

Queensland, Australia + Germany

Collaborating on science



Australia is known for its diverse environment, modern infrastructure, and multicultural society. Our people come from every nation. Our workforce is highly educated, digitally literate and recognised for its innovation and early adoption of new technology.

We are also world leaders in science.

Queensland offers a globally unique proposition

Queensland is a global research and innovation hub in the Asia Pacific with significant investment in infrastructure, and a great track record for attracting talent and collaboration partners. Our natural environment, geographic size, regional location in the Asia Pacific, and multicultural society offer a multiple advantages for international collaborators, which are unique to our state.

Established connections

Queensland is currently home to more than 500 German researchers and academics who continue the long-standing connection between our two territories, helping to shape our cultural and research landscape.

Importantly, visiting students and post-doctoral research fellows feel their career aspirations are understood and supported by academics with strong ongoing connections to Germany. Our higher education institution exchanges and partnerships, such as with Fraunhofer and the German Space Agency result in thoughtful and important research collaborations and investments.

Queensland continues to forge strong links at both government and institutional levels. Our agreements—such as the *Berlin–Queensland Alliance* (2019) signed with the then President of the German Bundesrat and Governing Mayor of Berlin; and the *Joint Declaration of Intent for Cooperation in Bioeconomy* (2022) between Queensland and the German Federal Ministry for Education and Research—pave the way for experts from Queensland and Germany to collaborate in research and development. Together we are working on a process to inform the future of health care, medical science, innovation, digital technology, energy and training and bioeconomy related research .

Our connections extend even further—companies such as Siemens, BMW, Strabag Construction and Rheinmetall are partnering with our universities, or setting up operations in Queensland. Due to Queensland’s unique advantages, Rheinmetall has made a sizable investment in the state, establishing both its Australia–New Zealand headquarters and a Military Vehicle Centre of Excellence here.



Great reasons to connect

Geographic advantages

- Easy access to south-east Asian markets and collaboration opportunities, while being based in a country with systems and IP protections similar to Europe.
- A range of climate zones and environmental conditions—wet and dry tropics, subtropics and arid, coastal and marine—makes it easy to grow and test products under various conditions.
- Opposite time zones to Europe provide accelerated research with 24-hour turnarounds.
- Abundant sunshine enabling year-round agricultural and solar energy production
- Wide open space—land, sky and sea—vast distances and varied terrains for testing space-demanding research into vehicles and autonomous technology.

Demographic advantages

- Highly educated and digitally confident society reflected in our local workforce including researchers.
- Digitally advanced systems and infrastructure enables designing and testing new ideas.
- Multicultural society making it easy to test for diverse perspectives and feedback.



**Queensland
Government**
Australia

Queensland–German collaborations

The Queensland Government supports higher learning, and has a history of investing in research, development and innovation. Our research programs are making a difference throughout the world, particularly in the fields of medical and health sciences; environmental sustainability; food and agriculture; advanced engineering; and defence/aerospace.

With more than 500 German academics and researchers, plus leading German companies like Seimans conducting advanced manufacturing in Queensland and Rheinmetall and Strabag with regional headquarters here, the opportunities to collaborate and make a difference to our communities and globally, just keep on increasing.

For further information: www.qld.gov.au/Science-with-Germany

Health

Improving access to services

Queensland's geographic size is a challenge for providing universal health care. Developed over the past decade, our telehealth initiatives are making it easier for people living in regional and remote communities to access health services.

The Queensland Department of Health has been pioneering the use of digital communication systems. Patients gain convenient access to the best health specialists without the need to travel prohibitive distances.

Queensland and Berlin experts in healthcare, medical science and innovation are working together to advance healthcare systems and innovations.

Diagnostic imaging

Most of the MRI scanners in the world use magnetic resonance technology research by Queensland Centre for Advanced Imaging. The Translational Research Institute (TRI) collaboration with the Siemens Healthineers enables researchers and clinicians to use advanced medical imaging without invasive testing.

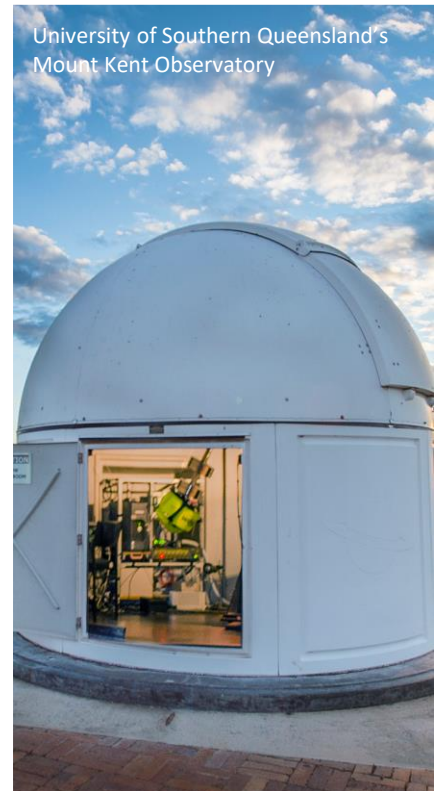
Developing solutions for antibiotic resistant drugs

The Fraunhofer International Consortium for Anti-Infective Research (iCAIR®) is a partnership founded by Fraunhofer Institute for Toxicology and Experimental Medicine (ITEM), the Hannover Medical School, and Queensland's Institute for Glycomics at Griffith University.

Designed to discover new treatments to combat respiratory illnesses caused by viruses including SARS-CoV-2, bacteria and fungi, the approach is to develop new anti-infective therapies to preclinical proof of concept stage.

Aerospace/defence

From hypersonics to astrophysics, the University of Southern Queensland (UniSQ) is recognised as an Australian Trailblazer to accelerate growth in space manufacturing.



Safety in space partnership with the German Space Agency

The UniSQ's Mt Kent Observatory hosts the Australian space debris optical tracking station of the DLR German Aerospace Center SMARTnet (Small Aperture Robotic Telescope network) program.

More than 500,000 pieces of debris are tracked as they orbit the Earth. Travelling at speeds up to 28,000 kilometres per hour, they pose a significant risk to satellites and spacecraft.

The southern hemisphere location offers advantage for northern winter testing and round-the-clock observations. UniSQ will be working with DLR's Space Operations and Astronaut Training on the project until at least 2029.

Queensland–German research collaborations delivering excellence

Our collaborations have more than doubled in the past decade. The data shows that the resulting joint publications have **4.6** times higher impact than the global average.

Preparing for the future

Queensland science is making a difference because of our unique combination of location, people, modern infrastructure and capabilities, making it the perfect place to research, design and test new ideas and products.

We are a western multicultural society within the Asia–Pacific offering research excellence for problems facing our own region and beyond, together with strong governance and IP protection.

German research priorities and needs can be matched with Queensland research proficiencies and capabilities.

Below are just a few examples of how Queensland research institutions are working to address current and emerging research priorities of interest to both our lands.

Bioeconomy

The *Joint Declaration of Intent for Cooperation in Bioeconomy* (2022) between the Queensland and German governments reflects our shared understanding that bioeconomy research will offer solutions to the most urgent societal challenges such as food security, climate change, reusing waste and the protection of natural resources.

Developing biomass-based energy and products

Working with industry, Queensland University of Technology (QUT) researchers have established a unique research and development facility converting sugar cane and agricultural waste into high-value fuels, chemicals, animal feeds and other bioproducts.

The Mackay Renewable Biocommodities Pilot Plant is available for use by industry and research partners to develop and demonstrate a wide range of technologies including the next generation of industrial micro-organisms, at the pilot scale and is contributing to the Queensland Government's goal to support a leading bio-based economy.

The power of seaweed

The University of Sunshine Coast is domesticating new species of seaweed for nitrogen

sequestration (to improve waste water quality) and harnessing seaweed genes to mitigate methane emissions from livestock, as well as opportunities with energy, functional foods, and nutraceuticals

Agriculture and technology

Revolutionary alternative to chemical fungicides

Developed by the University of Queensland, the non-toxic and safe, high-tech BioClay™ spray is transforming crop protection with fungi. It uses degradable clay particles carrying double-stranded RNA which enters the plant and protects it from pests, such as the globally significant whitefly, without altering the plant's genome. BioClay™ is now being trialled with industry on farms around the country and is the foundational research of the Sustainable Crop Protection Hub.

Improving productivity with farm automation

The University of Southern Queensland has partnered with John Deere to successfully develop the next generation of precision agricultural technologies. The vision-based precision spray technology See & Spray™ is industry's first factory-installed targeted spray that reduces input costs and minimises environmental impacts and minimises environmental impact for farmers globally.

Queensland is an ideal research partner for Germany as it provides the same commitment to a rule-based economy and dedication to innovation, while offering a range of complementary assets and capabilities



Professor Dr Michael Rosemann, Director QUT Centre for Future Enterprise; Honorary Consul of the Federal Republic of Germany in Brisbane

Health

Natural assets

Our marine and terrestrial biodiversity offer exceptional opportunities to discover new and useful compounds.

Researchers at The University of Queensland have found that funnel-web spider venom could prevent further brain damage in stroke victims. The same venom can also prevent damage caused by a heart attack, and extend the life of donor hearts used for organ transplants.

Energy

At the cutting edge of the energy revolution

Large-scale iron flow batteries are the cutting edge of the energy revolution. Researchers at the QUT-operated National Battery Testing Centre are using their large-scale Iron Flow battery (largest outside of the USA) in collaboration with Energy Storage Industries–Asia Pacific and the Future Battery Industries Cooperative Research Centre, to understand how to best integrate the battery with Queensland's energy grid.

For more on these and other projects visit: www.qld.gov.au/Science-with-Germany

Working to create opportunities now to build knowledge intensive industries for the future

Industry 4.0 is well and truly here. Queensland continues to develop and attract talent in order to grow our research, development and commercialisation capabilities across new industries— advanced manufacturing and precision agriculture; personalised and preventative healthcare; circular economy; decarbonisation; and next generation aerospace and space technology. In turn we will make these available anywhere in the world.

Encouraging more international links and collaboration

We live in a connected world, and recognise the value of multi-disciplinary, inter-institution, and international teams to answer science questions and solve problems. The Queensland Government is working to encourage and support greater international collaboration.



How you can link in with our research and development opportunities

Queensland plans to continue investing more into international collaborations. The aim is to facilitate greater connections, including between Queensland and Germany by:

- expanding existing relationships
- attracting international talent
- facilitating technology testing locally
- facilitating access to infrastructure and services.

Connect with our Trade and Investment Queensland – Investment Director, in Frankfurt, Germany.

Funding

Australian Government grants are available: www.grants.gov.au

The Queensland Government supports scientific research in Queensland through policies, strategic science and innovation initiatives as well as funding assistance and incentives.

The 2023 Queensland Germany Bioeconomy Collaborative Science Program is open for applications until 20 June 2023: <https://science.des.qld.gov.au/industry/funding>

Leading universities and research capabilities in Queensland

- Department of Environment and Science
- Department of Agriculture and Fisheries
- CSIRO

- 1 Australian Institute of Marine Science (AIMS)
- 1 James Cook University (JCU)
- 2 Central Queensland University (CQU)
- 3 University of the Sunshine Coast
- 4 The University of Queensland (UQ)
- 5 University of Southern Queensland (UniSQ)
- 6 Australian Catholic University
- 7 Queensland University of Technology (QUT)
- 7 QIMR Berghofer
- 8 Griffith University
- 9 Bond University



Queensland Alliance for Agriculture and Food Innovation



Queensland University of Technology



Seaweed Research Group, USC

Contact us

Find Queensland's science capabilities and connect with University Research and International engagement offices www.qld.gov.au/Science-with-Germany



For more information on our key research capabilities and science expertise, visit: www.qld.gov.au/ScienceDirectory or email: qld.science@qld.gov.au

Trade and Investment Queensland, helping businesses connect to our research capabilities: www.tiq.qld.gov.au/connect

Study Queensland: www.studyqueensland.qld.gov.au

Honorary Consul of the Federal Republic of Germany in Brisbane brisbane@hkdipl.de

Australian–German Research Network (AGRN) platform for bilateral cooperation in research, science and innovation is open to academics, government and industry: www.linkedin.com/groups/13531832