



CELLlines

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StemCellCo continues to make progress

By Dauphine Dunlap
SCN Summer Intern

Meetings with researchers in Halifax, decision-makers in the Privy Council Office and MP Joe Fontana (Parliamentary Secretary to Prime Minister Paul Martin on Science and Small Business) have added more promise to the plans for StemCellCo.

Stem Cell Network Executive Director Drew Lyall and James Price, Director of Partnerships and Corporate Development, met with researchers in Halifax to discuss prospects for the company, as well as the potential for Network stem cell research projects in Atlantic Canada.

"The company is making good progress, and we are seeking funding to implement the next phase of work," Price says.

Progress over the past month has been steady and interest continues to build.

Meetings have gone "very well," Price says.

The Network team was particularly encouraged by Mr. Fontana's response to the initiative during their meeting with him.

"He said it could be a new model for commercialization."

(- SCN Communications Intern Dauphine Dunlap is studying Journalism and Biology at King's College/Dalhousie University)



Joe Fontana

Update: Stem Cell Genomics Project

Research "on track towards successful completion"

Excerpted from the team's submission for NCE reporting

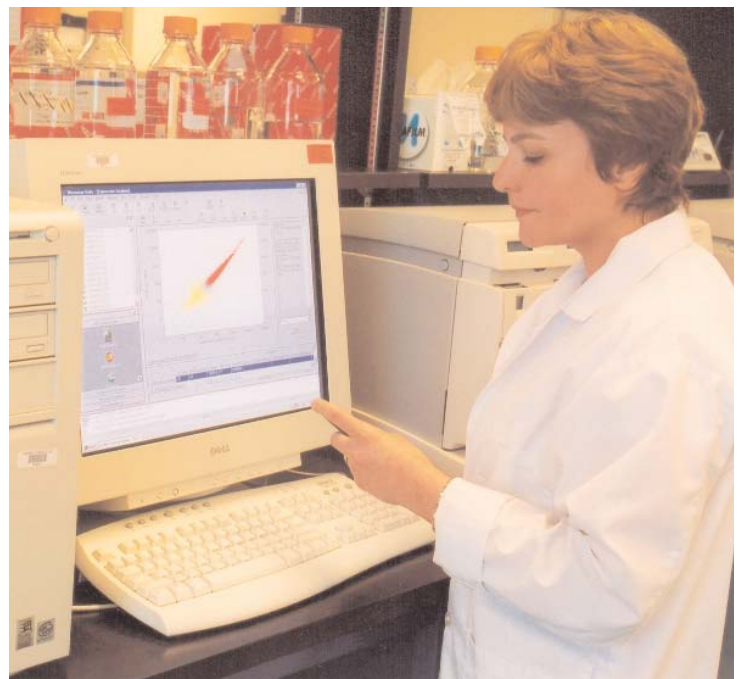
The Stem Cell Genomics Project (SCGP) is being completed to understand the genetic factors that specify stem cell identity and regulate the ability of stem cells to form the cells that make up different types of tissue. In order to do this, human and mouse embryonic and adult stem cells are isolated by Network and project scientists and are subjected to gene expression profile analysis to characterize the pattern of mRNA and proteins found in stem cells.

The Genomics Project is a full scientific collaboration with 25 investigators from the Stem Cell Network. Twenty-four people at the Ontario Genomics Innovation Centre (OGIC) and at the Ottawa Health Research Institute (OHRI) are working together on the project.

The project, which started in 2002, has made progress on a number of fronts, including personnel recruitment and research.

To date, Stem Cell Network investigators have provided an excellent source of proven samples for analysis. These samples represent a wide variety of stem cell types, including hematopoietic, ES, TS, neural, retinal, epithelial, and myoblast stem cells.

After an intense period of collecting samples and equipment, the team has inputted collected stem cell expression data into a web database, StemBase,



Research progresses on the Stem Cell Genomics Project

(<http://www.scgp.ca>), available to researchers on the project.

Researchers have collected more than 125 stem cell samples, performed 763 GeneChip hybridizations, sequenced 5 SAGE libraries, and identified 965 proteins by proteomic analysis.

The researchers have developed the methodology and are analyzing acquired data. The Proteomics, Bioinformatics, and Purification teams within the Genomics Project have all made significant advances.

The Proteomics team has developed two approaches that, collectively, should allow an evaluation of signaling pathways in stem cell preparations.

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"The Stem Cell Genomics Project is a clear example of how cooperation and collaboration have facilitated the conduct of a large-scale project that will significantly contribute to our understanding of stem cell function and identity."

Pax7 discovery a “major step”

Protein sufficient to regenerate muscle

By Dauphine Dunlap
SCN Summer Intern

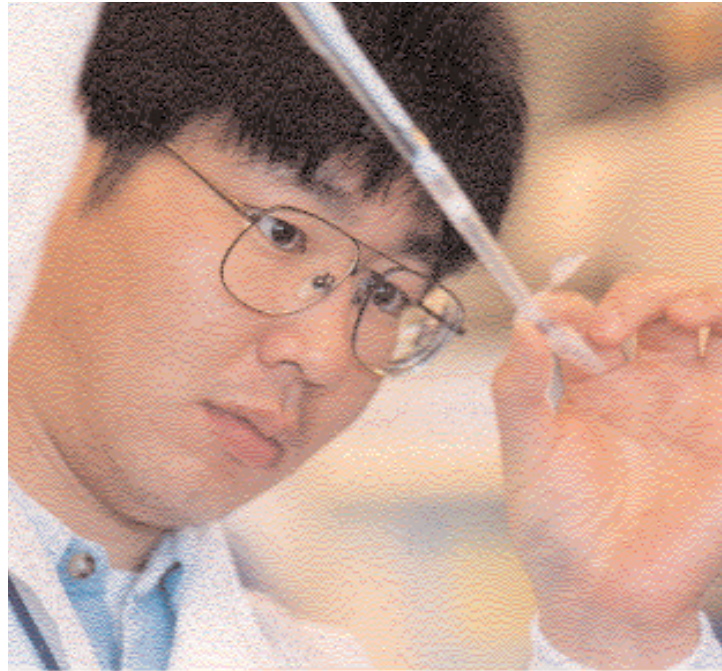
At a May 11 press conference at the Ottawa Hospital, the Stem Cell Network’s Michael Rudnicki, Senior Scientist and Head of the Molecular Genetics Program at the OHRI, described how the Pax7 gene triggered certain adult stem cells to become muscle-making cells in mice models.

Rudnicki’s team, which includes Patrick Seale (now conducting post-doc work at Harvard University), Jeff Ishibashi and Anthony Scime, published their findings in the May issue of *PLoS Biology* (DOI:10.1371/journal.pbio.0020130), one of the first open-access journals, freely available on the Web.

“What we’re doing is taking a naive cell that would not effectively participate in muscle regeneration and converting a high proportion of them into muscle-making cells by introducing this gene, Pax7, into them,” said Rudnicki.

Last year the team discovered that the protein was involved in the regeneration process. This study indicates that Pax7 is not just involved, but that it alone is sufficient to trigger the regeneration.

This discovery inspires hope for the development of therapies to treat debilitating neuromuscular



diseases, such as muscular dystrophy.

“This work demonstrates that Pax7 represents a key protein in the chain of events that directs stem cells to repair muscle,” Rudnicki says. “We now need to identify drugs that can activate Pax7 towards developing new therapies for the treatment of these devastating diseases.”

Ron Worton, CEO at the OHRI and Stem Cell Network Scientific Director, described the discovery as “one of the most significant findings we have had in a long time.”

Worton told reporters said that “science progresses in steps, and this is a major step.”

“After 20 years in research on muscular dystrophy, it has become clear to me that the best hope for those with neuromuscular disorders is through regeneration of the damaged muscle and that stem cells provide the means to achieving this.”

Rudnicki said that Pax7 discovery was made after experiments involving mice. The stem cell population was isolated and infected with a virus expressing the Pax7 gene. Following the infection, the

cells became muscle cells.

The cells infected with the virus were injected directly into a mouse, which demonstrated their ability to regenerate muscle. Patrick Seale also discovered that Pax7 enhances the formation of muscle.

The experiment was also conducted on a chemically damaged muscle. Cells infected with Pax7 were injected into a mouse lacking dystrophin. Function of the stem cells was proven when the dystrophin was restored.

This is “an extremely important discovery in the ongoing saga of trying to treat children and adults with the various forms of muscular dystrophy,” said Worton.

The researchers’ long-term hope is to develop a pill that will “mobilize the expression of Pax7 to enhance muscle regeneration,” said Rudnicki.

StemPath, a biotech start up, is moving in this area.

Worton said that his “best guess” is that such therapies might be available in five to ten years, though he wouldn’t be surprised if there was the possibility of going into early clinical trials in the next three to five years.

Events Calendar

May 13- First formal meeting of the Research Management Committee

May 25- All Day Mid-Term Review Planning Meeting at the Sheraton Gateway Airport Hotel in Toronto. The meeting, for board members and PIs, will focus on thoughts and input on a completed draft of the Mid-term Review (with the exception of research sections), as well as other areas of the Network mandate, such as networking, partnerships, technology transfer, and knowledge exchange.

For further information, Please contact Karen McPherson, at Karen@stem-cellnetwork.ca, or at 613-562-5826.

June 4- Training Award Applications Deadline. Thank you for your feedback. We have incorporated it into a simpler online application system. To apply, please visit www.stemcellnetwork.ca/careers/training.php

June 9- Executive Committee of Board of Directors meets in Ottawa

June 9- Audit and Finance Committee meets in Ottawa

June 22- Board of Directors Meeting by teleconference

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– Ron Worton

Thank you!

Stem Cell Network Executive Director Drew Lyall thanks everyone for completing NCE reporting on time. This has been most helpful as the SCN builds Mid-Term Review documents.

Genomics: Milestones met

Continued from Page 1

The Bioinformatics team has developed Web-mounted tools for StemBase, extracted data from Medline abstracts to identify facts relating to stem cells, and provided support for emerging experimental approaches – an example, chip on chip for the genomic mapping of chromatin modifications.

The Purification team has isolated 61 stem cell isolations, including mouse ES, neural, myoblast and hematopoietic stem cells.

Cooperation is a key component in this project. The research group has established close collaborative relationships with the National Research Council Institute for Biological Sciences in Ottawa, the McGill University and Genome Québec Innovation Centre in Montréal, and the British Columbia Genome Sciences Centre in Vancouver.

The Genomics Project team has met the significant revised milestones and it is on track toward the successful completion of the project.

The team is now prepared to



complete data acquisition and conduct the analytical phase of the project.

"The Stem Cell Genomics Project is a clear example of how cooperation and collaboration have facilitated the conduct of a large-scale project that will significantly contribute to our understanding of stem cell function and identity."

The SCGP is being conducted as a fully integrated partnership with the Stem Cell Network, and is funded in part by Genome Canada, Ontario Research and Development Challenge Fund (ORDCF) and Canada Foundation for Innovation (CFI).

Health charity meetings focus on funding of research, training

May meeting to examine further opportunities

By Dauphine Dunlap

Over the past few months, James Price, Stem Cell Network Director of Partnerships & Corporate Development, has met with a number of health charities to look at opportunities for working together.

Co-funding the training awards, and co-funding the research proposals for 2005 were key items discussed in the meetings, which took place in Ottawa and Toronto.

Discussions have been held with the Muscular Dystrophy Association of Canada, the ALS Society of Canada, the Juvenile Diabetes Research Foundation of

Canada (JDRF Canada), as well as the international JDRF branch (JDRF), the Parkinson's Society Canada, and Heart and Stroke Foundation of Ontario.

The Stem Cell Network is also continuing outreach in communications activities by posting partner subsites on its website.

Subsites have been developed in partnership with JDRF and with the Foundation Fighting Blindness.

In May, a meeting is planned between the Network and health charities to look at further opportunities.

"Hopefully, one of the outcomes of the May meeting will be to identify potential partners in research programs going for future funding," James said.

Mid Term Review Draft report to be sent to PIs in June

A draft of the Network's document for Mid-Term Review by the NCE will be finalized in early June, following the planning meeting on May 25.

The draft will be circulated to all PIs. Any comments must be inserted by the third week in June so the Mid Term Review can be ready by the end of July.



Research Management Committee appointed

The Stem Cell Network Board has formally appointed a Research Management Committee (RMC) to assist the SCN Board of Directors on research matters.

In addition to the Scientific Director, Associate Scientific Director and Theme Leaders, members include: **James Ellis**, Chair of the Training Committee; **Suzana Rosic-Kablar**, Chair of the Training Advisory Committee; **Michael Crowley**, Vice-president of Business Development, Robarts Research Institute; **Elizabeth Hurdman**, Manager, Science and Education Programs, Foundation Fighting Blindness.

Specific tasks of the RMC will be to review research proposals, monitor the progress of Network research, monitor the performance of, and provide feedback to the Network Investigators and make recommendations to the Board of Directors regarding research.

The RMC will meet by teleconference or in person at least four times per year. Their first formal face-to-face meeting is May 13.

Web Update

All Stem Cell Network Project Reports, submitted during the NCE Reporting process, will be posted on the internal website before May 25.

Contact us

The SCN welcomes your suggestions for future issues of *CELLlines*.

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In Focus:



The Cell Restoration Laboratory opened this spring at Dalhousie University's medical school. Stem Cell Network researcher Dr. Ivar Mendez, centre, says it is dedicated to stem cell applications for brain repair.

Cell Restoration Lab 'a world-class resource'

Researchers
get the tools
to change research,
diagnosis, treatment

HALIFAX, Nova Scotia

The official opening this spring of the new Cell Restoration Laboratory at Dalhousie Medical School highlighted exciting new research with stem cells that could benefit millions of people who suffer from brain and spinal cord injury and disease.

The Cell Restoration Laboratory is a unique Canadian infrastructure exclusively dedicated to stem cell applications for brain repair. The lab and its state-of-the-art infrastructure are the cornerstone of the "Stem Cells for Brain Repair Project." The lab is part of the Brain Repair Centre (BRC), the largest research collaboration in Atlantic Canada.

"The Cell Restoration

Laboratory is a world-class resource for the region and for Canada, which will help us bring to reality new innovations in brain repair using stem cell technology," said Stem Cell Network researcher Dr. Ivar Mendez, Professor and Head of the Division of Neurosurgery at Dalhousie University, Chair of the BRC, and one of the scientists who will perform research in the new lab.

"The lab will also play a key role in helping us attract and retain the brightest research scientists in this field."

The Government of Canada has invested more than \$8 million in the Brain Repair Centre.

"It has long been an important role of the QEII Foundation to put into the hands of its medical experts the tools they need to bring change to research, diagnosis and treatment," said Ms. Gwen Haliburton, Chair of the QEII Foundation Board of Trustees.

"We are honoured to provide our Cell Restoration Lab with a key piece of research equipment - a Multi-photon Microscope, which is

considered the gold standard in the work that our medical scientists will carry out."

"We must consciously raise the bar on self-imposed limitations," said Mr. Frank Sobey, Chair of the Dalhousie Medical Research Foundation. "We do this by investing in innovation and potential, like what we see at the Brain Repair Centre. Through collaborative funding partnerships, we must seek to recognize and support these kinds of opportunities in our region."

Innovative research at the Cell Restoration Laboratory will focus on stem cell restoration strategies for repairing neuronal circuitry in patients with disorders such as Parkinson's disease, ALS (Lou Gehrig's disease), Huntington's disease, multiple sclerosis, spinal cord injury and optic nerve injury. This newly expanded stem cell research facility includes state-of-the-art equipment for stem cell and animal behavioural testing systems, including an electrophysiological imaging module.

The Laboratory complements

the existing neural transplantation program, which is unique in Canada and one of only four worldwide. The investigators collaborate closely with labs across Canada, and abroad in search of ways to improve cell survival, safely transplant cells into the brain and discover new types and sources of cells.

— excerpted from a press release

Research at the Cell Restoration Laboratory will focus on stem cell restoration strategies for repairing neuronal circuitry in patients with disorders such as Parkinson's, ALS, Huntington's, MS, spinal cord injury and optic nerve injury.