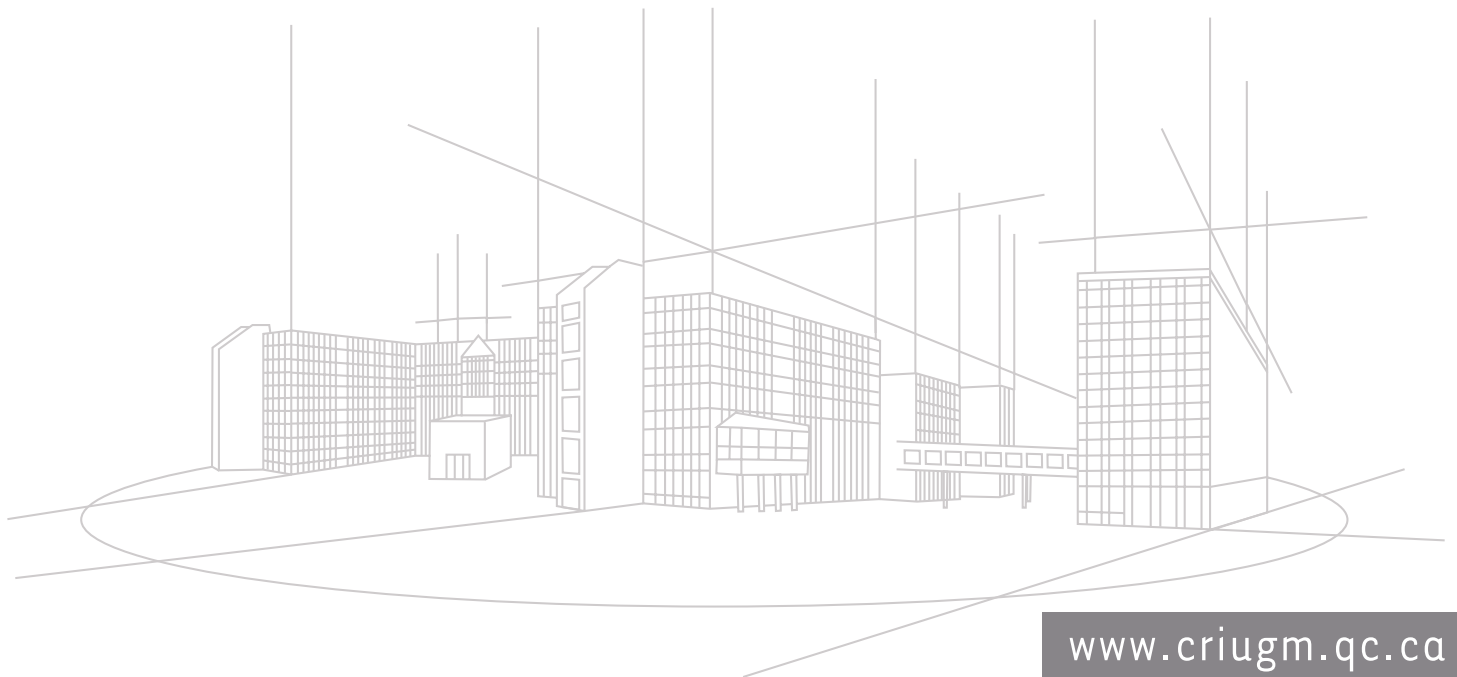




# 2002|03 Annual Report

Centre de recherche | Institut universitaire de gériatrie de Montréal



[www.criugm.qc.ca](http://www.criugm.qc.ca)

## Message | from the Director of Research

The Research Centre of the *Institut universitaire de gériatrie de Montréal (CRIUGM)* is an organizational structure which ensures the planning and support of the Institute's research mission. Recognized as one of the 19 Research Centres of the *Fonds de la recherche en santé du Québec (FRSQ)* (Quebec Health Research Fund), the Centre's mission is to contribute to our knowledge and its transfer to users with the goal of improving the quality of life of the elderly and fostering healthy aging. The Centre works with the support of about forty research teams representing all of the sectors of health research: basic research, clinical research, research on the organization of health services and research in the social sphere. This mission is accomplished through the creation of synergy among the researchers in all the health disciplines at the *Université de Montréal*. In addition to maintaining a unique interdisciplinary and cross-sectorial environment in the field of health and aging, the Centre is also involved in the coordination of all research activities in health and aging within the *Université de Montréal* network.

During the year 2002-2003, there was a major consolidation of the Research Centre's mission, both in terms of research programming and the introduction of new teams of researchers and significant research infrastructures.

The research programming in the 2001-2005 Development Plan was revised in order to better reflect the activities in progress and under development. Thus, in conjunction with the authorities at the *Fonds de la recherche en santé du Québec (FRSQ)*, the number of research themes was reduced from five to four. Following along the same lines, a new research theme—Aging and the Relationship between the Individual and the Environment—came into being, a theme which includes and creates synergy among all of the research and transfer activities concerning mobility, sensory aspects and the relationship with the environment. This theme will henceforth be composed of three topics: "Movement, hearing and vision" "Rehabilitation and technical supports" as well as "Environment and spatial orientation." The researchers in this theme represent a large number of disciplines ranging from engineering to occupational therapy, and including audiology, optometry, kinesiology, and neuropsychology.

Recruitment of new teams continued in 2002-2003, with the arrival of several new researchers. Thus, two young researchers, Dr. Louis Bherer (Psychology / *Université du Québec à Montréal (UQAM)*; physical activities, cognition and health promotion) and Dr. Oury Monchi (Radiology, radio-oncology and nuclear medicine / *Université de Montréal*; (neuroimaging of movement impairment in Parkinson's disease) have been granted salary support from the *Fonds de la recherche en santé du Québec (FRSQ)*. The Research Centre, in partnership with the Foundation of the Institute, is also offering salary support to two emerging researchers, Dr. Nicole Caza (Psychology / Arts and Sciences / *Université de Montréal*; memory and language impairment in the elderly) and Dr. Normand Carpentier (Sociology / Arts and Sciences / *Université de Montréal*; sociological approach to networks around family caregivers supporting individuals affected by Alzheimer's disease). Dr. Marie Alderson (Nursing / *Université de Montréal*; study of the organization of the work of care providers for the elderly) has also been named an emerging researcher. The arrival of young researchers compensates for the adjustments under way in the network resulting from the merger of all health research activities under the auspices of the *Fonds de la recherche en santé du Québec (FRSQ)*.

The year 2002-2003 was also the year in which the Michel Saucier Chair in Pharmaceutical Research and Aging was announced, in collaboration with the Faculty of Pharmacy of the *Université de Montréal*. The holder of this new chair will be chosen during the coming year. Moreover, the accomplishments of several researchers were highlighted during the year. The *Femme de mérite* 2003 of the *Fondation du Y des femmes de Montréal* was awarded to Mrs. Louise Lévesque, and the *Prix Florence* was awarded to Dr. Francine Ducharme. Dr. André Roch Lecours was presented with an honorary award for his exceptional contribution by the *Asociacion Mexicana de Neuropsicologia*. Finally, we must mention the prestigious award of National Researcher earned by Dr. Sylvie Belleville. This title reflects Dr. Belleville's exceptional career since she arrived at the Research Centre of the Institute in 1988.



Dr. Yves Joannette,  
Director of Research

## Message | from the Director of Research

The introduction of major research infrastructures continued in 2002-2003, and thus work was done throughout the winter and spring of 2003 to prepare for the introduction of a functional neuroimaging unit. All of the authorizations have been obtained and the final budget (\$9.5 million) has been submitted to the Canadian Foundation for Innovation as well as to the government of Québec. Negotiations with the main supplier, Siemens, have been concluded and the professionals have been chosen. It is expected that construction of the unit and installation of the 3.0 Tesla magnet and other functional neuroimaging devices will be completed in the fall of 2003, to prepare for inauguration of the unit in the winter of 2004. At the same time, Dr. Brigitte Stemmer's Neuropragmatics Laboratory, associated with her Canadian Research Chair granted in 2002, was also planned. Work on this laboratory, worth close to \$500,000, started in the summer of 2003; it is expected to be inaugurated before the end of the fall 2003. Finally, the renovation of the Research Centre spaces made important strides in 2002-2003—which augurs well for its completion shortly. Moreover, the organizational and legal infrastructures were established in 2002-2003 to allow for an increase in the commercialization of research. Thus, links with UNIVALOR were defined and the services of a commercialization firm CREA were retained in order to complete and support these links. A commercialization consultant from the PREVAL project initiated meetings with all of the researchers in the Centre in order to promote the commercialization of research products.

The year 2002-2003 proved to be a harvest year in terms of research grants to researchers. Thus, the fall 2002 competition saw many of the Centre's researchers benefit from new research support from numerous granting bodies. In particular, we must mention the record support of over \$1 million obtained by the Centre's researchers from the Canadian Institutes of Health Research (CIHR). These supports are a reflection of the constant improvement of the excellence of the Centre's research teams. A major grant of \$1.8 million over six years was also awarded to the Centre's researchers in partnership with their colleagues at the *Institut universitaire de gériatrie de Sherbrooke* and the *Institut sur la participation sociale des aînés de Québec*.

Under the co-direction of Dr. Yves Joanette, Dr. Hélène Payette (Sherbrooke) and Dr. René Verreault (Laval), this training program ([www.formsav.org](http://www.formsav.org)) will allow for contributing strategically to the research capacity in health and aging. In addition, in collaboration with Dr. Alan C. Evans (McGill), Dr. Julien Doyon was awarded a \$400,000 grant over two years to coordinate the *Regroupement provincial pour la recherche en imagerie cérébrale* (REPRIC) whose mission is to establish an infrastructure that will allow for promotion of exchanges and collaboration among the various research groups interested in brain imaging in Québec.

In conjunction with the Training Program, the Centre continued to contribute to the future of research through training in order to increase the research capacity in the field of health and aging. Thus, the researchers at the Centre welcomed 56 Masters' students, 90 Ph.D. students and 16 post-doctoral fellows in 2002-2003, as well as 12 undergraduate trainees in the summer of 2002. Since these students and fellows come from almost all the health-related fields, this is a major contribution to the future of research in health and aging in the country. Together, the researchers, their students and collaborators have maintained a remarkable level of productivity, with over 234 articles, 235 abstracts, 41 book chapters and 22 books. The research carried out at the Institute was reported at 305 conferences in North and South America, Europe and on other continents.

The Research Centre of the *Institut universitaire de gériatrie de Montréal* (CRIUGM) is pleased to be the organ for the development and promotion of research in health and aging within the university, which is the only one in the country to house the full range of health disciplines. Through the scope of its research activities and through the wide range of disciplines, the Centre is proud to pursue its progress as the main centre of its kind in the country and through the scope of its research activities and the unique range of its disciplines. We are looking forward with pleasure and satisfaction to the year 2003-2004, which should see the continued development of significant research infrastructures and the consolidation of its research programming.

## Message | from the Associate Director of Clinical Research

Clinical research is a major component of the research activities at the *Institut universitaire de gériatrie de Montréal*. This year, as in the past, there were numerous and diversified clinical research activities. In 2002-2003, in addition to the research conducted within each of the themes, several projects carried out by clinicians working at the Institute were completed and new initiatives were introduced in clinical sectors that remain to be investigated. These activities continue to be coordinated by the Clinical Research Advisory Board or CAREC, the body responsible for establishing links between clinicians and researchers. Thus, within the framework of its Clinical Research Support Program, CAREC resources contributed towards the completion of four pilot projects: two in the field of speech therapy (the results of one of these projects have been submitted to the journal *Aphasiology*<sup>1</sup>), one project in the field of clinical nutrition and one project in physical medicine. The results of the latter project, which focuses on the development of a scale for the assessment of independence in walking, will appear in the journal *Physiotherapy Canada*<sup>2</sup> (in press). In addition to these accomplishments, and thanks to a substantial increase in its budget, CAREC also supported the start-up of two large-scale projects in the fields of physical medicine<sup>3</sup> and pharmaceutical practice<sup>4</sup>, as well as a new pilot project dealing with the issue of glaucoma in chronic care<sup>5</sup>. These new initiatives will serve as the foundation for the development of new projects and research in new sectors at the Institute.

Moreover, last November CAREC hosted the 3<sup>rd</sup> annual "La recherche clinique s'affiche," a forum whose goal is to highlight the clinical research work conducted by clinicians at the Institute. The event brought together over 75 people and, as in the past, it received financial support from the Canadian Dairy Producers who have contributed to this initiative since its inception in 2000.

The year 2002-2003 was also marked by the consolidation of research activities within specialized out-patient clinics, and in particular the dysphagia clinic. In fact, research projects dealing with various aspects including swallowing and the nutritional status of elderly people have been discussed and are now being developed. Similarly, several research projects have been set

in motion at the cognition clinic dealing with issues such as the transformation of the support network for caregivers of elderly people with dementia of the Alzheimer type, the evolution of nutritional status of elderly people in the early stages of Alzheimer's disease, as well as working memory and executive functions in healthy elderly people and in those experiencing memory loss.

Finally, the Research Centre continued to pursue its work with the administration of the provincial infrastructure GEREQ (Clinical Research Management) with regard to the establishment of its Clinical Research Unit (URCE) that will link it to the central platform. The aim now is to develop a physical structure that will conform to the requirements of best clinical practices (BCP). This first step will be followed in the coming months by the establishment of standardized operating procedures as well as by the training of the research staff in BCP.

To summarize, the past year was one of expansion and it should lead to an even greater number of activities in the course of the coming year:

<sup>1</sup> Généreux, S., Larfeuil, C., Lavoie, V. et coll. Outiller les intervenants de centres d'hébergement et de soins de longue durée (submitted to *Aphasiology*).

<sup>2</sup> Kaegi, C., Bourdreault, R., Rousseau, J., et coll. Presentation of a walking safety scale for the geriatric population. *Physiotherapy Canada* (in review).

<sup>3</sup> Dubé, F., Rousseau, J., Boudreault, R., Kaegi, C. "Grille de l'évaluation de la sécurité à la marche (GEM) : Études de fidélité et de validation de contenu"

<sup>4</sup> Champoux, N., Monette, J., et coll. "Programme d'interventions visant l'optimisation de la prescription des neuroleptiques en centre d'hébergement "

<sup>5</sup> Kergoat, H., Lajeunesse, Y. "Évaluation des signes de glaucome chez les patients des unités de soins de longue durée de l'Institut universitaire de gériatrie de Montréal "



Dr. Guylaine Ferland  
Director of Clinical  
Research

# Research Themes

| Themes   | Research Topics   | Research Directors   | Functional unit   |
|--|---|--|---|
| <b>1<br/>Cognitive Neuroscience<br/>and aging</b>                                      | 1.1 Language, communication and aging<br>1.2 Cognitive neuropsychology of aging<br>1.3 Neuroimaging and neurobiology  | Dr. Gonia Jarema<br>Dr. Martin Arguin<br>Dr. Julien Doyon    | U1 - Language and cognition<br>U2 - Neuropsychology<br>U3 - Neuroimaging and neurobiology                                   |
| <b>2<br/>Care and services for the elderly<br/>and their families</b>                  | 2.1 Intervention programs for the family caregivers for the elderly<br>2.2 Intervention with the elderly and assessment of the quality of care of geriatric services<br>2.3 Ethics in quality of geriatric care | Dr. Francine Ducharme  | U4 - Care and services  |
| <b>3<br/>Nutrition, Metabolism<br/>and Aging</b>                                       | 3.1 Biology of nutrition and of aging<br>3.2 Nutrition and the elderly person<br>3.3 Nutrition and the elderly population   | Dr. Marie-Jeanne Kergoat                                     | U5 - Nutrition and clinical sciences  |
| <b>4<br/>Aging and the Relationship Between<br/>the Individual and the Environment</b> | 4.1 Movement, hearing and vision<br>4.2 Rehabilitation and technical supports<br>4.3 Environment and spatial orientation  | Dr. Sylvie Hébert<br>Dr. Louise Demers<br>Dr. Bernadette Ska | U7 - Movement, hearing and vision<br>U8 - Rehabilitation and technical supports<br>U9 - Environment and spatial orientation |

## Researchers Council

### *Researchers – Laboratory Directors*

Dr. Martin Arguin  
Dr. Mario Beauregard  
Dr. Renée Béland  
Dr. Pascal Belin  
Dr. Sylvie Belleville  
Dr. Louis Bherer  
Dr. Martin Brochu  
Dr. Normand Carpentier  
Dr. Nicole Caza  
Dr. Howard Chertkow  
Dr. Louise Demers  
Dr. Julien Doyon  
Dr. Laurette Dubé  
Dr. Francine Ducharme  
Dr. Guylaine Ferland  
Dr. Eric Fimbel  
Dr. Sylvie Hébert  
Dr. Gonia Jarema  
Dr. Yves Joannette  
Dr. Hélène Kergoat  
Dr. Marie-Jeanne Kergoat

Dr. Paule Lebel  
Dr. André Roch Lecours  
Dr. Franco Lepore  
Mrs. Louise Lévesque  
Dr. Julie Messier  
Dr. Oury Monchi  
Dr. Romedi Passini  
Dr. Isabelle Peretz  
Dr. Eric Poehlman  
Dr. Constant Rainville  
Dr. Jacqueline Rousseau  
Dr. Jocelyne St. Arnaud  
Dr. Bryna Shatenstein  
Dr. Bernadette Ska  
Dr. Brigitte Stemmer  
Dr. Cara Tannenbaum  
Dr. Christina Wolfson

### *Associate Researchers*

Dr. Marie Alderson  
Dr. Julie Carrier  
Dr. Nathalie Champoux  
Dr. Pierrette Gaudreau

Dr. Serge Gauthier  
Dr. Raymonde Labrecque  
Dr. Gary Libben  
Dr. Hélène Masson  
Dr. Fadi Massoud  
Dr. Maria Alice Di Mattos Pimenta  
Dr. Zohra Mimouni  
Dr. Jacques Montplaisir  
Dr. Hélène Pigot  
Dr. Jean-Luc Nespoulous  
Dr. Ugo Nocentini  
Dr. Michel Panisset  
Dr. Jacinthe Pepin  
Dr. Lucie Richard  
Dr. Luc Rousseau  
Dr. Xavier Seron

### *Guests*

Mrs. Johanne Dupuis  
Mrs. Christine Kaegi  
Mrs. Nathalie Walter

# Research | Committees

## Research Committee :

**Yves Joanette**, Research Director and Chairperson

**Christiane Lepage**, Chairperson, Council of Physicians, Dentists and Pharmacists

**Céline Crowe**, Director of Professional and Hospital Services

**Guyline Ferland**, Associate Director of Clinical Research

**Paule Lebel**, Director of Teaching

**Shirley Tremblay**, Director of Nursing Care

**Colette Tracyk**, Executive Director

*Representative(s) elected*

*by the Researchers Council :*

**Sylvie Belleville**, Faculty of Arts and Sciences

**Francine Ducharme**, Faculty of Nursing

**Eric Fimbel**, Ecole de technologies supérieures

**Marie-Jeanne Kergoat**, Faculty of Medicine

**Romedi Passini**, Faculty of Architecture

**Nathalie Walter**, Graduate student representative

## Advisory Board for

### Clinical Research (CAREC) :

**Guyline Ferland**, Associate Director of Clinical Research and Chairperson

**Céline Crowe**, Director of Professional and Hospital Services

**Johanne Dupuis**, Administrative Director and recording secretary

*Representatives of the clinical sectors :*

**Linda Boisvert**, Nursing Care

**Nathalie Champoux**, General Medicine

**Martine Gaudreault**, Clinical Nutrition

**Suzanne Généreux**, Speech Therapy

**Brigitte Gilbert**, Neuropsychology

**Suzanne Gilbert**, Pharmacy

**Cristine Kaegi**, Physiotherapy

**Hélène Kergoat**, Optometry

**Marie-Jeanne Kergoat**, General Medicine

**Elaine Laberge**, Social Services

**Paul Latour**, Occupational Therapy

*Researcher's Representative :*

**Francine Ducharme**, Researcher

## Executive Committee :

**Yves Joanette**, Director and Chairperson

**Céline Crowe**, Representative of the General Administration

**Johanne Dupuis**, Administrative Director and recording secretary

**Guyline Ferland**, Associate Director of Clinical Services

**Paule Lebel**, Director of Teaching

*Head of themes :*

**Martin Arguin**, Neuropsychology

**Louise Demers**, Rehabilitation and Technical Supports

**Julien Doyon**, Neuroimaging and Neurobiology

**Francine Ducharme**, Care and Services for the Elderly and their Families

**Sylvie Hébert**, Sensory Impairments

**Gonia Jarema**, Language and Cognition

**Marie-Jeanne Kergoat**, Nutrition and Clinical Science

**Bernadette Ska**, Environment and Spatial Orientation

## Scientific Evaluation Committee :

**Hélène Kergoat**, Chairperson

**Mario Beauregard**, Researcher

**Louise Demers**, Researcher

**Brigitte Stemmer**, Researcher

**Cara Tannenbaum**, Researcher

## Research Ethics Committee :

**Louise Francoeur**, Specialized nurse clinician and Chairperson

**Maud Champagne-Lavau**, Research Center student representative

**Céline Crowe**, Director of Professional and Hospital Services

**Brigitte Damien**, Speech Therapist

**Johane de Champlain**, Lawyer

**Eric Fimbel**, Researcher

**Fadi Massoud**, Geriatrist

**Oury Monchi**, Researcher

**Monique Normandin**, Representative of the general public

**Marie-Hélène Parizeau**, Ethicist

**Jacqueline Rousseau**, Researcher

## Nominating Committee :

**Yves Joanette**, Chairperson

**Sylvie Belleville**, Researcher

**Francine Ducharme**, Researcher

# Theme 1 Cognitive Neuroscience and Aging

## 1.1 Language and Cognition



Dr. Yves Joanette



Dr. Gonia Jarema



Dr. André Roch Lecours



Dr. Brigitte Stemmer

### Researchers theme 1.1

Dr. Yves Joanette  
Dr. Gonia Jarema  
Dr. André Roch Lecours  
Dr. Brigitte Stemmer

The *Language and Cognition* unit within the *Cognitive Neuroscience and Aging* theme includes researchers from the Faculty of Medicine and the Faculty of Arts and Sciences. The interdisciplinary and multilingual investigations of this theme deal with the nature and the treatment of language impairments in cerebrovascular accidents, as well as in certain neurodegenerative diseases.

The year 2002-2003 was marked by the arrival in this unit of a new, internationally renowned researcher, Dr. Brigitte Stemmer. A physician, linguist, researcher in cognitive neuroscience and holder of a Canada Research Chair in neuroscience and neuropragmatics, Dr. Stemmer, with support from the Canadian Foundation for Innovation, intends to pursue her research dealing, among others, with speech impairments in people affected by a neurological deficit. Her expertise in evoked potentials and various brain imaging techniques will contribute greatly to the development of our unit's neurolinguistic explorations, while at the same time allowing us to strengthen ties with the Department of Linguistics of the Faculty of Arts and Science of the Université de Montréal.

During 2002-2003, Dr. Gonia Jarema's team continued its research within the framework of an international project funded by the Social Science Research Council of Canada and entitled: "Words in the Mind, Words in the Brain." This vast interdisciplinary and cross-linguistic project brings together many Canadian and foreign researchers, Master's and Ph.D. students, as well as post-doctoral fellows. The goal of the project is to elucidate the cognitive processes set in motion during lexical processing, as well as to study the links between the functional architecture of the mental lexicon and the organization of the brain underlying it, in people who have a language impairment and in normal elderly subjects. In the fall of 2002, Dr. Jarema's team presented its work at the Third International Conference on the Mental Lexicon (Banff, Alberta) organized by the research group of the "Words in the Mind, Words in the Brain" project. A special issue of the prestigious journal *Brain and Language* (Academic Press), including forty-nine articles drawn from this conference, is currently in preparation. In 2002-2003, with Dr. Gary Libben (University of Alberta), Dr. Jarema also co-edited a book (submitted) dealing with the various aspects (linguistic, psycholinguistic, cross-linguistic, pathological, etc.) of the processing of compound words. Finally, Dr. Jarema also continued her research within the framework of a Valorisation Recherche-Québec (VRQ) project integrating UQAM (host university),

the Université de Montréal, McGill University and Université Laval.

Dr. Yves Joanette's interdisciplinary team continued its work on the contribution of the right hemisphere to verbal communication and the effect of right lesions in elderly people. This research, funded by the CIHR focused on (1) semantic processing of words, (2) narrative discursive skills and (3) pragmatic skills (indirect language acts). In collaboration with Dr. Bernadette Ska, Dr. Joanette has secured a five-year renewal of the CIHR support for this research worth a total of close to half a million dollars. The research programming is now placing greater emphasis on the contributions of functional neuroimaging and includes a series of studies on the effects of age on the nature of verbal communication impairments in light of a theoretical model (the *HAROLD* model) recently introduced by an American colleague. Dr. Joanette has also started research dealing with the nature of the inter-hemispheric cooperation underlying recovery from aphasia. This research is now being funded by the Canadian Heart and Stroke Foundation. It has also received a Quebec-Italy scientific cooperation grant with the group at the San Raffaele Hospital in Milan. In addition, Dr. Joanette has continued to work for the transfer of knowledge to users (health professionals in speech therapy) through the development of the first protocol truly intended for assessment of communication impairments in patients who have suffered right lesions. The protocol was developed, validated in clinical settings (UGM, Marie-Clarac, Villa Medica, the Jewish Rehabilitation Hospital, Lucie-Bruneau, and the Montreal Rehabilitation Hospital), then disseminated by summer trainees. This protocol will be marketed by Ortho-Édition in 2004. Dr. Joanette also served as chair of the Board of Governors of the Academy of Aphasia and chaired the annual conference in October 2002. He also served as chair of the Organizing Committee for the *Sociedad latinoamericana de neuropsicología*, whose biennial conference will take place in Montreal in 2004.

The year 2002-2003 was also marked by the presentation of a special tribute to Dr. André Roch Lecours in Mexico for his outstanding contribution to the development of neuropsychology. This tribute was announced at the Annual Conference of the *Asociacion Mexicana de Neuropsicologia* in March 2003, held in San Luis Potosi. This honour was bestowed on Dr. Lecours during a touching ceremony at the annual Scientific Day of the researchers on April 23, 2003.

# Theme 1 | Cognitive Neuroscience and Aging

## 1.2 Cognitive Neuropsychology of Aging

The researchers in the Cognitive Neuropsychology of Aging topic continued to focus in 2002-2003 on identifying the functional mechanisms underpinning normal aging, as well as those that characterize Alzheimer's disease and other impairments of the central nervous system that have an impact on cognition.

In a developmental approach that encompasses all stages of life, the research conducted in the acquired and developmental dyslexia laboratory directed by Dr. Renée Béland aimed to develop clinical tools for assessment and treatment of written language impairment in children and adults. Dr. Béland's laboratory developed a multimedia assessment battery (Llabel) that allows for assessment and treatment of aphasic patients in a trilingual interface (Arabic, French and English). Dr. Béland's team also developed a treatment program for pre-reading children that will be available on the Internet in the fall of 2003.

Dr. Martin Arguin's laboratory continued its work on letter-by-letter dyslexia by showing that in a large number of patients recruited internationally (Canada, the United States and Great Britain), it is possible to control the level of patients' reading performance through the factor of visual similarity between letters. Considerable progress was also made relative to the simulation of letter-by-letter dyslexia in the normal reader, which is obtained through an alteration of the physical properties of the stimulus (reduction of contrast and elimination of intermediary spatial frequencies). Other studies in collaboration with Dr. Eric Fimbel evaluated the potential of EEG and EMG signals as a source of control of various devices with a view to a possible application for people presenting a severe physical handicap. A prototype EMG interface whose level of effectiveness exceeds that of devices of the same type presently on the market has been developed within the context of this research.

Dr. Sylvie Belleville and her team are continuing their research dealing with memory and executive functions in normal elderly people, in those experiencing mild cognitive impairment and in those with dementia of the Alzheimer type. Her research has led to the identification of certain components of memory and executive functions that are affected in the earliest stages of Alzheimer's disease, even before the diagnosis has been established. Another important part of Dr. Belleville's research aims to develop and test cognitive interventions that will optimize cognitive functioning in normal elderly people and in those with mild cognitive impairments. Her results indicate that elderly people with and without cognitive impairment can improve their cognitive capacities when they are given appropriate exercises; this provides further proof of a certain form of neuronal plasticity.

The researchers working in this topic have received many grants from the Canadian Institutes of Health Research (CIHR), as well as from many national and international granting bodies. Among others, we would like to highlight the prestigious salary support granted to Dr. Sylvie Belleville in the form of "National Researcher" from the *Fonds de la recherche en santé du Québec (FRSQ)*.

The research teams in this topic are also continuing to make major contributions to the training of clinicians and young researchers in the fields of neuropsychology and speech therapy. Moreover, there have been significant transfers of knowledge to users, as is the case with the latest version of the computerized battery for assessment of memory impairment developed by Dr. Belleville and tools for assessment and treatment introduced by Dr. Béland and her team (see above).

To summarize, the research programming of the researchers in this topic continues to play an important role in terms of improving the quality of life of our seniors with regard to healthy cognitive aging.



Dr. Martin Arguin



Dr. Renée Béland



Dr. Sylvie Belleville



Dr. Louis Bherer



Dr. Isabelle Peretz

### Researchers theme 1.2

Dr. Martin Arguin  
Dr. Renée Béland  
Dr. Sylvie Belleville  
Dr. Louis Bherer  
Dr. Nicole Caza  
Dr. Isabelle Peretz

# Theme 1 | Cognitive Neuroscience and Aging

## 1.3 Neuroimaging and Neurobiology



Dr. Julien Doyon



Dr. Howard Chertkow

As in the previous years, 2002-2003 was been an outstanding one both for the members of the Neuroimaging and Neurobiology unit of the IUGM Research Centre and for all of the researchers associated with the Regroupement Neuroimagerie/Québec (RNQ) or Québec Neuroimaging Group, a university-based initiative of the CRIUGM. The past year allowed for the introduction of the administrative and scientific steps needed for the creation of the new Functional Neuroimaging Unit, funding for which was obtained in January 2002 from the Canadian Foundation for Innovation and Recherche Québec. Under the able leadership of Dr. Yves Joanette (Director of the IUGM Research Centre and Director of the RNQ), Dr. Julien Doyon (Assistant Director for Neuroimaging, and Scientific Director of the RNQ) and Mrs. Colette Tracyk (Executive Director of the Institute), plans for the construction of the FNU have been approved by all of the administrative authorities of the City of Montreal and the Québec government. The researchers in the Neuroimaging and Neurobiology unit also reached a turning point in December 2002, with completion of the choice and purchase of the master part of the FNU, the 3.0 Tesla high magnetic field TRIO system from Siemens. A research and development partnership project, which should become a reality in 2003, was also proposed to Siemens. Under Dr. Julien Doyon's chairmanship, a series of committees have been established in order to ensure the smooth functioning of this state-of-the-art brain imaging unit in Québec. Thus a Coordination Committee of the RNQ has been established to harmonize the scientific activities of the Department of Radiology of the CHUM (*Centre hospitalier de l'Université*

*de Montréal*) in functional magnetic resonance imaging (fMRI) which will be carried out on the new 1.5 Tesla device. This device has just been installed with those of the Institute's UNF that will rely upon a 3.0 Tesla device and other brain imaging techniques such as optic imaging and high-density evoked potentials. Other committees have also been created in order to oversee the scientific orientations of the RNQ and the day-to-day rules of operation of the UNE. In addition, a major step has been taken thanks to the joint work of Mrs. Louise Francoeur, Director of the Ethics Research Committee of the Institute and Dr. Julien Doyon: together they have worked on the establishment of the Joint Scientific and Ethics Evaluation Committees of the RNQ which will be common to the different institutions in the *Université de Montréal* network (CHUM, Sainte-Justine Hospital, Sacré-Coeur Hospital, the Fernand-Séguin Research Centre and the *Institut universitaire de gériatrie de Sherbrooke*). This initiative of the RNQ and the Institute is a first in the field of research in Québec. By enabling researchers to submit their plans for brain imaging studies to a single body, these joint committees of the RNQ will not only facilitate the life of researchers who sometimes had to obtain approval from scientific and ethics committees in several institutions before starting their research, but will also ensure that the projects will be studied by experts in the field of functional brain imaging.

### Researchers theme 1.3

Dr. Mario Beauregard  
Dr. Pascal Belin  
Dr. Howard Chertkow  
Dr. Julien Doyon  
Dr. Oury Monchi

# Theme 1 | Cognitive Neuroscience and Aging

## 1.3 Neuroimaging and Neurobiology

The members of the Neuroimaging/Neurobiology unit have also continued their efforts to improve the infrastructure for research in brain imaging applied to normal and pathological aging in Québec. Thus, Dr. Howard Chertkow (Lady Davis Institute and the CRIUGM, in collaboration with several other researchers including Dr. Sylvie Belleville of the Institute, has submitted a major structuring project to the Canadian Fund for Innovation as well as to Recherche Québec. The aim of this project is to create the Québécois Consortium for Alzheimer's Disease and Related Neurodegenerative Diseases. Furthermore, Dr. Julien Doyon and Dr. Alan C. Evans (Montreal Neurological Institute) have received a \$400,000 grant over two years to coordinate the *Regroupement Provincial de Recherche en Imagerie Cérébrale (REPRIC)*. The mission of this group, among others, is to encourage meetings and exchanges among basic researchers and clinicians interested in brain imaging in Québec in order to facilitate the development of multicentre and pluridisciplinary research in this field of studies.

The year 2002-2003 was also marked by the recruitment a new researcher within the Neuroimaging/Neurobiology Unit, Dr. Pascal Belin. Dr. Belin is an assistant professor in the Department of Psychology of the Université de Montréal and he specializes in the auditory system. He is mainly interested in the study of the neuronal sub-strata involved in the perception of the human voice and

surrounding sounds through the use of brain imaging techniques such as positron emission tomography (PET) and functional magnetic resonance imaging (fMRI). Dr. Belin has published several important articles in this field in prestigious international journals such as *Nature*. Similarly, the other members of the unit have pursued their respective research programs and have thus contributed significantly to the advancement of knowledge in the field of normal and pathological aging, as well as in other related fields of research. Dr. Mario Beauregard, FRSQ *chercheur boursier* (Researcher-Grant Recipient), continued his work on the identification, using fMRI, of the brain systems associated with primary emotions as well as the conscious and voluntary self-regulation of emotions. Dr. Howard Chertkow continued research aimed at the identification of the biological determinants of dementia and mild cognitive impairments. Dr. Julien Doyon and his colleagues published the results of many studies whose goal is to identify the distinct contribution of certain components of the central gray nuclei of the brain (striatum and cerebellum) in motor-type learning. Their work is connected to that of Dr. Habib Benali of the Unité 494 of the INSERM in Paris, in order to study the functional and effective connectors during the learning of this type of motor skills.



Dr. Mario Beauregard

## Theme 2 | Care and Services for the Elderly and their Families



Dr. Francine Ducharme



Dr. Paule Lebel



Mrs. Louise Lévesque



Dr. Cara Tannenbaum

### Researchers theme 2

- Dr. Normand Carpentier
- Dr. Francine Ducharme
- Dr. Marie-Jeanne Kergoat
- Dr. Paule Lebel
- Mrs. Louise Lévesque
- Dr. Lucie Richard
- Dr. Jocelyne St. Arnaud
- Dr. Cara Tannenbaum

In 2002-2003, three new researchers—Dr. Cara Tannenbaum, Dr. Claire Croteau and Dr. Normand Carpentier—joined the team working within the theme of *Care and Services for the Elderly and their Families*. Dr. Tannenbaum is a geriatrist, with training in epidemiology and biostatistics. Her main field of interest is the health of elderly women. She obtained financial support from the Canadian Institutes of Health Research (CIHR), in collaboration with Dr. Bryna Shatenstein and Dr. Francine Ducharme, in order to carry out a national survey on the health priorities of elderly women. She has also undertaken a study that will be conducted in four chronic care hospitals to ensure successful care and treatment of urinary incontinence in elderly women in nursing homes and other chronic care facilities. Dr. Tannenbaum is connected to several international teams, among others to that of Dr. Richard Fortinsky of the Center of Aging of the University of Connecticut and with the research group at the University of California at San Diego. As for Dr. Croteau, her research deals with conversational links between aphasic people and their spouses. She recently received two grants, one from the Social Science Research Council (SSRC) and the other from the *Fonds de la recherche en santé du Québec (FRSQ)*, which will allow for developing the bases of a treatment model for couples affected by aphasia. Dr. Croteau has been an FRSQ chercheur-boursier since July 2002. Finally, Dr. Normand Carpentier, who was named an emerging researcher in July 2003, was awarded two new grants, one from the Alzheimer Society of Canada and the other, in collaboration with Dr. Francine Ducharme and Dr. Marie-Jeanne Kergoat, from the Canadian Institutes of Health Research (CIHR). Dr. Carpentier's research deals with the transformation of the social networks of family caregivers of elderly people suffering from dementia of the Alzheimer type.

In other areas, the work undertaken last year by the other researchers in this theme has continued to progress. Dr. Kergoat, in collaboration with Dr. Paule Lebel, obtained a grant from the CIHR to study the quality of hospital care and services through tracer cases of individuals who have suffered a fall. This study receives financial support from the Quebec Ministry of Health and Social Services and the main professional orders of health care in Quebec. Dr. Kergoat and Dr. Lebel are members of the research theme dealing with the quality of care and services offered to the frail elderly in the Quebec network on aging. The project being conducted by this team aims to develop, validate and establish indicators of quality for two health problems, i.e. cognitive impairments and difficulties in walking. Drs. Lebel, Kergoat and Ducharme have also pursued their

commitment within the framework of the Solidage multidisciplinary team in health, for which Dr. Ducharme has been appointed to head the unit dealing with interventions for the elderly. As part of this team's research, Drs. Ducharme and Lebel are proceeding with the evaluation of a stress management intervention carried out by case managers in two Montreal CLSCs with family caregivers of frail elderly people. Dr. Lebel also co-chaired the day of exchange among researchers, regional authorities, managers and care providers entitled "The SIPA Project: An Interdisciplinary Experience Anchored in the Community" held on September 13, 2002 in Montreal, and attended by over 350 people. During that day, Drs. Lebel and Ducharme and their collaborators presented the results of the evaluation of the quality of SIPA care and services. The proceedings of this conference were published on the SOLIDAGE website ([www.solidage.ca](http://www.solidage.ca)). In collaboration with Mrs. Louise Lévesque, Dr. Ducharme—who holds the Desjardins Chair in Nursing Care for the Elderly and their Families—also conducted a longitudinal project on male caregivers (CIHR) and completed two studies. The first deals with the multicentric evaluation of a program to promote the mental health of caregivers in nursing homes (FRSQ and the Alzheimer Society of Canada), whereas the second focuses on the perspective of care providers concerning the services offered to families as part of the *virage ambulatoire* or shift towards ambulatory care (SSRC). The latter project was the subject of recommendations disseminated to political bodies in order to provide evidence-based data for the improvement of services to families. It should also be mentioned that the website of the Desjardins Chair was available online in the spring of 2003 ([www.chairedesjardins.umontreal.ca](http://www.chairedesjardins.umontreal.ca)). Dr. Jocelyne St-Arnaud and Dr. Francine Ducharme are conducting research on the ethical challenges posed by the treatment of elderly dialysis patients in circumstances of limited resources. Finally, Dr. Lucie Richard is completing her project (CIHR) aiming to take an inventory of prevention and health promotion initiatives for the elderly and to analyze their ecological dimension. Dr. Richard is also in charge of a team (FRSQ) on the promotion of health in the community. Finally, Mrs. Louise Lévesque has obtained a grant that will allow her to conduct an international, longitudinal research project that deals with the health of Lebanese caregivers. Mrs. Lévesque was honored in April 2003 for her outstanding contribution in the health sector—she received the Montreal YWCA Prize, an award that was reported in the various daily newspapers as well as in the Canadian Senate.

## Theme 3 | Nutrition, Metabolism and Aging

During 2002-2003, the title of this theme was modified so that it would reflect the arrival of new researchers and explicitly highlight their contribution to the theme, i.e. research on the metabolic aspect of nutrition. This important aspect of research in nutrition and aging is, among others, at the heart of the research conducted by one of the researchers who has joined this theme, Dr. Martin Brochu. His research work deals with the role of physical exercise on body composition and on the health of elderly people, in particular on insulin resistance and the metabolic and genetic determinants of post-menopausal weight gain.

In conformity with the Research Centre's Development plan for 2001-2005, which called for ensuring that Theme 3 has a critical mass of researchers, the year 2002-2003 also corresponds to a year of submitting enhanced activities to the FRSQ. The FRSQ evaluation of the research activities conducted within Theme 3 was very positive. Not only did the reviewers underscore the excellent scientific productivity demonstrated by the members of this theme, but they were also pleased with the recruitment of Dr. Louis Bherer. This young researcher in the field of the neuropsychology of aging is interested in the dimensions of promotion and prevention of cognitive functions through multidimensional approaches, including diet and physical exercise.

The research work conducted by the researchers that was published or presented at conferences this year allowed them to focus on several major themes, covering several research sectors. Among others, we would like to highlight the following contributions:

Studies in basic research (animal model):

- Dietary regulation of uptake receptors for growth, pituitary and renal hormones;
- Dietary regulation of the leptin system;
- Impact of vitamin K deficiencies on cognitive functions;
- Tissue distribution of vitamin K according to dietary intake.

Clinical research:

- Weight loss due to decrease in visceral fat in post-menopausal women and improvement of metabolic profile;
- Impact of physical exercise on cardiac rehabilitation in the elderly;
- Impact of emotional determinants on dietary intake among elderly patients during an average hospital stay;
- Links between obesity and the clinical response to a cholesterol reducer according to genetic and protein characteristics.

Epidemiological research

- Research in collaboration with researchers in nutrition and cancer at the Université de Montréal on the role of fatty acids on the development of colon and breast cancer.
- Development of an approach for dietary assessment in the long term among the elderly population;

Evaluative research

- Influence of the organization of food services on the dietary intake of elderly hospitalized patients;
- Evaluation of the application of a systematic care protocol in nutrition for a frail elderly population followed within the framework of a CLSC home maintenance program.

Two of the researchers in this theme have published reference books on nutrition for the elderly: *Alimentation et Vieillesse*, a book that can be used by specialists and the general public alike, was written by Dr. Guylaine Ferland and published by the Presses de l'Université de Montréal, and *Malnutrition*, a chapter in the *Encyclopedia of Aging*, published by MacMillan USA, was written by Dr. Bryna Shatenstein.

Dr. Shatenstein has been appointed Associate Researcher in the Department of Nutrition of the Université de Montréal and she has received salary support from the FRSQ as a Clinical Chercheur-Boursier (Junior 2) for her research program entitled: Development and validation of measures of dietary intake in diverse populations.



Dr. Marie-Jeanne Kergoat



Dr. Martin Brochu

### Researchers theme 3

Dr. Martin Brochu  
Dr. Laurette Dubé  
Dr. Guylaine Ferland  
Dr. Marie-Jeanne Kergoat  
Dr. Bryna Shatenstein  
Dr. Christina Wolfson

## Theme 3 | Nutrition, Metabolism and Aging



Dr. Guylaine Ferland



Dr. Bryna Shatenstein

We must also highlight the exceptional nature of the funding received by the researchers in the Nutrition theme over the course of 2002-2003. In this respect, we would like to mention the following new grants:

- Evolution of nutritional status in people with Alzheimer's disease (Drs. Shatenstein & Kergoat), with a grant from the Canadian Institutes of Health Research (CIHR) (declined by the researchers) and the Alzheimer Society of Canada).
- Role of vitamin K on cognitive functioning during aging (Drs. Ferland, Carrié and Rocheford), with a grant from the CIHR.
- Impact of calorie restriction on neurohormonal modulation (Drs. Ferland, Gaudreau et al.), with a grant from the Natural Sciences and Engineering Research Council of Canada.
- Epidemiological research on the role of nutrition in aging within a Québécois longitudinal study: Nutrition as a determinant of successful aging (Drs. Payette, Shatenstein, Kergoat, Ferland et al., members of the nutrition theme of the Québécois research network on aging) with a grant from the CIHR.
- Metabolic and genetic predictors of body weight relapse in obese, postmenopausal women (Drs. Poehlman, Garel and Brochu), with a grant from the CIHR.
- Physical activity program and education to lifelong good habits for insulin-resistant individuals (Drs. Béliveau and Brochu), with a grant from Health Canada.
- Study on the quality of care and services in geriatric hospitals by tracer cases of falls (including a study of osteoporosis) (Dr. Kergoat et al.), with grants from the CIHR and the Quebec Ministry of Health and Social Services.

The researchers in Theme 3 have presented their research findings at many local, national and international scientific meetings. In particular, we would like to highlight the presentations made at the International Francophone Conference on Gerontology (Brussels), at the Experimental Biology meeting (New Orleans), and the International Academy on Nutrition and Aging (Albuquerque). We would also like to mention the participation of our researchers at a major meeting entitled: Research on Aging: Accomplishments and Challenges of the Coming Decades. This conference, co-sponsored by the Québécois Network for Research on Aging and the Sherbrooke Research Centre on Aging was a forum for highlighting the contributions of the 1998-2002 France-Québec Mission on Aging.

All of these activities and accomplishments show the dynamism of the research teams in Theme 3, while at the same time underscoring the work to be accomplished during the coming years. To do so, Theme 3 is pursuing a policy by which it is constantly seeking to recruit new researchers to add to the critical mass already in place. In 2003, the theme was enriched by the arrival of Louis Bherer to whom we extend a warm welcome, and best wishes for a smooth and productive integration.

## Theme 4 | Aging and the Relationship Between the Individual and the Environment

During the year 2002-2003, the researchers in the topic of *Sensory Impairment and Aging* were part of Theme 4 which, until recently, was called *Positioning, Mobility and Aging*. This grouping had been necessary to offer a research environment built upon a critical mass able to compete on the national and international scenes. The new theme, which has grown from this grouping, has been named to reflect the activities of its research teams: *Aging and the relationship between the individual and the environment*. Together, the nine researchers in this new Theme 4 conduct research that can be classified according to three topics: i) Movement, Hearing and Vision, ii) Rehabilitation of Technical Supports and iii) Environments and Spatial Orientation.

*Movement, hearing and vision* includes Dr. Éric Fimbel, Dr. Julie Messier, Dr. Sylvie Hébert and Dr. Héléne Kergoat. Thanks to grants from the CIHR and Valorisation Recherche-Québec (VRQ), Dr. Fimbel, in collaboration with Dr. Martin Arguin, initiated a project that aims to produce communication supports for people with severe motor handicaps, by means of advanced interfaces (EMG, EEG and through gestures). A first study has provided significant results and has allowed for the development of effective EMG interface prototypes. Methodological research conducted in parallel, and dealing with qualitative computational tools, has been successful. These tools have been applied to the analysis of deficits of various types of movements in Parkinson's and Huntington's diseases and have produced promising results.

Dr. Messier, a new recruit to the Research Centre, is pursuing research that aims for a greater understanding of the roles of proprioceptive and visual information in the coordination and precision of movements. She is also interested in the effect of normal aging and Parkinson's disease on visual-motor adaptation. In parallel, Dr. Messier is collaborating on the development of a virtual tri-dimensional environment with Drs. Jean-Marc Beaulieu, Éric Fimbel and Bernadette Ska. By enabling the creation of sophisticated sensory-motor conditions, this environment will facilitate innovative studies on the processes of sensory-motor adaptation and their decline during normal and pathological aging.

Dr. Hébert's research team on hearing aims to gain a greater understanding of the mechanisms underlying hearing impairments in aging. These impairments are ranked the third most frequent chronic disability among the

elderly. Research on tinnitus (buzzing) have allowed for demonstrating the link between stress linked to tinnitus, intolerance to external sounds, and chronically high levels of stress hormones in elderly people who are suffering from tinnitus. This research, funded by the CIHR, the *Fonds de la recherche en santé du Québec (FRSQ)*, the Natural Sciences and Engineering Research Council (NSERC), the *Fonds québécois de la recherche sur la nature et les technologies (FQRNT)* and the Canadian Hearing Foundation, aims at a better understanding of the origin of this link and thus to foresee the development of a model that would explain why elderly individuals with disturbing tinnitus develop an intolerance to external noise.

As for research on vision, Dr. Kergoat's team is pursuing the development of new tools and protocols that will allow primarily for investigating the neuronal and vascular aspects of the eye. This research applies, among others, to aging, dementia of the Alzheimer type, macular degeneration linked to age, as well as to glaucoma. The research aims in particular to better define the relationship existing between blood flow and neuronal function in the healthy eye throughout the aging process and in the eye affected by pathology.

The researchers associated with the *Rehabilitation and technical supports* topic are Drs. Bernadette Ska, Louise Demers, and Jacqueline Rousseau. These three researchers, in collaboration with Drs. Constant Rainville and Sylvie Belleville, contribute to multicentric research on rehabilitation needs and services for people throughout the province of Québec who have suffered a cerebrovascular accident.

The key role of Dr. Ska with many integrative research activities in rehabilitation must be underscored. She plays an active role in the research dealing with the Competency Model (Dr. Rousseau), the constitution of an assessment battery in geriatric rehabilitation (Dr. Demers), and learning the use of the haptic arm (Drs. Messier, Fimbel and Beaulieu). Her conceptual and methodological expertise is important for the advancement of the research of these young researchers. On another front, her work related to cognitive neuroscience and aging is continuing to focus on the issues surrounding communication and praxies (see Theme 1.1).

Dr. Demers, in collaboration with Dr. Ska, has completed the design of a model to assess the effects of geriatric rehabilitation offered in hospitals. Thanks to grants from the CIHR,



Dr. Bernadette Ska



Dr. Louise Demers



Dr. Sylvie Hébert

### Researchers theme 4

Dr. Louis Bherer  
 Dr. Louise Demers  
 Dr. Eric Fimbel  
 Dr. Sylvie Hébert  
 Dr. Héléne Kergoat  
 Dr. Franco Lepore  
 Dr. Julie Messier  
 Dr. Romedi Passini  
 Dr. Constant Rainville  
 Dr. Jacqueline Rousseau  
 Dr. Bernadette Ska

## Theme 4 | Aging and the Relationship Between the Individual and the Environment



Dr. Hélène Kergoat

the FRSQ, and the interdisciplinary health research team SOLIDAGE, research in progress aims to assemble and test a battery of measurement tools resulting from this model and using the GEREQ computerized platform. Other fruitful research includes the development of assessment tools dealing with i) the quality of services offered to adults who have suffered a head injury (with Dr. Bonnie Swaine), ii) at-risk behaviours of elderly people presenting mental health problems (with Dr. Rossitza Nikolova) and iii) the assessment of functional status of elderly people during visits to the E.R. (with Mrs. Nathalie Veillette).



Dr. Franco Lepore

With support from FRSQ grants, as well as grants from the *Fonds québécois de la recherche sur la nature et les technologies (FQRNT)* and from the *Réseau provincial de recherche en adaptation et réadaptation (REPAR)* Dr. Rousseau is pursuing her research in collaboration with Dr. Ska on the assessment of the person-environment relationship within the context of home care. An adaptation of the Competency Model for People with Cognitive Impairment has been developed (with Mrs. Marianne Lorrain). In addition, research on the validation of the Gait Assessment Grid is being carried out in close collaboration with the Institute's physiotherapy team. Her research also fits within the topic of environments described above.



Dr. Romedi Passini

Drs. Romedi Passini and Constant Rainville are associated closely with the topic *Environment and spatial orientation*. This year, Dr. Passini has concentrated on preparing a large-scale exhibition on spatial orientation that juxtaposes art and science. The organization of this event is accompanied by a publication of some 80 pages. In collaboration with the *Institut Nazareth et Louis Braille*, he is also directing a study on the readability of Braille characters. This year also marks the re-edition of his book entitled *Wayfinding: People, signs and architecture*, with his co-author, Dr. Paul Arthur.



Dr. Constant Rainville

As for Dr. Rainville's research, it deals with executive functions and spatial-cognitive impairments, and spatial orientation in particular. These studies are conducted within the framework of normal and pathological aging, especially with patients suffering from Alzheimer's disease or from a cerebrovascular accident. The results have confirmed and objectified the presence of an impairment in spatial orientation which is characterized by a deficit in the decision-making process. Spatial-cognitive operations have been studied with the help of a life-size labyrinth with different types of elderly individuals suffering from neurological impairment, especially Alzheimer's disease. The Tower of London test was adapted to better study these pathological conditions. Moreover, two studies have been conducted using magnetic resonance imaging in order to specify the neurological substrata underlying processes of spatial representation.

The theme of *Aging and the Relationship Between the Individual and the Environment* is marked by the diversity and complementarity of its researchers. The research conducted within this theme falls all along a continuum from the mechanisms involved in normal and pathological aging to the adaptation of the elderly individual to his surroundings. These characteristics contribute to the richness of the scientific exchanges and the dynamism of the milieu.



Dr. Jacqueline Rousseau



Dr. Eric Fimbel

## This year's | new Investigators

### **Louis Bherer, Ph.D.**

The main goal of Dr Bherer's research program is to better understand how cognitive vitality could be improved and maintained in late adulthood. To this aim, his empirical work is concerned with changes in cognitive functioning that occur in normal aging and with identifying the determinant factors of cognitive vitality in late adulthood (e.g., lifestyle, educational background, physical condition). Dr Bherer is specifically interested in changes that affect attentional functions and executive control of cognitive behaviors (e.g., as required to perform several tasks concurrently). One current research project, funded by the *Fonds de la recherche en santé du Québec (FRSQ)*, investigates the effects of cognitive training interventions on dual-task performance in older adults. The project also aims to assess the impact of individual factors (e.g., education and fitness condition) on training outcomes, as well as assessing how the skills learned through cognitive training might generalize to different dual-task situations. With collaborators from the research center and the neuropsychology department at the *Institut universitaire de gériatrie de Montréal*, Dr Bherer is also interested in cognitive decline as observed in pathological aging (e.g., Alzheimer and Parkinson's Disease).

### **Normand Carpentier, Ph.D.**

Dr. Normand Carpentier is a researcher at the Research Centre of the *Institut universitaire de gériatrie de Montréal*. He has just completed a post-doctoral fellowship (CIHR scholarship) that enabled him to initiate a research program on caregivers of people affected by Alzheimer's disease. Within the framework of a first project, he applies a qualitative and retrospective approach to analyzing the first stages of a career as a caregiver (grant from the Alzheimer's Society of Canada). A second project will allow for a longitudinal follow-up (over a 24-month period) of the support networks for caregivers following the first contacts with professionals (CIHR grant). These two studies are based on a theoretical framework constructed around the perspective of social networks and the approach by career. A mixed integrated methodology is used. The overall objective of the research program is to take a longitudinal perspective for the analysis of the processes enabling the mobilization of

formal (professional) and informal (family, friends) care resources by caregivers of people presenting dementia of the Alzheimer type. Our approach will allow us to gain a better understanding of the reasons that may explain the isolation of some caregivers as they advance in their career and the phenomenon of reticence of caregivers with regard to professional health services.

### **Nicole Caza, Ph.D.**

Dr. Nicole Caza earned a Ph.D. in clinical and research neuropsychology from the Université de Montréal, under the direction of Dr. Sylvie Belleville. She then pursued post-doctoral studies at the Rotman Research Institute in Toronto, under the supervision of Dr. Morris Moscovitch. Her research activities at the Centre follow the work that she did while she was training, with the overall aim of understanding the relationships between language and the different memory systems. More specifically, Dr. Caza is interested in the organization of semantic memory in elderly people and in patients affected by Alzheimer's disease. Other research she has conducted deals with the processing of verbs in patients presenting degenerative disorders, including Parkinson's disease. She is also pursuing research that aims to understand the impact of loss of the meaning of words on short-term and episodic memory, in patients with sudden and degenerative brain diseases. Since her arrival at the Centre in July 2003, Dr. Caza has been responsible for the Conferences Cycle, which take place bimonthly and focus on all research fields related to aging.

### **Oury Monchi, Ph.D.**

Dr. Oury Monchi was awarded a 'chercheur boursier' salary grant from the FRSQ and started his activities as an independent researcher at the Centre in July 2003. His recent work with his collaborators using fMRI on patients with Parkinson's disease has allowed for the elaboration of new hypotheses regarding the origins of cognitive deficits in Parkinson's disease and gave rise to a publication in the *Journal of Neuroscience*. Other fMRI studies were performed that will allow for a better understanding of the contribution of the prefrontal cortex and the striatum in executive processes in young healthy subjects and in normal aging.



Dr. Louis Bherer



Dr. Normand Carpentier



Dr. Nicole Caza



Dr. Oury Monchi

# Post-Doctoral | Fellows

## ANA INES ANSALDO

**Research Theme:** 1.1

**Discipline:** Communication sciences and disorders

**Research Title:** Réorganisation fonctionnelle suite aux traitements du langage suivant une aphasie : étude à l'aide de la résonance magnétique fonctionnelle

**Director:** Julien Doyon

**Funding Source:** Canadian Institutes of Health Research

## BAYA BOUDIA

**Discipline:** Neuropsychology, Cognitive Neuroscience

**Research Title:** Intégration intermodale, visuelle-auditive, et plasticité corticale chez l'enfant sourd implanté cochléaire : organisation et limites.

**Director:** Franco Lepore

**Funding Source:** Canadian Institutes of Health Research and FCAR

## CHANTAL CARON

**Research Theme:** 2

**Discipline:** Nursing Science

**Research Title:** Processus de la prise de décision quant à l'hébergement de leur proche âgé atteint de démence.

**Director:** Francine Ducharme

**Funding Source:** Canadian Institutes of Health Research

## NORMAND CARPENTIER

**Research Theme:** 2

**Discipline:** Social Gerontology

**Research Title:** L'utilisation du modèle des réseaux sociaux pour expliquer les trajectoires des personnes âgées.

**Director:** Francine Ducharme

**Funding Source:** Canadian Institutes of Health Research

## ISABELLE CARRIER

**Research Theme:** 3

**Discipline:** Biology and Aging

**Research Title:** Influence de l'état nutritionnel en vitamine K sur la fonction cérébrale.

**Director:** Guylaine Ferland

**Funding Source:** Institut Danone (France)

## MAUD CHAMPAGNE-LAVAU

**Research Theme:** 1.1

**Discipline:** Communication sciences and disorders

**Research Title:** États mentaux et troubles de la communication chez les cérébrolésés droits

**Director:** Yves Joannette

**Funding Source:** Canadian Heart and Stroke Foundation

## ISABELLE ÉCUYER-DAB

**Research Theme:** 4

**Discipline:** Psychology

**Research Title:** Orientation et autres habiletés spatiales dans les contextes du vieillissement et de la maladie d'Alzheimer.

**Director:** Yves Joannette

**Funding Source:** Foundation of the Institut universitaire de gériatrie de Montréal

## ABDALLAH HADJ-TAHAR

**Research Theme:** 1.3

**Discipline:** Neuroscience

**Research Title:** Mechanisms of motor skill learning.

**Director:** Julien Doyon

**Funding Source:** Institut universitaire de gériatrie de Montréal

## CAROL HUDON

**Research Theme:** 1.2

**Discipline:** Neuropsychology

**Research Title:** Dépistage précoce de la maladie l'Alzheimer par la caractérisation des troubles de mémoire épisodique.

**Director:** Sylvie Belleville

**Funding Source:** Alzheimer Society of Canada

# Post-Doctoral | Fellows

## LORÉNA KOZLOWSKI

**Research Theme:** 1.1

**Discipline:** Communication sciences and disorders

**Research Title:** Effet d'un programme d'entraînement sur l'intelligibilité auditive et visuelle de la parole chez les partenaires de communication de personnes ayant une déficience auditive.

**Director:** Yves Joannette

**Funding Source:** Conselho Nacional de Desenvolvimento Científico e Tecnológico (Brazil)

## OURY MONCHI

**Research Theme:** 1.3

**Discipline:** Radiology

**Research Title:** Investigation of the role of prefrontal cortex/basal ganglia connections with respect to working memory and higher cognitive deficits in Parkinson's disease using a combination of computational neuroscience models and event related functional magnetic resonance imaging.

**Director:** Julien Doyon

**Funding Source:** Foundation of the Institut universitaire de gériatrie de Montréal

## CHANTAL ROBITAILLE

**Research Theme:** 3

**Discipline:** Nutrition

**Research Title:** Considération des représentations cognitives et émotionnelles pour une meilleure prise en charge nutritionnelle des patients atteints de la maladie de Parkinson.

**Director:** Guylaine Ferland

**Funding Source:** Foundation of the Institut universitaire de gériatrie de Montréal

## DANIEL SAUMIER

**Research Theme:** 1.2

**Discipline:** Psychology

**Research Title:** Object recognition in Alzheimer's disease

**Director:** Howard Chertkow

**Funding Source:** Foundation of the Institut universitaire de gériatrie de Montréal

## LAUREL TAYLOR

**Research Theme:** 3

**Discipline:** Management

**Research Title:** Multilevel model of compliance in the management of chronic diseases.

**Director:** Laurette Dubé

**Funding Source:** Canadian Institutes of Health Research

## CHRISTINE WHATMOUGH

**Research Theme:** 1.2

**Discipline:** Psychology

**Research Title:** Localization of semantic memory.

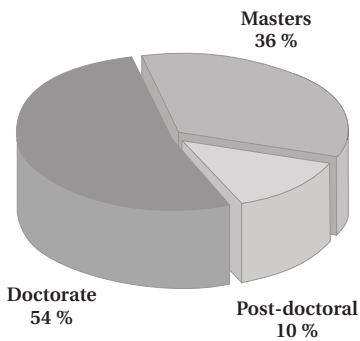
**Director:** Howard Chertkow

**Funding Source:** Canadian Medical Research Council (CMRC)

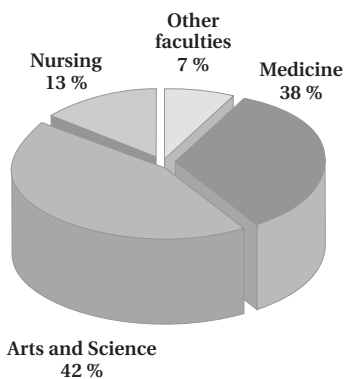
## Students

|               | students |
|---------------|----------|
| Masters       | 55       |
| Doctorate     | 83       |
| Post-doctoral | 15       |

## Students/Fellows



## Faculties



## Building a capacity for research on health and aging

In 2002-2003 the various research teams made an outstanding contribution to building the capacity for research on health and aging. In fact, over 150 graduate students and post-doctoral fellows benefited from training that provided access to high-tech infrastructures and very high quality education. During the year 2002-2003, researchers in the Centre trained 55 Master's students and 83 Ph.D. students. The greater number of doctoral students is a reflection of the excellence of the laboratories that welcomed them and of their direct contribution to the training of young researchers in the field of health and aging. Moreover, the diversity of the faculties represented demonstrates the highly interdisciplinary nature of the research training milieu that the Institute offers. Thus, the number of students from the two largest faculties of the University is almost equal (65 from the Faculty of Arts and Sciences and 58 from the Faculty of Medicine), with close to 20 students from the Faculty of Nursing and 11 from other units in the University. The teams also welcomed 15 post-doctoral fellows, three of whom received financial support through the Governors' Scholarship program of the Foundation of the Institute.

One of the highlights of 2002-2003 was the allocation of a major grant from the Canadian Institutes of Health Research for the introduction of the *Réseau de formation en santé et vieillissement* (FORMSAV). With the initiative of the *Centre de Recherche de l'Institut universitaire de gériatrie de Montréal* (CRIUGM), this training network integrates and allows for synergy among the research groups working on health and aging at the Université de Montréal, those at the Université de Sherbrooke (CRIUGS) and those at the Université Laval (*Institut sur le vieillissement et la participation sociale des aînés* (IVPSA)). A sum of \$1.6 million for the period from 2003-2009 will serve to augment the capacity for research in health and aging by increasing the number of graduate students and enhancing their training. The introduction of this network will allow, among others, for an emphasis on interdisciplinary and cross-sectoral training, while supporting the training role of mentors. The establishment of the FORMSAV network is planned for 2003-2004.

## Doctorate

|                         |                         |                      |                         |                            |
|-------------------------|-------------------------|----------------------|-------------------------|----------------------------|
| Ayotte, Julie           | Duchesne, Geneviève     | Gupta, Kunal         | Malo, Denise            | Sears, D.                  |
| Bargiel, Marianne       | Duong, Anh              | Hamel, Caroline      | McCabe, Éric            | Simard, Alain              |
| Bayard, Sophie          | Ellenberg, Dave         | Hammarrenger, Benoît | Mejia-Constain, Beatriz | St-Amour, Dave             |
| Beauchamp, Miriam       | Enriquez-Rosas, Adriana | Hardy, Paule         | Ménard, Edith           | St-Arnaud, Danielle        |
| Beauchemin, Marie-Josée | Fecteau, Shirley        | Hyde, Krista         | Monetta, Laura          | St-Pierre, Marie-Catherine |
| Bélanger, Annie         | Fiset, Daniel           | Karama, Shérif       | Morin, Amélie           | Taller, Vanessa            |
| Bélanger Sarah          | Fiset, Stéphanie        | Koury, Cristina      | Morin, Sylvie           | Tremblay, Emmanuelle       |
| Bentaleb, Lahcen Ait    | Forget, Julie           | Lahaie, Annie        | Nikolova, Rossitza      | Tremblay, Tania            |
| Bergeron, Réjeanne      | Fung, Dion              | Lavoie, Karyne       | Nkondjock, André        | Valiquette, Christine      |
| Bertrand, Marie-Claude  | Gagnon, Jean            | Leclaire, Hélène     | Orémus, Mark            | Vanasse, Catherine         |
| Botarie, Caroline       | Giguère, Jean-François  | Leclerc, Chantal     | Paquet, Catherine       | Vasilescu, Maria-Cristina  |
| Bouras, Raby            | Gilbert, Brigitte       | Leclerc, Charles     | Perlak, Danuta          | Veillette, Nathalie        |
| Bourassa, Michèle       | Giraud, Kimberly        | Lecours, Sophie      | Racette, Amélie         | Vitali, Paolo              |
| Cantin, Catherine       | Gold, David             | Legault, Alain       | Roy, Mathieu            | Walter, Nathalie           |
| Cervellon, Marie-Cécile | Gosselin-Kessiby, Nadia | Legoux, R.           | Sassine, Rima           | Zhefeng, M.                |
| Doucet, Marie-Eve       | Gosselin, Nathalie      | Lévesque, Johanne    | Savard, Jacinthe        |                            |
| Dubois, Anouchka        | Gougoux, Frédéric       | Louis, Marianne      | Sayad, Fouad            |                            |

## Masters

|                             |                             |                          |
|-----------------------------|-----------------------------|--------------------------|
| Aktouf, Karina              | Denault, Anne-Marie         | Mercure Évelyne          |
| Arbour, Marie-Christine     | Dos Santos, Sinelandia      | Nantel, Julie            |
| Aubé, François              | Dubois, Diane               | Paquin, Danielle         |
| Audet, Monique              | Eugène, Fanny               | Pelletier, Mario         |
| Batanga, Daniel             | Fahim, Chérine              | Perreau-Linck, Élisabeth |
| Bédard, Daniel              | Gagné, Steve                | Perrault, Véronique      |
| Bégin-Bertrand, Lydia       | Garneau-Beaumont, Dominique | Philibert, Maxime        |
| Bélanger, Élisabeth         | Heierle-Valero, Christina   | Poirier-Soucy, Johanne   |
| Bertrand, Benoît            | Jacques, Marc-André         | Potvin, Stéphanie        |
| Bisaillon, Annie            | Jean-Louis, Seendy          | Racicot, Marie-Ève       |
| Blanchette, Nancy           | Lafamme, Marie-Claude       | Roy, Kathleen            |
| Boucher, Josée              | Lavoie, Annie               | Savard, Isabelle         |
| Bussières, Chantal          | Lavoie, Marie-Ève           | Séguin, Marie-Josée      |
| Cantini, Franca             | Leclerc, Bernard-Simon      | Tinjust, David           |
| Caty, Marie-Eve             | Leuthner, Virginia          | Trinh Phan, Bao          |
| Cerveza-Monteagudo, Beatriz | Lorrain, Marianne           | Tsertsvadze, Alexander   |
| Charrau, Sébastien          | Marinier, Julie-Andrée      | Whilshire, Geneviève     |
| Chassé, Véronique           | Mathieu, Marie-Ève          | Yelle, Isabelle          |
| Chettih, Khedidja           |                             |                          |

## Postdoctoral

|                       |
|-----------------------|
| Ansaldò, Ana Ines     |
| Boudia, Baya          |
| Carpentier, Normand   |
| Caron, Chantale       |
| Carié, Isabelle       |
| Champagne-Lavau, Maud |
| Ecuyer-Dab, Isabelle  |
| Hadj Tahar, Abdallah  |
| Hudon, Carol          |
| Kozlowski, Lorena     |
| Monchi, Oury          |
| Robitaille, Chantal   |
| Saumier, Daniel       |
| Taylor, Laurel        |
| Whatmough, Christine  |

# Funding

## Increase in international support

The year 2002-2003 featured a steady increase in the level of funding obtained by the researchers and their teams. The total amount of scholarships and grants of all types rose overall to slightly over \$5 million, translating into a 15% increase as compared to 2001-2002. While there was a modest increase in the amount of funds from federal (\$2 million) and provincial (\$2.13 million) sources, it was funding from international sources that showed major growth. In fact, in 2002-2003, grants and scholarships from international sources amounted to just over \$625,000 and represented 70% of the grants other than those from provincial and federal bodies.

The analysis of the distribution of funding among the different themes highlights once more the scope of the research activities in cognitive neuroscience and aging. The re-engineering of the themes did result, however, in achieving a better balance among the other themes. The arrival of several new researchers and the anticipation of new projects should lead to a significant acceleration of this trend in 2003-2004.

**Johanne Dupuis**  
Assistant to the Director  
for Administrative Affairs

**Dr. Yves Joanette**  
Research Director



Mrs. Johanne Dupuis

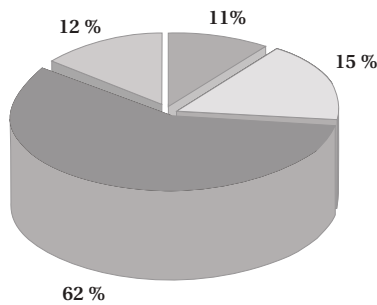


Mrs. Cathy Desmarais



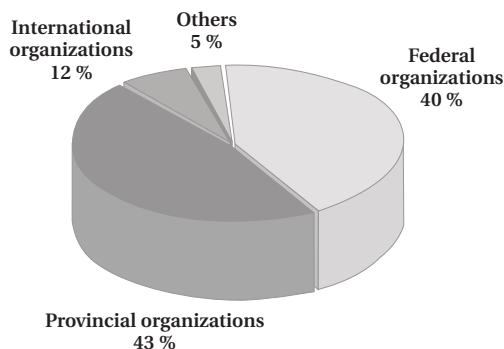
Mrs. Ghyliane Paul

## Funding distribution within research themes



- Cognitive Neuroscience and aging
- Care and services for the elderly and their families
- Nutrition, Metabolism and Aging
- Aging and the Relationship Between the Individual and the Environment

## Distribution of funding according to grant organizations



## Use of infrastructure funds of the Fonds de la recherche en santé du Québec

|  |                  |
|--|------------------|
| <b>INCOME</b>                              | <b>2002-2003</b> |
| FRSQ GRANT                                 | \$756 250        |
| OTHER INCOME                               | \$238 537        |
| <b>TOTAL INCOME</b>                        | <b>\$994 787</b> |
| <b>EXPENSES</b>                            |                  |
| Salaries and benefits                      | \$704 672        |
| <b>TOTAL SALARIES</b>                      | <b>\$704 672</b> |
| <b>OTHER COSTS</b>                         |                  |
| Periodicals and volumes                    | \$29 143         |
| Equipment                                  | \$68 967         |
| Rent and repairs office equipment          | \$16 217         |
| Professional fees                          | \$22 412         |
| Scientific activities                      | \$8 793          |
| Software and office supplies               | \$48 409         |
| Telephone and long-distance fees           | \$2 433          |
| Postage                                    | \$7 451          |
| Miscellaneous                              | \$31 317         |
| Research Grants                            | \$12 450         |
| Seminars and conferences                   | \$18 057         |
| <b>TOTAL OF OTHER COSTS</b>                | <b>\$265 650</b> |
| <b>TOTAL EXPENSES</b>                      | <b>\$970 322</b> |
| <b>Surplus of income over expenditures</b> | <b>\$24 465</b>  |

The Research Centre of the *Institut universitaire de gériatrie de Montréal* (CRIUGM) recently completed a midterm review of its 2001-2005 development plan. There are numerous opportunities for development, and there are considerable challenges involved in their implementation. We will be focusing our attention on several plans and projects during the coming year. Some of the most important developments are mentioned below.

**Integration of social research to the range of research levels in health and aging** — The recent expansion of the respective mandates of the Canadian Institutes of Health Research and the *Fonds de la recherche en santé du Québec* will soon be reflected in the Centre's programming. Already, a sociologist—Dr. Normand Carpentier—is contributing to social research. The coming year will see an intensification of approvals in this direction, in partnership with the Université de Montréal, and in particular with its Faculty of Arts and Science. Moreover, the coming (fall 2004) establishment of a "Viellissement et Société" Observatory<sup>1</sup> will allow for the introduction of an exchange among elderly people, researchers and public decision-makers about a number of important issues.

**Reinforcement of fundamental research** — Fundamental research activities must be reinforced within the framework of the Centre's scientific programming. The availability of unique infrastructures and modern laboratories, coupled with the coming introduction of an animal laboratory facility should allow us to substantially reinforce fundamental research on aging. The arrival of new researchers will add to the efforts currently being made in the field of nutrition and aging.

**Implementation of a plan for remodelling and enlarging the Research Centre** — The year 2003-2004 should see the implementation of the plan to remodel and enlarge the spaces allocated for research at the Institute. The implementation of this plan—which was already the subject of a concept study—requires finalization of the administrative agreements that will allow for the use of spaces in the administration building or the identification of an alternative solution. As soon as these agreements are reached, work will begin on preparing the plans and

designs. Access to these new spaces has become necessary in order to allow for the current and anticipated growth in research activities.

**Bringing the functional neuroimaging unit into operation** — The functional neuroimaging unit will be inaugurated during the year 2003-2004. This inauguration represents a turning point in the evolution of research in neuroscience not only at the Institute, but also for all neuroscience at the Université de Montréal. The combined technical platforms of high field magnetic resonance imagery, optic imagery and evoked potentials will allow researchers at the Institute and their colleagues to make major advances. The inauguration of the functional neuroimaging unit will also require the establishment of a support team composed of physicists, and radiology and computer technologists.

**Launch of the CIHR strategic network for training in health and aging (FORMSAV)** — During the summer and fall of 2003, Drs. Yves Joannette, Sylvie Hébert and Cara Tannenbaum worked with their colleagues from the Université de Sherbrooke and the Université Laval to establish the FORMSAV strategic network. The introduction of this network will allow us to offer strategic support for the growth of the research capacity in health and aging. This network will be unique in Canada and will enable the Institute to consolidate its national leadership.

**Consolidation of research activities in progress** — We will also have to pay special attention to reinforcement and supports for the development of research themes that are currently strong. Support for the infrastructure will have to be adapted to the growth of teams and the arrival of new researchers. The Centre will continue to promote the importance of research in health and aging at the Université de Montréal, the only university in Canada that has a complete range of health disciplines. Given that the challenges of healthy aging concern all aspects of health, the partnership between the CRIUGM and the various components of the University thus offers a unique competitive advantage to meet the challenges of research in health and aging.

<sup>1</sup>Check the following website:  
[www.observatoirevieillissementetsociete.org](http://www.observatoirevieillissementetsociete.org)