

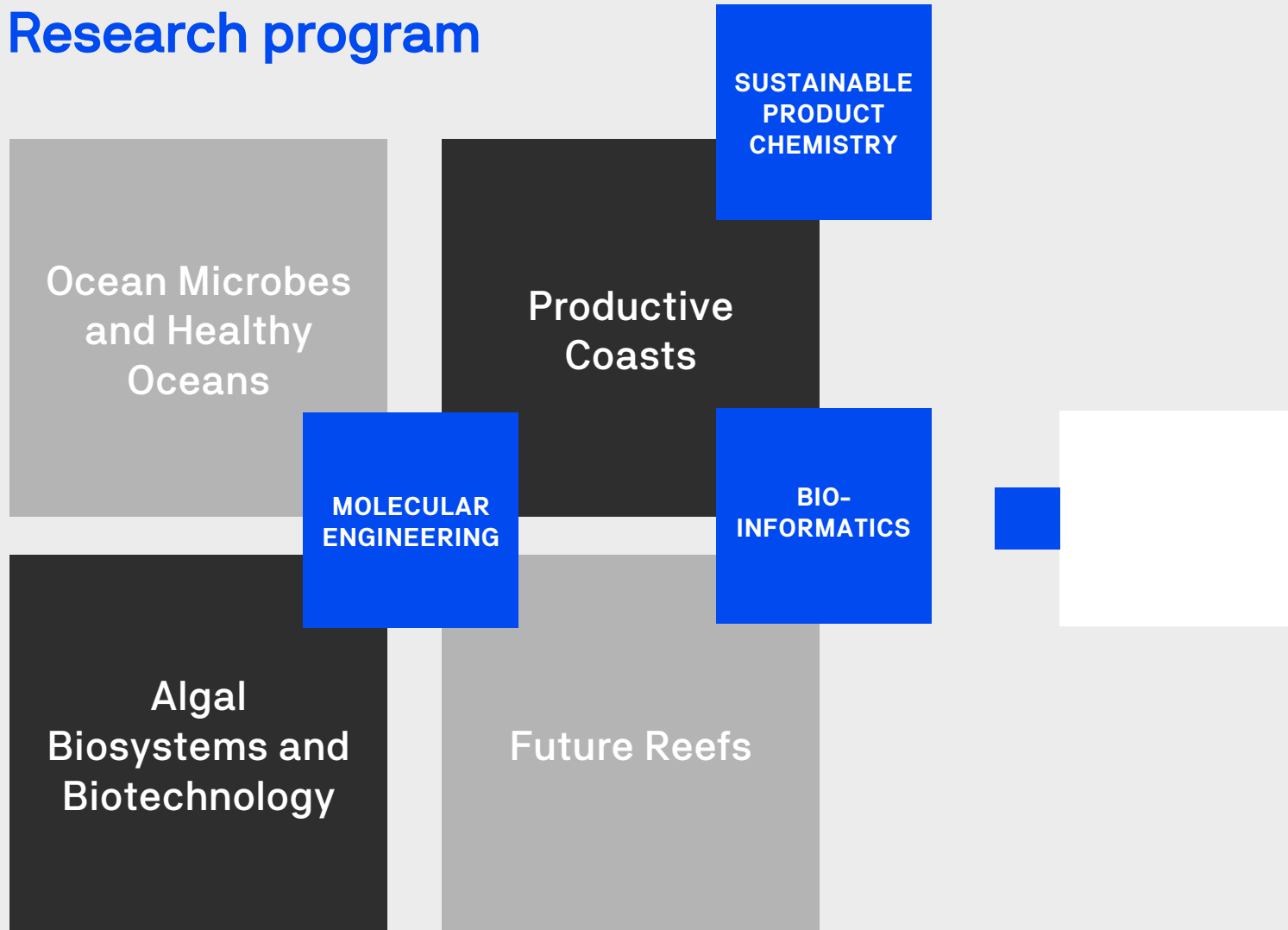


Faculty of Science

# Climate Change Cluster

[c3.uts.edu.au](http://c3.uts.edu.au)

# Research program



## PARTNER WITH US

At C3, our future focus ensures we're continually striving to use our research capability to meet the needs of society, business, governments and industry. We build mutually beneficial relationships to produce real results with quantifiable impact.

We can work with you on short-term projects to solve specific problems or on a long-term basis to develop programs that meet a broader corporate social responsibility objective.

## WORK WITH US

Visit us at [c3.uts.edu.au](https://c3.uts.edu.au) for PhD and Honours projects and available employment opportunities.



## Our vision

**To be globally recognised for transforming society through scientific discovery, by providing meaningful strategies for climate adaptation through a deeper understanding of the impacts of climate change on ecosystems, and mitigation via innovations to Australia's bioeconomy.**

The world is facing unprecedented change. Global challenges, such as climate change and urban growth, affect human health and require both collaborative and sustainable solutions.

At the UTS Climate Change Cluster (C3), we provide a deeper understanding of the world's aquatic plant and microbe ecosystems that are critical to the wellbeing of the global communities that rely on them, producing new insights which address the challenges of human and ecological interactions with climate.

Our dynamic and vibrant culture creates meaningful and high-impact research that transforms society through scientific discovery and innovation.

## Our approach

C3 operates within a UTS-wide culture of research excellence and we are driven by a readiness to work collegially and collaboratively with others nationally and internationally ensuring our outputs have global reach and impact.

By transforming traditional thinking and approaches, C3 aims to address some of the biggest environmental and societal issues the world faces in a changing climate, including food and energy security, sustainability and ecological resilience, and global health. We work directly with industry, government and other organisations to translate our research and create real-world impact providing transformative solutions that improve the planet and the climate.

C3 Research Programs benefit from the technical expertise of our integrators. By bringing together in-house experts from different fields, including green chemistry, biophysicists, bioinformaticians and bioengineers, we tackle issues from all fronts, ensuring our research outputs are informed by a holistic approach.

## Our Challenge

Global climate change has become an existential threat to societies worldwide. Our research in climate adaptation and mitigation continues to attract international attention and deliver significant impact. COP26 (Glasgow 2021) established the urgency with which our research needs to be delivered, placing the UTS Faculty of Science and C3 in a central position.

Sustainability is one of the UTS's values under the *UTS 2027 strategy*; both economically and ecologically. UTS's Sustainability Policy affirms the principles of the United Nations Sustainable Development Goals (SDG), which provide 'the blueprint to achieve a better and more sustainable future for all'. UTS is a signatory to the:

- UN's Sustainable Development Goals
- United Nations Global Impact
- Climate Emergency Declaration and
- Race to Zero.



# Case studies



## Coral Nurture Program

The Coral Nurture Program is a new approach for the Great Barrier Reef (GBR) that is initiated by a partnership between tourism and science. Our unique approach is not about “Reef Restoration” per se, but long-term stewardship and adaptation at economically valuable GBR locations; increasing available management tools beyond existing options to include planting corals. This doesn’t just involve out-planting corals in order to boost live coral cover at reefs that have experienced a fall in cover, but also helps ensure reef sites with existing high coral cover that are economically valuable stay healthy.

This program was funded through the Australian and Queensland Government ‘Boosting Coral Abundance Challenge’ and subsequently via the partnership between the Australian Government’s Reef Trust and the Great Barrier Reef Foundation.

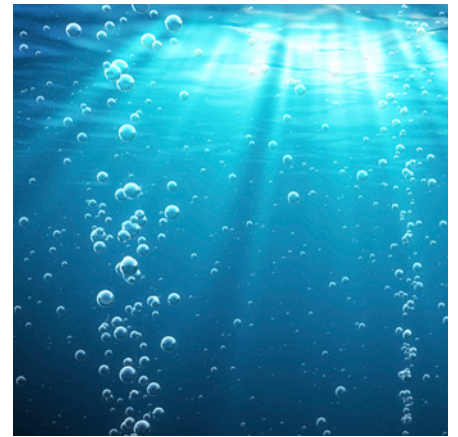
## Management of recreational water quality

A new research collaboration has used sophisticated DNA marker approaches to determine the primary cause of poor water quality at beaches. And guess what? It’s us.

This research collaboration involves the Ocean Microbiology Group, in the Climate Change Cluster, along with the NSW Department of Planning, Industry and Environment (DPIE), Beachwatch and Central Coast Council, and has identified sewage as the primary cause of poor water quality.

Ocean Microbiology Group leader Professor Justin Seymour, his PhD student Nathan Williams and post-doctoral research associate Dr Nahshon Siboni used sophisticated DNA marker approaches to analyse samples of stormwater and seawater for human, bird and dog faeces.

The team found that even in dry weather, several stormwater drains at Rose Bay were contaminated by human faecal matter, or sewage.



## Ecological Impacts of Wastewater Discharges in Marine Environments

Professor Martina Doblin from C3 leads a project within the National Environmental Science Program’s (NESP) Marine & Coastal Hub, focussed on identifying the ecological impacts of wastewater discharges in marine environments. The NESP Marine and Coastal Hub is one of four hubs funded by the National Environmental Science Program, and contributes research that provides information to support decision making about Australia’s coastal and marine ecosystems. This project, conducted in collaboration with the NSW Department of Planning and Environment, the University of Tasmania, University of Adelaide, the University of New South Wales, the Sydney Institute of Marine Science, and the Clean Ocean Foundation, aims to determine the concentration of emerging pollutants in different wastewater outfall settings, and assess where environmental impacts are greatest. Australia’s Waste Policy Action Plan, Threat Abatement Plan for the impacts of marine debris and Australia’s One Health Master Action Plan all refer to the need for emerging pollutants to be incorporated into contaminant guidelines.



Great Barrier Reef Foundation



Planning, Industry & Environment



## Piping Hot

Piping Hot is an iconic Australian surf brand with a mission to protect our oceans. Plastics and fibres continue to pollute and degrade our oceans. Piping Hot Australia has commissioned C3 to develop an innovative biomaterial derived from seaweed. C3 scientists will build a prototype fibre developed in response to Piping Hot's ambition to protect oceans for future generations. The bio-based solution will sequester carbon from the ocean and reduce the environmental impact of synthetic fibres.

This Australian innovation could transform the global polyester industry.

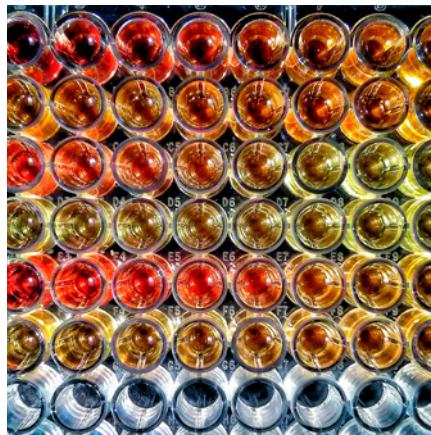
As part of Piping Hot's mission to defend the oceans, our purpose-led investment into marine biotechnology and material science is of vital importance. "Together with UTS we intend to influence and impact change through marine science and transform the industry's reliance on fossil fuels," said Stan Wan, CEO and Managing Director of Piping Hot Australia.



## Phenomics Facility

A world-first algae phenomics facility designed to meet the needs of the emerging algae-based biotechnology sector. C3 researchers will use this specialist training and research space to help meet the needs of industry and fast-track the discovery and commercialization of algae-based bio-products, as well as overcome current production hurdles.

The facility includes state-of-the-art instrumentation/platforms including a phenotyping robot, ToF Mass Spectrometry and Raman Spectrometry, Flow Cytometry, PSI PBRs (photo bioreactors), PSI Fluorcam (open & closed), and a culture room to maintain our growing bioprospected collection of novel algal strains.



## v2food

v2food is a plant-based protein company with a mission to create a food system 2.0.

Knowing that if we continue to consume meat at the rates we are, we'd need another whole earth full of resources to sustain us, v2's focus is on creating sustainable food options to reduce our reliance on meat.

Working with C3, v2 are looking to continue their product development using microalgae at a commercial scale for use as a colouring ingredient in their products.

This novel technology will allow for a unique and natural additive that replicates the natural colour of animal meat. C3 and V2's partnership is based on a research program.

This ongoing partnership will bring together C3, CSIRO and v2 and lead to greater Australian algae industry development.



## Contact

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[@uts\\_c3](https://twitter.com/uts_c3)  
[@UTS\\_Science](https://twitter.com/UTS_Science)

## Postgraduate Research

At UTS Science, research is part of our culture. As a research student, you'll be an integral part of a team working at the frontiers of knowledge to support society.

Our close collaborations with industry and government research organisations means you'll be in high demand from future employers.

### How to apply

To find out more about the application process visit [uts.edu.au/research-applications](http://uts.edu.au/research-applications) or email: [grs@uts.edu.au](mailto:grs@uts.edu.au)

International students should head to [uts.edu.au/international](http://uts.edu.au/international) for further details relevant to you.

### Scholarships

UTS offers a range of competitive research scholarships and funding schemes for both domestic and international applicants.

More information at [uts.edu.au/research-and-teaching/research-degrees](http://uts.edu.au/research-and-teaching/research-degrees)

### UTS Science Research Strengths and Centres

The Climate Change Cluster  
[c3.uts.edu.au](http://c3.uts.edu.au)

Australian Institute for Microbiology & Infection (AIMI)  
[aimi.uts.edu.au](http://aimi.uts.edu.au)

Institute for Biomedical Materials and Devices  
[ibmd.uts.edu.au](http://ibmd.uts.edu.au)

Centre for Forensic Science  
[forensics.uts.edu.au](http://forensics.uts.edu.au)

Centre for Clean Energy Technology  
[cleanenergy.uts.edu.au](http://cleanenergy.uts.edu.au)

The Kidman Centre UTS  
[uts.edu.au/research/kidman-centre](http://uts.edu.au/research/kidman-centre)

Centre for Health Technologies  
[cht.uts.edu.au](http://cht.uts.edu.au)