in bioprocess engineering, microbiology and biochemistry. My research drives the development of high-throughput screening assays for the optimisation of nutrients, light and temperature which are critical to the production of photosynthetic microorganisms. I have designed automated assay-specific robotic screening platforms, process control software and data analytics pipelines. My research feeds into building new comprehensive techno-economic and life-cycle analysis platforms. Since 2019, I am managing the operations at the Centre for Solar Biotechnology pilot plant facility at the University of Queensland. I have >10 years of experience with stakeholder engagement and relationship building on a national and international level (with a focus on Germany & Europe).
MBCRC Relevance	<ul style="list-style-type: none"> • optimisation of microalgae production using high-throughput screening approaches (e.g. nutrients, light, temperature, pH) • optimisation of process control for microalgae production at pilot scale (upstream processing) • optimisation of microalgae cultivation at pilot-scale (~20-6000 L), both in open ponds and photobioreactors • techno-economic and life-cycle analysis models • optimisation of photobioreactor design • designing a biorefinery approach (multiple product streams)

Name	Mark S. Butler
Position	Casual Academic
Organisation	The University of Queensland, Institute for Molecular Bioscience
Research Capability	<p>PhD (1992, UMelb) in marine natural products and MBA (2017, UQ). Extensive management and research experience in biotech and industry-focused academic research. Worked in Australia, Singapore, and the USA, and have collaborated extensively with organisations in China, Japan, Malaysia, New Zealand, Singapore, Sweden, Switzerland, United Kingdom, and USA. Currently working as a Casual Academic with UQ, as well as running a consulting company. Expertise includes:</p> <ul style="list-style-type: none"> – Background in marine science, knowledgeable about different types of marine organisms and industries. – Writing and reviewing technical reports, publications, and grant applications. – Project management, business and IP planning, and due diligence. – Natural product chemistry management – purification, structure elucidation, dereplication and large-scale re-supply. – Analytical chemistry management – quantification and stability (physical and biological) studies used in compound/product development, as well as <i>in vivo</i> bioanalytical analyses. – Lead discovery and drug development management – hit identification from screening, lead optimisation, pre-clinical development, and preparation for clinical trials. – World expert in anti-infectives R&D, previously a WHO consultant on antibacterial R&D and part of team that brought two antibiotics into clinical trials. – Development of herbal products (botanical medicines and medical cannabis) and part of team that implemented production methods for diagnostics (ISO 13485).
MBCRC Relevance	<ul style="list-style-type: none"> • write and/or review technical reports, grant applications and publications as relate to marine bioproducts • undertake specific consulting tasks as relate to marine bioproducts • evaluate new project ideas and competitor analysis • support project management

Name	Mark Morrison
Position	Professor
Organisation	The University of Queensland, Frazer Institute
Research Capability	<p>My scientific expertise resides in microbial physiology, genetics, and (meta)genomics. I have a long-standing interest in bacterial adhesion mechanisms and carbohydrate active enzymes coordinating biomass degradation. In recent years my research focus has been on the mucosa-associated microbiota of the gastrointestinal tract in health and disease, and the impacts of dietary components on the structure-function relationships inherent to these communities. My laboratory uses (meta)genome-based approaches to direct strategies to bring microbial genomes to life to provide novel enzyme-, organismal-, and systems-level interventions to augment and/or productively alter microbial communities of relevance to medicine and agriculture.</p>
MBCRC Relevance	<ul style="list-style-type: none"> • integrated use of computational and (micro)biological approaches to bring microbial genomes to life • methodologies to characterise microbial ecosystem structure-function relationships

Name	Markus Muttenthaler
Position	Associate Professor
Organisation	The University of Queensland, Institute for Molecular Bioscience
Research Capability	<p>An accomplished medicinal chemist working at the interface of chemistry, biology and medicine. With over 20 years of experience, he specialises in tapping into Nature's diversity to create molecular tools, diagnostics and therapeutics. His strong background in drug discovery, chemistry, molecular biology and pharmacology drives his quest to characterise bioactive molecules from natural sources and translate them into innovative solutions for pain management, cancer treatment, gut health, and neurodegenerative diseases. He leads a research group of 15 talented scientists, supported by cutting-edge equipment and infrastructure, including mass spectrometry, analytical HPLC, NMR, next-generation sequencing, chemistry and molecular biology equipment, and high-throughput bioassays.</p>
MBCRC Relevance	<ul style="list-style-type: none"> • bioactive marine peptides/proteins and that could benefit human or animal health • bioactive peptide/protein discovery, sequencing, purification, characterisation, synthesis, and recombinant production • knowledge in the biomedical, chemistry, biological and drug discovery and development space.

Name	Michael Netzel
Position	Senior Research Fellow
Organisation	The University of Queensland, Queensland Alliance for Agriculture and Food Innovation (QAAFI)
Research Capability	I am a nutritionist and food scientist who has been working with plant food, beverages and microalgae for the past 20+ years. I am a nutritionist by training, but I have also a sound expertise in food chemistry, biochemistry and human physiology. I have a special interest in exploring the nutritional quality of fresh, processed, biofortified and novel foods, their nutritional composition, bioactivity, digestive characteristics and potential health benefits for consumers. Current projects involve a broad range of plant-based foods and derived products. I have active collaborations with different stakeholders from industry and academia.
MBCRC Relevance	<ul style="list-style-type: none"> nutritional profile and functionality of micro and macroalgae marine bioproducts (including solid state fermented algae-products) using state-of-the-art technologies such as stable isotope dilution assays (SIDA) and cell-based in vitro systems. digestive characteristics and nutritional quality of micro and macroalgae marine bioproducts using a centralised automated comprehensive <i>in vitro</i> digestion and absorption system mimicking the human digestion process "from mastication to colonic fermentation" translate nutritional information into a consumer and industry "friendly" language

Name	Rob Capon
Position	UQ Professor and Group Leader, MBCRC Program Leader
Organisation	The University of Queensland, Institute for Molecular Bioscience
Research Capability	With >40 year research experience in marine and microbial natural products chemistry, and related multidisciplinary sciences (medicinal and synthetic organic chemistry, microbiology, pharmacology, biochemistry) I established and lead an internationally renowned marine natural product research group supported by state-of-the-art scientific equipment and infrastructure. We work collaboratively with academic and industry partners to study natural products that are new to science, to acquire knowledge that can inspire innovative solutions to important scientific, medical, industrial and societal challenges. Our discoveries extend across new treatments for infectious, inflammatory and neurodegenerative diseases, cancer and pain, and new products to safeguard animal health and protect crops and the environment. We are expert in and have access to a range of analytical tools and methods that allow us to detect, prioritize, characterise, isolate, identify and quantify bioactives in marine extracts, fractions, and formulated products, and in acquiring and assessing the applied value of marine microbes.
MBCRC Relevance	<ul style="list-style-type: none"> marine microbes as a tool for stimulating the production and quality of marine bioproducts marine microbes as a tool for increasing yields and improving properties of marine bioproducts marine microbes as an environmentally sustainable biomass for the production of marine bioproducts analytical chemistry to detect and manage the fate (QC) of bioactives during biorefining of marine bioproducts validate chemical/biological properties of bioactives to add "premium" value to existing marine bioproducts discover new bioactives to inspire the development of new classes of marine bioproduct (e.g. anthelmintics)

Name	Tim Mahony
Position	Professorial Research Fellow
Organisation	The University of Queensland, Queensland Alliance for Agriculture and Food Innovation (QAAFI), Centre for Animal Science.
Research Capability	I have over 20 of years of research experience in improving health outcomes in animal production. This includes the development of novel vaccine delivery technologies using herpesviral vaccine vectors for livestock species. More recently I have led the development of strategies enable the efficient delivery of nucleic acids to aquaculture species to improve disease control. My research group has developed novel disease models to enable the robust evaluation of our research outputs. These activities have been underpinned by state-of-the-art facilities and equipment located in my laboratory at the Queensland Biosciences Precinct on The University of Queensland's St Lucia campus. I have successfully managed large industry focused projects with research partners from academia, government, and industry. I have extensive experience in tailoring research projects that deliver novel scientific outputs, while addressing industry need for innovation. A central theme of my research career has been the development of vaccine delivery strategies that enable use within the constraints of current industry practices. This approach enables easy adoption of new technologies thus maximising return on investment in research and increasing industry profitability.
MBCRC Relevance	<ul style="list-style-type: none"> novel approaches for the efficient and stable delivery of bioactives (ie RNA, mRNA) to cultured marine species bioassays to evaluate the antiviral properties of marine bioproducts in aquaculture, livestock and human health identification of marine bioproducts to reduce reliance of terrestrial and aquatic farmed species on antimicrobials

Name	Zeinab Khalil
Position	ARC Future Fellow
Organisation	The University of Queensland, Institute for Molecular Bioscience
Research Capability	<p>I have >10 years research experience in the field of natural product chemistry and microbiology, with focus on investigating the new chemical diversity produced from bacteria and fungi. I hold the position of an Australian Research Council Fellow within the research team led by Professor Rob Capon at Institute for Molecular Bioscience, University of Queensland. This role grants me access to cutting-edge scientific equipment within his laboratory, as well as access to the Institute's advanced infrastructure (e.g microscopy).</p> <p>I co-established the Biodiscovery@UQ, a university-wide networking facility designed to support excellence in biodiscovery research across UQ for the development of new microbe-inspired antibiotics and other drug leads. I have assembled an extensive network of collaborators spanning academics based at UQ and other Australian and international universities (e.g. Leibniz Center for Medicine and Biosciences, Germany). I have led multi-year projects with industry, targeting animal (Boehringer Ingelheim) and crop health (NEXGEN Plants) as well as microbial chemical diversity (Microbial Screening Technologies; BioAustralis). I use a suite of techniques and methods to discover and explore the chemical and biological properties of hundreds of rare and new natural products from Australian microbiome.</p> <p>I have used a wide variety of techniques to search for and develop new therapeutics within Australia's microbiome through spanning the fields of chemistry, microbiology & genomics. I have driven novel systemic perspectives in natural product drug biodiscovery that addressed significant needs including; (1) study of silent genes hidden within microbial genomes and encoding for new chemical diversity; (2) genome-based methods to study the entire microbial potential that successfully provided knowledge of new, high-value microbial defences to meet future demands in chemical and environmental sciences; and (3) chemical analysis to discover new classes of antibiotics that inspired the future development of next-generation therapeutics.</p>
MBCRC Relevance	<ul style="list-style-type: none"> • role of marine microbial diversity in bioprocessing and production of marine bioproducts • isolate, identify and evaluate the chemical/biological properties of bioactives in marine bioproducts (i.e. pharmaceuticals)

Name	Ian Henderson
Position	Executive Director, Institute for Molecular Science
Organisation	University of Queensland
Research Capability	<p>High through put genetic screens of microbes (mostly focused bacteria but could be applied to algae etc.)</p> <p>Animal models of infection</p> <p>Structural biology with a particular emphasis on membrane proteins</p> <p>Biochemical/biophysical analyses of proteins</p> <p>Forced evolution experiments to evolve new functions</p> <p>Protein expression and purification</p>
MBCRC Relevance	<ul style="list-style-type: none"> • mechanism of action of antimicrobial marine bioproducts • understanding the fundamental biology of marine microbes • microbial bioconversion of marine bioproducts

Name	Yasmina Sultanbawa
Position	Professor
Organisation	The University of Queensland, Queensland Alliance for Agriculture and Food Innovation,
Research Capability	<p>I have over 20 years of experience working directly with and managing industrial and end-user focussed research. I have expertise in bringing together a unique combination of research areas in combining process technologies and engineered delivery systems for bioactive compounds to improve nutrition, flavour quality and safety of foods, thereby providing commercially applicable solutions to address challenges and opportunities throughout the agri-food value chain. I am also the Director, Centre for Nutrition and Food Sciences, at QAAFI, UQ. I can provide; (1) access to state of the art central one stop, research and testing facilities at Long Pocket at UQ, to assess nutritional composition, sensory properties, quality, safety and functionality of food, functional foods, ingredients and nutraceuticals (marine bioproducts); (2) access to simulated gut digestion model and cell culture assays to determine absorption and potential health benefits for market access with scientific evidence; (3) sustainable product development and research translation through market validation and commercialisation; (4) developing regulatory approvals for novel human food products and ingredients for the domestic and international markets; (5) training of different stakeholders across the marine bioproduct value chain.</p>
MBCRC Relevance	<ul style="list-style-type: none"> • new marine bioproducts for human consumption • regulatory approvals for market access • evidence for the health and nutritional properties, and safety of marine bioproducts • traceability through marine bioproduct production, processing and distribution



Name	Abigail Elizur
Position	Director, Centre for Bioinnovation, Prof, Aquaculture Biotechnology
Organisation	University of the Sunshine Coast, Centre for Bioinnovation
Research Capability	I have > 30 years experience in aquaculture biotechnology, working primarily on developing technologies to close the life cycle of aquaculture species in captivity. I identify hormones associated with reproduction and apply them to induce reproductive development, conditioning and spawning. This applies to fish, oysters, sea cucumbers and crustaceans. I use molecular tools including gene cloning, gene expression and omics to address question regarding the animal's physiology. In addition, I have been instrumental in developing the analytic capabilities at UniSC, and we now have an advanced instrumental facility with state of the art equipment for detection and characterisation of marine bioproducts and have been applying these capabilities to a range of marine species.
MBCRC Relevance	<ul style="list-style-type: none"> valuable marine bioproducts (e.g. antimicrobials) in oysters controlling oyster conditioning and spawning overcoming challenges in reproduction to increase biomass production (e.g. sea cucumbers) proteomics, metabolomics, lipid and volatiles profiles bioassays

Name	David McMillan
Position	Senior Lecturer
Organisation	University of the Sunshine Coast, Centre for Bioinnovation and School of Science, Technology and Engineering
Research Capability	I have greater than 20 years' experience working in the field of bacterial infectious disease. I have led or contributed to projects in the area of vaccine development, diagnostics and molecular epidemiology, and understanding molecular mechanisms of bacterial pathogenesis. My research has been funded through both government and Industry partnerships. At UniSC we are developing an antimicrobial and anti-virulence discovery pipeline with a focus on discovery of molecules that inhibit virulence properties of bacteria, including biofilm formation and motility.
MBCRC Relevance	<ul style="list-style-type: none"> novel anti-virulence marine bioproducts, effective against antimicrobial resistant clinical pathogens, and marine pathogens

Name	Lachlan Dennis
Position	Research Fellow
Organisation	University of the Sunshine Coast, Centre for Bioinnovation
Research Capability	My skills are based upon using innovative scientific approaches to address questions concerning reproductive biology of fishes. I undertook my PhD on using biotechnology to enhance aquaculture of giant grouper and am currently using molecular approaches to develop a breeding plan for mulloway for genetic management and restocking. My particular focus is applied science and using laboratory techniques in 'real-world' settings. I have used a variety of advanced biological techniques to support these objectives and am comfortable developing new biological methods and assays when required. I have also utilised standard fisheries sampling techniques, and bioeconomic approaches to answer scientific questions. I have a strong background of collaboration with industry and end-user groups, having collaborated with external stake holders in private industry, government, and international organisations. I have helped mentor international students from Italy, The Philippines, New Zealand, and Japan.
MBCRC Relevance	<ul style="list-style-type: none"> protein production and quantification, administration of recombinant hormones and physiological techniques to assess reproduction in teleosts including cannulation and biopsy of gonads, sectioning combined with hematoxylin and eosin staining, egg development and sperm motility assessment. molecular approaches such as DNA amplification and synthesis, oligonucleotide primer design and trial, DNA extraction and purification, expression of plasmids, restriction enzyme use, RNA extraction and sequencing and genome and transcriptome sequence analysis. standard fisheries sampling techniques, examine fish age and growth through histological and otolith examination, relate abiotic environmental conditions with fish spawning, infer recruitment through larval survival and perform controlled laboratory experiments to stimulate spawning.

Name	Mai Saowaros Suwansa-ard
Position	Research scientist
Organisation	University of the Sunshine Coast, Centre for Bioinnovation
Research Capability	<p>I am a research scientist specialising in molecular biology and reproductive biology of invertebrates, particularly in aquaculture species such as oysters (Sydney rock oysters, pearl oysters), sea cucumbers, and prawns. I am a member of the Aquaculture Biotechnology theme within the Centre of Bioinnovation. My research focuses on gene and protein products of animals that are involved in their reproductive biology and/or other important aspects (e.g., behaviours, growth, infection etc.) and the development of biotechnology tools for enhancing aquaculture techniques. Below is a summary of my research expertise and skills:</p> <ul style="list-style-type: none"> – Reproductive biology in invertebrates (particularly aquaculture species such as oysters, sea cucumbers, and prawns) – Innovation of biotechnology for aquaculture – Genomics, transcriptomics, and proteomics – Quantitative gene analysis (i.e., real-time PCR) – Immunohistochemistry/immunofluorescence study – Histology (tissue preparation, H&E stain, and structural biology analysis) – Isolation of DNA/RNA/peptides/proteins from biological samples – Animal handling and <i>in vivo</i> bioassay (oysters, prawns, sea cucumbers, seastars) – Animal rearing in an aquaculture facility (oysters, prawns, sea cucumbers, seastars)
MBCRC Relevance	<ul style="list-style-type: none"> • molecular/biological aspects of aquaculture species, to enhance techniques, disease management, and market value • isolate and investigate gene/protein bioproducts from invertebrates of interest in aquaculture and/or other fields

Name	Tianfang Wang
Position	Senior Lecturer
Organisation	University of the Sunshine Coast, Centre for Bioinnovation
Research Capability	<p>My research focus centres on the discovery of bioactive proteins and peptides derived from natural sources, with a primary emphasis on applications in the medical field. My expertise lies in various analytical chemistry techniques, particularly the utilisation of mass spectrometry for the structural analysis of proteins and peptides. My research heavily relies on the cutting-edge spectroscopy and spectrometry capabilities available at the Advanced Instrument Facility of UniSC, which I have been overseeing for several years. This facility boasts state-of-the-art equipment, including QTof MS/MS, HPLCs, GCMS, TripleQ MS/MS, and NMR instruments. Notably, UniSC recently acquired a groundbreaking 2D-LC-TOF mass spectrometer, the first of its kind in Australia, significantly enhancing my analytical capabilities. These advanced instruments are crucial for the analysis of bioactive and nutritional molecules sourced from marine organisms. Furthermore, I have established collaborative partnerships through multiple ARC LIEF grants, which provide me with access to additional advanced mass spectrometers at institutions such as the Institute for Molecular Bioscience (IMB) and the Pharmacy Australia Centre of Excellence (PACE). These collaborations enable me to conduct world-leading research in the analysis of bioactive and biofunctional peptides. In addition to my expertise in mass spectrometry, I am proficient in bioinformatics analysis and computational chemistry. These skills are invaluable for various tasks, including structural analysis, annotations, enrichment analysis, and integrated analysis. I also have access to three world-class advanced-computing facilities, including Gadi at NCI, and Flashlite and Awoonga at QCIF, which further support my research endeavours.</p>
MBCRC Relevance	<ul style="list-style-type: none"> • identify and quantify bioactive and biofunctional marine peptides and proteins • <i>in vitro</i> and <i>in vivo</i> assays to characterise the activities of marine peptides and proteins • methods to stabilise bioactive marine peptides and proteins to meet industry requirements

Name	Tomer Ventura
Position	A/Prof
Organisation	University of the Sunshine Coast, Centre for BioInnovation
Research Capability	<p>My key focus is decapod crustacean (crabs, lobsters, prawns) development. I apply state of the art technology (advanced molecular techniques, multi-omics, behavioural assays, AI-enabled ML, gene silencing and editing) to decipher key industry bottlenecks associated with decapod crustacean aquaculture including the development of the all-male technology in freshwater prawns, genetics of lobsters, crabs and crayfishes. Our team induced sex change, moult and reduced aggressive behaviour in assorted decapod species. We work with key industry partners to address bottlenecks in production using molecular approaches.</p>
MBCRC Relevance	<ul style="list-style-type: none"> • chemical analysis of marine bioproducts • genetic diagnostics for key traits of interest

Name	Trong Tran
Position	Senior Lecturer
Organisation	University of the Sunshine Coast, School of Science, Technology and Engineering
Research Capability	<p>My research expertise is a combination of natural product chemistry, medicinal chemistry and analytical chemistry. At the University of the Sunshine Coast (UniSC), I am leading a research group with a focus on the discovery and analysis of bioactive compounds from natural sources via compound isolation, structure elucidation, chemical synthesis and chemical analysis. More recently, targeted and non-targeted fatty acid, lipidomic and metabolomic studies using mass spectroscopy have been established in my group. I am also a manager of the Advanced Instrumentation Facility at UniSC with an access to state-of-the-art chromatography and mass spectrometers including GC-MS (Headspace and SPME), DAD-uHPLC/QQQ-MS, one- and two-dimensional DAD-uHPLC/QTOF-MS, and nuclear magnetic resonance spectrometer.</p>
MBCRC Relevance	<ul style="list-style-type: none">• discovery and analysis of marine bioproducts with nutritional and/or medicinal properties



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Name	Brett Paull
Position	Professor in Analytical Chemistry, Director of the ARC Training Centre for Hyphenated Analytical Separation Technologies
Organisation	University of Tasmania, Australian Centre for Research on Separation Science (ACROSS)
Research Capability	I have ~ 30 years post-PhD experience as an analytical chemist and separation scientist. My research has always found itself at the interface of materials science and analytical chemistry, focusing on the advancement of functional materials and their novel applications in extraction, isolation, separation and concentration of target analytes. My research group has been based within the Australian Centre for Research on Separation Science at UTAS, an internationally recognised centre of excellence for the advancement of the separation sciences, both fundamental and applied, and home to state of the art analytical (chromatography and mass spectrometry) facilities, second to none within Australia. Our applied analytical projects cover natural product analysis, environmental monitoring, industrial processing, biomedical analysis and forensic sciences. Our research covers analytical scale separations to large scale extraction projects, modelling and optimisation. We have an extensive track record of industry collaboration, with ~ 70% of all activity over the past decade being co-funded collaborative projects.
MBCRC Relevance	<ul style="list-style-type: none"> • extraction, purification, separation, analysis and characterisation of marine bioproducts • data modelling, development of process analytical technology and optimisation of production of marine bioproducts

Name	Camille White
Position	Research Fellow
Organisation	University of Tasmania, Institute for Marine & Antarctic Studies
Research Capability	I have over 15 years research experience in coastal marine ecology, with extensive knowledge in the field of aquaculture environment interactions across a range of cultivated species and environments. I am a Team Leader within the Aquaculture Environment program at IMAS with key research around nutrient utilisation in the marine environment, taxonomic assessment of algal and invertebrate assemblages (including biofouling) and physiochemical evaluation of the marine environment. I have experience in interpretation and analysis of biochemical data, most notably fatty acids and lipidomics, amino acids, stable isotopes and elemental composition of marine plants and animals. I am proficient in the use of a variety of instrumentation for measuring environmental parameters and undertake research using a range of methods, including visual census of marine life and physical environmental sampling, with access to resources for diving, ROV and implementation of camera systems. I am experienced at developing methodologies for assessing marine environments, using both traditional and cutting-edge techniques such as machine learning and molecular analysis. I have led and managed a range of projects involving academic, government and industry partners, and develop research projects that align with the research needs of government and industry. I understand governance frameworks for marine aquaculture industries and provide advice to government for the development of sustainable marine industries.
MBCRC Relevance	<ul style="list-style-type: none"> • assessing suitability of marine plants, invertebrates and biofouling organisms as a source of aquaculture marine bioproducts • optimising environmental performance and sustainability of marine bioproduct culture systems • monitoring the environment, culture systems and associated biota (including machine learning and molecular techniques)

Name	Catriona Macleod
Position	Professor
Organisation	University of Tasmania, Institute for Marine & Antarctic Studies
Research Capability	Environmental Risk / Impact Assessment, Risk Relevant Environmental Monitoring, Social Licence, Sustainability (Sustainable Aquaculture Development), Ecosystem Interactions and Alignment with Ecosystem Services, Benthic Ecology, Invertebrate Taxonomy, Marine Resource Management & Governance, Industry and Community Engagement, Issues Management &, Conflict Resolution, Science Extension and Communication, Integrated Multi-trophic Aquaculture/ Ecological Aquaculture, Aquaculture in the Circular Economy, Marine Spatial Planning
MBCRC Relevance	<ul style="list-style-type: none"> • aquaculture operations and mapping risk appropriate governance and engagement strategies • understanding biodiversity, ecosystem interactions and optimising sustainable development, including supporting regulation and management decisions • indigenous development opportunities to improve engagement, communication and knowledge equity • risk relevant management and governance strategies to help fast-track climate change mitigation opportunities • improved and more sustainable food production practices • improved understanding of carbon interactions in marine systems to support carbon offsets and promote carbon management initiatives with validated, evidence based metrics/ information

Name	Christopher Bolch
Position	Associate Professor, Phycology and Molecular Ecology
Organisation	University of Tasmania, Institute for Marine and Antarctic Studies.
Research Capability	I am a microalgal molecular biologist with >30 years research experience working with microalgae. I have particular expertise in isolation, culture, characterisation, optimised biomass production of microalgae (incl. blue-greens), toxic and bioactive algae, and functional genomics of algal-bacterial interactions and microbiomes. As a research/teaching balanced staff at IMAS in Hobart, I currently lead teaching in molecular ecology/biology, and have over 20 yrs experience of teaching algal ecology/biology, culture methods, physiology and diversity. I currently coordinate a small team of molecular biology/ecology researchers and PhD students using DNA/RNA to examine marine algal and microbe diversity over short- and long-timescales. I have led and managed a wide range of seafood and marine industry partner projects, as well as FRDC and ARC-funded projects focussed on marine and freshwater algae, biotoxins, and marine aquaculture health/disease and seafood safety. My analytical and technical skillset includes microbial/algal isolation and culture, algal physiology and production techniques, phylogenetics and molecular systematics, a wide range of PCR-based molecular methods, DNA/RNA microbial profiling, and gene-functional analysis and comparative genomics.
MBCRC Relevance	<ul style="list-style-type: none"> • new sources/strains of microalgae as a source of marine bioproducts • algal/microbial strains with clear and demonstrated provenance & ownership • physiological studies, modification and manipulation to optimise bioactive and/or biomass production • molecular characterisation of strains for identity/provenance, and product biosynthesis pathways • problem solving the transition from lab to pilot to production scale

Name	Fernando Maya Alejandro
Position	Senior Lecturer in Analytical Chemistry.
Organisation	University of Tasmania
Research Capability	I have >15 years research experience in the field of analytical chemistry, working on the development of novel analytical methods, materials, and devices for environmental pollutant analysis. I am one of the academic members of the Australian Centre for Research on Separation Science (ACROSS), with access to state-of-the-art instrumentation in analytical separation techniques. I have participated in a number of research projects ranging from fundamental research to applied research projects engaging with industry partners. My current research interests are directed towards the development of novel materials capable to trap microplastics, nanoplastics, as well as other plastic waste pollutants, for both analytical and environmental remediation applications. My research skills involve analytical sample preparation methods, chromatographic techniques, as well as general materials characterization techniques.
MBCRC Relevance	<ul style="list-style-type: none"> • characterization of marine bioproducts during bioprocessing • processing to upscale waste to marine bioproducts.

Name	Harriet Walker
Position	Research Fellow
Organisation	University of Tasmania, Tasmanian Institute of Agriculture
Research Capability	I am an early-career researcher in the field of agricultural science with a focus/interest on sustainable practices. My research experience has been largely in perennial and annual horticultural systems, exploring how agricultural amendments (soil conditioners, fertilisers) impact plant nutrition and productivity. This included working with isotopic tracers, and commercial and research-grade sensors. More recently, I was the ECR lead on a three-year project exploring the potential of utilising sea urchin waste as an agricultural amendment. This involved working with local industry to formulate a product, which was then tested in both pot and field trials on a variety of crops in different settings.
MBCRC Relevance	<ul style="list-style-type: none"> • linking blue and green economies with a food production/agricultural focus • utilisation of marine waste for agriculture

Name	Jason Smith
Position	Professor, Head of Chemistry
Organisation	University of Tasmania, School of Natural Sciences- Chemistry
Research Capability	I have 30 year's experience as an organic chemist and I have extensive knowledge in the areas of biosynthesis, isolation and structural characterisation, drug metabolism and drug design. I have developed methods for the isolation of natural products using Pressurised Hot Water Extraction (PHWE) for the rapid isolation of metabolites. This method has been used as discovery technique as well as semi-preparative to isolate multi-gram quantities for biological evaluation and chemical modification for drug discovery programs. I also have experience in the determination of chemical structures using spectroscopic methods. I also have experience in chemical evaluation biomass streams for potential product development. I also have experience in drug discovery in chemical modification of naturally occurring chemical structures to develop potential therapeutics.
MBCRC Relevance	<ul style="list-style-type: none"> • isolation and identification of marine metabolites • chemical modification of marine metabolites and biopolymers

Name	Jeff Wright
Position	A/Prof
Organisation	University of Tasmania, Institute for Marine and Antarctic Studies (IMAS)
Research Capability	I have > 25 years research experience in seaweed biology and ecology focussed on their reproduction, demography, natural product chemistry and their role as habitat. A major recent research focus has been on applied aspects of seaweed biology to support the sustainable production of seaweed for bio-products and restoration. Seaweed aquaculture requires managing the life-cycle of species and my team research the reproduction and development of early life-cycle stages (hatchery) and the optimisation of growth and bio-products (grow-out) of cultivated seaweed. I work on a diverse range of seaweed species that occur in southern Australia across all three groups (red, green and brown macroalgae). At the Institute for Marine and Antarctic Studies we have state-of-the-art hatchery facilities and a research lease in south-eastern Tasmania for grow-out of hatchery-reared strains. There is technical expertise for both lab and field components of the research. I currently lead projects that include academic, industry and government stakeholders and am experienced in collaborating with these different groups to meet their diverse needs. I have established collaborations with natural product chemists and have working knowledge of techniques to extract, identify and quantify natural products from seaweed. I also collaborate with geneticists to facilitate the identification of high-performing genetic strains for use in cultivation.
MBCRC Relevance	<ul style="list-style-type: none"> • bringing new seaweed species into cultivation (hatchery and at-sea) • optimising cultivation methods for existing aquaculture species • understanding natural patterns of variation in key seaweed bioactives • selecting high-performing marine seaweed strains for cultivation

Name	Michael Breadmore
Position	Professor
Organisation	University of Tasmania, ACROSS, Chemistry, School of Natural Science
Research Capability	I am an analytical chemist with a focus on the development of portable analytical technology for at-site measurement of chemicals and biochemicals. This includes autonomous 'set and forget' systems for periodic measurement of natural and industrial waters, as well as technology for rapid at-site measurement for rapid decision making. I have over 20 years of research experience in this area, with 5 commercial products making it to market based off my research. I also have expertise in microfluidics, which exploits fundamental microscale fluid processes to achieve complex chemical and biochemical outcomes. This platform is used globally for cell culture and 'organ on chip' research, and may have value for the refining, making and testing of bioproducts. It has also found value in creating controlled emulsions, and for high-throughput screening in single nL sized droplets.
MBCRC Relevance	<ul style="list-style-type: none"> • long-term monitoring of production and environmental discharge • rapid at-site chemical and biochemical information for timely and informed decision making • microfluidic technology for refining, manufacturing and testing of marine bioproducts

Name	Stuart Thickett
Position	Associate Professor in Chemistry and ARC Future Fellow
Organisation	University of Tasmania, School of Natural Sciences - Chemistry
Research Capability	I have > 15 years research experience in polymer and materials chemistry, specifically looking at structure-property relationships in polymeric materials to develop end-products with enhanced properties (e.g. thermal, mechanical, amongst others). I have led my own research group at UTAS since 2015 and previously worked at UNSW Chemical Engineering. I have supervised close to 30 HRD and Honours students in polymer and materials science. I am currently involved in a major cross-disciplinary project at UTAS looking at developing bio-based polymers from cellulose and lignin based starting materials, with an aim to replacing petroleum-based chemicals. This work is looking at utilising wood waste (e.g. sawdust) and developing high value-added products through simple chemical transformations, creating polymers from those compounds and evaluating their properties (such as tensile strength, degradation, thermal stability, optical clarity, amongst others). As an ARC Future Fellow I am also investigating new methods of making polymers from environmentally benign starting materials, to reduce and potentially eliminate volatile organic solvents. This work is specifically targeting the design of functional gels, adhesives, and 3D printing. I have worked extensively with industrial partners via the ARC linkage scheme and have a suite of modern polymer characterisation tools here in my lab in Hobart.
MBCRC Relevance	<ul style="list-style-type: none"> • polymeric/thermoplastic/thermoset marine bioproducts • polymer performance characterisation (mechanical, thermal or otherwise)

Name	Vanni Caruso
Position	Senior Lecturer in Pharmacology
Organisation	University of Tasmania, School of Pharmacy and Pharmacology
Research Capability	I am a pharmacologist and research group leader with 10+ years of international research experience (Italy, Sweden, Australia). My research focuses on drug discovery projects for the cure of obesity and diabetes. My research group is based in Hobart (Sandy Bay Campus and Medical Science Precinct) where I am currently supervising 5 PhD candidates. My investigations encompass a wide array of methodologies, such as proteomics, cytokine assays, gene expression analyses as well as animal behaviour studies.
MBCRC Relevance	<ul style="list-style-type: none"> • identification of new marine bioproducts for the treatment of obesity and diabetes

Name	Wouter Visch
Position	Researcher and lecturer in seaweed biology
Organisation	University of Tasmania, Institute of Marine and Antarctic Science (IMAS)
Research Capability	As a postdoctoral researcher with 10+ yrs experience in seaweed cultivation, my work optimises aquaculture productivity through environmental regulation, examining factors like light, temperature, nutrients, water motion, and managing competing/fouling organisms. I've previously worked on selective breeding and hatchery production of kelp. My recent focus is on plant growth regulators (hormones) and their impact on seaweed growth and development. I've applied analytical methods like cryopreservation, DNA extraction, and biochemical analysis, with expertise in gametophyte and sporophyte cultivation. Beyond the lab, I contribute to hatchery and out-grow phases in seaweed farms. Currently, I'm engaged in various seaweed related projects. For example, creating opportunities for Bull kelp (<i>Durvillaea</i>) aquaculture, developing production systems for offshore kelp (<i>Macrocystis</i>) mariculture, and a kelp restoration project.
MBCRC Relevance	<ul style="list-style-type: none"> • cultivation of seedstock, application onto cultivation ropes, and establishment of seaweed farms, both at-sea and tank-based • primarily focused on kelps but extending to green or red seaweeds, exploring the development of targeted breeding initiatives • managing growth in both at-sea and tank-based cultivation environments • impacts on the biochemical content and properties of harvested seaweed biomass • addressing questions on drying techniques, handling, and their effects on biochemical properties

Name	Peter Nichols
Position	Honorary Research Associate, IMAS
Organisation	University of Tasmania, Institute for Marine and Antarctic Studies, Honorary Research Fellow at the CSIRO Environment Business Unit in Hobart.
Research Capability	Peter leads new initiatives with signature lipid technology and environmental applications, and on marine oils, including with emphasis on the health-benefitting omega-3 oils. The research involves detailed characterization of fish-derived and novel microbial oils, process development for utilization of oils, development as part of a CSIRO team of novel land plant sources of long-chain omega-3 oils, and transfer and application of these know-how to industry and community. This research has led to better utilisation of national fisheries resources and wastes, and to new oilseed crops. Other innovations have been development and use of chemical (lipid) signatures in microbial ecology, environmental (e.g., fecal pollution) and food-chain studies, and new discoveries and applications in marine biotechnology. He has worked closely with Australian and overseas Universities actively co-supervising and mentoring over 30 PhD students to graduation, with a further 2 students presently underway. Peter is involved in international collaborations across the above research fields, including having sponsored sabbaticals and visits by overseas scholars.
MBCRC Relevance	<ul style="list-style-type: none"> • marine oils (wax ester, omega-3, shark liver oils, and other products)

Name	James Crane
Position	Senior Lecturer in Anatomy
Organisation	University of Tasmania, Tasmanian School of Medicine
Research Capability	For over 20 years, I have worked to understand how the brain responds to and recalls emotionally charged situations and stimuli. Through this time, I have employed behavioural models in rodents, electrophysiological recordings of neurons (in vitro and in vivo), and immunohistochemistry. However, I have a broad interest in all things related to brain function and disease that has led me to collaborate on projects related to the neurobiology of neurodegenerative disorders such as motor neuron disease and Huntington's disease. The Medical Sciences Precinct at University of Tasmania contains state of the art laboratory facilities. Here, I have access to behavioural equipment, electrophysiological equipment, small animal surgical suites, advanced microscopy equipment (e.g., two-photon confocal, STORM, transmission electron microscopy), a suite of tools for genetic and proteomic analysis, and a collection of genetically modified animal models.
MBCRC Relevance	<ul style="list-style-type: none"> • influence of marine bioproducts (e.g. fucoidans) on anxiety-like behaviour, and the development/extinction of fear memories • evaluation of marine bioproducts for the treatment of neurodegenerative disorders • evaluation of marine bioproducts for the treatment of endometriosis

UTS



Name	Mathieu Pernice
Position	Associate professor
Organisation	University of Technology Sydney
Research Capability	<p>I am the co-leader of the Algal Biosystems and Biotechnology team, with strong expertise in molecular physiology and algae biotechnology. Our team sits within the Climate Change Cluster at UTS with access to world class facilities, including the Algal Phenomics Facility: Australia's and the world's first Phenomics facility designed for high throughput screening of algal strains, mutants and transformants in a dynamic environment; and Advanced Algal Cultivation Facilities: Walk-in incubators for the cultivation of microalgae under specific conditions, with temperature and light control, along with facilities for large-scale algae production to bridge the gap between lab and industrial scale. Over the last 3 years, I have led R&D program at UTS with industry partner v2food to develop RepliHue™, a new patented technology, using the natural red colour found in microalgae to deliver a natural, sustainable, and scalable solution for plant-based meat market. RepliHue™ cooks, looks and tastes just like animal meat but has been derived from natural ingredients such as algae and plants. RepliHue™ is part of the v2food new cutting-edge protein-based meat 2.0 which has recently won the InnovationAus 2023 Award for Excellence in the Food and Agritech category and will enter the market in Australia by mid 2024.</p> <p>As lead scientist for the R&D program at UTS, my key responsibilities and activities have included as co-Inventor of biotechnology for a novel, non-GM algal-derived pigment that can change colour when it is cooked in the same way and at the same time as meat, supporting regulatory application submission for novel food approval by FSANZ, informing selection of prototype and algae ingredient format for commercial use, and optimization of cultivation performance with v2food and equipment vendor to be applied for industrial scale-up.</p>
MBCRC Relevance	<ul style="list-style-type: none"> • aquaculture feed, food and biotechnology sectors

Name	Unnikrishnan Kuzhiumparambil
Position	Senior Lecturer
Organisation	University of Technology, Sydney Climate Change Cluster
Research Capability	<p>I am a bioanalytical chemist with more than 15 years' experience in academia and industry. I have expertise in isolation and characterisation of molecules from marine and natural product sources using chromatography and spectroscopy techniques. I possess proficiency in metabolomics and have actively contributed to multiple marine biology projects, playing a role in the creation of omics pipelines. My expertise also extends to algae biomaterials research, where I have been involved in the development of various prototypes, including algae-based bioplastics, fibres, building materials and platform molecules.</p>
MBCRC Relevance	<ul style="list-style-type: none"> • identify and characterise bioactives in marine bioproducts • quantitative and qualitative analysis of molecules of interest, elemental analysis, measurement of other physical properties such as surface morphology, thermal and rheological properties of products from algae-based lipids, carbs and proteins • sustainable high value marine bioproducts (e.g. bioplastics, fibres, building materials) from algae and other sources