



 **Griffith** UNIVERSITY  
Griffith Institute for Drug Discovery  
Queensland, Australia

# Creating knowledge that transforms lives

*[griffith.edu.au/gridd](http://griffith.edu.au/gridd)*

# Director's welcome

At GRIDD we strive to create knowledge that transforms lives to embrace diversity and to live our values of excellence, integrity, respect and collegiality.

At the Griffith Institute for Drug Discovery (GRIDD), we bring together leading experts in the fields of biology and chemistry to tackle significant global health problems, focusing on diseases such as malaria, cancer and Parkinson's disease. We also research new ways to improve spinal cord injury repair, building on the ground breaking work of Professor Emeritus Alan Mackay-Sim, 2017 Australian of the Year.

We are privileged at GRIDD to house significant national drug discovery resources. Compounds Australia is the nations' industry standard, compound curation facility. NatureBank is Australia's largest collection of raw biota, processed into two libraries (a >20,000 natural product extract library and a >100,000 natural product fraction library) that academic and industry researchers can use to discover new bioactive agents.

At GRIDD we achieve our goals through our outstanding researchers, extensive global partnership and networks, by utilising our unique resources and through training and inspiring the next generation of scientists.

Thank you to our partners and supporters for the important roles you play in providing grants and donations, collaborative opportunities and sharing of your expertise. We look forward to continued interactions and welcome new opportunities that may arise.



**Professor Katherine Andrews**

BSc(Hon); PhD





# Compounds Australia

Compounds Australia is Australia's national compound storage and curation facility. It is a key part of the Therapeutic Innovation Australia (TIA) Small Molecules platform, funded by the National Collaborative Research Infrastructure Strategy (NCRIS) Translating Health Discoveries program.

## At a glance

This highly specialised facility enables researchers worldwide to outsource compound and natural product management and logistics.

- Sample lodgement and storage
- Specialised formatting into assay-ready microplates
- Access to unique robotic and liquid handling platforms
- A sample quality control program
- Large-scale data handling
- Programming and customisation of proprietary software
- Data tracking at all points of processing

## Open access libraries

Compounds Australia hosts 'Open' Compound libraries including a scaffold focused library, the Selleck Kinase and aEpigenetics collections, and the MicroSource Spectrum FDA approved drugs collection. Compounds Australia Structure Portal (CASPeR) enables researchers to browse or search the 'Open' Compound Collections via a web portal. This provides researchers with access to up-to-date information such as individual chemical properties.

Find out more at [compoundsaustralia.com/casper](https://compoundsaustralia.com/casper)

## Our model

- Enabling new collaborations between chemists and biologists
- Intellectual property is retained by researchers
- Flexible and cost effective



# NatureBank

NatureBank is a unique biodiscovery platform based on natural product extracts and fractions derived from Australian plants and marine invertebrates.

The NatureBank samples have been processed into two libraries (currently, a >20,000 natural product extract library and a >100,000 natural product fraction library), which are ready for screening to discover new compounds for a range of applications. NatureBank also holds more than 30,000 archived biota samples. These libraries represent the unique biodiversity of Australia, which translates into novel chemical diversity.

## A resource you can access

NatureBank can accelerate biodiscovery and is accessible to researchers worldwide. The libraries have been shared with more than 30 universities, research institutes and companies.

NatureBank can be used to search for:

- new drugs to treat human diseases
- animal health products
- agrichemicals
- food ingredients or additives
- nutraceuticals
- cosmeceuticals
- other industry applications.

## Nature aids biodiscovery

Nature has played an important role in discovery and development of novel active molecules over the past 200 years.

Some natural products (or derivatives) exploited for wide use include:

- Paclitaxel (from the Pacific Yew tree bark), used in the treatment of breast, ovarian and non-small cell lung cancers
- Pyrethrins (from *Chrysanthemum cinerariifolium*) which are potent insecticides
- Ivermectin (derived from bacterial cultures), used to treat many types of parasites in humans and animals
- Stevia (from the leaves of the *Stevia rebaudiana* plant), used as a sweetener and a sugar substitute.

If you are working in academia, or from a private or public company, contact us to find out more about accessing NatureBank and collaborating with us.



# Partner with us

## Industry and government

Partnerships are essential to GRIDD's drug discovery and development pipeline. The Institute partners widely with industry, not for profits, government and the community and welcomes enquiries from potential new partners. GRIDD's research leaders are expert scientists with academic and industry experience who know that diversity is critical to finding innovative solutions to biological and biomedical problems.

## Funding partners

GRIDD receives funding from a range of government, industry and not for profit partners. Among our key funders, we thank: the ARC and NHMRC; the Australian and Queensland Governments; Therapeutic Innovation Australia; Cancer Therapeutics CRC (Cooperative Research Centre); Clem Jones Foundation; Australian Cancer Research Foundation; Medicines for Malaria Venture; the Bennelong Foundation; AEGIUM; Parkinson's Qld; and the Perry Cross Spinal Research Foundation.

## Collaboration with fellow researchers and clinicians

No single discipline or researcher can hope to address the complex scientific detective work needed to discover new drugs. Extensive collaboration is how GRIDD leverages its cutting-edge research across many disciplines and around the world. Collaborators include chemists, biologists, microbiologists, clinicians and data analysts.

---

*'GRIDD has the experience, infrastructure, resources and maturity to lead new drug discovery.'*

**Peter Johnstone**, CEO Clem Jones Group  
and Chair GRIDD Development Board

## Donations



Donations are gratefully received and can be made online via [griffith.edu.au/gridd/donate](http://griffith.edu.au/gridd/donate), by phone or mail. Donations of more than \$2 are tax deductible.

## Community

We engage closely with the broader community especially those affected by the conditions for which we are seeking to find better treatments. Visitors are welcome at GRIDD, where tours of facilities are arranged regularly.

The Institute encourages you to spread the word about our drug discovery research to your friends and family. To find out what's happening, follow GRIDD on Twitter, Facebook and LinkedIn.

 **GRIDD\_GU**

  **Griffith Institute for Drug Discovery**

## Latest technologies

The Institute uses state of the art technologies to facilitate drug discovery. This includes cell-based high throughput screening and high content imaging and Fourier Transform Mass Spectrometry (FTMS) for rapid screening of molecules as part of the drug discovery process.



# New hope for devastating diseases

GRIDD researchers focus on:

- seeking new therapeutic approaches for breast, prostate and pancreatic cancer
- discovering novel drugs for Parkinson's disease and tuberculosis
- finding treatments for malaria, and other major tropical diseases.
- repairing spinal cord injuries
- overcoming drug resistance.

*Here are just a few examples of our work.*





## Finding cures for cancer

Cancer is a leading cause of death in Australia, and few families remain unaffected. GRIDD has several teams leading innovative projects to find new treatments. Professor Vicky Avery's team is exploring breast, prostate and pancreatic cancer. Using 3D culturing techniques and high content imaging systems, they are investigating how cancer cells interact, grow and progress in order to find new prevention strategies. Professor Avery leads the Griffith University Drug Discovery Programme for the CRC for Cancer Therapeutics (CTx). Associate Professor Rohan Davis' team is investigating prostate cancer, collaborating with Australia's Translational Research Institute (TRI) since 2012. This team recently identified natural product compounds with a unique mechanism, a key progress indicator. A team led by Professor Sally-Ann Poulsen may offer new hope to combat brain tumours by altering the cellular environment to overcome chemotherapy-resistant brain cancer.

## Clinical resources lend strength to battle neurological diseases

Professor George Mellick is exploring the puzzle of Parkinson's disease—focusing on what causes it and strategies for treatment. His team's research is supported by access to the Queensland Parkinson's Project (including samples and information from more than 5,000 people). These resources are used together with high content screening and genetic data to shed light on this complex illness. Dr Alex Cristino's research focuses on the development of systems-based methods that integrate high-throughput cellular and molecular data from patient-derived cells from GRIDD's NeuroBank to identify disease-associated gene networks and pathways that can serve as biomarkers for drug screening and personalised treatment.

## Fighting infectious diseases

Infectious diseases cause significant morbidity and mortality globally. Many of these diseases suffer from the lack of vaccines, a lack of drugs or resistance to available drugs. Professor Kathy Andrews' team is focused on the discovery and development of new drug leads to prevent and treat malaria, a disease that kills more than 60,000 every day. Professor Vicky Avery has developed innovative high throughput, high content imaging assays for neglected diseases, including malaria, trypanosomiasis and leishmaniasis.

Associate Professor Tina Skinner-Adams' research focuses on new drugs for malaria and giardiasis. Former Foundation Director Professor Ronald Quinn, is seeking a cure for tuberculosis, among the top 10 causes of death globally.

## Continuing the work of Professor Emeritus Alan Mackay-Sim

Up to 500,000 people globally have spinal cord injuries (World Health Organisation). Researchers at GRIDD's **Clem Jones Centre for Neurobiology and Stem Cell Research** ([cjcneurostemcell.org](http://cjcneurostemcell.org)) are investigating cell transplantation approaches to restore motor function and sensation to those with injured spinal cords. Led by Associate Professor James St John, this work is founded on the ground-breaking research of 2017 Australian of the Year, Professor Emeritus Alan Mackay-Sim, whose clinical trial showed transplantation of nasal cells into the spinal cord was possible and safe.

## Cell factories and biopolymers

Professor Bernd Rehm leads the Centre for Cell Factories and Biopolymers within GRIDD. The Centre's mission is to research and develop innovative materials and technologies that can provide solutions for global health and environmental challenges. Professor Rehms research focuses on the design and biotechnological production of bio-based materials for use as drug delivery systems, vaccines and diagnostics for conditions including HCV, TB, and cancer. The research of Dr Frank Sainsbury, also part of the Centre, focuses on biomolecular engineering, protein self-assembly, plant biotechnology and nanotechnology.

Find out more on our research themes at [griffith.edu.au/gridd](http://griffith.edu.au/gridd)





## Eva Hesping

Eva (pictured left) is working with Professor Kathy Andrews on a PhD focusing on Malaria.

*"I first came to GRIDD on a 3 month internship as part of my Master's program in Germany and then returned for my PhD the following year. My project combines both biology and chemistry. The interdisciplinary environment at GRIDD is very motivating. GRIDD is a great place to work—it really feels like a community and also allows me to develop important career skills beyond my research."*

## Study with us

GRIDD welcomes prospective PhD and postdoctoral scientists. As one of our early career scientists, you will have access to outstanding infrastructure and resources as well as career development and leadership opportunities. You will be supervised and mentored by exceptional researchers who are as dedicated to developing your career as they are to pioneering research.

### Contact us

For further information on our resources, technologies and contract research services.

#### Griffith Institute for Drug Discovery

Buildings N27 and N75, Griffith University  
Brisbane Innovation Park, Don Young Road  
Nathan Qld 4111 Australia

E | [gridd@griffith.edu.au](mailto:gridd@griffith.edu.au)

P | +61 7 3735 6000

 GRIDD\_GU

  Griffith Institute for Drug Discovery

[griffith.edu.au/gridd](http://griffith.edu.au/gridd)