

Calendar 2003 of Friends of CIHR  
Honours  
the Past  
and Celebrates  
the Future

DNA - Genomics - Proteomics - Health

# Health Research: We Honour the Past and Celebrate the Future



I am pleased to welcome our many friends to read and display Calendar 2003. Here, we commemorate the 50th anniversary of the discovery of the DNA structure and highlight a cadre of New Investigators in the CIHR family. As in previous years, this Calendar is to serve an educational role to help understand the wonders of medical research and the health sciences. What better way than to provide

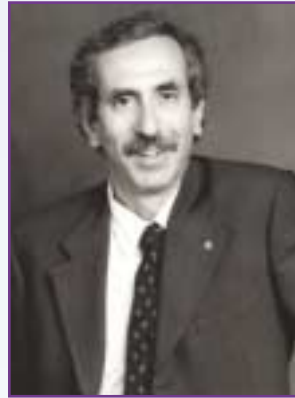
insights into the world-class achievements of senior scientists, namely the Gairdner awardees as well as contemporary work of young researchers who are trailblazing the frontiers of health research. 2003 is the golden milestone of the discovery of the molecular structure of DNA and it is fitting to honour those individuals who translated this into the fields of genomic and proteomic sciences.

This year Genome Canada has joined FCIHR as a principal sponsor of Calendar 2003, and together with Great West Life/London Life and Partners in Research we represent a consortium of organizations dedicated to promoting a better understanding of health research at the community level. These sponsorships have assured a national distribution of this Calendar to all high schools in Canada including those in the Northwest Territories and Nunavut.

The public's fascination with health sciences and landmark discoveries continues unabated. We hope this Calendar will be informative as well as educational and prompt young Canadians to pursue a career in health research. Thank you all for your interest and support.



Aubie Angel, MD  
President, FCIHR



This century will be marked by profound discoveries in all areas of health research. The Canadian Institutes of Health Research (CIHR) will lead the way, by fostering academic growth in biomedical and clinical science, health systems and services research, and investigations of the social, cultural and other factors that affect populations.

Here are a few examples of CIHR's awards and grants aimed at Canada's brightest young researchers. The New Emerging Team (NET) grants, which support the creation and development of teams of independent investigators undertaking multidisciplinary research, will give young investigators a chance to shine. The Strategic Training Initiatives will build transdisciplinary health research opportunities for

undergraduate and health professional students, and provide post-doctoral research training. Brain Star, developed by CIHR's Institute of Neurosciences, Mental Health and Addiction, offers bi-weekly recognition of work done by research trainees. The Peter Lougheed/CIHR Scholarship, CIHR's pre-eminent award worth \$525,000, is given to the highest-rated applicants in CIHR's national competition.

CIHR also encourages the next generation of scientists through educational endeavors such as "Gee! In Genome" - a CIHR-funded national traveling exhibit designed to excite youth about the wonders of genomics. Then there is Science's Next Wave program (<http://nextwave.sciencemag.org/>), which is CIHR-funded, and serves as a career development resource for scientists.

In short, CIHR is committed to excellence - and will continue to help tomorrow's health researchers reach for the stars.

Sincerely,



Dr. Alan Bernstein, FRSC  
President, CIHR



As federal Minister of Health, I am pleased to congratulate the Friends of Canadian Institutes of Health Research on the publication of your third annual calendar. This is an invaluable tool that will generate awareness about the importance of health research in Canada.

Since becoming Minister of Health I have come to fully appreciate that research is a vital cornerstone on which our health care system rests. It is also a key to building an innovative and evidence-driven health care system for the 21st century.

The Government of Canada, through the creation of CIHR, doubled the amount of money it invests in health research. At universities, teaching hospitals and research institutes across the country, CIHR-funded researchers are working to strengthen our health care system.

Their work has a significant impact here and around the world. To the Friends of CIHR and Canada's health research community, I extend my best wishes and commend you for your dedication and commitment to improving the lives of others.

A. Anne McLellan  
**Federal Minister of Health**



Genome Canada is proud to partner with Friends of CIHR to celebrate the 50th anniversary of the double helix discovery and the exceptional individuals who have contributed so much to opening up this exciting new field of genomics.

Working with other partners such as our five regional Genome Centres, provincial governments, the private sector, academic institutions and national and international foundations, Genome Canada is developing and implementing a national strategy in genomics and proteomics research for the benefit of all Canadians. Our goal is to ensure that Canada becomes a world leader in genomics and proteomics research in key selected areas such as agriculture, environment, fisheries, forestry and health.

At Genome Canada, another important part of our mandate is to raise public awareness about issues associated with genomics. We hope this calendar will help you learn more about those remarkable Canadians that are leading this amazing life science revolution.

Have a great year!

Dr. Martin Godbout  
**President and CEO, Genome Canada**

The contribution of medical research in the past to our lives as Canadians pales with what the future will bring. From a redrawing of the map of the brain that helps us understand what makes a baby nurse, or allows a violinist to execute a thrilling arpeggio; to the virtual creation of a new drug "in silico" that cures a previously "incurable" disease, medical research will deliver; and much, much more. As the health of Canadians and the wealth of our communities improve and flourish, future Canadians will point to 2001 - the dawning of the Biocentury. To think we were there!

Dr. Calvin Stiller  
**President and CEO, Canadian Medical Discoveries Fund**  
**Recipient of the FCIHR Distinguished Service award for 2002**

# The Gairdner Foundation International Awards 2002

The 2002 Gairdner Foundation Awards are presented to scientists for their major original and pioneering contributions, both fundamental and applied to our understanding of mammalian and other genomes. The Gairdner Foundation International Awards were established in 1957 by Toronto businessman James Gairdner to recognize outstanding contributions by medical scientists. Of the past 255 International Awardees, in a variety of disciplines from genetic research to cancer therapy, 56 have gone on to win a Nobel Prize. Over the past 42 years, the awards have grown to be one of the most prestigious international awards in medical research. Reflecting Canada's commitment to the support of excellence in genomics research, the 2002 Gairdner Awards honour achievement in this critical field of inquiry and discovery. **This year, Genome Canada is the Gairdner's national lead sponsor.**



GenomeCanada

## The Early Architects

**Dr. Jean Weissenbach,**  
Director, Genoscope,  
French National Sequencing Centre,  
Paris, France.



Citation:

For "His unique contributions in creating a detailed genetic map of the human genome."

**Dr. Maynard V. Olson,**  
Professor of Genome Sciences and Medicine  
(Division of Medical Genetics)  
and Adjunct Professor of Computer Science,  
University of Washington, Seattle, WA



Citation:

For "His original concepts, and for technological and experimental innovations that were critical for the sequencing of the mammalian genomes."



*In addition to \$30,000 and a scroll containing the citation for their award, Gairdner winners receive a six-and-a-half inch abstract bronze sculpture titled *Le Coeur*, mounted on a base of black Belgian marble which was created by sculptor Donald Liardi.*

# The Human Genome Project



**Sir John E. Sulston,**  
Founder, Sanger Institute,  
Cambridge, UK  
*With Dr. Sydney Brenner, Dr. Sulston received  
a Gairdner International Award in 1991.*

Citation:  
For "His major seminal contributions to sequencing  
of human and other genomes".

**Dr. Robert Waterston,**  
Chairman,  
Department of Genetics,  
Washington University  
School of Medicine,  
St. Louis, MO



Citation:  
For "His major seminal  
contributions to  
sequencing of human  
and other genomes".

# Bioinformatics

**Dr. Philip P. Green,**  
Professor, Department of Genome Sciences  
and Adjunct Professor, Computer Science Department,  
University of Washington, Seattle, WA and  
Investigator, Howard Hughes  
Medical Institute, New York



Citation:  
For "His contributions to development of the  
computational tools essential for sequencing  
of the human genome".

**Dr. Michael S. Waterman,**  
Professor of Mathematics,  
of Biological Sciences,  
of Computer Science and  
University Professor, University  
of Southern California,  
Los Angeles, CA



Citation:  
For "His contributions to computational molecular biology  
that greatly facilitated sequencing of the human genome".



## The Gairdner International Award of Merit

**Dr. Francis S. Collins**, (left), Director of the National Human Genome Research Institute, National Institutes of Health, Bethesda, MD.

**Citation:** For “His outstanding leadership in the Human Genome Project and particularly for the international effort to map and sequence the human and other genomes”.

**Dr. James D. Watson**, (right), President, Cold Spring Harbor Laboratory, Cold Spring Harbor, N.Y. Dr. Watson is best known for his discovery of the double-helix structure of DNA, for which he shared, with Francis Crick and Maurice Wilkins, the 1962 Nobel Prize in Physiology of Medicine.

**Citation:** For “His 50 years of unparalleled contributions to biology and medical science, and in particular for his critical international leadership during the creation of the Human Genome Project”.



**Dr. J. Craig Venter,**  
**Founder and Chair of**  
**The Institute for Genomic Research**  
**(TIGR), Rockville, MD**

**Citation:**  
For “His major advancement of whole genome sequencing and its applications to microbial, human and other genomes”.



*\*Please refer to pages 4 and 5 for the remaining Gairdner Award recipients.*

## The Human Genome Project



**Dr. Eric S. Lander,**  
**Professor, Department of Biology,**  
**Massachusetts Institute of Technology,**  
**Director, Whitehead Institute/MIT Centre**  
**for Genome Research, Cambridge, MA**

**Citation:**  
For “His major seminal contributions to sequencing of human and other genomes”.

# OCTOBER

2002



sunday

monday


tuesday

wednesday

thursday

friday

saturday

		1	2	3	4	5
6	7	8	9	10	11	12
13	Thanksgiving Day	15	16	17	18	19
20		🍁 Gairdner Foundation National Genome Program, Oct. 21-25 🍁				26
Daylight Saving Time Ends	28	29	30	Halloween		
27				31		

Canada-Wide Science Fair: *it's time to register!*  
May 11-18, 2003 -- Calgary, Alberta

Visit [www.yzf.ca](http://www.yzf.ca) to obtain information on how you or your school can participate in the Canada-Wide Science Fair!

**Genome Canada: committed to promote science to young Canadians**

[www.genomecanada.ca](http://www.genomecanada.ca)





Within 24 hours of birth, babies' heads are measured to establish Canadian standards for normal growth at birth.

*Funding: Dr. Janssen's research is supported by the CIHR and the British Columbia Medical Services Foundation.*

*Research/Image Credit: Courtesy of Dr. Patricia Janssen*

# Newborn Growth and Development

# N O V E M B E R 2002



sunday

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3	4	5	6	7	8	9
10	Remembrance Day 11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	Hanukkah 30



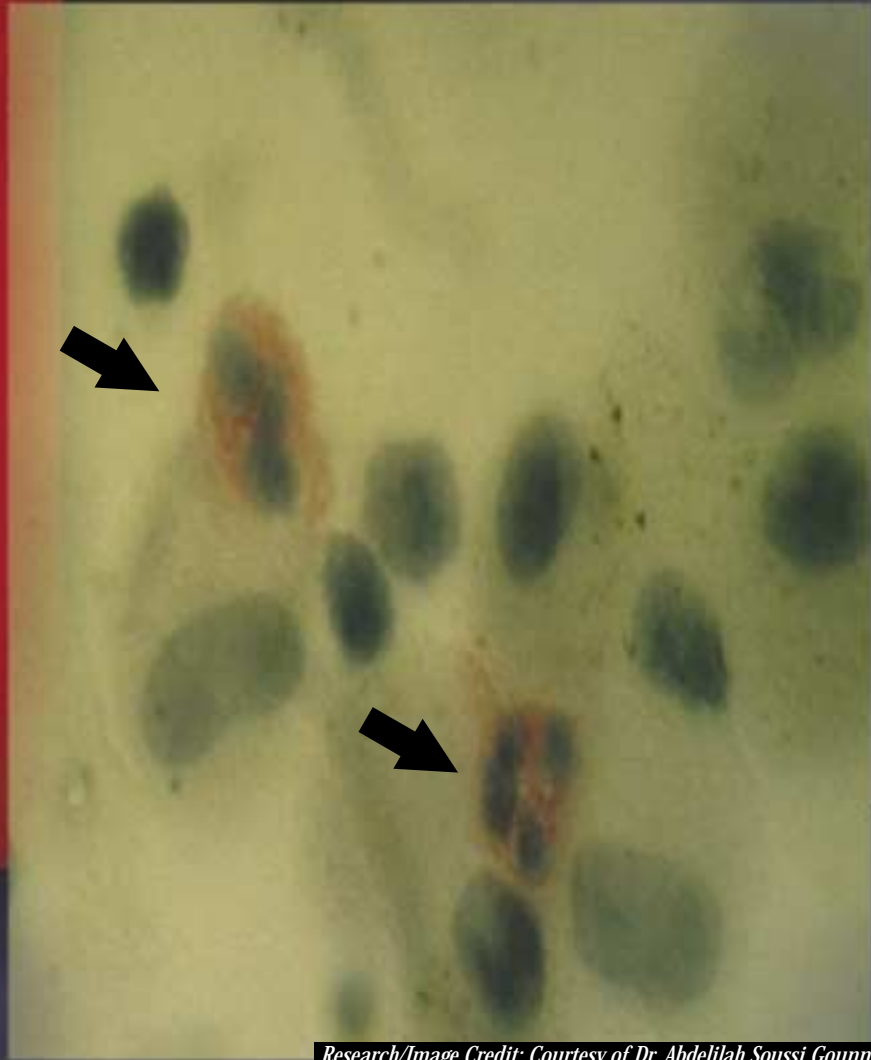
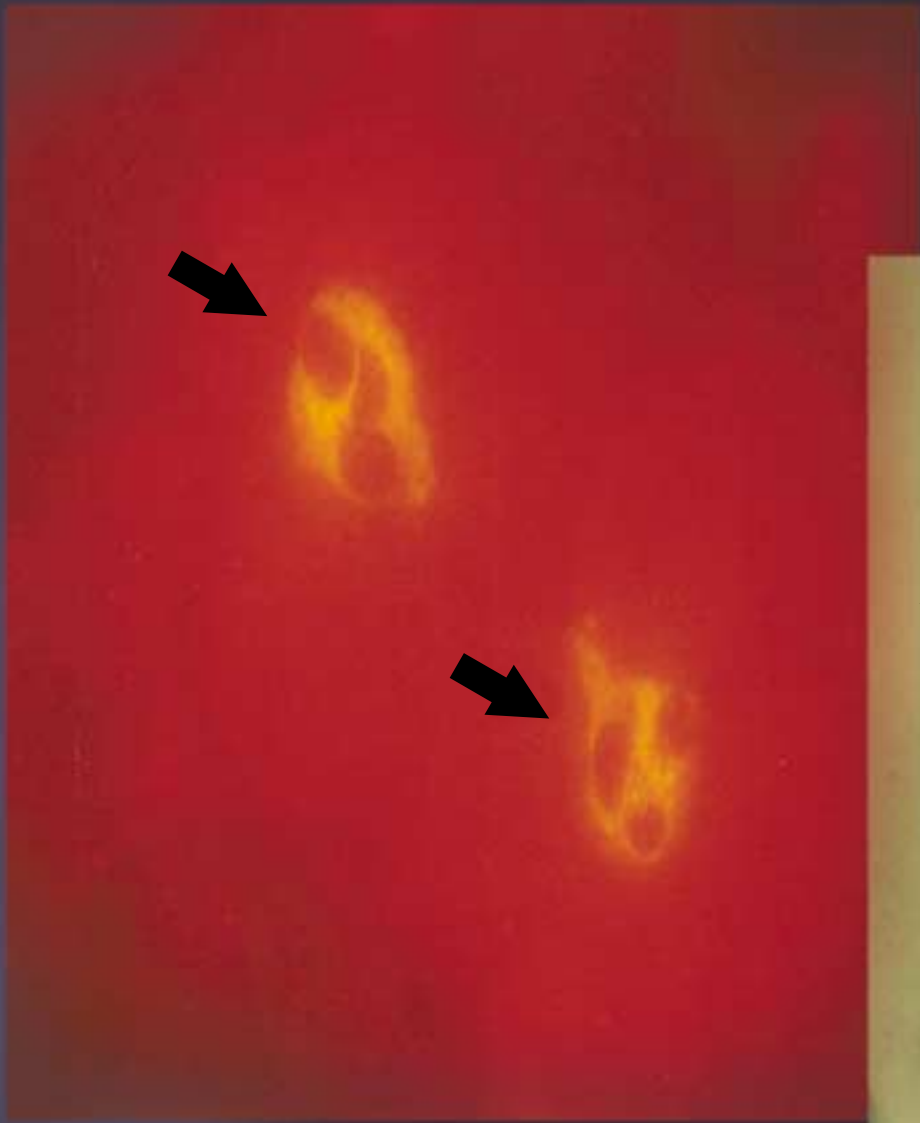
Dr. Patricia Janssen is interested in maternal, fetal, newborn and women's health and is currently updating standards for measuring fetal growth. Through her research she is establishing Canadian standards for normal growth at birth, separating babies by sex and ethnicity to allow doctors and nurses to know when a

baby hasn't grown properly in the uterus, therefore requiring careful observation and frequent feeding.

Dr. Janssen became interested in research because of its exciting challenges in creating new knowledge. She holds a BSN (Nursing) from the University of British Columbia, and a Masters in Public Health and PhD

(epidemiology), both from the University of Washington. She is an Assistant Professor at the University of British Columbia and an Associate Faculty member at the BC Research Institute for Children's and Women's Health.

Dr. PATRICIA  
JANSSEN



During an asthma attack, white blood cells called neutrophils (arrows) migrate to the lung, release cytotoxic products leading to asthma exacerbation.

*Funding:*

*Dr. Abdelilah Soussi Gounni's research is supported by the CIHR and the Manitoba Health Research Council*

*Research/Image Credit: Courtesy of Dr. Abdelilah Soussi Gounni*

# Asthma

# D E C E M B E R 2002



*sunday*

*monday*

*tuesday*

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15	16	17	18	19	20	21
Winter Solstice		Christmas Eve	Christmas Day	Boxing Day		
22	23	24	25	26	27	28
29	30	New Year's Eve				
		31				



Dr. Abdelilah Soussi Gounni's research focuses on the role played by white blood cells called neutrophils in allergic diseases such as asthma. His laboratory has discovered that activation of these cells through specific receptors induced harmful mediator release, which exacerbated asthma. The outcomes of his research will

aid in the design of effective strategies for allergy and asthma treatment.

Dr. Soussi Gounni is fascinated with research because it allows him to use both creative and intellectual skills to add to our knowledge base. He holds a PhD in molecular biology and immunology from the Paul

Sabatier University and Pasteur Institute in Toulouse and Lille, France respectively. Currently, he is an Assistant Professor in the Department of Immunology at the Faculty of Medicine, University of Manitoba.

Dr. ABDELILAH SOUSSI GOUNNI



Research/Image Credit: Courtesy of Dr. Wendy Ungar



Choosing the right medications for children is a unique challenge. We don't always know what drugs are best for children and medicines can also be expensive. The goal of our research is to help create a health care system where cost does not prohibit access to medicines that are safe and effective for children.

# Drug Costs and Health

# JANUARY

2003



*sunday*

*monday*

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*saturday*

			New Year's Day <b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
Epiphany <b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>
<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>
<b>19</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>
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Dr. Wendy Ungar studies the health consequences of medication cost-sharing borne by Ontario children and their families for the treatment of asthma. The provision of medications is a major component of health care not universally covered by provincial health programs. This work is a model for understanding the

relationship between cost-sharing, a form of user fees and health outcomes.

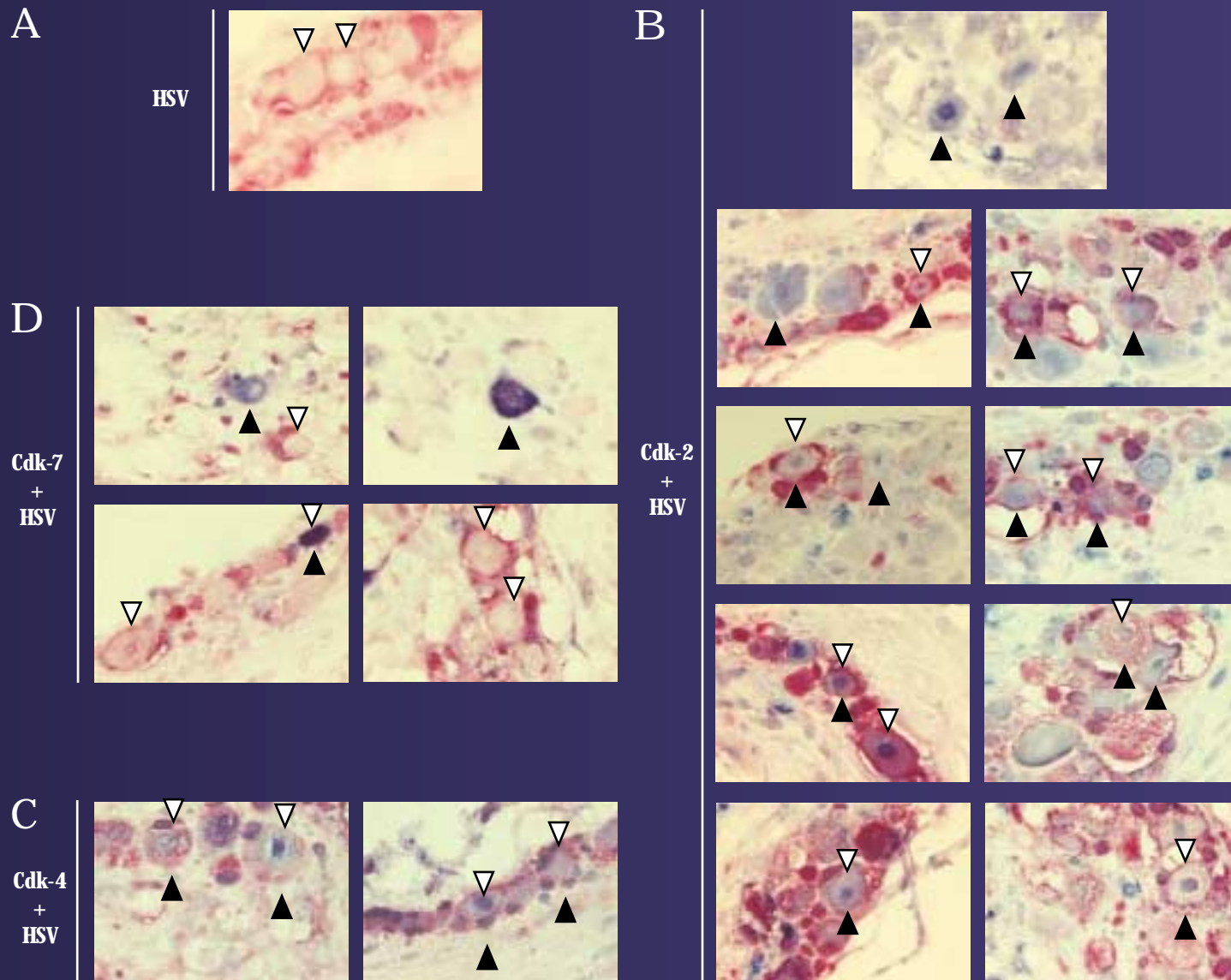
Dr. Ungar became interested in research because of the challenge of the unknown and the opportunity to make a unique and lasting contribution to the health of Canadians. She holds a MSc in Pharmacology and

Therapeutics from McGill University and a PhD in Health Policy, Management and Evaluation from the University of Toronto. She is a Scientist at the Hospital for Sick Children Research Institute and an Assistant Professor in the Department of Health, Policy and Management at the University of Toronto.

Dr. WENDY UNGAR

*Funding: Dr. Ungar's research is supported by the CIHR and the Canadian Lung Association.*

# Figure Legend



## HSV replicates in neurons that express the proteins called cdk2 and cdk4

Cdks are shown in blue and HSV in red. Black arrowheads pointing up indicate neurons where a specific cdk is expressed. White arrowheads pointing down indicate neurons where HSV is replicating. Neurons designated by black and white arrowheads are those that express a specific cdk and where HSV is replicating. Clockwise from top-left. **(A)** A section processed to show only HSV replication (*red*) is presented for comparison. **(B)** Sections that show expression of cdk2 (*blue*) and replication of HSV (*red*). The top panel shows two neurons where cdk2 is expressed but where there is no HSV replication and several neurons that do not express cdk2 or support HSV replication. All other panels show neurons that express cdk2 and where HSV is or is not replicating. All neurons where HSV is replicating express cdk2. **(C)** Sections showing cdk4 (*blue*) and HSV replication (*red*). Nuclear cdk4 is clear in neurons where HSV is replicating. **(D)** Sections showing cdk7 and HSV replication. In contrast to cdk2 and cdk4, HSV replicates in many neurons that do not express cdk7.

Research/Image Credit: Courtesy of Dr. Luis Shang

# Herpes Simplex Viruses

# F E B R U A R Y 2003



sunday

monday

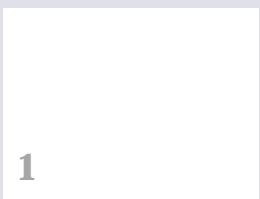
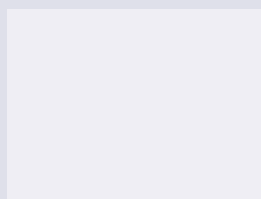
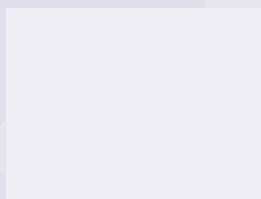
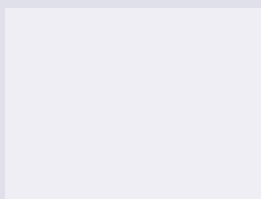
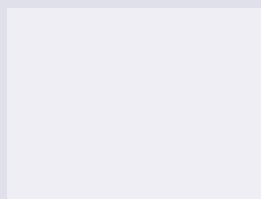
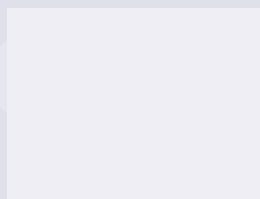
tuesday

wednesday

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Groundhog Day

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St. Valentine's Day

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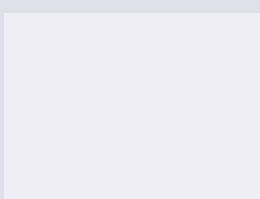
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Dr. Luis Schang is interested in killing Herpes Simplex Viruses (HSV) which cause human disease. As in all viruses, HSVs only replicate inside infected cells and use cellular proteins to produce infectious viruses, which kill cells. He wants to determine the roles played by these cellular proteins in HSV replication and in the

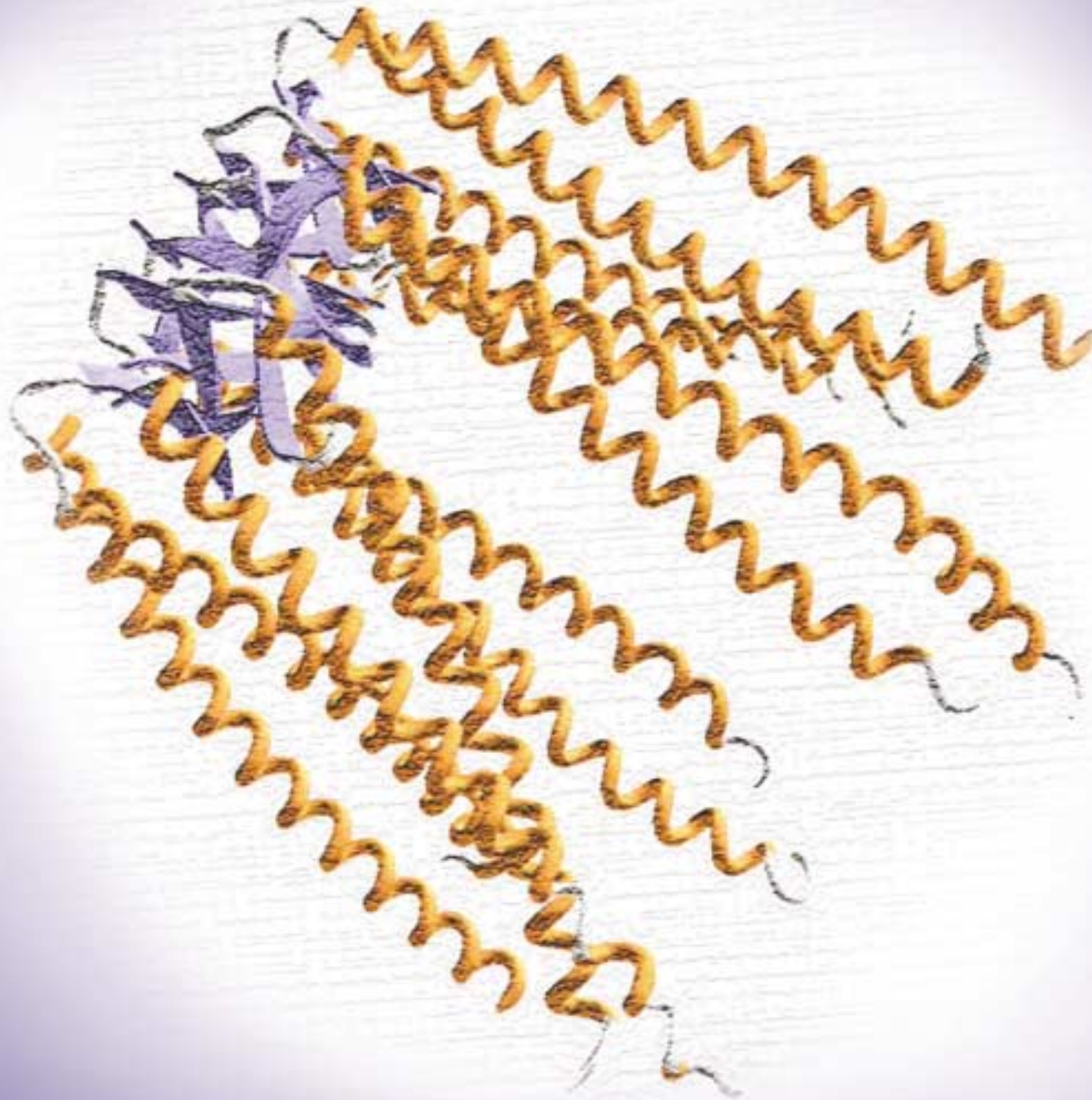
drugs which inhibit some cellular proteins through potent antiviral activity against HSV.

Dr. Schang is fascinated with research because of the thrill of discovery, just like the exhilaration of winning in sports, and both are his passions. He worked as a cattle veterinarian in Argentina before completing his PhD at

the University of Nebraska-Lincoln. Currently he is an Assistant Professor of Biochemistry at the University of Alberta.

*Funding:* Dr. Schang's research is supported by the CIHR and the Alberta Heritage Foundation for Medical Research.

Dr. LUIS SCHANG



# Molecular “Chaperones”

Three dimensional structure of Prefoldin, the octopus-shaped molecular chaperone.

*Research/Image Credit: Courtesy of Dr. Michel Leroux*

# MARCH

2003



sunday

monday


tuesday

wednesday

thursday

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saturday

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16	St. Patrick's Day 17	18	19	Vernal Equinox 20	21	22
23 30	24 31	25	26	27	28	29



Dr. Michel Leroux is interested in folding proteins. Proteins found in our bodies perform most functions required for life. His studies focus on understanding how certain proteins termed “molecular chaperones” assist in the fundamental cellular process called protein folding. All proteins must fold into a specific three-

dimensional shape in order to function properly and support human health.

Dr. Leroux became interested in research because it allows him to explore the fascinating world of how life functions at the molecular and cellular levels. He holds a BSc from McGill University, a PhD from the University

of British Columbia and was a Postdoctoral fellow at the Max Planck Institute for Biochemistry in Germany. He is an Assistant Professor at Simon Fraser University, a CIHR New Investigator and a Michael Smith Foundation Scholar.

Dr. MICHEL LEROUX

*Funding: Dr. Leroux's research is supported by the CIHR, the National Cancer Institute of Canada, the Heart and Stroke Foundation of B.C. and Yukon, the Michael Smith Foundation for Health Research and NSERC.*

# Gene Research aids Kidney Failure ➤



Dr. Susan Quaggin is trying to understand the genes that are responsible for kidney failure, in order to identify new targets for treatment and prevention. She and her colleagues have built a 'molecular toolbox' that makes it possible to 'snip out' or 'add' genes (DNA) specifically in the glomeruli "kidney filters" of mice. Kidney failure results when these glomeruli "kidney filters" become scarred. Using these molecular tools, Dr. Quaggin and

her co-workers are dissecting the genes and pathways that are responsible for establishing and maintaining healthy kidney filters with the hope that one day, it will be possible to fix 'scarred kidney filters' in patients.

Dr. Quaggin became interested in research during her training as a nephrologist (kidney specialist). Although great advances have been made in replacing the function of a kidney with dialysis and kidney transplants, the treatment options remain limited. She holds an MD from the University of Toronto and pursued research training at Yale University.

Dr. Quaggin is also involved in a Genome Canada/ Ontario Genomics Institute initiative called the Toronto Centre for Comparative Models of Human Disease. Dr. Quaggin's role in this project is to develop and analyze clinical screens for kidney disease in a mutant mice model.

2) The purple and brown staining represents individual cells (podocytes) in a developing and an adult kidney filter. The colour results from an 'extra gene' that has been genetically engineered into the mouse kidneys.



Research/Image Credit: Courtesy of Dr. Susan Quaggin

1



1) Photograph of a mouse kidney that has a 'blue gene' added into the kidney filters. Each of the blue circles represents an individual kidney filter that separates the blood from the urinary space.



Image courtesy of Dr. Prakash Venglat, Research by Dr. Raju Datla

Flowers represent a critical stage of the reproductive phase of plant development and play important roles in the overall performance and productivity in many plants. The homeobox genes, a group of key gene expression regulators, are implicated in controlling the body plan in diverse organisms. In *Arabidopsis* homeobox gene *BREVIPEDICELLUS* plays a critical regulatory role in defining inflorescence architecture (compact inflorescence in loss of function mutant in "B" compared to that of normal plant in "A"; Venglat et al., Proc. Natl. Acad. Sci. USA 99:4730-4735,2002). Understanding how homeobox genes function in development will offer new opportunities to modify plants for improving their performance.

## ◀ Homeobox Gene regulates Plant Architecture



Dr. Raju Datla received his PhD in plant genetics from Andhra University, India. He came to Canada in 1985 as a "Research Associate" and obtained postdoctoral training in plant molecular biology at the Plant Biotechnology Institute of National Research Council of Canada, Saskatoon. The research work on plant transformation and gene regulation led to the development of several vector systems and high gene expression modules that have been used widely in plant transgenic research. In 1993 he joined as "Research Officer" and established a strong program in plant gene expression studies, which led to the isolation of diverse cell and tissue specific plant promoters for regulated

expression of transgenes in plants. More of his recent research work is focused on genetic and biochemical pathways that regulate plant development and performance mediated by homeobox group of transcriptional factors and myristoylated proteins. Current studies led to the identification of *BREVIPEDICELLUS* gene, a key transcriptional factor that regulates the inflorescence architecture in *Arabidopsis*. Functional insights into homologues of this and similar genes likely will have potential to modify plant architecture to improve performance in crops and other useful plants. His research interests also include application of recent genomics technologies for identification and functional insights into key genes relevant for improving the performance of Canadian crops supported by Genome Canada/ Prairie and NRC Genomics.

# A P R I L

2003



sunday

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		1	2	3	4	5
Daylight Saving Time Begins						
6	7	8	9	10	11	12
Palm Sunday				Passover	Good Friday	
13	14	15	16	17	18	19
Easter Sunday	Easter Monday					
20	21	22	23	24	25	26
27	28	29	30			



The GEEE! in  
**GENOME**

[www.genomecanada.ca](http://www.genomecanada.ca)

**MARK YOUR CALENDAR!**

May 2, 2003

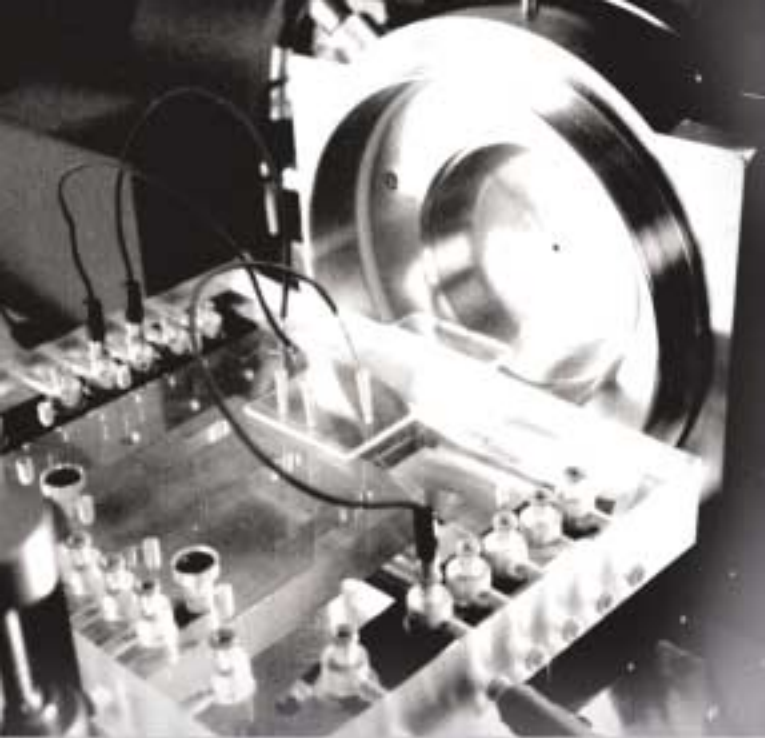
The Gee! in Genome opens in Ottawa  
at the Canadian Museum of Nature

*Canada's first travelling,  
national exhibition on genomics*



GenomeCanada





Research/Image Credit: Courtesy of Dr. Guifeng Jiang

## ◀ Microchip Systems automate Chemical Processes



Dr. Guifeng Jiang's research involves developing a sample preparation station for biological samples such as proteins, and employing microchips together with electrospray mass spectrometry detection. A Microfluidic chip is a device with two layers of glass bonded together, in which channels or reaction chambers are fabricated for fluid manipulation. The development of

Microchip systems provides integration, miniaturization and automation of chemical and biochemical processes. Such systems will make sample processing much faster and easier, leading to an automated, fast platform for discovery in the world of proteomics.

Dr. Jiang is a research scientist with AIMS BIO (Advanced Integrated Microfluidic Systems) in Edmonton, Alberta. Her research is supported by Genome Canada and Genome Prairie.

Photograph of Microchip-MS interface, showing the chip holder, electrical connections, chip with attached capillary electrospray emitter and the sampling orifice of the mass spectrometer.

## Bioinformatics furthers Gene Research ▶

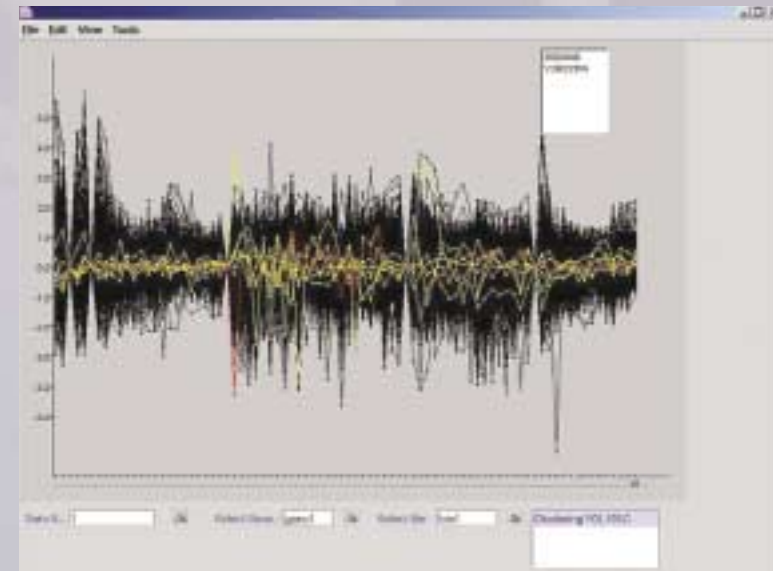


Dr. Michael Hallett is involved in the construction of several bioinformatics systems: one integrates heterogeneous objects; another integrates gene expression data, transcription factor information, and molecular sequence data; a third involves databases of protein interactions and protein expression data; and a fourth system is a tool for exploring the evolution of species on a genome-wide scale.

Dr. Michael Hallett graduated with his PhD in computer science from the University of Victoria in 1996. He spent four years at the ETH Zürich, Switzerland as a senior researcher in the Computational Biochemistry Research Group.

He is currently the interim director of the McGill Centre for Bioinformatics. He has received a Quebec Strategic Researcher Award and his research is supported by Genome Canada and Genome Quebec.

The expression of Yeast genes are plotted throughout the organism's cell cycle.



Research/Image Credit: Courtesy of Dr. Michael Hallett

## Canada-Wide Science Fair

May 11 - 18, 2003 -- Calgary, Alberta

The Canada-Wide Science Fair is a national youth science and technology event that every year gathers the country's youngest and brightest minds. For more information on the Canada-Wide Science Fair, please visit [www.ySF.ca](http://www.ySF.ca)

Genome Canada: committed to promote science to young Canadians  
[www.genomecanada.ca](http://www.genomecanada.ca)



YOUTH SCIENCE  
FOUNDATION CANADA



GenomeCanada





2003 Calgary

Canada-Wide Science Fair - Exploring our potential

# M A Y

2003



sunday	monday	tuesday	wednesday	thursday	friday	saturday
	<p><b>The Gairdner International Award of Merit</b>                      Recipients: Dr. Francis S. Collins (left) and Dr. James D. Watson (right)</p> <p>Honouring the 50th anniversary of the discovery of the structure of DNA. See pages 4-6. Visit <a href="http://www.genomecanada.ca">www.genomecanada.ca</a></p>			1	<p>Grand opening of <b>The Gee! In Genome exhibit</b>, the Canadian Museum of Nature, Ottawa, Ontario</p> <p>Canadian Medical Hall of Fame Youth Symposium University of Calgary Calgary, AB</p>	3
4	5	6	7	8	9	10
Mother's Day			<p>May 11-18  <b>Canada-Wide Science Fair</b>                      Calgary, Alberta</p>		<p><b>National Genomics Conference</b>                      (Genome Canada)                      Toronto, Ontario</p>	
11	12	13	14	15	16	17
	Victoria Day				<p>Canadian Medical Hall of Fame Youth Symposium University of Western Ontario London, Ontario</p>	
18	19	20	21	22	23	24
				<p>Canadian Medical Hall of Fame Youth Symposium Memorial University of Newfoundland St. John's, Nfld</p>		
25	26	27	28	29	30	31



The **GEEE!** in  
**GENOME**

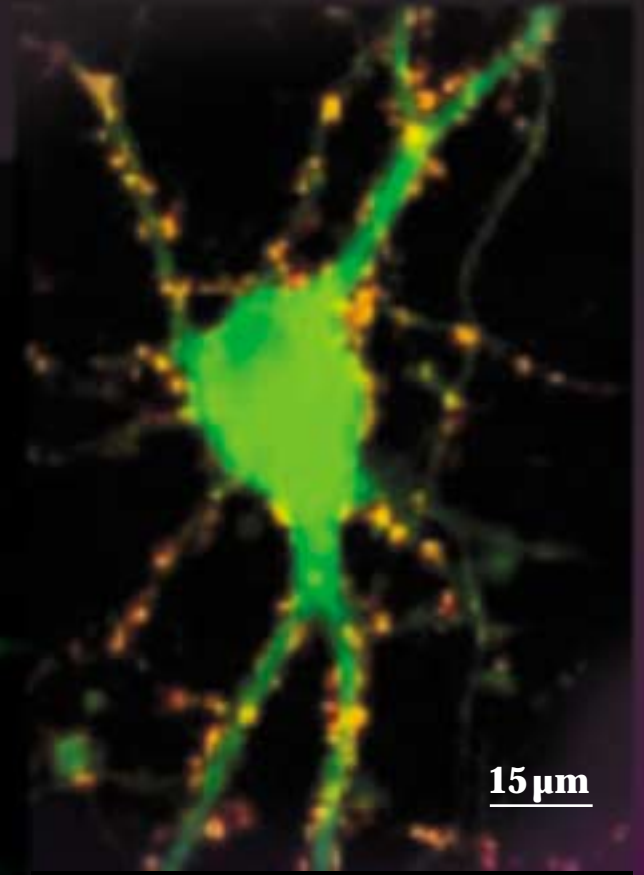
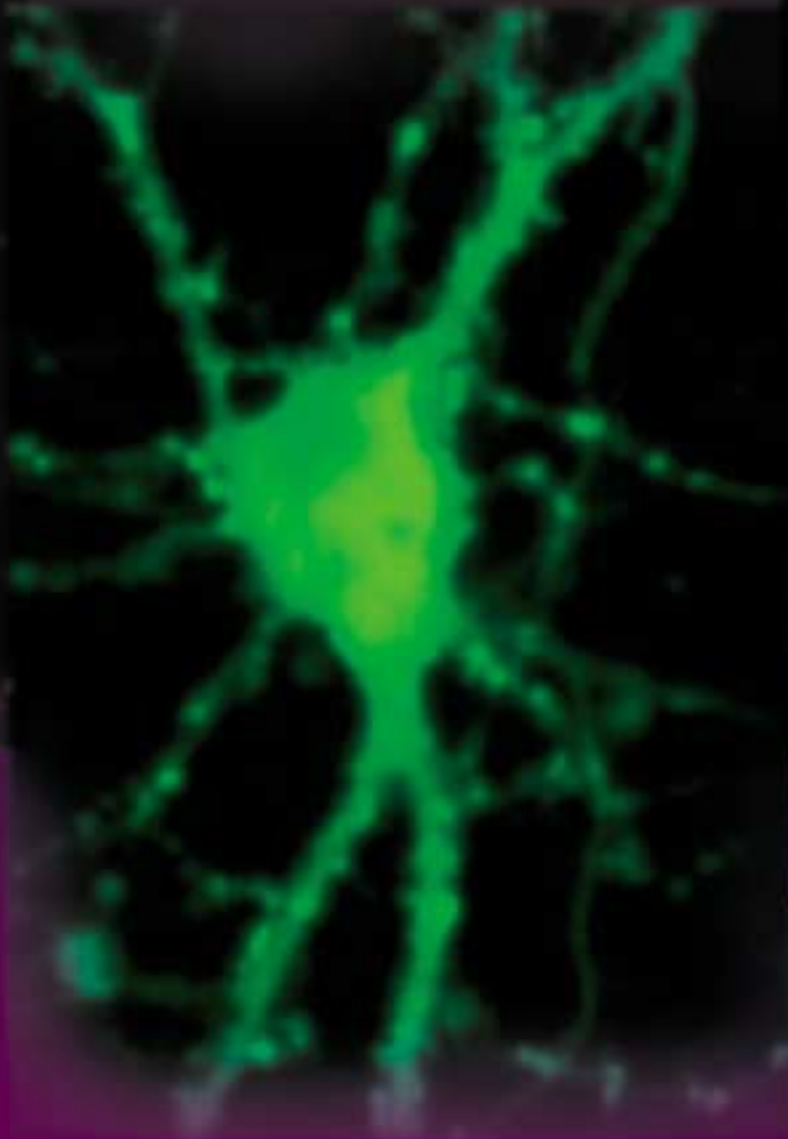
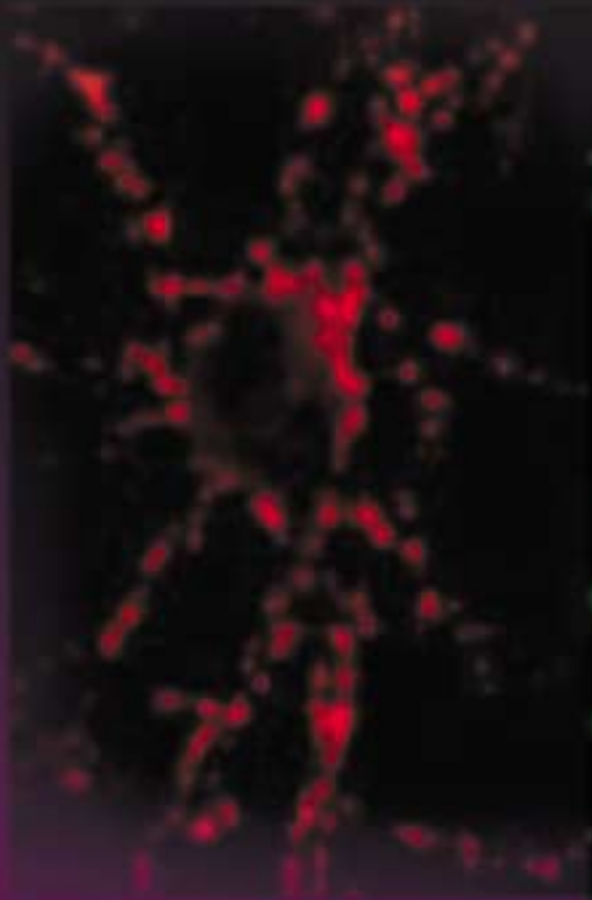
[www.genomecanada.ca](http://www.genomecanada.ca)

**IT'S NOW OPEN!**  
 May 2 - September 1, 2003  
 The Gee! in Genome open in Ottawa at the Canadian Museum of Nature  
*Canada's first travelling, national exhibition on genomics*



GenomeCanada





*Research/Image Credit: Courtesy of Dr. Wei-Yang Lu*

Immunostaining of  
glutamate receptors in  
a neuron

# Nerves and Memory

# J U N E 2008

<i>sunday</i>	<i>monday</i>	<i>tuesday</i>	<i>wednesday</i>	<i>thursday</i>	<i>friday</i>	<i>saturday</i>
1	2	3	4	5 Canadian Medical Hall of Fame Youth Symposium McMaster University Hamilton, Ontario	6	7
8	9	10	11	12	13	14
15 Father's Day	16	17	18	19	20	21 Summer Solstice
22	23	24 (PQ) St. Jean Baptiste Day	25	26	27	28
29	30					



Dr. Wei-Yang Lu is interested in the network of nerve cells in the brain. The connecting site between nerve cells is called synapse, where they communicate with each other and regulate many body functions such as aging, learning and memory. Dr. Lu's laboratory is studying the mechanism by which inflammatory

factors modulate synaptic communications.

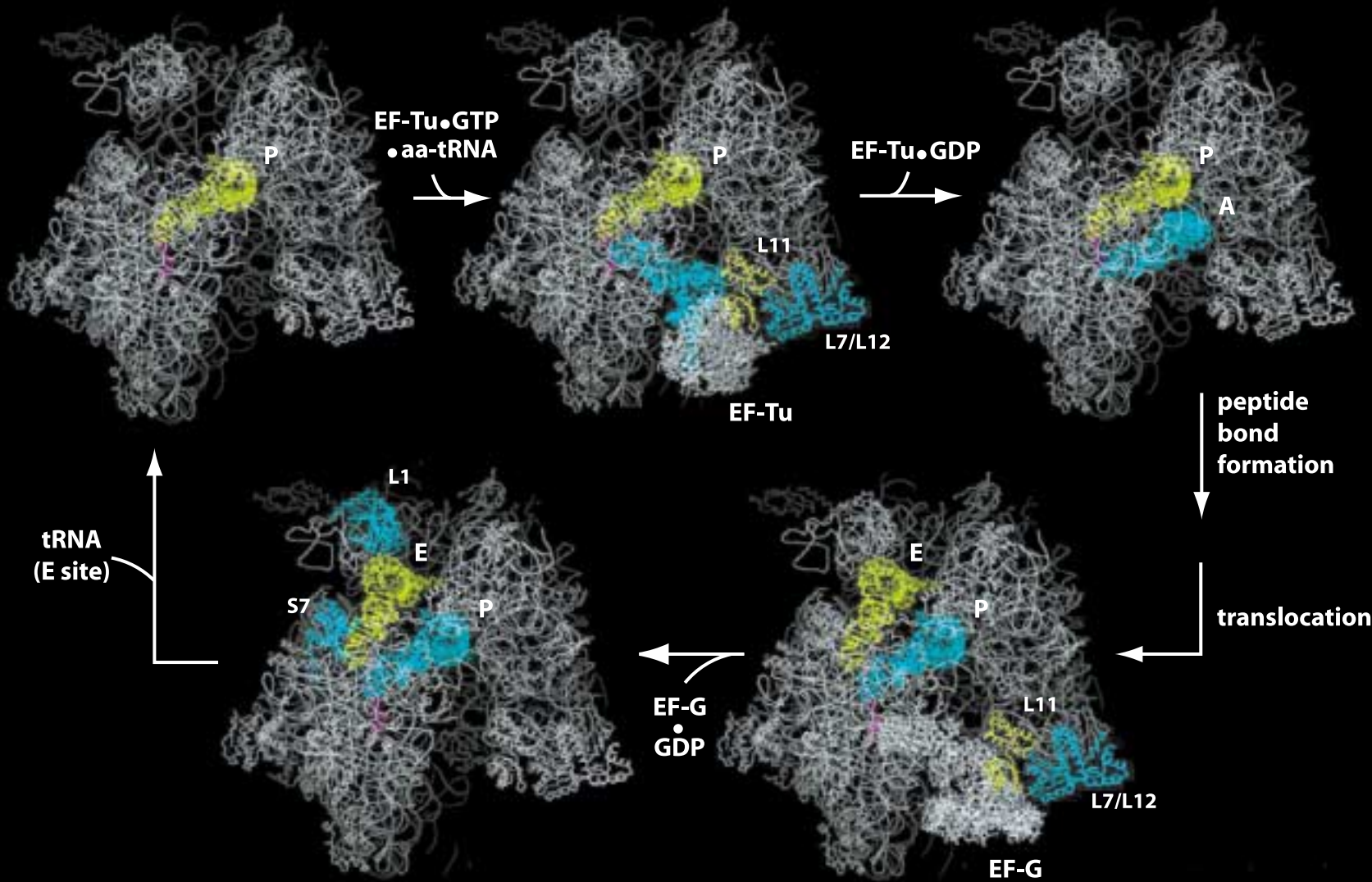
Dr. Lu became interested in research as a means to improve the quality of life. He studied medicine at Shandong University in China and holds a PhD degree from Memorial University of Newfoundland. Currently, Dr. Lu is an Assistant Professor in the

Departments of Anesthesia and Physiology at the University of Toronto.

*Funding:* Dr. Lu's research is supported by the Canadian Trauma Research Program, which is co-sponsored by CIHR and other research organizations.

Dr. WEI-YANG LU

## MODEL FOR THE TRANSLATION ELONGATION CYCLE



**Legend:**  
 This cycle represents the incorporation of a single amino acid into a growing protein chain during the process of translation. The central enzyme of translation is the ribosome, which orchestrates protein synthesis based on coding information in messenger RNA (mRNA). A new amino acid, which attached to a transfer RNA (tRNA) substrate, is brought to the ribosome by elongation factor EF-Tu. A peptide bond forms between the new amino acid and the growing protein chain, which is attached to the tRNA bound in the P site of the ribosome. Both tRNAs and the mRNA are moved in the ribosome in a mechanism catalyzed by elongation factor EF-G. Finally, the discharged tRNA in the E site is released, returning the ribosome complex to its original state with one additional amino acid residue added to the protein chain. Through directed chemical probing methods, we are investigating the structural dynamics of the ribosome and its interactions with tRNA and elongation factors.

*Funding: Dr. Wilson's research is supported by the CIHR and the Natural Sciences and Engineering Research Council of Canada.*

*Research/Image Credit: Courtesy of Dr. Kevin Wilson*

# The Ribosome and Protein Synthesis

# J U L Y 2003



*sunday*

*monday*

*tuesday*

*wednesday*

*thursday*

*friday*

*saturday*

		Canada Day 1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		



Dr. Kevin Wilson is interested in the ribosome, the central enzyme of translation and translational factors that regulates protein synthesis in bacteria and mammalian cells. He is trying to understand the fundamental mechanisms of translation, which are targeted by broad-spectrum antibiotics against bacteria.

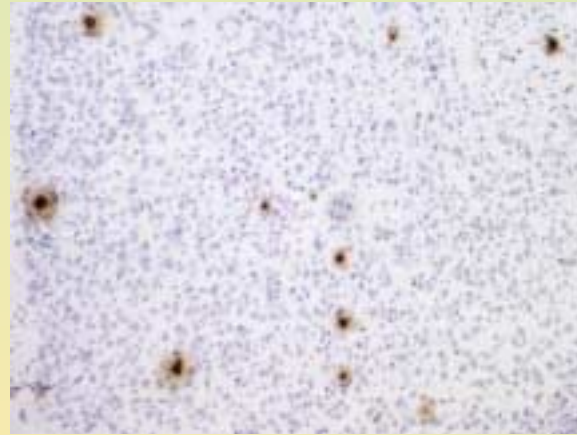
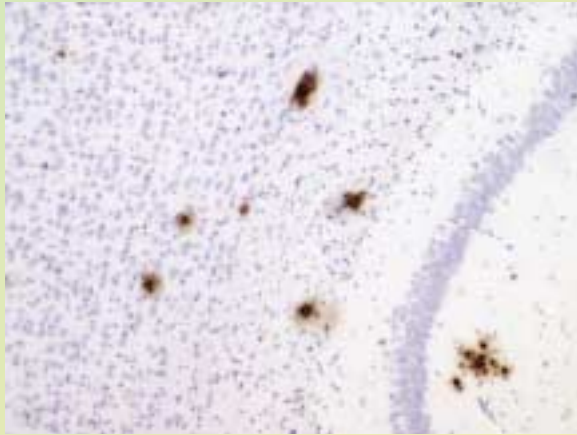
As a postdoctoral fellow at the University of California at Santa Cruz, he developed novel chemical cleavage methods for probing the structure and dynamics of the translational machinery conserved in all cells.

Dr. Wilson became interested in research at an early age from a desire to understand the fundamental

mechanisms of life in chemical terms, a motivation which still drives his research today. He holds a PhD from the University of Oregon and is currently an Assistant Professor in the Department of Biochemistry at the University of Alberta.

Dr. KEVIN WILSON

## Senile Plaques in AD Transgenic Mice



## Decreased Senile Plaques After Anti-Aβ Drug Treatment



Plaques are visualized using specific Aβ antibodies shown in brown.

# Alzheimer's Disease

*Research/Image Credit: Courtesy of Dr. JoAnne McLaurin*

# AUGUST 2003



sunday

monday

tuesday

wednesday

thursday

friday

saturday

					1	2
3	Civic Holiday 4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24 31	25	26	27	28	29	30



Dr. JoAnne McLaurin works on Alzheimer's disease which is characterized by a loss of neurons and the development of senile plaques. As there is abundant evidence that amyloid-beta peptide (A $\beta$ ) increases the progression of Alzheimer's disease, the removal of this peptide from the brain is one mechanism to prevent

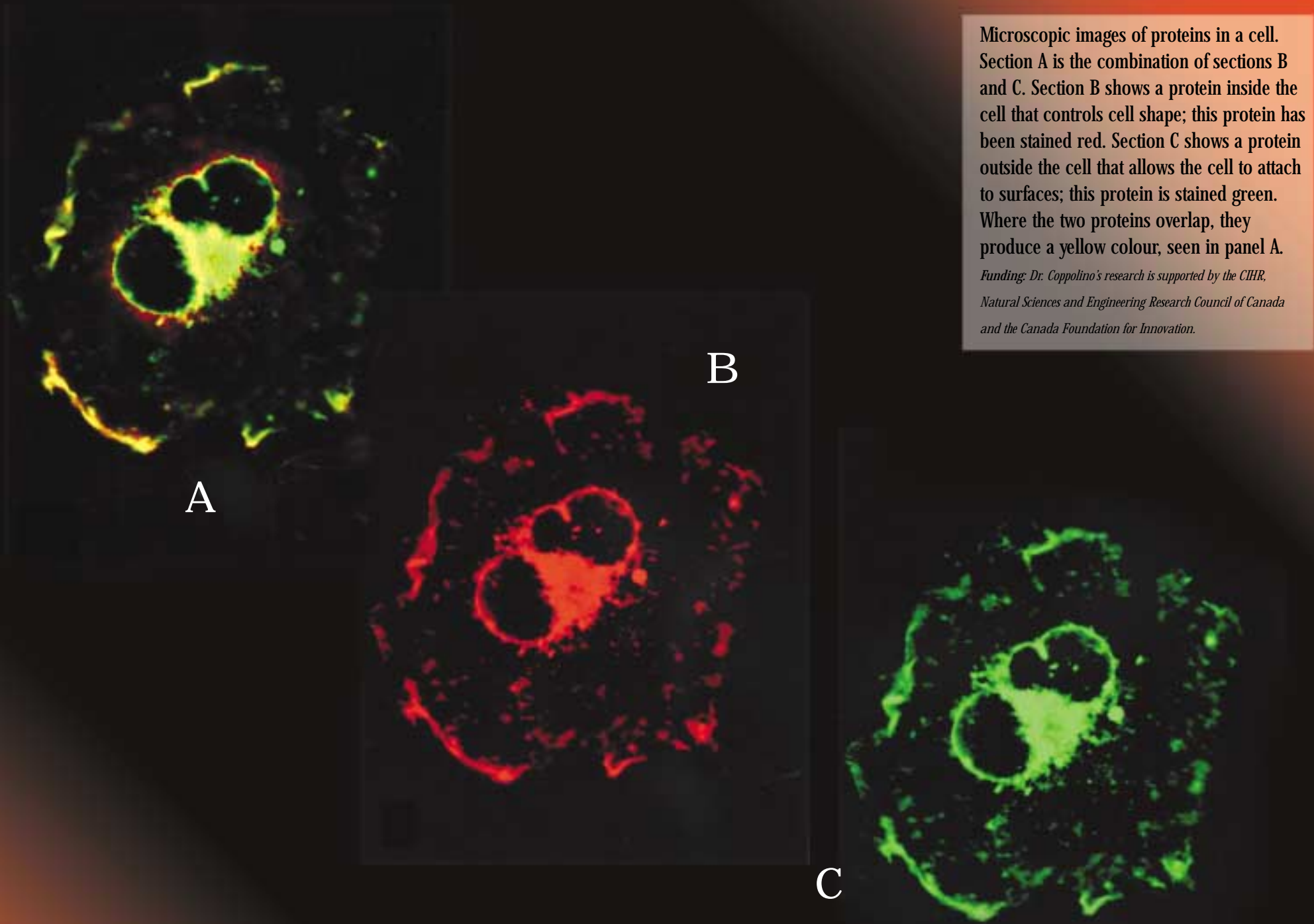
clinical decline. Dr. McLaurin is developing anti-A $\beta$  drugs based on molecules that naturally bind to this peptide within the brain.

Dr. McLaurin became interested in research for the challenge of unraveling how the brain copes with disease. She holds a PhD from the University of Toronto

in Clinical Biochemistry and is currently an Assistant Professor at the Centre for Research in Neurodegenerative Diseases at the University of Toronto.

*Funding: Dr. McLaurin is funded by the CIHR and NSERC.*

Dr. JoAnne  
McLaurin



Microscopic images of proteins in a cell. Section A is the combination of sections B and C. Section B shows a protein inside the cell that controls cell shape; this protein has been stained red. Section C shows a protein outside the cell that allows the cell to attach to surfaces; this protein is stained green. Where the two proteins overlap, they produce a yellow colour, seen in panel A.

*Funding: Dr. Coppolino's research is supported by the CIHR, Natural Sciences and Engineering Research Council of Canada and the Canada Foundation for Innovation.*

# Cell Movement

# S E P T E M B E R

2003



*sunday*

*monday*


*tuesday*

*wednesday*

*thursday*

*friday*

*saturday*

	Labor Day 1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	Autumnal Equinox 23	24	25	26	Rosh Hashanah 27
28	29	30				



Dr. Marc Coppolino wants to know more about the molecules within cells that control cell adhesion and migration. Cell adhesion and migration are fundamentally important to normal human physiology and tissue integrity and disruption of these processes can

lead to both developmental disorders and diseases such as arthritis and cancer.

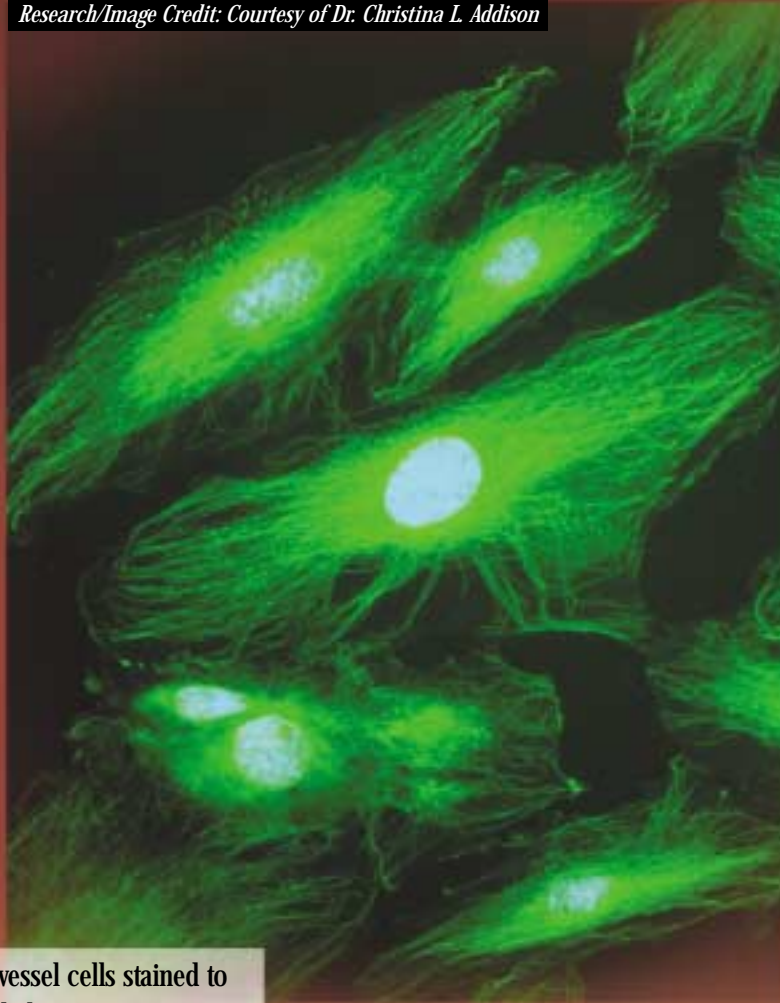
Dr. Coppolino became interested in research from an enjoyment of solving problems and a desire to understand how biological systems work. He holds a

BSc from the University of Waterloo and a PhD from the University of Toronto. He is an Assistant Professor at the University of Guelph in the Department of Chemistry and Biochemistry.

Dr. MARC COPPOLINO

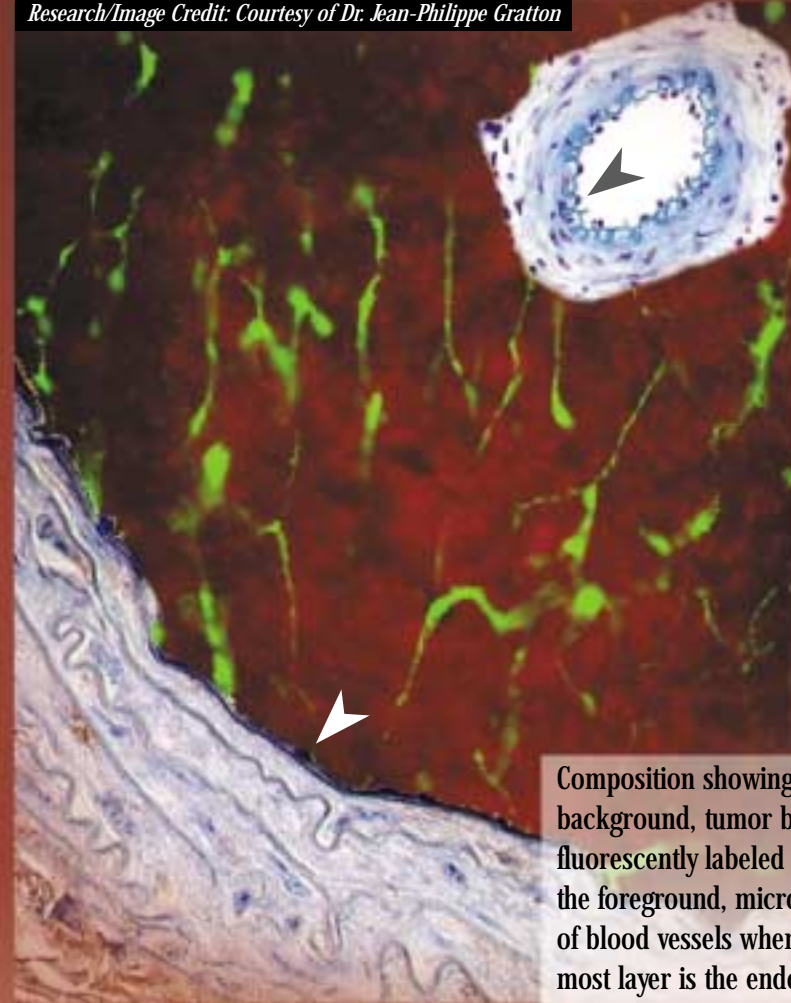
# Cancer Growth

Research/Image Credit: Courtesy of Dr. Christina L. Addison



Human blood vessel cells stained to show the cell skeleton.

Research/Image Credit: Courtesy of Dr. Jean-Philippe Gratton



Composition showing in the background, tumor blood vessels fluorescently labeled in green and in the foreground, microscopic sections of blood vessels where the inner most layer is the endothelial cells (arrows).



Dr. Christina L. Addison is interested in starving tumors to death. Her research examines how certain proteins inhibit the growth of blood vessels into tumors and how tumors can affect the function of these molecules. It is hypothesized that if one can understand how tumors contribute to blood vessel growth and sur-

Dr. CHRISTINA L. ADDISON

vival, these processes can be blocked, thereby destroying the blood vessels in the tumor and essentially starving tumors, leading to their elimination.

Dr. Addison became interested in research after working in research labs during her co-op program at the University of Guelph. She holds a BSc degree from

the University of Guelph and a PhD degree from McMaster University. She is a Career Scientist at the Ottawa Regional Cancer Centre and an Assistant Professor at the University of Ottawa.

*Funding: Dr. Addison's research is supported by the CIHR and the Cancer Research Society.*

# OCTOBER

2003



sunday

monday

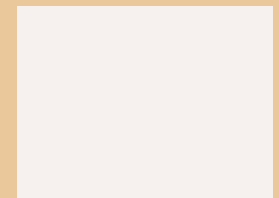
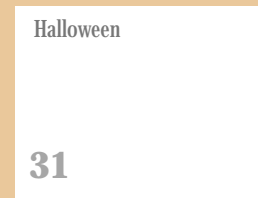
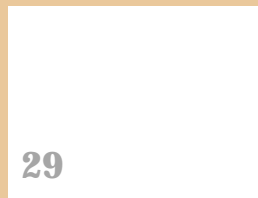
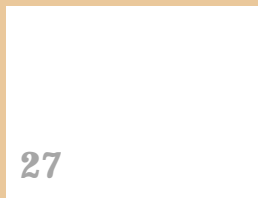
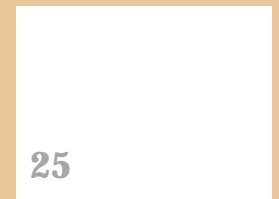
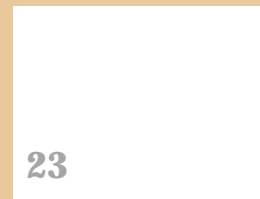
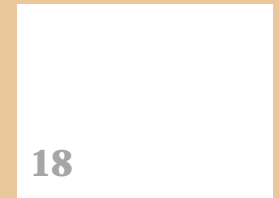
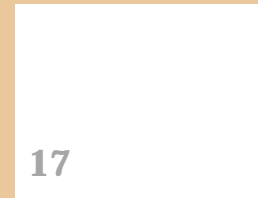
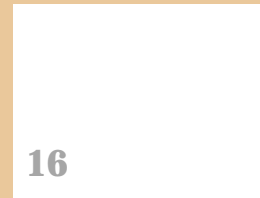
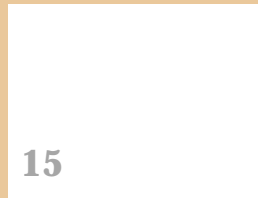
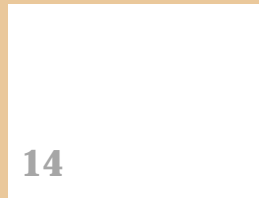
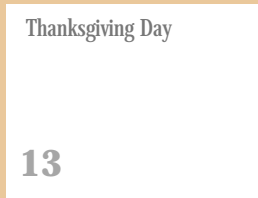
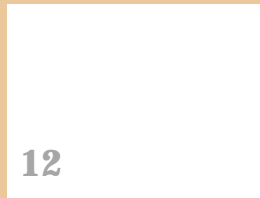
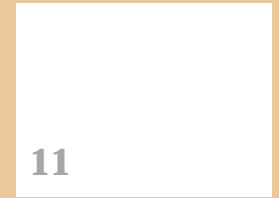
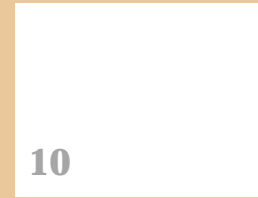
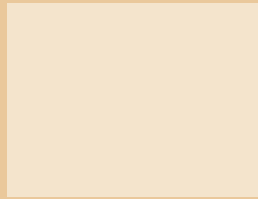
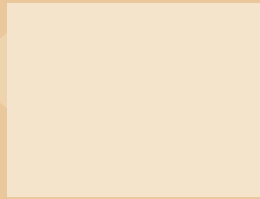
tuesday

wednesday

thursday

friday

saturday



Dr. Jean-Philippe Gratton is interested in endothelial cells, or the cells that line our arteries and veins. (Image top right.) These cells are strategically positioned to control blood pressure and form blood vessels, so they are key to cardiovascular diseases and to the development of new blood vessels in cancerous tumors.

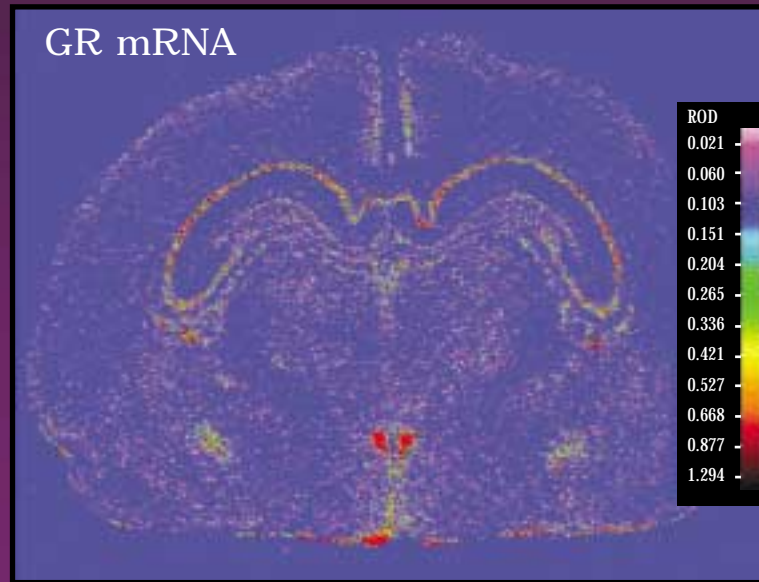
Dr. JEAN-PHILIPPE GRATTON

Dr. Gratton became interested in research because of his interest in biological sciences and also for the freedom to explore, test and demonstrate, all necessary components of research. He holds a PhD in pharmacology from the University of Sherbrooke with post-doctoral training from Yale University. He is the Director of the

laboratory of endothelial cell biology at the Clinical Research Institute of Montreal and is an adjunct researcher at the Department of Medicine at the University of McGill.

*Funding: Dr Gratton's research is supported by the CIHR and the FRSQ (Fonds de la Recherche en Santé du Québec.)*

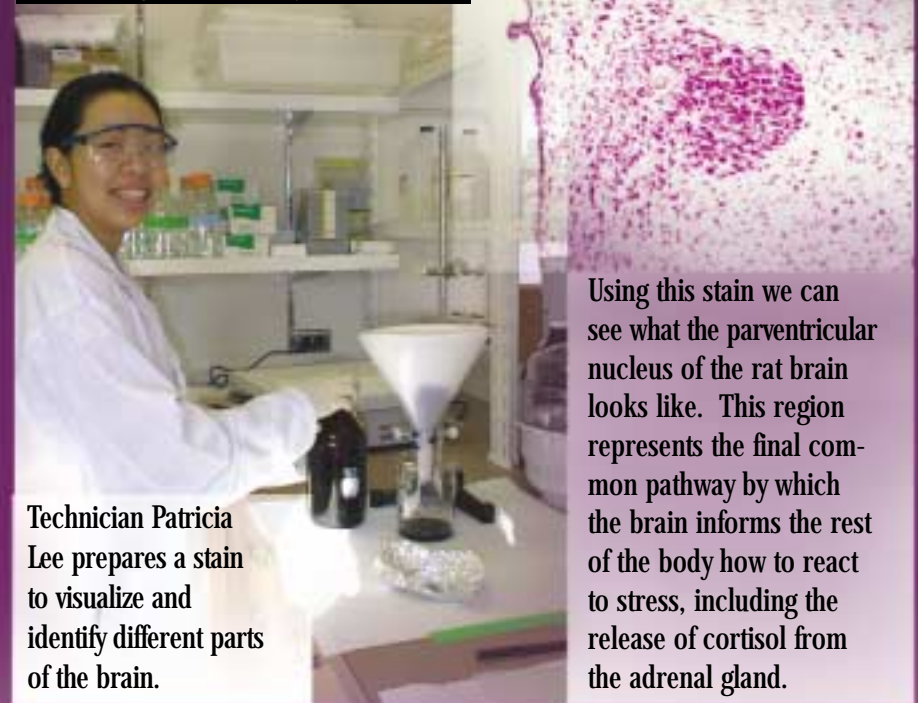
# Hormones and Stress



*Research/Image Credit: Courtesy of Dr. Stephen Matthews*

The image shows the expression of glucocorticoid receptor (GR) and mRNA in the developing fetal brain.

*Research/Image Credit: Courtesy of Dr. Victor Viau*



Dr. Stephen Matthews is studying how alterations in the fetal environment can permanently program the development and function of endocrine systems. He is particularly interested in determining the way in which prenatal exposure to certain hormones can modify an individual's ability to respond to stress through life.

Dr. STEPHEN MATTHEWS

Dr. Matthews became interested in medical research because of its opportunities to dissect and understand complex physiological processes, which can help to alleviate or prevent disease. He holds a BSc Honors degree from the University of Nottingham and a PhD in Molecular Neuroendocrinology from the

University of Cambridge. Currently he is an Associate Professor in Physiology, Obstetrics and Gynaecology at the University of Toronto.

*Funding: Dr. Matthews is a CIHR New Investigator and is also supported by the Canada Foundation for Innovation.*

# N O V E M B E R 2003



sunday

monday


tuesday

wednesday

thursday

friday

saturday

							1
2	3	4	5	6	7	8	8
9	10	Remembrance Day 11	12	13	14	15	15
16	17	18	19	20	21	22	22
23 30	24	25	26	27	28	29	29



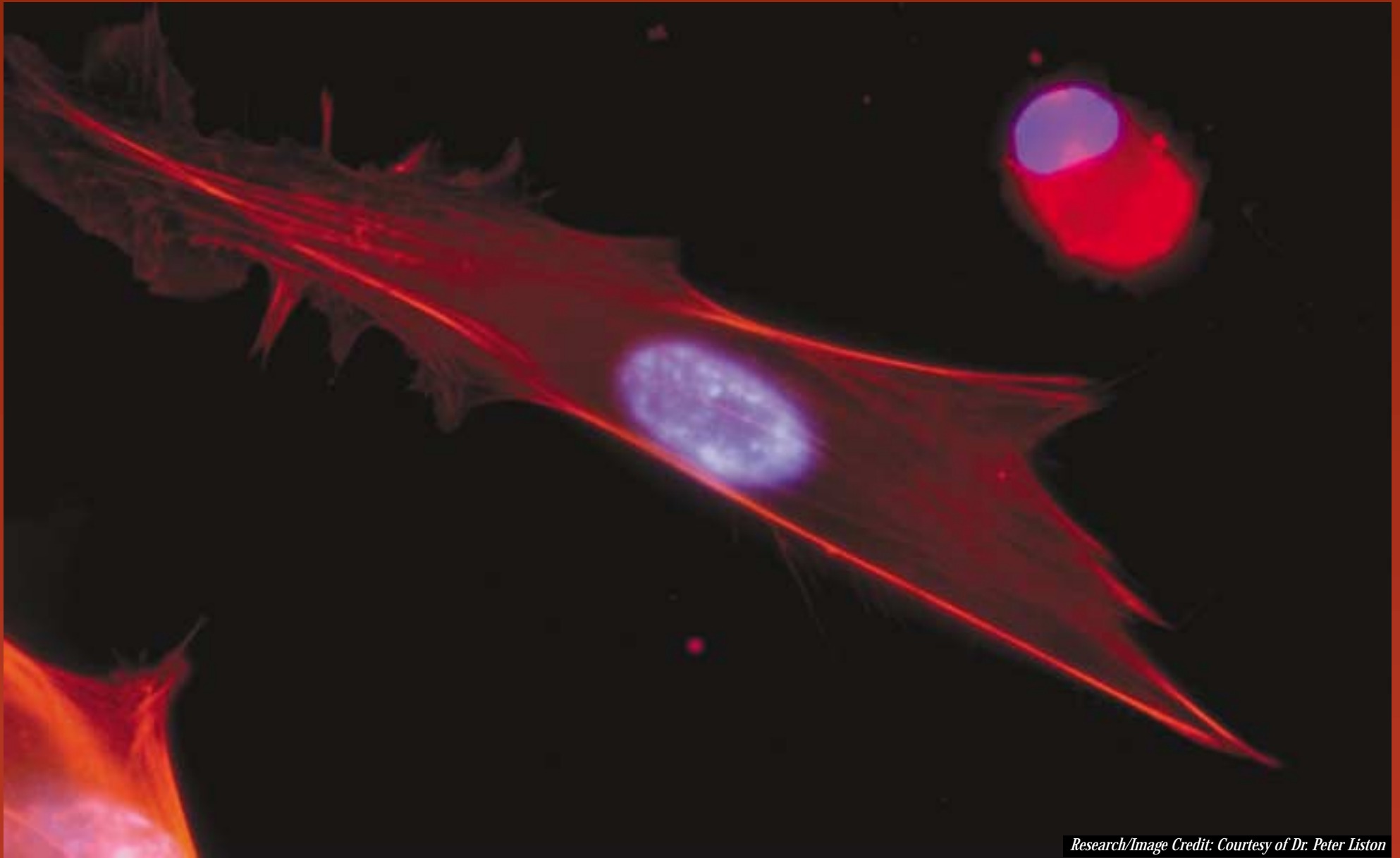
Dr. Victor Viau explores the question why males and females react differently to stress. (Image top right.) Stress affects us all, and fortunately we secrete a hormone called cortisol, which circulates throughout the body, including the brain, to protect us against stress. Dr. Viau is interested in determining why males

and females secrete different levels of cortisol. Dr. Viau became interested in research to make a mark in science but also to interact with other scientists and share his enthusiasm for the quest for knowledge. He holds a PhD from McGill University where he studied the effects of sex steroids on hormonal responses

to stress. Currently he is an Assistant Professor in the Department of Anatomy at the University of British Columbia where he is studying how gender, stress and depression intersect in the brain.

Dr. VICTOR VIAU

*Funding: Dr. Viau's research is supported by the Canadian Institutes of Health Research (CIHR), the Canadian Foundation for Innovation, and the Michael Smith Foundation for Health Research.*



*Research/Image Credit: Courtesy of Dr. Peter Liston*

# Cell Suicide

The image shows a healthy and an apoptotic, or dying cell (upper right). The cytoskeleton was revealed by phalloidin staining (red), and the nucleus counterstained in blue. Apoptotic cells show characteristic changes, including the collapse of the cytoskeleton, rounding up of the cell, and the formation of membrane bound 'bubbles', called blebs. Eventually the dying cell will be phagocytosed (eaten) by neighboring cells.

# D E C E M B E R 2003



sunday

monday

tuesday

wednesday

thursday

friday

saturday



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Winter Solstice

Christmas Eve

Christmas Day

Boxing Day

New Year's Eve



Dr. Peter Liston is learning how cell death can be activated. Our bodies eliminate 50 to 70 billion cells every day through apoptosis, or cell suicide. Blood cells last only days or weeks, while neurons need to last our entire lives. In cancer cells, these pathways get disrupted and cells that would ordinarily die continue

to grow. Dr. Liston's work focuses on a family of proteins called the Inhibitors of Apoptosis and seeks ways to reactivate cell death pathways in cancer cells.

Dr. Liston became interested in research because of a curiosity about how things work and a fascination with the process of testing ideas through experiments.

He holds a BSc from the University of Ottawa and a PhD from McGill University in molecular biology. Currently he is Assistant Professor of pediatrics at the Children's Hospital of Eastern Ontario Research Institute in Ottawa.

Dr. PETER LISTON

*Funding: Dr. Liston's research is supported by the CIHR and the J.P. Bickell Foundation.*

A project of:



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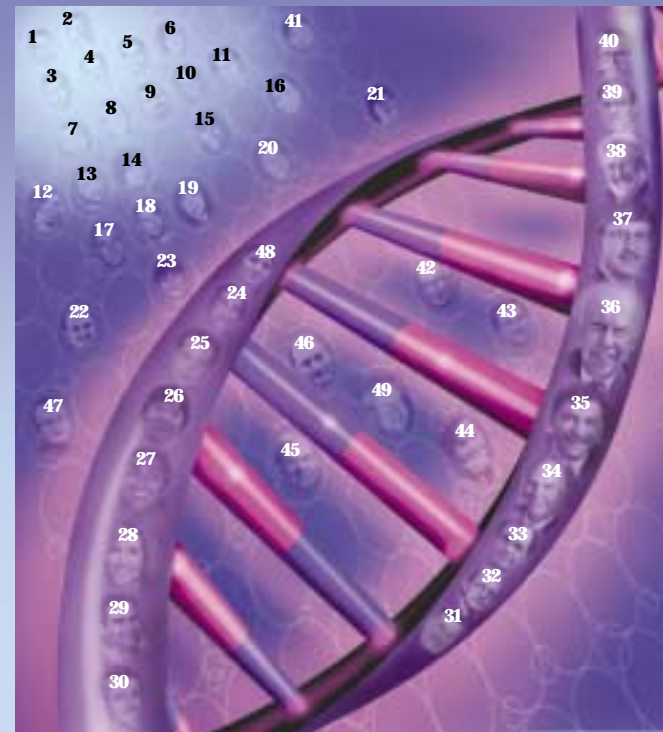
Genome Canada celebrates the 50th anniversary of the double helix discovery and the exceptional individuals who have contributed so much to opening up this exciting new field of genomics. Genome Canada is the primary funding and information resource relating to genomics and proteomics in Canada. For more information, please visit [www.genomecanada.ca](http://www.genomecanada.ca)



Helping build stronger communities through partnerships. We hope to inspire the next generation of Canada's medical heroes by supporting medical career days for students across the country, and by awarding annual scholarships to young Canadians to pursue careers in health and medical sciences.



PIR is a non-profit charitable organization dedicated to educating the public, especially primary and secondary school students on issues relating to biomedical research.  
[www.pirweb.org](http://www.pirweb.org)



#### Cover Image:

A stylized double helix representing DNA, the genetic map of living systems in nature. This image commemorates the golden anniversary of the discovery of the structure of DNA, which has led to major insights in the cause, diagnosis and treatment of diseases in humankind and animals. The embedded faces are of individuals who have made a difference in the acquisition and the promulgation of new knowledge in the health sciences and many are featured within the Calendar.

This calendar was produced by Montage Design. Design Director: Susanne Vande Vyvere. Graphic Designer: Jennifer Nikkel

#### FRONT COVER LEGEND

1. Dr. Roger Lippe
2. Dr. Donna-Marie McCafferty
3. Dr. Martin Sirois
4. Dr. Brian Kavanagh
5. Dr. Jason Dyck
6. Dr. Nancy Ross
7. Dr. Ron Plotnikoff
8. Dr. Linda Carlson
9. Dr. Howard Young
10. Dr. Gary Eitzen
11. Dr. Marc Coppolino
12. Dr. Stephen Hwang
13. Dr. Abdelilah Soussi Gounni
14. Dr. Christina L. Addison
15. Dr. Tara Haas
16. Dr. Luis Schang
17. Dr. Jean-Philippe Gratton
18. Dr. Yonghong Won
19. Dr. Lingyun Wu
20. Dr. Kevin Wilson
21. Dr. Patricia Janssen
22. Dr. Stephen Matthews
23. Dr. JoAnne McLaurin
24. Dr. Raju Datla
25. Dr. Michael Hallett
26. Dr. Guifeng Jiang
27. Mr. Ritesh Patel
28. Dr. Sue Quaggin
29. Dr. Peter Liston
30. Dr. Michel Leroux
31. Dr. Philip P. Green
32. Dr. Robert Waterston
33. Dr. Jean Weissenbach
34. Dr. J. Craig Venter
35. Dr. Eric S. Lander
36. Dr. James D. Watson
37. Dr. Francis S. Collins
38. Sir John E. Sulston
39. Dr. Michael S. Waterman
40. Dr. Maynard V. Olson
41. Dr. Wei-Yang Lu
42. Dr. Henry Friesen
43. Dr. Christopher Sinal
44. Dr. Wendy Ungar
45. Dr. Robert A. Phillips
46. Dr. Victor Viau
47. Dr. Andrew D. Paterson
48. Miss Ishminder Mann
49. Dr. John H. Dirks