

extremophile biodiscovery new biotechnologies

Commercialising novel microbes and bioactives from New Zealand's extreme environments.

Close synergy between research and commercialisation allows for a robust and dynamic approach to biodiscovery.

Extremophile research and commercial operations have been established as part of GNS Science's geothermal expertise.

GNS Science is looking to grow long-term, mutually beneficial relationships with companies in the identification of commercially attractive novel bioactives and microbes from its growing extremophile collection.

GNS Science would welcome the opportunity to talk with you further about our extremophiles programme and discuss how we can work together to develop commercial opportunities.



at a glance →

→ **Unique** New Zealand is without equal in the diversity of extreme geothermal environments; providing a unique ecosystem where microbial species thrive like nowhere else on Earth.

→ **Diverse** We are focusing on diverse bacteria that form the basis of the food web in geothermal environments: sulphur oxidisers, methanotrophs, hydrogenotrophs, organotrophs, and metal respirers.

→ **Culture Collection** GNS Science's exploration of New Zealand's extreme environments has yielded a collection of more than 1500 microbial strains; containing many novel microorganisms. This collection continues to grow through our research activities. We know the environmental conditions

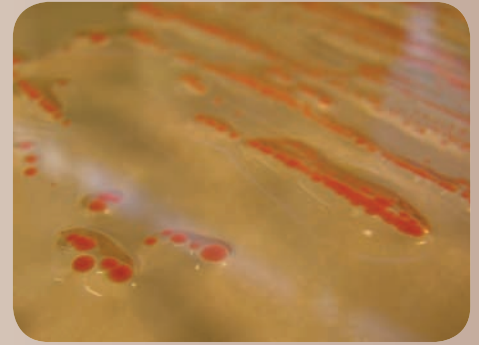
at the source, including specific location, pH, and temperature, and basic taxonomy. More detailed characterisation has been undertaken on selected strains.

→ **Targeted** Our research direction is guided by the needs of a range of industrial sectors. For example, our collection contains microorganisms with potential applications for biofuels, industrial enzymes and bioactives.

→ **Focussed** GNS Science is committed to the constant development of bioactive screening and associated technologies. Through dedicated research programmes there is support for our commercial operations. This ensures that our client's needs and our research focus are aligned.

→ **Certainty** At GNS Science we pride ourselves in our ability to form long-term, mutually beneficial relationships. This includes agreements with landowners for sampling access to their geothermal systems and any associated commercial development. These agreements provide certainty for sustainable research and development, and peace of mind for commercial clients; knowing that the microorganisms come from legitimate sources.

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Extreme environments house an incredible diversity of microorganisms, the majority of which have yet to be discovered.

“Microorganisms have developed novel mechanisms to survive in these extreme habitats. If we can identify and exploit these mechanisms, there is potential to develop new biotechnological applications and improve existing processes.”

*Matthew Stott
GNS Science geomicrobiology team*

about us →

GNS Science is New Zealand’s leading provider of Earth and geoscience research and consultancy services, with over 140 years experience. Our focus is on understanding natural Earth system processes and its resources, and translating these into economic and social benefits.

GNS Science’s geomicrobiology team is based at the Wairakei Research Centre in the geothermal heart of New Zealand’s North Island.

Over the last 5 years, through substantial funding provided by the New Zealand government and GNS Science, the geomicrobiology team has built a collection of over 1500 diverse extremophiles from unique geothermal and hydrothermal environments.

GNS Science has secured exclusive agreement from landowners for the isolation, identification and application of these microbes.

As well as undertaking characterisation of selected strains, the collection continues to grow through ongoing biodiscovery. Current research activities focus on biofuels, microbial ecology and genomics. We are progressively screening our microbial collection for bioactives.

contact us →

VISIT www.gns.cri.nz/extremophiles

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