

Methods and compositions for ocular regeneration

Business Opportunity

This technology developed at the University of New South Wales (UNSW), provides an opportunity to develop an early marker diagnostic kit for ocular disease. It is also a potential novel therapy to affect proliferation, expansion, and migration of cells resulting in regeneration of corneal tissue *in situ*.

The Market

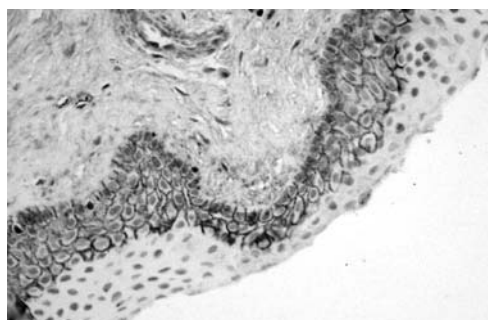
25-30 million people suffer with irreversible visual impairment due to age-related macular degeneration/maculopathy. 2.3 million are affected by uveitis, and 5.5 million suffer from cataracts (US figures). A potential regenerative therapy using the technology is well placed to play a role in the estimated 2010¹ worldwide \$500 billion regenerative medicine market.

The Technology

This technology offers a method of inducing corneal regeneration by use of growth factors and somatic stem cells. UNSW scientists have localised a number of growth factors to a specific region of the eye, one of which in addition to its anti-apoptotic properties, maintains mesenchymal stem cells in self-renewal. Potentially, this allows us to expand a sufficient amount of autologous stem cells from a patient's bone marrow and transplant them to the area that requires regeneration in the cornea. Delivery of the cells may be through contact lenses or injection to the site of injury to enhance regenerative capacity and wound healing.

Furthermore, we are working on the use of olfactory ensheathing cells as a means of supplying alternative cells for regenerating corneal tissue. The same applies with the

growth factor, although believed to be a potent antiangiogenic factor, it is also actually a neurotrophin, which we have taken to induce tissue regeneration of corneal.



Immunolocalization of growth factor in the cornea and limbus.

The Team

The UNSW team who have worked on this technology is composed of Professors Denis Wakefield (an expert in immune mechanisms in inflammatory eye disease), Peter McCluskey (a Clinical Ophthalmologist), Dr Maria Sarris (Head of the Histology and Microscopy Unit), Dr Nick DiGirolamo, and PhD Candidate, Mr Helder Marcel.

Investment Opportunity

NSi is looking to license the technology and/or to partner with an organisation to further support this research and advance the proof of concept.

An Australian provisional patent application was filed in November 07.

Further Information:

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¹ Ratner, Buddy. "What are the opportunities in the field of tissue engineering/regenerative medicine?" Wksp on Tissue Engineering and Regenerative Medicine. US Dept of Health and Human Services. 28 March 2003.