THE UNIVERSITY OF NEW SOUTH WALES
SYDNEY • AUSTRALIA

NON-CONFIDENTIAL DISCLOSURE

NewSouth Innovations

Glutathione Overproduction and Secretion

Business Opportunity

An opportunity exists for an industrial bioprocessing company to collaborate with the University of New South Wales (UNSW) to develop a manufacturing process for the production of glutathione from the yeast *Saccharomyces cerevisiae.*

Glutathione is the most important antioxidant found in the human body and plays a key role in nutrient metabolism, and regulation of cellular events to help protect against many diseases and conditions. For example, it is used to treat infertility, cancer, cataracts, HIV, and to remove various toxins from the body.

The Market

Reduced and oxidized forms of glutathione have found use in the following areas:

- Pharmaceutical - alternative therapies
- Neutraceutical - dietary supplements to promote fat burning, anti-aging, detoxification.
- Cosmeceutical – for skin repair, skin whitening

The Technology

The inventors have developed genetic techniques that confer glutathione overproduction and secretion as detailed below:

- Single mutations have been identified that influence the level of glutathione in cells and the extracellular medium. This extracellular glutathione is predominantly in the reduced form often designated GSH.
- These mutations have been clustered into groups according to the biological process they affect in the cell. This approach provides a clear overview of the different cellular processes that are important for manipulating glutathione production.
- Since many of processes are distinct, it is feasible that generation of strains that harbour multiple mutations, carefully selected from respective groups would lead to genesis of a strain with even higher glutathione production.
- The influence of growth phase on intracellular and extracellular glutathione accumulation has been defined.
- Additionally nutritional and environmental factors have been identified which strongly influence the level of extracellular glutathione production.
- One strain was identified that accumulates high level of extracellular oxidised (GSSG) glutathione.

The Team

This technology was developed by Professor Ian Dawes and Dr. G. Perrone from the School of Biotechnology and Bimolecular Sciences in the Faculty of Science at UNSW.

Patent Protection

NewSouth Innovations, the commercialisation organisation for UNSW manages and owns the intellectual property around this technology. The patent application is now in the National Phase. Further details are available upon request.

Investment Opportunity

The genetic techniques developed to date could be applied to industrially robust yeast strains. Furthermore, recent work has identified a cluster of mutants that dramatically increase intracellular glutathione production. The next step is to examine the combined effects of these recently identified mutations with those identified previously on total glutathione production (intracellular and extracellular).

Partners are sought to further invest in the development of this technology. NSi can offer rights to develop, market and sell products based on this technology.

Further Information:

Peter Milic
T: +61 2 9385 4727
M: 0404 002 936
E: p.milic@nsinnovations.com.au
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