

NatureBank

What is NatureBank?

NatureBank is a unique biodiscovery 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 (currently an 18,000 natural product extract library and a 90,000 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 is being used to search for:

- new drugs
- animal health products
- agrichemicals
- food ingredients or additives
- nutraceuticals
- cosmeceuticals
- other industry applications

Nature aids biodiscovery

Nature has played an important role in the 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.



Working with industry

NatureBank is available for risk-sharing or fee-for-service screening to provide lead or bioactive molecules that work in your application.

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 in your assay, 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, companies and public research institutions around the world for biodiscovery 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:

- commercial development of the bioactive
- IP protection
- publication
- joint grant application.

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

NatureBank in use

Antiparasitic advances

A high-throughput screening campaign using the NatureBank extract library and an antiparasitic assay identified active fractions derived from several rainforest plants that subsequently yielded four lead molecules with nematocidal activity. See results in *International Journal for Parasitology: Drugs and Drug Resistance*, 2019, 9, 72-79, doi.org/10.1016/j.ijpddr.2018.12.006

Anticancer exploration

To identify new anticancer compounds from nature, a fraction library derived from Australian plants sourced from NatureBank was screened for activity against a prostate cancer cell line. See results in *J. Nat. Prod.*, 2015, 78, 2908-2916. doi.org/10.1021/acs.jnatprod.5b00509

For other NatureBank publications please see our website.

About GRIDD

We innovate at the chemistry-biology interface using the unique Compounds Australia and NatureBank resources, and our extensive global network of partners. We 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 biodiscovery 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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