

# Centre for Stem Cell Research E-news

July 2009 Volume 2, issue 2

The University of Adelaide, Australia

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## Diary Dates

**\*\*Coming Up\*\***

7<sup>th</sup> August 12-2pm  
CSCR Honours and Postgraduate Information Day  
(All welcome to attend)

9<sup>th</sup> September 1pm  
CSCR Management Committee Meeting

30<sup>th</sup> September  
CSCR collaborative Grant Application due by 4pm

## CONTACT THE CENTRE

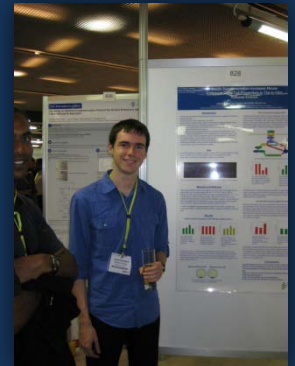
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## Director's Report

A number of us recently attended the International Society for Stem Cell Research Annual Meeting in Barcelona. Starting a day after most of us received our NHMRC project grant referee reports! The sheer size of the meeting-some 3,000 registrations and over 1000 abstracts highlighted the fact that in order to remain competitive we need to continue to collaborate locally, nationally and increasingly internationally. As such the Centre is announcing a new initiative **collaborative grants**. These are designed to develop ideas, generate preliminary data etc in order to enhance success rate when submitting NHMRC project grants etc. These are open to Centre members and must include at least one collaborating group. This can be from within the Centre, locally, nationally or overseas. At least two grants will be offered each year. Each grant will be for a maximum amount of **100K** and for a period of up to two years. Application forms will be release this week.

Mark and Stan



Above: Jared Campbell (PhD Student). Below: Ivan Vassiliev (Research Fellow)



## The Advertiser Friday, July 24, 2009

### Boost for stem cell research into gum disease

ADELAIDE scientists using stem cells to treat gum disease in animals have won funding to expand their research.

Full article on page 2



Recently Centre members Professor Mark Bartold and Associate Professor Stan Gronthos were awarded \$200K from the Australian Stem Cell Centre (ASCC).

*Left: The announcement made in the Advertiser on Friday, July 24, 2009 regarding the ASCC's new research portfolio and Collaborative Streams (They will be part of Stream 3 – Pluripotent Stem Cell Differentiation)*

## Boost for stem cell research into gum disease

**CALLIE WATSON**

ADELAIDE scientists using stem cells to treat gum disease in animals have won funding to expand their research.

University of Adelaide Professor Mark Bartold and Hanson Institute Associate Professor Stan Gronthos have spent the past five years trying to develop a treatment for inflammatory diseases of the bone, gums and tissues, known as periodontitis.

Theirs is one of 32 projects nationally to receive funding from the Australian Stem Cell Centre.

They have been awarded \$200,000.

The work involves separating normal adult stem cells from the ligament that holds the teeth in the jawbone of sheep and pigs, before culturing them and re-implanting them in animals that have bone loss near their teeth caused by gum disease.

"We've got the proof, in principle, and can regrow a lot of bone around the teeth and restore some of the damage that has been done," Prof Bartold said.

"As with any new technology, we've still got a little way to go; there's a lot of unanswered questions and more will pop up along the way."

It is the first time the researchers have received a cash injection from the Australian Stem Cell Centre and means they can use new technology to re-program cells to repair gum tissues, an advancement on what they are doing now.

Prof Bartold said about 60 per cent of Australians suffered from gum disease and a smaller portion developed advanced or severe forms of periodontitis.

Most debate about stem cell research surrounds the use of embryonic stem cells, which are derived from fertilised embryos that are less than one week old.

Congratulations Mark Bartold and Stan Gronthos

# CSCR HONOURS & POSTGRADUATE INFORMATION DAY

Friday, 7<sup>th</sup> August 2009  
Medical School North Building, Level 2

## CSCR Honours & Postgraduate Information Day 12-2pm

Name badges and business cards will be available on the day to the people who submitted projects.

If you require additional name badges please email me the details by the 5<sup>th</sup> August

[leanne.srpek@adelaide.edu.au](mailto:leanne.srpek@adelaide.edu.au)

Posters can be displayed from 10am and should be ready before 12pm.  
Velcro will be available

The Robinson Institute  
Centre for Stem Cell Research  
www.adelaide.edu.au/stemcell

THE UNIVERSITY OF ADELAIDE AUSTRALIA

HONOURS AND POSTGRADUATE INFORMATION DAY

Scholarships Available up to \$7000

Friday 7th August 2009 12-2pm  
Medical School Nth Building, Level 2  
FREE LUNCH PROVIDED

THE UNIVERSITY OF ADELAIDE IMYS The Queen Elizabeth Hospital Women's & Children's Hospital Royal Adelaide Hospital HANSON

Life Impact The University of Adelaide www.adelaide.edu.au

*Note: All staff and students are invited to attend*

Lunch will be provided

# SEMINAR AND NETWORKING SERIES

Dr Paul Verma presented “**Advances in generating patient specific pluripotent stem cells**” to the Centre on the 11<sup>th</sup> June 2009.

The evening was a success with an informative talk on the research being undertaken in Paul Verma's stem cell laboratory at Monash Institute of Medical Research. Dr Verma, Centre members and other attendees continued after the seminar into the networking part of the evening.

We encourage all members to attend this event. It's a great opportunity to listen to invited speakers from around the world in the field of Stem Cells, and join in on the networking part of the session with other Centre member and interested parties.



# CENTRE EVENTS AND DIARY DATES

## CENTRE MEETINGS

### MANAGEMENT COMMITTEE MEETINGS 2009

Wednesday, September 9<sup>th</sup> \*

Wednesday, December 2<sup>st</sup> \*

1pm, Frome Rd Medical School North Building, Level 2

\* NOTE LUNCH PROVIDED

### ADVISORY BOARD MEETINGS 2009

Tues September 15<sup>th</sup>

1pm, Frome Rd Medical School North Building, Level 2

## CENTRE EVENTS

### CSCR Honours and Postgraduate Information Day

Friday August 7<sup>th</sup>

12-2pm Med School North Seminar Room 229

\*All Welcome to attend

### CSCR Annual Meeting

Thursday November 11<sup>th</sup>

9am – 6.30pm, The Wine Centre

Open to all members (Staff and Students)

More details will be email out closer to the date

## OTHER DIARY DATES

Tuesday 4 August 2009

Healthy Development Adelaide - Bone Health Symposium

State Library (10.00am - 3.30pm)

Centre Member A/Prof Andrew Zannettino

Head, Myeloma Research Laboratory, Haematology, IMVS

will be presenting at 2.30pm

**“The therapeutic application of mesenchymal precursor cells in bone repair”**



A/Professor Andrew Zannettino is a Chief Medical Scientist in the Division of Haematology, IMVS; a member of the Centre for Cancer Biology, SA Pathology; and member of the Centre for Stem Cell Research, University of Adelaide. He graduated with his PhD in 1997 and has co-authored upwards of 90 publications, book chapters, review articles and patents. In recent years, A/Prof Zannettino's interests have focused on haematological malignancy, multiple myeloma, which mediates a profound destruction of skeletal tissues. Studies emanating from his

lab have added to a growing appreciation of the mechanisms that lead to bone disease. In collaboration with A/Prof Stan Gronthos, he has developed numerous patents describing the isolation and composition of matter of mesenchymal precursor cells (MPC). The family of patents surrounding this technology were assigned to Angioblast Systems Inc., NY, USA in 2004 and formed the basis for the establishment of Mesoblast Ltd, Melbourne, Australia. In his capacity as scientific consultant to Mesoblast Ltd, Melbourne /Angioblast Systems Inc. NY, he is now examining the therapeutic potential of MPC for cardiac and orthopaedic applications.

Details of the full program attached as PDF

RSVP by 28<sup>th</sup> July to [anne.jurisevic@adelaide.edu.au](mailto:anne.jurisevic@adelaide.edu.au)

# RECENTLY PUBLISHED PAPERS

Stem Cells. 2009 Jun 4. [Epub ahead of print]

## **Implanted Adult Human Dental Pulp Stem Cells Induce Endogenous Axon Guidance.**

[Arthur A](#), [Shi S](#), [Zannettino AC](#), [Fujii N](#), [Gronthos S](#), [Koblar SA](#).

Mesenchymal Stem Cell Group, Division of Haematology, Institute of Medical and Veterinary Science/Hanson Institute, CSCR University of Adelaide, Adelaide 5000, SA, Australia.

The human central nervous system has limited capacity for regeneration. Stem cell-based therapies may overcome this through cellular mechanisms of neural replacement and/or through molecular mechanisms, whereby secreted factors induce change in the host tissue. A readily accessible human cell population to investigate these mechanisms are dental pulp progenitor/stem cells (DPSC) that can differentiate into functionally active neurons given the appropriate environmental cues. We hypothesized that implanted DPSC secrete factors that coordinate axon guidance within a receptive host nervous system. An avian embryonic model system was adapted to investigate axon guidance in vivo following transplantation of adult human DPSC. Chemo-attraction of avian trigeminal ganglion axons towards implanted DPSC was mediated via the chemokine, CXCL12, also known as stromal cell derived factor-1, and its receptor, CXCR4. These findings provide the first direct evidence that DPSC may induce neuroplasticity within a receptive host nervous system.

PMID: 19544412 [PubMed - as supplied by publisher]

Stem Cells. 2009 Jun 19. [Epub ahead of print]

## **Co-transplantation of Placental MSCs Enhances Single and Double Cord Blood Engraftment in NOD/SCID Mice.**

[Hiwase SD](#), [Dyson PG](#), [To LB](#), [Lewis I](#).

Division of Haematology, Centre for Cancer Biology, SA Pathology, Adelaide, Australia.

Limited cell numbers in a unit restricts cord blood transplantation (CBT) in adults. We evaluated whether co-transplantation of placental mesenchymal stromal cells (MSCs) would enhance engraftment. Plastic adherent cells from placenta demonstrated typical characteristics of MSCs. In 6 individual experiments, 4 cohorts of 24 NOD/SCID mice were evaluated. Cohort 1 received  $5 \times 10^4$  CD34(+) cells from unit (U) 1 (SCBT); cohort 2 received  $5 \times 10^4$  CD34(+) cells from U1+  $4 \times 10^4$  MSCs (SCBT+MSCs); cohort 3 received  $2.5 \times 10^4$  CD34(+) cells from U1+  $2.5 \times 10^4$  CD34(+) cells from U2 (DCBT); cohort 4 received  $2.5 \times 10^4$  CD34(+) cells from U1+  $2.5 \times 10^4$  CD34(+) cells from U2+  $4 \times 10^4$  MSCs (DCBT+MSCs). Hematopoietic engraftment evaluated after 6-8 weeks, was similar in recipients of SCBT and DCBT. MSC co-transplantation demonstrated enhanced engraftment in DCBT (51.8 +/- 6.8% vs. 14.9 +/- 6.5%;  $p=0.04$ ) with an increased trend in SCBT (48.7 +/- 7.7% vs. 17.5 +/- 6.1%;  $p=0.07$ ). In DCBT, co-transplantation of placental MSCs reduced single cord dominance. Self renewal capacity was assessed by serial transplantation in secondary recipients infused with engrafted human cells from primary mice transplanted with or without MSCs. In secondary transplant of 17 evaluable mice, 13 engrafted at levels of 1-6.5%. Despite enhanced engraftment in primary mice long term engraftment capacity was unaltered with MSC co-transplantation. Imaging studies showed MSCs migrated to pelvic region and improved CB CD34(+) homing. Co-transplantation of placental MSCs enhanced cord blood engraftment and may act by improving homing of CD34(+) cells.

PMID: 19544531 [PubMed - as supplied by publisher]