THE UNIVERSITY OF NEW SOUTH WALES
SYDNEY • AUSTRALIA

NON-CONFIDENTIAL DISCLOSURE

NewSouth Innovations

Methods for Producing Secondary Metabolites: Unnatural Production of Natural Products

Business Opportunity
An opportunity exists to collaborate with the University of New South Wales (UNSW) to invest in a unique platform technology that enables the production of valuable secondary metabolites. The platform is based on the cyanobacterium *Synechocystis* sp.

The Technology

How does it work?
The invention requires transforming *Synechocystis sp.* bacteria with at least one peptide, polyketide and/or fatty acid synthetase gene required for production of the secondary metabolite (the secondary metabolite is a non-ribosomal peptide or polyketide, or a derivative thereof). By engineering repeat modules of various non ribosomal peptide synthetases (NRPS), "Combinatorial Biosynthesis" of natural compounds becomes possible.

Non ribosomal synthesis provides a pathway of synthesising compounds which would be expensive or unobtainable using synthetic chemical methods. Non ribosomally synthesised peptides share certain characteristics. These small bioactive peptides are usually between 2 and 50 amino acid residues long and possess potent biological activities.

What are the benefits?
Non ribosomal synthesis allows microorganisms to produce a diverse range of novel compounds including:

- carboxy acids
- heterocyclic rings
- fatty acids and
- non-proteinogenic modified amino acids.

Most examples of these compounds are also highly resistant to physical and chemical degradation making them ideal for use as oral therapeutics. The valuable products of microbial non ribosomal peptide synthesis include:

- the immunosuppressant cyclosporin A
- antibiotics such as penicillin, gramicidin S, vancomycin, cephalosporin
- surfactins.

In general terms other bioactive compounds that may also be produced using this versatile platform technology includes:

- anti-viral agents
- anti-fungal agents
- anti-cancer agents
- anaesthetic or analgesics
- anti-tumour products
- anti-cholesterole~nics
- anti-parasitic agents
- veterinary therapies
- agrochemicals
- cosmetics

The Team

Professor Brett Nielan and his research group at the School of Biotechnology and Biomolecular Sciencees at UNSW have pioneered this technology.

Investment Opportunity

NewSouth Innovations is seeking commercial partners to invest in the development of this platform technology. Although this technology has been licensed for therapeutic applications the licensee is seeking interested parties to further invest in this area.

Further Information:

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