

# ICSCN

## International Consortium of Stem Cell Networks

### Consortium Update – October 2006

#### 1. Update from the North-east of England



The Universities of Durham and Newcastle are in the final stages of negotiation of a Memorandum of Understanding to establish a cross-University regional institute. After having the 'Institute of Stem Cell Biology and Regenerative Medicine' as a holding name for the past year, we have now agreed that we will be known as the 'North-east England Stem Cell Institute' (NESCI).

We are rapidly expanding our academic, infrastructural and commercial bases.

In June this year, Professor Karim Nayernia joined us as Chair in Stem Cell Biology in Newcastle. His July 2006 Developmental Cell paper, in which his team, then at Gottingen, demonstrated that sperm grown from embryonic stem cells could be used to produce live mice, received headlines around the world. Professor Nayernia's expertise in germ cells and spermatogonial stem cells adds another dimension to the existing expertise in embryonic and somatic (including cord blood) stem cells in the region. We will announce further academic appointments in the next few months.

Work on our new, purpose-built GMP facilities will be completed at the end of October 2006. The two labs, one in the Fertility Centre (a clinical IVF unit) and one in University labs at the other end of the corridor, will give us the ability to produce clinical grade embryonic stem cell lines. The university facility has also been designed to allow teams working on cord blood and other somatic stem cells to work in GMP grade conditions in separate rooms to the embryonic team (albeit in the same facility). The overall cost of the facilities is just over £4m sterling.

We are completing an audit of all intellectual property held by the Institute and have recently appointed a Legal and Regulatory Officer, who is working with the academics to identify potential commercial opportunities. She is also working on various regulatory issues relating to embryology, stem cells and human tissue. We will also shortly about a part-time academic lawyer, who will lead research into these issues.

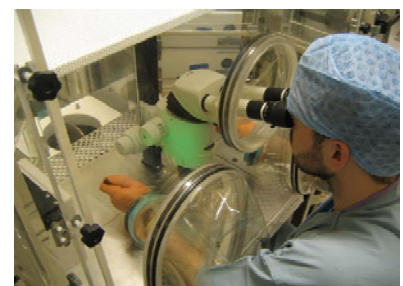
Further details are available from Martin Cox, [m.b.cox@ncl.ac.uk](mailto:m.b.cox@ncl.ac.uk); (0044) + 191 241 8698. Our brochures can be downloaded from [www.iscbrm.org](http://www.iscbrm.org) (we will be launching a new website later this year at our nesci address).



3. Scale of GMP Facility



2. Progress on 16 Oct 06



1. Patented Prototype isolator technology for IVF

## 2. Stem Cell Network Canada - Multidisciplinary Stem Cell Training Course



### *Three positions now filled.*

The Stem Cell Network (SCN) sincerely thanks all ICSCN members who forwarded applications to attend the SCN Multidisciplinary Course. SCN is pleased to report that the following ICSCN trainees will participate in this upcoming training event:

**Dr. Sujala Pathare, Stem Cell Research Forum of India**  
**Raymond Ching-Bong Wong, Australian Stem Cell Centre**

Congratulations to the successful applicants! This is the first such training course that SCN has offered, and due to the overwhelming response, it will likely be the first of many to come.

## **New International Consortium to Study Transcriptional Networks in Stem Cells**

The International Regulome Consortium (IRC) project represents the next crucial step in genomics research, the discovery of how gene function is regulated in mammalian cells during development. To do this, we will map the transcriptional regulatory nodes and networks (the 'regulome') that control the function and lineage determination of embryonic and adult stem cells. Because the interactions between these regulatory nodes and networks govern normal and disease states, the outcomes of this project will strongly influence the medical practice and therapeutic development of the future. The new knowledge of how genetic factors specify a stem cell's identity and regulate its commitment towards specific differentiation pathways will set the stage for a powerful new paradigm of health-medicine centred on the regeneration of diseased or dysfunctional tissues that is at once personalized, predictive, and preventive. In a larger context, the IRC's gene regulation discoveries will serve as an enabling knowledge base that informs virtually the entire field of molecular biology.

For Canada this project is the next logical step beyond its highly successful [Genome Canada Stem Cell Genomics project](#), which systematically examined gene expression in stem cells and differentiated derivatives. This project did much to consolidate Canada's international reputation in stem cell research and resulted in Canadians becoming one of the top contributors to GEO, a worldwide gene expression database.

For the full article and further information please click [here](#).

## **3. News from the Scottish Stem Cell Network**

### *Roslin Cells Centre launched*

A new initiative has been launched to underpin the development and exploitation of stem cell science in Scotland.

The Centre is a partnership between Roslin Institute, [Scottish Enterprise Edinburgh and Lothian](#), the [University of Edinburgh](#) and [Scottish National Blood Transfusion Service \(SNBTS\)](#) and will create clinically useable human stem cell lines compliant with UK and European regulatory requirements.

The unique partnership approach capitalises on each partner's expertise in stem cell research and development, with the involvement of SNBTS helping to ensure the centre meets Good Manufacturing Practice conditions needed for the stem cell lines to be suitable for clinical use.

The Centre is led by Dr Paul De Sousa of the [University of Edinburgh](#) and will be based at Roslin initially before transferring to the [Centre for Biomedical Research](#) being developed by the University of Edinburgh and Scottish Enterprise.

See: [www.roslinecells.com](http://www.roslinecells.com)

#### 4. ISSCR 2007, Cairns Australia

The International Society for Stem Cell Research invites you to participate in the Society's 2007 Annual Meeting held in June 17-20 in Cairns Queensland. Support packages, exhibit space and marketing opportunities for the meeting are now available with full details on the [ISSCR website](#).

#### 5. ICSCN Meeting, Cairns 2007

It is anticipated that the ICSCN will meet again in conjunction with the ISSCR annual meeting. Due to popular demand, the ICSCN meeting will happen over the course of a whole day, with the intended date currently Saturday June 16. Please email me any thoughts or suggestions concerning next years meeting.

#### 6. ICSCN Temporary Website

ICSCN information is currently located on the [ASCC website](#).



#### 7. International Events

##### *Korea*

### **2006 SEOUL SYMPOSIUM ON STEM CELL RESEARCH**

October 20, 2006, Centennial Hall, Yonsei University, Seoul, Korea

Organized by Stem Cell Research Center (SCRC), Yonsei University Medical Center,  
IRMP, Seoul National University

Sponsored by Ministry of Science and Technology

Please click [here](#) for the program. For more information please contact Dong-Wook Kim, Director, Stem Cell Research Centre, Korea at [dwkim2@yumc.yonsei.ac.kr](mailto:dwkim2@yumc.yonsei.ac.kr)

##### *Latin America (Chile)*

### **ES cells as a model for mammalian development**

*Santiago Chile, 15th to 28th January, 2007*

*A Workshop for UK and Latin American Students*

*Including, first meeting of the Latin American Stem Cell Network*

The focus of this workshop will be to introduce embryonic stem cell model system to a selective group of Latin American and British students and to create collaborative links between the UK, Latin America and the broader stem cell community.

The workshop will also include research talks from the laboratories in Latin America starting to do ES cell work. This will be the basis for the Latin American Stem Cell Network and includes groups from Brazil, Mexico, Uruguay, Argentina and Chile.

For more information visit the workshop [website](#).

## 8. Articles and Links of Interest

### **Bit Player or Powerhouse? China and Stem-Cell Research**

Stem Cell Research in China, article in The New England Journal of Medicine. Click [here](#) to access.

### **Global Biopolitics Working Papers**

The Global Biopolitics Research Group publishes a series of [Working Papers](#) on the latest research and issues in Global Biopolitics. Recent stem cell related papers include:

Brian Salter, Melinda Cooper, Amanda Dickins, [China and the global stem cell bioeconomy:an emerging political strategy?](#) July 2006

Catherine Waldby, [Oöcyte markets: global tissue economies and women's reproductive work in embryonic stem cell research](#) submitted to *New Genetics and Society*, August 2006

### **Websites of interest**

[www.stemcellscience.org](http://www.stemcellscience.org)

[www.stemcells.net](http://www.stemcells.net)

[www.stemcellnews.com](http://www.stemcellnews.com)

## 9. Next Month

Please send articles, activities, conferences, recruitment opportunities and other items of interest for next month's newsletter by November 13.

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For Canada this project is the next logical step beyond its highly successful Genome Canada Stem Cell Genomics project (<http://www.ottawagenomecenter.ca/projects/stembase/>), which systematically examined gene expression in stem cells and differentiated derivatives. This project did much to consolidate Canada's international reputation in stem cell research and resulted in Canadians becoming one of the top contributors to GEO, a worldwide gene expression database.

As it did with the Stem Cell Genomics project, the Canadian Stem Cell Network (SCN) provided the IRC with critical early funding. In our experience, seed funding is crucial for the rapid and successful launch of team-based research initiatives. The SCN's \$200K (Cdn) initial investment, combined with further financial support from federal (Genome Canada, Canadian Institutes of Health Research) and provincial (Ontario's Ministry of Research and Innovation) sources, provided the means for the proof-of-concept assays, workshops, and project management support necessary to create the Consortium.

Launched in 2004 (see *Science* 304:942, 2004), the IRC is an ambitious, Canadian-led international research effort that brings together over 45 investigators from 34 institutions in 12 countries to develop and apply the latest genetic, genomic and proteomic approaches to achieve these scientific goals. Our aims are to characterize the protein components of transcriptional complexes, identify the transcription factors and their binding sites, and determine their gene targets in embryonic and select adult stem cells. We will use the mouse primarily since it is the only mammalian system tractable for such high-throughput studies, and then turn to human embryonic stem cells for validation and translational studies. Finally, we will carry out computational analyses and apply systems biology approaches to create descriptive models that reveal the biological function behind all the data, in particular the mechanisms of genetic control in stem cells, how they function, and how they commit to pathways that form tissues.

The implications of the research are immense, with the promise of insights into developmental biology, disease and regenerative medicine. As well, our improved understanding of gene control systems and

their breakdown will allow researchers to select causal from associated genes in disease, greatly improving the success rate of drug development programs in Canada's pharmaceutical and biotechnology industries.

But the Consortium's overarching goal, to define the mammalian regulome, is an enormous task and beyond the scope of any one country's scientific expertise and resources. Hence, the IRC has linked the world's top genomics researchers together and divided the job among them according their different specialties.

IRC researchers are a diverse, multidisciplinary group, and all enjoy international reputations in their fields.

- In Canada, the Ottawa contingent is from the uOttawa/Ottawa Health Research Institute and includes Michael Rudnicki, a recognized expert in mouse genetics, stem cell biology and genes linked to muscle regeneration. Daniel Figeys is a world expert in mass spectrometry applications to proteomics and director of the Institute for Systems Biology. Marjorie Brand leads her field in quantitative proteomics applied to gene expression regulation. Mads Kaern uses world-class skills in computational analysis to study genetic networks. At the University of Toronto, Jack Greenblatt is a world leader in high-throughput mass spectrometric analysis of proteins and their complexes; Janet Rossant, Chief of Research at the Hospital for Sick Children, is a leading mouse geneticist and stem cell developmental biologist.
- In Europe, Frank Grosveld is a pioneer in transcriptional regulation of complex gene sets and heads up the IRC project component at the European Transcriptome, Regulome & Cellular Commitment Consortium (EuTRACC).
- In Britain, Bill Skarnes at the Wellcome Trust Sanger Institute (a leader in the Human Genome project), is an acknowledged expert in mouse mutational studies.
- In France, Irwin Davidson at the Institut de Génétique et de Biologie Moléculaire et Cellulaire (IGBMC) has a world reputation in transcription factor research. He heads a group of six scientists from five institutions in France.
- Bing Lim's team at the Singapore Genomics Institute is developing key technologies for use across the IRC.
- In Australia, John Mattick (University of Queensland) builds his own microarrays to look at siRNA expression and is known worldwide for his ideas on non-coding RNA as key regulators of cell development.
- In the USA, Ihor Lemischka (Princeton University) has been instrumental in the development of high-throughput techniques using siRNA to interrogate the function of transcriptional networks. And Mahendra Rao, an outstanding stem cell biologist recently recruited from the NIH, leads a research team from Invitrogen Corporation.

Each of these laboratories brings specialized strengths to the Consortium with programs that both complement and corroborate the work of the other participants. In the IRC we have the very best in the world working in concert, sharing world-class facilities and best practices in research, allowing us to be faster, better, and more thorough in pursuit of our scientific goals. Across all of these labs, an

intensive training program for young researchers will ensure that the next generation is equipped with the needed skills and experience to meet the scientific challenges of the future.

For further information, visit the IRC web portal (<http://www.internationalregulomeconsortium.ca>) or contact [irc@ohri.ca](mailto:irc@ohri.ca)

## Seoul Symposium Program

# 2006 SEOUL SYMPOSIUM ON STEM CELL RESEARCH

October 20, 2006, Centennial Hall, Yonsei University, Seoul, Korea

Organized by Stem Cell Research Center (SCRC), Yonsei University Medical Center,  
IRMP, Seoul National University  
Sponsored by Ministry of Science and Technology

08:30-09:20	Registration	
09:20-09:25	Welcome address	Yonsei University, Korea
09:25-09:30	Congratulatory remark	MOST, Korea
<b>Session I: Regulation of Self Renewal</b>		
<i>Chairs: Kye-Seong Kim and Hiromitsu Nakauchi</i>		
09:30-09:55	MicroRNAs, as a factor regulating cellular function of stem cells	Kye-Seong Kim, Hanyang University, Korea
09:55-10:30	Epigenetic regulation of stem cell self-renewal by polycomb group protein, Bmi-1	Hiromitsu Nakauchi, Univ. of Tokyo, Japan
10:30-10:55	Role of growth factors and neurotransmitters in regulation of embryonic stem cell proliferation	Ho-Jae Han, Chonnam National University, Korea
10:55-11:15	Coffee Break	
<b>Session II: Prospect of Stem Cell Research</b>		
<i>Chairs: Paul Simmons and Ron McKay</i>		
11:15-11:50	The Yin and Yang of MSC	Paul J Simmons, President of ISSCR, USA
11:50-12:15	Umbilical cord blood-derived stem cells for future regenerative medicine	Kyung-Sun Kang, Seoul National University, Korea
12:15-12:50	The use of embryonic stem cells in science and medicine	Ron McKay, NIH, USA
12:50-14:20	Lunch	
<b>Session III: Differentiation/Application of Stem Cells</b>		
<i>Chairs: Kyung-Sun Kang and Andrew G Elefanty</i>		
14:20-14:45	Molecular and cellular targeting of spinal cord injury; From molecular signature to stem cell therapy	Soo Kyung Kang, Pusan National University, Korea
14:45-15:20	Differentiation of embryonic stem cells	Andrew G Elefanty, Monash Univ, Australia
15:20-15:45	Efficient induction of dopamine neurons from human ES cells	Dong-Wook Kim, Director, SCRC, Korea
15:45-16:10	Coffee Break	
<b>Session IV: Pre-Clinical and Clinical Applications</b>		
<i>Chairs: Gilson Khang and Jonhhoon Kim</i>		
16:10-16:35	Mesenchymal stem cells for bone marrow transplantation; Roles in hematopoietic regenerations and possible transformation	Il-Hoan Oh, Catholic University of Korea, Korea
16:35-17:10	Antidepressant and anxiolytic effects of stem cell-derived monoaminergic neuronal grafts: new horizons and innovative delivery methods	Miles Cunningham, Harvard Medical School, USA
17:10-17:35	From endothelial progenitor cells to MAGIC-CELL clinical trial; <b>an example of 'bench to bedside'</b>	Hyo-Soo Kim, Seoul National University, Korea
17:35	Closing Remark	