

NatureBank

What is NatureBank?

NatureBank is a unique drug discovery platform based on natural product extracts and fractions derived from Australian plants and marine invertebrates. It is housed within the Griffith Institute for Drug Discovery (GRIDD) in Queensland, Australia.

The NatureBank samples have been processed into two libraries (a 10,000 natural product extract library and a 50,000 natural product fraction library), which are ready for screening against any disease. NatureBank also holds more than 30,000 archived biota samples.

A resource you can access

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

NatureBank is being used to search for new drugs to treat and prevent:

- malaria
- African sleeping sickness
- cancer
- Parkinson's disease
- schizophrenia
- stroke
- thrombosis
- tuberculosis
- HIV
- Alzheimer's disease.

Nature aids drug discovery

Nature has played an important role in drug discovery and development over the past 200 years. Between 1981 and 2014, 387 natural product-based drugs were approved for use worldwide.

Some natural products (or derivatives) exploited for therapeutics include:

- Paclitaxel (from the Pacific Yew tree bark), used in the treatment of breast, ovarian and non-small cell lung cancers
- Eribulin (based on a natural product from a marine sponge) used for treating metastatic breast cancer
- Penicillin G (from *Penicillium* fungi), an antibiotic used to treat various bacterial infections.



Working with industry

NatureBank is available for risk-sharing or fee-for-service screening to provide drug-like lead molecules that hit your targets.

NatureBank services

NatureBank is accessible to industry partners seeking novel bioactive compounds on a negotiable basis. Screen our libraries for bioactive compounds or improve your libraries using our proprietary Lead-Like Extraction technique.

Our services include:

- supply of NatureBank extracts or fractions for screening on your assay systems, with follow-up isolation chemistry at GRIDD
- screening of NatureBank extracts or fractions or other libraries against your drug target, using our advanced high-throughput screening system
- processing and optimisation of your natural product libraries of biota or crude extracts into NatureBank fractions to create an assay-ready screening set.

Research collaboration

NatureBank samples can be sent to academic laboratories, biotech and pharma companies and public research institutions around the world for drug discovery projects.

We adopt a flexible and shared approach to collaborations. Following the initial screening campaign, we work together to decide the next steps, which may be:

- publication
- joint grant application
- IP protection
- commercialisation.

If you're an academic, non-profit or publicly funded researcher, contact us to find out more about accessing NatureBank and collaborating with us.

NatureBank in use

Antimalarial advances

A high-throughput screening campaign using the NatureBank fraction library and an *in-vitro* antimalarial assay identified active fractions derived from the Australian marine sponge *Plakortis lita*. See results in *J. Org. Chem.*, 2013, 78, 9608-9613.

Anticancer exploration

To identify new anticancer compounds from nature, a prefractionated library derived from Australian endemic plants sourced from NatureBank was generated and screened against the prostate cancer cell line LNCaP using a metabolic assay. See results in *J. Nat. Prod.*, 2015, 78, 2908-2916.

About GRIDD

We tackle devastating diseases using the unique Compounds Australia and NatureBank resources, and an extensive global network of partners. We innovate at the chemistry-biology interface, and collaborate with academia, the community, government, health, not-for-profits and industry. We thank our supporters including the Clem Jones Foundation, Perry Cross Spinal Research Foundation, Aegium, Parkinson's Queensland, and the Queensland and Australian Governments. We are proud to foster the next generation of drug discovery scientists.

Support NatureBank

Donate to support this unique resource at griffith.edu.au/gridd

Contact us

NatureBank's academic lead is Associate Professor Rohan Davis.

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