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Media Release

\$1 million awarded to innovative and clinically focused Australian stem cell projects

12 November 2009, Melbourne Australia:

The Australian Stem Cell Centre today announced funding for six projects spanning diverse areas from Alzheimer's to eyes, pelvic floor regeneration to stem cell manufacturing and bioinformatics under its Strategic Development Fund.

Six projects have been selected for support from the Australian Stem Cell Centre's (ASCC) Strategic Development Fund which aims to develop and accelerate stem cell projects towards a well-defined commercial, medical or academic goal.

The ASCC received more than 60 high quality applications from investigators from over 50 organisations, in six states, reflecting the diversity and depth of Australian stem cell research. The successful applications were chosen by a panel of scientific and commercial experts led by Professor Patrick Tam, Chair of the ASCC's independent Scientific Advisory Board.

Professor Joe Sambrook, Scientific Director of the ASCC said "The quality of applications was very high and number of applicants was far greater than anticipated so the reviewing committee was faced with a difficult task." He went on to say that "The ASCC is delighted with the choices made by the reviewers and we anticipate great things will result from the support provided by the Strategic Development Fund."

The successful projects are:

1. Investigating Adult Stem Cells for Regenerating the Pelvic Floor

Dr Caroline Gargett, Monash Institute of Medical Research and Dr Keith McLean, CSIRO

Pelvic organ prolapse, caused by injury to the pelvic floor tissues during childbirth, is a debilitating disorder affecting millions of women with the only current treatment being reconstructive surgery augmented with biological and synthetic materials, which often fail to repair the damage. This project is investigating the possibility that endometrial stem cells found in the highly regenerative lining of the uterus combined with new tissue engineering technologies utilising next generation synthetic scaffolds will be able to regenerate the pelvic floor.

Dr Caroline Gargett said, "We are very excited about this project which has the potential to revolutionise treatment for pelvic organ prolapse, a condition affecting 50% of women." Her colleague Dr Keith McLean at the CSIRO commented, "This project is a significant collaboration that uses stem cells and tissue engineering to solve this major clinical problem."

2. A Clinical Trial to Further the Utilisation of Stem Cells on Contact Lenses to treat Corneal Blindness

Associate Professor Nick Di Girolamo, University of New South Wales and Dr Stephanie Watson, Prince of Wales Hospital

This pioneering technique to treat corneal blindness, which affects approximately 10 million persons worldwide, has already been trialled to establish safety and efficacy in a small pilot study of three patients. This funding will allow the investigators to expand to a larger trial of 33 patients to

further assess the technique. In addition further research will be conducted to fully understand how the technique, which involves taking stem cells from a healthy part of the patient's eye, culturing them on a normal contact lens and then transferring to the diseased cornea, restores sight.

Associate Professor Nick Di Girolamo and Dr Stephanie Watson stated, "We are delighted to have been awarded an ASCC grant, it will assist us in developing our novel stem cell transplantation strategy to treat patients with blinding corneal disease."

3. Strategies for Stem Cell Therapies for Alzheimer's Disease

Professor Colin Pouton, Dr John Haynes, Dr Jennifer Short and Dr Joe Nicolazzo, Monash Institute of Pharmaceutical Sciences, Monash University

This project aims to establish whether restoration of cognitive function using cell therapy for Alzheimer's disease is dependent on provision of a type of neuron known as cholinergic neurons. Alzheimer's is a progressive neurodegenerative disorder that affects over 500,000 Australians with no current effective therapy. Using mouse models of Alzheimer's and mouse embryonic stem cells the investigators will turn the stem cells into neurons at various stages and implant them into the mice to test their effectiveness in treating the disease thereby determining the most promising strategies.

Speaking about the Alzheimer's disease project, Professor Colin Pouton said, "We believe that specific types of neurons are likely to be safer and more effective for cell transplantation therapy than multipotent neural stem cells. We plan to test this hypothesis and determine whether implantation of precursors to cholinergic neurons can relieve symptoms in an Alzheimer's model."

4. The Australian Stem Cell Database Initiative

Dr Christine Wells, Griffith University, Professor Doug Hilton, Walter and Eliza Hall Institute, Professor Sean Grimmond, University of Queensland

The Australian Stem Cell Database Initiative builds on existing Australian resources, infrastructure and bioinformatics expertise to create a powerful web based database containing multiple datasets of genetic data across adult, embryonic and induced pluripotent stem cell lines. Such a database will help Australian scientists to better compare the characteristics of different types of stem cells and ask a myriad of biological questions critical to the advancement of stem cell research.

Dr Christine Wells commented, "We are delighted to receive this new funding which will provide an important collaborative platform for high-impact research outcomes across the leading stem cell researchers in Australia. The National Centre for Adult Stem Cell Research focuses research efforts in areas of importance to Queensland, Australia and globally."

5. Manufacturing Clinical Grade Mesenchymal Stem Cells

Professor Kerry Atkinson, Mater Health Services, Dr Nicholas Timmins, University of Queensland, Associate Professor Gary Brooke, Mater Medical Research Institute

Mesenchymal stem cells are a type of adult stem cell found in several tissues of the body including bone marrow and the placenta which can give rise to a number of tissue types such as bone, cartilage, fat tissue, and connective tissue. Mesenchymal stem cells have shown promise for treatment for a number of diseases but for any treatment requiring significant numbers of cells there is currently no efficient means for growing the cells in large numbers. The aim of this project is to develop a device for isolation and expansion of mesenchymal stem cells that are of a clinical quality, derived from the placenta.

Professor Kerry Atkinson explained, "Mesenchymal stem cells have shown promise in the treatment of a number of diseases, however there is not yet an efficient method for generating these cells in large numbers. Our project aims to produce such a method to manufacture clinical

grade “off-the-shelf” stem cells, which represent the first step in regenerative medicine.”

6. Utilising Mathematical Modelling to Understand Pluripotency

Dr David Winkler, CSIRO

Pluripotency, that is the ability for a stem cell to become any other cell of the body, is the characteristic that makes embryonic stem cells and the newer induced pluripotent stem cells valuable in research. However, relatively little is still understood about the genes for pluripotency. Utilising sophisticated and novel mathematical modelling and bioinformatics techniques, this project aims to identify a common set of genes in five pluripotent stem cell lines including three human embryonic and two induced pluripotent stem cell lines. By identifying such genes the researchers will then be able to investigate the role those genes play in pluripotent cells and determining their value in regenerative medicine.

Dr David Winkler of the CSIRO commented, “This grant will allow us to create an essential bridge between the vast experimental research efforts, and the surprisingly scarce computational and theoretical research effort on pluripotent stem cells. We anticipate that this will assist in the development of a thorough understanding of what makes a stem cell pluripotent, which in turn will help us understand and evaluate the utility of stem cells in regenerative medicine.”

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About the Strategic Development Fund

The Aim of the Strategic Development Fund is to provide financial support to develop and accelerate new and innovative Australia based projects in stem cell research towards a well-defined goal.

By awarding grants under this scheme the ASCC aimed to identify and invest in:

- early stage, stand alone projects, for the delivery of a definitive outcome
- discrete projects that may have a short term commercial outcome or objective that would otherwise not be funded because of financial risk
- those projects that may fall into gaps in existing conventional funding systems
- projects that may currently fall outside an existing Collaborative Stream

All Australian for-profit and not-for-profit organisations; public or private institutions, with appropriate facilities were eligible to apply. The projects may be carried out in collaboration with research already funded in the ASCC’s Collaborative Streams provided there is no overlap or duplication with currently funded scientific aims.

The ASCC is providing a total of \$1 million in grants with each grant up to a maximum of \$250,000. Funding will commence no later than 1 December 2009 and grants duration is a maximum of 18 months.

About the ASCC

The Australian Stem Cell Centre was founded to capitalise on Australia's significant strengths in the field of stem cell research. The ASCC was selected in 2002, in a competitive bid process, as Australia's Biotechnology Centre of Excellence, an initiative of the Australian Government. The Centre provides a unique national resource for stem cell researchers to deliver outcomes that benefit the wider Australian biotechnology industry and will ultimately contribute innovative solutions to human health challenges.

The Centre was established with the financial and in-kind support of a number of institutions of which the current voting Members, who retain ultimate oversight of the Centre, are: Monash University, University of Queensland, Howard Florey Institute and University of Adelaide. The additional Stakeholder institutes are: University of Melbourne, Baker IDI, Murdoch Children's Research Institute, Victor Chang Cardiac Research Institute and Mater Medical Research Institute.

The ASCC is governed by a Board of Directors with independent scientific oversight and support from an eminent Scientific Advisory Board.

Total funding of \$100 million has been awarded to the ASCC by the Australian Government and is administered by the Australian Research Council and the Department of Innovation, Industry, Science and Research. The funding is provided in instalments from 2002 to 2011. To complement Australian Government funding, the State Government of Victoria's Science Technology and Innovation program awarded the Australian Stem Cell Centre a further \$11 million to support key infrastructure in Victoria.

Together the ASCC and partnering organisations support a critical mass of Australian stem cell research that is internationally competitive. The ASCC currently funds research at leading institutes and universities in Victoria, Queensland, South Australia and New South Wales with the major hubs of activity centred in Victoria and Queensland.