



2001|02 Annual Report

Centre de recherche | Institut universitaire de gériatrie de Montréal



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Message | from the Director of Research

During the year 2001-2002, the Research Centre of the Institut universitaire de gériatrie de Montréal continued to pursue its mission which aims to promote, plan and support research on health and aging within the Université de Montréal network. This year was marked by the celebration of the 20th anniversary of the Research Centre, with the backdrop of major developments of its infrastructures. The Centre also continued its role of dissemination of the research findings to users and increased its regional visibility, while maintaining its major presence on the international scene.

It was in the spring of 1982 that the first researchers in the Centre held an inaugural conference. The main players behind the creation of the Centre at that time were Dr. Yves Jetté, Director General, Dr. Pierre Bois, Dean of the Faculty of Medicine, and Dr. André-Roch Lecours, Founding Director of the Centre. The latter brought together Dr. David Caplan, Dr. Yves Joannette, and Dr. Jean-Luc Nespoulous who formed the core group at the outset, focusing on issues relating to cognitive neuroscience and aging. The 20th conference, marking the Centre's anniversary took place on April 4 and 5, 2002 amid great pride and emotion. This conference, characterized by its international influence in most of the important fields for health and aging, allowed the researchers to focus on the future of international research. The list of invited presenters included the top researchers from the United States, Germany, and England. The American *National Institute on Aging*, as well as the Institute on Aging of the Canadian Institutes of Health Research also contributed to painting a prospective picture of research on health and aging. Over 240 participants from all regions of Québec had special access to the world, while having the opportunity to learn of the research carried out the Centre, as reported in over 32 poster presentations. A summary of the talks presented by the guest speakers has since been made available on the Centre's website. The festivities celebrating the 20th anniversary allowed the research teams at the Centre to gauge the extent of the interdisciplinary potential that has yet to be tapped to ensure the quality of life of our seniors.

From the point of view of funding for research, the highlight of the year 2001-2002 is without question the earning of an infrastructure grant from the Canadian Foundation for Innovation for a \$9.5 million project. This grant will allow for the introduction of a cutting-edge functional neuroimaging centre

including high field (3 Teslas) magnetic resonance imaging, as well as evoked potentials and optic imaging devices. This technical platform will be at the heart of the research of the *Regroupement Neuroimagerie Québec* which, piloted by the Centre, groups together over 25% of the researchers in neuroscience in Canada working in the different campuses and hospitals of the Université de Montréal as well as their collaborators (Université de Sherbrooke and Université du Québec à Montréal). This infrastructure will allow the researchers in the Centre a series of innovative projects aiming at a better understanding, diagnosis and treatment of various diseases affecting the nervous system (e.g. Alzheimer's disease, Parkinson's disease). In doing so, the researchers in the Centre will be well equipped to tackle what the Canadian Institute on Aging views as one of the most important research priorities in the country, i.e. the cognitive impairments associated with aging.

The Centre's research program continues to adopt a particularly interdisciplinary approach to the major health problems experienced by the elderly. Its goal is to maintain their quality of life as well as that of their loved ones. The research work focuses on fundamental clinical research on the organization of health and social services, as well as the social aspects of aging. The Centre takes pride in the fact that its researchers represent a very large number of fields associated with all of the faculties and schools in the field of health at Université de Montréal.

In the fall of 2001, the Institute drafted a Policy of Support and Development of Research and a Regulatory Framework that was approved by its Board of Directors. This document enables the Research Centre to garner the support and an operational mode that is in line with the most recent ministerial policies. The adoption of this policy subsequently earned the Centre the FRSQ "Seal of Good Research Practices." The Centre is thus well positioned to carry on with the development of its activities, with respect to accepted research practices as recognized throughout the country as well as internationally.

Several new researchers were welcomed to the Centre in 2001-2002. Dr. Constant Rainville (Psychology) was appointed an FRSQ junior 2 *chercheur-boursier*. Dr. Brigitte Stemmer (Linguistics) was appointed to a Research Chair of Canada in neuroscience and neuropragmatism. The Centre also welcomed Drs. Julie Messier (Kinesiology),



Dr. Yves Joannette,
Director of Research

Message | from the Director of Research

Cara Tannenbaum (Geriatrics), Pascal Belin (Psychology), and Eric Poehlman (Nutrition), in addition to granting associate status to Dr. Mario Paquet (Public Health) and Dr. H el ene Pigot (Computers and Mathematics). Overall, the Centre brings together the teams of 36 researchers/ laboratory directors, amounting to 24,9 full-time equivalents.

The research activities of the Centre's teams have continued to be supported by the major granting bodies in the country. In 2001-2002, the total amount of grants and scholarships awarded to researchers at the Institute was approximately 4.5M\$. As an example, Dr. Francine Ducharme received funding as a senior FRSQ *chercheur-boursier*. This past year saw the official inauguration of the Desjardins Chair in Nursing Care for the Elderly and Family, which she currently holds. The Centre also continued planning its links with industry and marketing of research products through its membership in Univalor, as well as through its participation in the Preval project.

During this time, the Centre continued to make major contributions to training new researchers, as it welcomed an ever-increasing number of research trainees enrolled in graduate studies (at both the Masters and Ph.D. levels). The research teams at the Centre also welcomed a record number of post-doctoral fellows, among others, thanks to the support offered by the Foundation of the Institute. Together the researchers, their trainees, and their partners have maintained a remarkable level of research productivity, with over 218 articles, 133 abstracts, 49 book chapters, and 11 books. Research conducted at the Institute was reported at 296 conferences in both North and South America, Europe and on the other continents.

To summarize, the Research Centre is entering its third decade strengthened by the diversity of its research and the progress that has made it one of the leading centres for research on health and aging in the country, and one of the leaders on the international scene. The quality of life of our seniors should thus benefit from the fruits of the many research projects being carried out or planned at the Centre.

Message | from the Associate Director of Clinical Research

In terms of clinical research, 2001-2002 was a year characterized by many research projects carried out by the researchers at the Centre, and by an expansion of the topics covered. The arrival of new researchers, in particular in the field of physical rehabilitation, allowed for the development of research activities on topics such as the relationship between the person and the environment in patient populations presenting impairments (motor, visual and cognitive), the impacts of rehabilitation in the geriatric setting, and tinnitus, which were studied from various clinical angles.

The Clinical Research Advisory Committee (CAREC) approved the launch of four new projects on the part of the Institute's clinician-researchers in the fields of nutrition,¹ neuropsychology,² social sciences,³ physiotherapy⁴, and speech therapy. Thanks to its financial support, CAREC also enabled the writing of two scientific articles resulting from research initiatives conducted in the past year: "Grid for assessment of independent walking" and "Equipping care providers in chronic care units of the CHSLDs in order to facilitate their interactions with aphasic residents." Finally, in November 2001, CAREC sponsored the 2nd edition of the event "La recherche clinique s'affiche" [Clinical Research Posts], a forum that allows clinicians and researchers at the Institute to exchange views on various clinical realities as well as on research initiatives to be pursued. It should be emphasized that this event received financial support from the Dairy Producers of Canada. Once again this year, the clinician-researchers and researchers at the Institute have shown uncommon dynamism in organizing two conferences, with support from the Institute's Direction de l'enseignement et de la diffusion de

l'expertise: "Falls among the elderly: A matter of balance?" and "Health Care for the Elderly: Who will take care of it?" which were attended respectively by 366 and 260 participants. In addition, last March the Institute hosted a seminar on computerized clinical tools and their application for patients experiencing loss of autonomy, an event attended by 120 professionals and care providers working in geriatric settings.

Finally, the Research Centre is pursuing its active participation within the group "Gestion Recherche Québec" or GEREQ, a group funded by the Valorisation-Recherche Québec and the Canadian Foundation for Innovation whose main objective is to provide participating centres with a management service for clinical/epidemiological studies and for data that meets the highest standards of quality. Thanks to GEREQ, the researchers at the Centre will have available new resources for their clinical research work, which will make them even more competitive within the community of researchers on health and aging.

¹ "Determination of the clinical profile and nutritional medical care delivered to different patient populations in chronic care facilities"

² "Development of an algorithm to objectivize the capacity for management of assets"

³ "Evaluation of the relationships between problems with balance and executive functions in elderly subjects"

⁴ "The role of music in recovery of the words of songs"



Dr. Guylaine Ferland
Director of Clinical
Research

Research Themes

Themes	Research Topics	Research Directors	Functional unit
1 Cognitive neuroscience and aging	1.1 Language, communication and aging 1.2 Cognitive neuropsychology of aging 1.3 Neuroimaging and neurobiology	Dr. Gonia Jarema Dr. Isabelle Peretz Dr. Julien Doyon	U1 - Language and cognition U2 - Neuropsychology U3 - Neuroimaging and neurobiology
2 Care and services for the elderly and their families	2.1 Intervention programs for the family caregivers for the elderly 2.2 Intervention with the elderly and assessment of the quality of care of geriatric services 2.3 Ethics in quality of geriatric care	Dr. Francine Ducharme	U4 - Care and services
3 Nutrition and the elderly	3.1 Biology of nutrition and of aging 3.2 Nutrition and the elderly person 3.3 Nutrition and the elderly population	Dr. Marie-Jeanne Kergoat	U5 - Nutrition and clinical sciences
4 Positioning, mobility, and aging	4.1 Engineering for rehabilitation applied to technical supports for posture and mobility 4.2 Use and satisfaction with technical supports 4.3 Movement and gesture 4.4 Spatial orientation and finding one's way	Dr. Bernadette Ska	U6 - Gesture, way-finding, and spatial orientation
5 Sensory impairment and aging	5.1 Visual impairment 5.2 Hearing impairment	Dr. Sylvie Hébert	U7 - Sensory impairment

Researchers Council | 2001 – 2002



Researchers present at the Annual Photo Session

Researchers – Laboratory Directors

Dr. Martin Arguin
Dr. Mario Beauregard
Dr. Renée Béland
Dr. Pascal Belin
Dr. Sylvie Belleville
Dr. Martin Brochu
Dr. Howard Chertkow
Dr. Louise Demers
Dr. Julien Doyon
Dr. Laurette Dubé
Dr. Francine Ducharme
Dr. Guylaine Ferland
Dr. Eric Fimbel
Dr. Michel Habib
Dr. Sylvie Hébert
Dr. Gonia Jarema
Dr. Yves Joannette
Dr. Hélène Kergoat
Dr. Marie-Jeanne Kergoat
Dr. Maryse Lassonde
Dr. Paule Lebel
Dr. André Roch Lecours
Dr. Franco Lepore
Dr. Tony Leroux

Ms Louise Lévesque
Dr. Julie Messier
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. Julie Carrier
Dr. Nathalie Champoux
Dr. Jacques Bruno Debruille
Dr. Isabel Fortier
Dr. Pierrette Gaudreau
Dr. Serge Gauthier
Dr. Raymonde Labrecque
Dr. Gary Libben
Dr. Isabelle Lussier
Dr. David McFarland
Dr. Hélène Masson

Dr. Fadi Massoud
Dr. Maria Alice Di Mattos Pimenta
Dr. Zohra Mimouni
Dr. Jacques Montplaisir
Dr. Laurent Mottron
Dr. Hélène Pigot
Dr. Jean-Luc Nespoulous
Dr. Ugo Nocentini
Dr. Michel Panisset
Dr. Carole Paradis
Dr. Jacinthe Pepin
Dr. Agnessa Pillon
Dr. Gilles Plourde
Dr. Lucie Richard
Dr. Luc Rousseau
Dr. Xavier Seron

Guests

Ms Johanne Dupuis
Ms Christine Kaegi
Ms Nathalie Walter
Dr. Isabelle Ecuyer-Dab

Research | Committees

Research Committee:

Yves Joannette, Research Director and Chairperson of the Research Committee
Christiane Lepage, Interim Chairperson, Council of Physicians, Dentists and Pharmacists
Céline Crowe, Director of Professional and Hospital Services
Guylaine Ferland, Associate Director of Clinical Research
Paule Lebel, Director of Teaching
Johanne Théoret, 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
Marie-Jeanne Kergoat, Faculty of Medicine
Romedi Passini, Faculty of Architecture
Nathalie Walter, Graduate student representative

Advisory Board for

Clinical Research (CAREC):

Guylaine Ferland, Associate Director of Clinical Services and Chairperson of the CAREC
Céline Crowe, Director of Professional and Hospital Services
Johanne Dupuis, Administrative Director and Recording Secretary for the CAREC

Representative(s) of the clinical sectors:

Linda Boisvert, Nursing Care
Nathalie Champoux, General Medicine
Martine Gaudreault, Clinical Nutrition
Suzanne Généreux, Speech Therapy
Francine Sophie Fontaine, 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 Representatives:

Francine Ducharme, Researcher
Bernadette Ska, Researcher

Executive Committee:

Yves Joannette, Director and Chairperson of the Executive Committee
Céline Crowe, Representative of the Executive Director
Johanne Dupuis, Administrative Director and Recording Secretary for the Executive Committee

Guylaine Ferland, Associate Director of Clinical Services

Paule Lebel, Director of Teaching

Unit Directors:

Julien Doyon, Neuroimaging and Neurobiology
Francine Ducharme, Care and Services
Sylvie Hébert, Sensory Impairment
Gonia Jarema, Language and Cognition
Marie-Jeanne Kergoat, Nutrition and Clinical Science
Isabelle Peretz, Neuropsychology
Bernadette Ska, Mobility/Way-finding

Scientific Evaluation Committee:

Bryna Shatenstein, Chairperson
Martin Arguin, Researcher
Mario Beauregard, Researcher
Renée Béland, Researcher
Louise Demers, Researcher
Hélène Kergoat, Researcher
Paule Lebel, Researcher
Tony Leroux, Researcher

Research Ethics Committee:

Louise Francoeur, Specialized nurse clinician and Chairperson of the Ethics Committee
Maud Champagne-Lavau, Research Center student representative
Céline Crowe, Director of Professional and Hospital Services
Brigitte Damien, Speech Therapist
Johane de Champlain, Lawyer
Isabelle Ecuyer-Dab, Post-Doctoral fellows representative
Eric Fimbel, Researcher
Fadi Massoud, Geriatrician
Monique Normandin, Representative of the general public
Marie-Hélène Parizeau, Ethicist
Jacqueline Rousseau, Researcher

Nominating Committee:

Yves Joannette, Chairperson of the Nominating Committee
Sylvie Belleville, Researcher
Francine Ducharme, Researcher

Scholarships Committee:

Bernadette Ska, Chairman of the Scholarships Committee
Sylvie Belleville, Researcher
Guylaine Ferland, Researcher

Theme 1.1 | Cognitive Neuroscience and Aging

Language and Cognition

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 Science. The interdisciplinary and multilingual research conducted in this unit deal with the nature and treatment of language impairments associated with cerebrovascular accidents, as well with certain neurodegenerative diseases.

The year 2001-2002 was marked by the arrival in our unit of a new, internationally known researcher, Dr. Brigitte Stemmer, a physician, linguist, and researcher in cognitive neuroscience. Dr. Stemmer, who holds a Canadian research chair in Neuroscience and Neuropragmatics, and enjoys strong support from the Canadian Foundation for Innovation, intends to pursue her research dealing, among others, with speech impairments in people who suffer from a neurological deficit. Her expertise in evoked potentials and various techniques of brain imaging will contribute greatly to the development of the neurolinguistic research of our unit, while allowing for broader links with the Department of Linguistics of the Faculty of Arts and Science of the Université de Montréal.

Dr. Gonia Jarema's team is continuing its research with the framework of an international project dealing with the mental lexicon and, in January 2002, it received a new prestigious grant from the Social Sciences and Humanities Research Council of Canada that will enable the team to prolong and expand its research (among others to studies in evoked potentials and brain imaging) over the next five years. The goal of this vast interdisciplinary and multidisciplinary project entitled "Words in the mind, Words in the Brain" 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. Dr. Jarema's team is comprised of many Canadian and foreign collaborators, students at the Masters and doctoral levels, as well as post-doctoral fellows. In the fall of 2002, Dr. Jarema's team presented its work at the Third International Conference on the Mental Lexicon (Banff, Alberta), a biannual conference initiated and organized by her research group in 1998. The Second International Conference on the Mental Lexicon, held at the IUGM in 2000, led to the publication in April-May-June 2002 of the first triple Special Issue (750 pages) of the journal *Brain and Language* on the topic of the mental lexicon. In 2002, Dr. Jarema's team also published a special issue of *Folia Linguistica* on the processing of compound words. During the year 2001-2002, the student members of the team continued to benefit from an FCAR grant (Drs. Y. Joannette and G. Jarema, coordinators) that enabled them to pursue their research on language cognition and verbal communication

impairments. Finally, Dr. Jarema's team continued its psycho- and neurolinguistic research within the framework of a VRQ project integrating UQAM (host university), Université de Montréal, McGill University, and Université de Laval.

Dr. Joannette's interdisciplinary team continued its research on the contribution of RH to verbal communication and on the impacts 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). Dr. Joannette also initiated research dealing with the nature of the inter-hemispheric cooperation underlying recovery from aphasia. This research is now being funded by the Heart and Stroke Foundation. It has also received a Quebec-Italy scientific cooperation grant with the group from the San Raffaele Hospital in Milan. Dr. Joannette also pursued research on the transfer of knowledge to users (health professionals in speech therapy) through the development of the first protocol truly intended for the assessment of communication impairments of patients who have right-hemisphere lesions. The protocol was developed, validated in clinical settings (IUGM, Marie-Clarac, Villa-Medica, Jewish Rehabilitation Hospital, Lucie-Bruneau, Institut de réadaptation de Montréal), then standardized by summer trainees. This work is now being finalized and will be marketed in 2002. Finally, in August 2001, Dr. Joannette chaired the triennial conference of the International Association of Logopedics and Phoniatrics, the largest international meeting in the field of human communication impairment. Over 1200 participants from every continent attended this conference. The Canadian Association of Speech Therapy and Audiology, as well as the Quebec Order of Speech Therapists and Audiologists made this event their annual meeting. This was the first meeting of its kind to take place in Canada and the second (after Washington) held in North America. This conference allowed researchers in the theme to consolidate their international reputation. Dr. Joannette and Dr. Jarema are continuing to make their contributions to the world of scientific publishing respectively as Associate Editor and member of the editorial board of the journal *Brain and Language*.

In June 2002, Dr. André-Roch Lecours was named Professor Emeritus in the Faculty of Medicine of the Université de Montréal. This nomination crowns a long career in neurolinguistics and neuropsychology during which many of today's researchers received their training. Dr. Lecours, who was honoured with a Killam Prize in 1993, is a pioneer in research on cognition and the brain in Montreal and indeed in the entire country.



Dr. Yves Joannette
Dr. Gonia Jarema
Dr. André Roch Lecours

Researchers theme 1.1

Dr. Michel Habib
Dr. Gonia Jarema
Dr. Yves Joannette
Dr. André Roch Lecours

Theme 1.2 | Cognitive Neuroscience and Aging

Cognitive Neuropsychology and Aging

The *Cognitive Neuropsychology and Aging Unit* in the *Cognitive Neuroscience and Aging* theme continued its research dealing with the comprehension of the mechanisms underlying cognitive impairments linked to aging and those characteristic of neurodegenerative diseases (such as Alzheimer's disease) that have an impact on memory and the other components of cognition. This interdisciplinary team brings together the creative forces from the Université de Montréal in its field. Its interests focus on the development of diagnostic tools and interventions in clinical neuropsychology and in the related fields (such as behavioural neurology and geriatrics). Its interests also include mild cognitive impairment that characterizes a sub-set of elderly individuals likely to develop Alzheimer's disease or an associated dementia.

During the year 2001-2002, the cognitive neuropsychology team took full advantage of the three evoked potential units in its laboratory funded by the Canadian Foundation for Innovation and the Foundation of the Institute. The researchers in this team also continued a series of studies in cognitive neuropsychology on bilingualism, reading systems, memory systems, emotions, and the possible link between concussion and dementia. The following examples illustrate the research being carried out.

Dr. Renée Béland and Dr. Zhora Mimouni continued their detailed study of manifestations in French and Arabic of an aphasic bilingual person. The research highlights the similarities and differences of how the two linguistic systems are affected. In addition, a case study of an Arabic-speaking individual with deep dyslexia confirms that the triconsonantal root is a lexical unit, which is accessed during reading. These studies should allow for better adaptation of the assessment and speech therapy of Arabic-speaking aphasic patients.

Dr. Martin Arguin continued his research on uncovering deficits in the visual processing of letters in cases of reading impairment called "letter-by-letter dyslexia." The research indicates that there is a complete disappearance of the effect of word length in dyslexic patients when words of different lengths are matched on the level of total difficulty of visual decoding of the letters they contain. The studies also highlight that the effect on processing of letters is only seen when the word is comprehended in its totality. These results should allow for better strategies of treatment of aphasic patients with such reading difficulties.

Dr. Sylvie Belleville is exploring systems of memory and attention control in normal elderly subjects, as well as in those with mild cognitive impairment and with dementia of the Alzheimer type, in order to identify tests likely to be specific to dementia of the Alzheimer type and sensitive as early as the first pre-clinical signs (i.e. in patients with mild cognitive impairment). Dr. Belleville also participated in a large multi-centre study involving the majority of memory clinics in Québec. The goal of this process is to create a registry and thus to accumulate clinical, neuropsychological, and neuroradiological data on patients with mild cognitive impairment, or those with Lewy body dementia or frontotemporal dementia. In collaboration with clinicians at the Institute, Dr. Belleville is also conducting research that evaluates the effectiveness of cognitive intervention programs in normal elderly subjects and in those with mild cognitive impairment.

Dr. Maryse Lassonde continued her highly original research on the long-term impact of concussions in young adults (e.g. hockey) on the possible appearance of progressive cognitive impairment in advanced age. This research is of critical importance for the possible introduction of codes of conduct in these sports activities that will decrease their long-term impact on the cognitive health of elderly people who participated in such sports during their lifetime.

The research conducted by Dr. Isabelle Peretz has allowed for a greater understanding of certain aspects of the processing of the auditory signal in its cognitive aspects. Her team developed two auditory situations (one at a low level, during fine discrimination of pitch and the other, at a high level during detection of a musical incongruity) that allowed for better understanding of the characteristics of cognitive processing of the auditory signal in elderly people. The emotional aspects of the processing of auditory signals were also studied by using psycho-physiological indicators (e.g. respiration, electro-dermal response). Lastly, Dr. Peretz pursued her interest in the impact of music therapy for elderly patients.

To summarize, the research conducted in the Cognitive Neuropsychology and Aging Unit has enabled us to push back the frontiers of knowledge of cognitive impairment in the elderly. This has allowed our researchers to look towards practical applications intended to maintain the quality of life of our seniors.



Dr. Sylvie Belleville
Dr. Martin Arguin
Dr. Renée Béland

Researchers theme 1.2
Dr. Martin Arguin
Dr. Renée Béland
Dr. Sylvie Belleville
Dr. Maryse Lassonde
Dr. Isabelle Peretz

Theme 1.3 | Cognitive Neuroscience and Aging

Neuroimaging and Neurobiology

The year 2000-2001 was an exceptional one for the researchers in the *Neuroimaging and Neurobiology* Unit. In fact, not only did the researchers in this theme maintain their impressive scientific productivity, but the successes that were scored for the implementation of major infrastructures bore fruit. Thanks to the leadership of Dr. Julien Doyon, Assistant Director for Neuroimaging and the Scientific Director for the Québec Neuroimaging Group, the researchers at the Centre, in collaboration with their colleagues at other Université de Montréal centres, received an impressive \$9.5 million in support from the Canadian Foundation for Innovation and *Recherche Québec* for the establishment of a cutting-edge functional neuroimaging centre. The consortium of researchers grouped under the banner of the Québec Neuroimaging Group includes researchers from the Université de Montréal campus *Centre de recherche en sciences neurologiques* or CRSN (Centre for Research in Neurological Science), the *Groupe de recherche en neuropsychologie expérimentale* or GRENE (Research Group in Experimental Neuropsychology) and the *Centre de recherches mathématiques* or CRM (Mathematics Research Centre) as well as their colleagues in neuroscience from the CHUM, Sacré-Coeur Hospital, Ste. Justine Hospital, the Fernand-Séguin Research Centre, the Centre de recherche en neurosciences of UQAM, the University Geriatric Institute in Sherbrooke, and the Montreal Neurological Institute. With the initiative of the researchers in this theme, this support will allow this group of researchers to establish a 3 Tesla functional magnetic resonance imagery (fMRI) unit, high-density evoked potentials equipment compatible with the fMRI and devices allowing for a brand new technique, optic imagery. In addition, the group will allow for access to strategies for analysis of the images acquired that will benefit from the most recent international advances thanks to the collaboration of the researchers of the Mathematics Research Centre. Completion of this project is slated for 2003.

As for scientific production, the researchers in this unit have been pursuing their respective research programs, and have thus contributed in a significant manner to the advancement of knowledge in the field of normal and pathological aging, as well as that in other related fields. Dr. Mario Beauregard, an FRSQ *chercheur-boursier* continued his research using fMRI to identify the brain systems associated with primary emotions as well as the conscious and voluntary self-regulation of emotions. Dr. Howard Chertkow continued his research aiming at the identification of the biological determinants of dementia and of mild cognitive impairments. Dr. Julien Doyon and his collaborators published the results of studies that aimed to identify the distinct contribution of the striatum and the cerebellum in motor-type learning. The latter have published several scientific articles and book chapters dealing with the contribution of the striatal-cortical and cortical-cerebellar systems in the learning of motor sequences and sensory-motor adaptation. Their research is linked to that of Drs. Habib Benali and Yves Burnod in Paris, in order to study the functional and effective connectivities during learning of this type of skills.



Dr. Howard Chertkow
Dr. Mario Beauregard
Dr. Julien Doyon

Researchers theme 1.3
Dr. Mario Beauregard
Dr. Howard Chertkow
Dr. Julien Doyon

Theme 2 | Care and Services to the Elderly and Their Families

During the year 2001-2002, several events marked the research being carried out within the theme of *Care and Services to the Elderly and Their Families*. The international activities were particularly important, as well as those dealing with the dissemination and transfer of knowledge. Thus, a study on the health of Lebanese family caregivers of elderly people with limited autonomy, carried out with a grant from the World Health Organization, under the direction of Louise Lévesque, in collaboration with Dr. Ducharme, is now complete. Following the Second Latin American Conference in Huelva, Mrs. Lévesque was appointed to take charge of an international project on the influence of culture on care. Drs. Marie-Jeanne Kergoat and Francine Ducharme were invited to present their work as part of the XIV Jacques Cartier interviews in Lyon and Mrs. Lévesque led seminars in Spain at the Escale Internationale de Gérontologie. Moreover, as part of the Conference celebrating the 20th anniversary of the Research Centre, Dr. Hazel Qureshi of the York University (United Kingdom) Social Policy Research Unit as the guest researcher.

In terms of research accomplished, Mrs. Lévesque's has now completed her epidemiological study on the unmet needs for community services for people aged 75, with a grant from the CHSRF. The results of the research conducted by Dr. Paule Lebel and Dr. Francine Ducharme on the assessment of the quality of care and services within the SIPA framework were disseminated in several forms. Dr. Lebel is co-chairing the scientific committee of a conference on the SIPA experiment that will take place in Montreal in 2002. Drs. Marie-Jeanne Kergoat, Lebel, and Ducharme pursued their research within the framework of the Solidage interdisciplinary team, with a grant from the CIHR, and for which Dr. Lebel is responsible for the theme dealing with interventions for the elderly. Drs. Lebel, Marie-Jeanne Kergoat, and Bryna Shatenstein have thus undertaken the evaluation of the application of interdisciplinary protocols for screening, diagnosis and care and treatment of geriatric syndromes; Drs. Marie-Jeanne Kergoat, Paule Lebel, and Judith Latour are continuing their research on the quality of the care and treatment of the frail elderly in geriatric assessment units.

Following a major donation from the Desjardins Movement, an official ceremony to inaugurate the *Desjardins Chair in Nursing Care for the Elderly and Their Families* took place on May 15, 2002 at the Université de Montréal. Dr. Ducharme, who holds this chair and is a senior FRSQ *chercheur-boursier*, is pursuing her research program, with the addition of new projects, in particular a project that has a grant from the CIHR on the health of male caregivers. An evaluative study of a stress management intervention for family caregivers living with a frail elderly person at home (Drs. Ducharme and Lebel) has also just gotten under way. The results of research conducted at the Chair were reported within the framework of an interdisciplinary conference entitled: *Les aidants à bout de souffle : transformons nos pratiques, modifions nos politiques* (Exhausted caregiver: let's change our practices, let's modify our policies) attended by care providers, caregivers, volunteers, managers, decision-makers, and researchers. Graduate students were also trained in research within the Chair, among others, with the arrival of Dr. Alba Di Censo, holder of a CHSRF Chair, who offered seminars on the concept of evidence-based data and on the links between research and practice.

Finally, Dr. Jocelyne St-Arnaud has undertaken research dealing with the field of ethics and aging. Grants from the FRSQ Network for research in clinical ethics enabled a project to be carried out on the guidelines in research ethics in public health. A review of the literature on conflicts between families and care teams concerning end-of-life treatment, in collaboration with Dr. Ducharme, was also conducted. Dr. Lucie Richard (FRSQ Junior 2 *chercheur-boursier*), a new member of this team, has started to develop a research program on the prevention and health promotion among the elderly. A first study, carried out with a grant from the CIHR and conducted in collaboration with Dr. Ducharme, aims to produce a list of health promotion/prevention activities in CLSCs, public health departments, day centres, and community organizations.



First row:
Dr. Francine Ducharme
Dr. Paule Lebel
Ms Louise Lévesque
Second row:
Dr. Jocelyne St-Arnaud
Dr. Marie-Jeanne Kergoat
Dr. Lucie Richard

Researchers theme 2
Dr. Francine Ducharme
Dr. Marie-Jeanne Kergoat
Dr. Paule Lebel
Ms Louise Lévesque
Dr. Lucie Richard
Dr. Jocelyne St-Arnaud
Dr. Cara Tannenbaum

Theme 3 | Nutrition, Metabolism, and the Elderly

The researchers in the theme of *Nutrition, Metabolism and the Elderly* continued their research on nutrition problems in the elderly, using basic animal research as well as clinical and epidemiological approaches. The researchers in this theme also focused on metabolism and the use of dietary intake. In 2001-2002, the team welcomed a new researcher, Dr. Éric Poehlman, who holds a Research Chair of Canada in Nutrition and Metabolism. Dr. Poehlman also received a grant from the Canadian Foundation for Innovation, which enabled him to equip his laboratory with a metabolic unit and to acquire a mass spectrometer. These instruments are assets that will enable him to pursue research on the modifications of body mass and of oxydative metabolism in the decline of normal aging, in certain specific medical conditions (diabetes, malnutrition, dementia) and on the modulating role of physical exercise.

Dr. Marie-Jeanne Kergoat and her colleagues have completed development of evaluation tools for a screening protocol for nutritional problems (evaluative research) applied by the care providers of home maintenance programs within the framework of a demonstration project on integrated care for the frail elderly (SIPA). This project is operating in two CLSC territories in the Montreal-Centre Regional Board.

Dr. Bryna Shatenstein completed the adaptation and validation for an elderly population of a measurement tool serving to evaluate the quality of dietary intake of an adult population through a diet quality index (data from the Santé-Québec study). A qualitative tool was developed and tested; it serves to gather information on the consumption of functional foods at several stages of life. This tool will be used within the framework of a longitudinal study focusing on the role of nutrition as a determinant of successful aging that the researchers in nutrition of the Québec research network on aging would like to establish.

Dr. Guylaine Ferland's research dealing with the role of vitamin K in anti-coagulation treatment is now complete and the results clearly show that stabilizing the daily intake of vitamin K improves control of anti-coagulation treatment and reduces the need to adjust the drug doses. Given the large number of elderly people treated with this anti-coagulant, the results of this study will have a significant clinical impact.

In the field of animal research, Drs. Guylaine Ferland and Isabelle Carrié (post-doctoral fellow) carried out research dealing with the influence of the vitamin K nutritional state on brain function through behavioural and biochemical approaches. The results of this research indicate that lifelong marginal intake of vitamin K leads to cognitive impairment, particularly to a loss of the capacity for learning. This research will be pursued in animals through mechanist studies and will serve as the basis for the development of the intervention in humans.

Some of the results of the study dealing with the determinants of dietary intake and nutritional status in geriatric rehabilitation settings are in the publication process, while deeper analyses are still in progress on the abundant data gathered during this study. Collectively, the number of publications and conferences in 2001-2002 has surpassed all previous years. Last May, the members of this theme were invited to give four conferences during the Sherbrooke Institut universitaire de gériatrie's scientific training day entitled: *La nutrition et la personne âgée : enjeux et intervention*. The researchers in this theme were also called to serve as experts on a variety of advisory committees including the MSSS, the National Academy of Science (Washington), the Nutrition Bureau of Health Canada, and Santé-Québec.



Dr. Guylaine Ferland
Dr. Martin Brochu
Dr. Marie-Jeanne Kergoat
Dr. Bryna Shatenstein

Researchers theme 3

Dr. Martin Brochu
Dr. Laurette Dubé
Dr. Guylaine Ferland
Dr. Marie-Jeanne Kergoat
Dr. Eric Poehlman
Dr. Bryna Shatenstein

Theme 4 | Positioning, mobility, and aging

In the year 2001-2002, the theme of *Positioning, mobility, and aging* saw a year of consolidation of its research topics and its approaches, facilitated by grants and scholarships. Taking advantage of her status of FRSQ junior *chercheur-boursier* and her young researcher *subvention d'établissement*, Dr. Louise Demers launched her research projects devoted to the development of tools to evaluate the effectiveness of rehabilitation interventions for the elderly. Within this framework, a REPAR grant obtained in collaboration with other researchers including Dr. Bernadette Ska, enabled her to gather data on the design of a model to evaluate the effects of geriatric rehabilitation in the hospital setting.

Thanks to a CFI grant obtained in collaboration with Dr. Jean-Marc Beaulieu, Dr. Éric Fimbel built a laboratory to study synthetic environments. He continued his research in neuroergonomics through the development of tools and methods of qualitative computational simulation, as well as computational qualitative analysis methods to analyze movements and to model biological or neurobiological systems. Among the applications of this approach, we must mention the development of neuromuscular computer interfaces for patients with motor handicaps, the automatic measurement of similarity and its application for the analysis of spatial memory, the comparison of formal complexity and (human) difficulty in planning tasks.

Dr. Romedi Passini's team continued its research on spatial orientation in natural settings and in a life-size labyrinth, in particular thanks to the collaboration of Dr. Isabelle Écuyer-Dab who was awarded a post-doctoral scholarship from the Foundation's *Bourse des gouverneurs* program. This research will certainly contribute to the knowledge of spatial orientation difficulties in people with Alzheimer's disease.

Dr. Jacqueline Rousseau's research focuses on the evaluation of the person-environment relationship as it pertains to home maintenance. Several students are working together on projects including the following main ones: the study of the rest-retest reliability of EDIPE (FCAR), the exploration of the impact of cognitive and perceptive impairments of the elderly person on the person-environment relationship in the home setting (in collaboration with Dr. Bernadette Ska and Marianne Lorrain), and the validation of the content of the walking evaluation grid (GEM; CAREC support, in collaboration with Christine Kaegi and Renée Boudreault, clinicians at the Institute).

Dr. Bernadette Ska's team has been conducting research in several areas: the study and analysis of profiles of cognitive degeneration in dementia (VRQ), the analysis of speech and its evolution in Alzheimer's disease (FRSQ doctoral scholarship awarded to Anh Duong), the effectiveness of intervention in patients whose stroke dates back more than five years, the perfection of an evaluation battery for communication problems in patients with right brain lesion (HSF and CIHR, with Dr. Yves Joannette).

To summarize, the members of Theme 4 have several research topics in common and there are many productive interactions among the researchers. In addition, collaborations have spilled over the limits of the theme, thus enabling the researchers to produce work that respects the principles of multidisciplinary and cross-sectoral approaches with researchers from other themes or other research centres and networks.



Dr. Louise Demers
Dr. Bernadette Ska
Dr. Eric Fimbel
Dr. Jacqueline Rousseau

Researchers theme 4
Dr. Louise Demers
Dr. Eric Fimbel
Dr. Julie Messier
Dr. Romedi Passini
Dr. Constant Rainville
Dr. Jacqueline Rousseau
Dr. Bernadette Ska

Theme 5 | Sensory Impairment and Aging

This theme, introduced in 1998, includes researchers from the School of Optometry (Dr. Hélène Kergoat), the School of Speech and Audiology (Dr. Sylvie Hébert, FRSQ *chercheure-boursière* and Dr. Tony Leroux), the Psychology Department (Dr. Franco Lepore), and the Department of Medicine/Geriatrics (Dr. Marie-Jeanne Kergoat). It constitutes a unique ensemble of researchers from various disciplines working in the sciences of vision and hearing of the elderly.

The research team has published the results of several studies on visual impairment whose goal was to better identify deficits of the visual function linked to senescence and dementia of the Alzheimer type. This recent research indicates that senescence is accompanied by neuronal damage at the level of the retina, the head of the optic nerve, and the visual cortex. The research also shows that the retina is not affected in early DAT, but that the disease is accompanied by a delay in the transmission of retino-cortical nerve information. These results were confirmed in a study spanning 18 months. The goal now is to better define the degenerative changes in the visual paths of subjects with DAT through the use of new electrodiagnostic procedures as well as to even earlier detection of the changes found to date. This new paradigm will also be applied to individuals who have mild cognitive impairments and are thus at risk of developing DAT. Research has also been pursued on age-related macular degeneration (ARMD). This condition is the greatest cause of blindness in people aged 65 and older in North America. The research conducted aims to examine one of the hypotheses that attempts to explain the pathogenesis of the disease, i.e. the vascular hypothesis. The research to date indicates that taken as a whole, the blood supply to the choroid is not altered in ARMD. The next step in our work will thus aim to evaluate the blood supply to the choroid in a much more localized manner, i.e. on the level of the central retina where the clinical changes linked to the disease are more evident. If a link exists between ARMD and the blood supply to the choroid, then this type of evaluation could become an important clinical tool in the follow-up of patients suffering from the disease, and of the various treatments used for this disease.

In terms of research on hearing, the goal of the research program is a better understanding of the mechanisms underlying hearing impairment, which is the third most frequent chronic disability in the elderly, after arthritis and hypertension. The research team is continuing its studies of the processing of the temporal aspect of acoustic stimuli. This temporal processing is at the basis of several auditory skills including the detection of rapid acoustic changes in speech. On the other hand, research dealing with tinnitus (buzzing) has shown a link between the stress related to tinnitus and the presence of depression. Thus, the validation of a questionnaire assessing the psychological impact of tinnitus in those with this disorder has been completed. This clinical tool will prove extremely valuable for health professionals here who will be able to identify people who need rapid care and treatment. Other studies are also in progress in order to examine the impact of noise on tinnitus and that of excessive sensitivity to surrounding noises.

The researchers in this unit receive funding from the major granting bodies in the country including the Medical Research Council of Canada (now the Canadian Institutes of Health Research) and the Fonds de la recherche en santé du Québec. Our researchers have also had the opportunity to present their work at several conferences including the International Association of Logopedics and Phoniatrics (IALP 2001). Researchers working in the field of hearing came from all corners of the world to present their most recent work.



First row:
Dr. Hélène Kergoat
Dr. Sylvie Hébert
Second row:
Dr. Franco Lepore
Dr. Tony Leroux

Researchers theme 5

Dr. Sylvie Hébert
Dr. Hélène Kergoat
Dr. Marie-Jeanne Kergoat
Dr. Franco Lepore
Dr. Tony Leroux

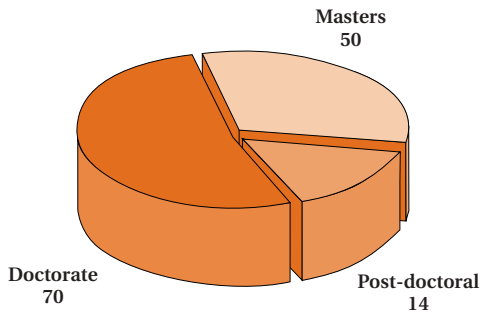
Researcher Training

Increasing the research capacity in health and aging

In 2001-2002 the Research Centre of the Institute once again contributed significantly to increasing the research capacity in the field of health and aging. The researchers at the Centre trained 120 graduate students and 14 post-doctoral fellows in 2001-2002. The interdisciplinary nature of the training locale is evident in the diversity of the students' academic backgrounds: out of the 134 students and post-doctoral fellows, 40% are enrolled in

the Faculty of Medicine; 45%, in the Faculty of Arts and Science, and 10% in the Faculty of Nursing. It should be noted that the research teams also welcomed 8 undergraduate research trainees who did "stages" in the summer of 2001. It is hoped that these summer "stages" will serve as an opportunity to attract new students to graduate programs in the field of health and aging. Taken as a whole, these training activities make the Centre one of the largest sites for interdisciplinary training in research in health and aging in the country.

Students/Fellows



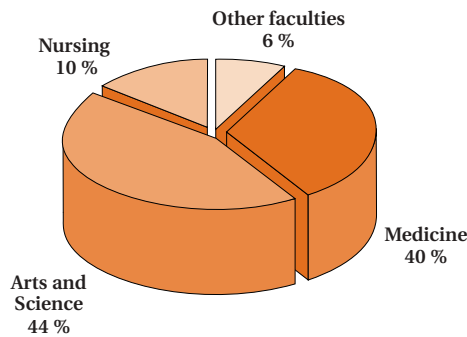
Doctorate

- | | |
|-------------------------|------------------------|
| Ansaldo, Ana Ines | Fung, Dion |
| Ayotte, Julie | Gagnon, Louise |
| Bayard, Sophie | Giguère, Jean-François |
| Beauchamp, Miriam | Gilbert, Brigitte |
| Beauchemin, Marie-Josée | Giraud, Kimberly |
| Benoit, Monique | Gold, David |
| Bergeron, Réjeanne | Gosselin, Nadia |
| Bherer, Louis | Gosselin, Nathalie |
| Cervellon, Marie-Cécile | Gougoux, Frédéric |
| Dalla Bella, Simoné | Gupta, Kunal |
| Doucet, Marie-Eve | Hamel, Caroline |
| Duchesne, Geneviève | Hammarrenger, Benoit |
| Duong, Anh | Hardy, Paule |
| Ellenberg, Dave | Hyde, Krista |
| Enriquez-Rosas, Adriana | Jackson, Philip |
| Fiset, Daniel | Karama, Shérif |
| Fiset, Stéphanie | Koury, Cristina |
| Forget, Julie | Lafleur, Martin |

Masters

- | | |
|-----------------------|-----------------------------|
| Aktouf, Karina | Coron, Anne-Marie |
| Archambault, Annie | Dos Santos, Sinelandia |
| Aubé, François | Dubois, Diane |
| Audet, Monique | Emond, Stéphanie |
| Baillargeon, Estelle | Eugène, Fanny |
| Batanga, Daniel | Gagné, Steeve |
| Beausoleil, Natacha | Garneau-Beaumont, Dominique |
| Bédard, Daniel | Godin, Catherine |
| Bégin-Bertrand, Lydia | Hamel, Karine |
| Bertrand, Benoit | Heierle-Valero, Christina |
| Bonnel, Anna | Héту, Marie-Josée |
| Bourget, Annick | Huot, Odette |
| Bussièrès, Chantal | Jacques, Marc-André |
| Cantini, Franca | Jean-Louis, Seendy |
| Caty, Marie-Eve | Lachambre, Violaine |
| Charruau, Sébastien | Laflamme, Marie-Claude |
| Chettih, Khedidja | Lavoie, Annie |
| Conne, Antoine | Lorrain, Marianne |

Faculties



- | | |
|--------------------|----------------------------|
| Lahaie, Annie | Racette, Amélie |
| Lavoie, Karyne | Sassine, Rima |
| Lebel, Jordan | Savard, Jacinthe |
| Leclaire, Hélène | Sayad, Fouad |
| Leclerc, Chantal | Simard, Alain |
| Leclerc, Charles | St-Amour, Dave |
| Lecours, Sophie | St-Arnaud, Danielle |
| Legault, Alain | St-Pierre, Marie-Catherine |
| Lemay, Marc | Taller, Vanessa |
| Lévesque, Johanne | Tétraut, Mari-Hélène |
| Louis, Marianne | Tremblay, Emmanuel |
| Ménard, Edith | Tremblay, Tania |
| Monetta, Laura | Tripat, Gill |
| Morin, Sylvie | Valiquette, Christine |
| Nikolova, Rossitza | Vasilescu, Maria-Cristina |
| Nkondjock, André | Walter, Nathalie |
| Paquet, Catherine | |
| Perlak, Danuta | |

Postdoctoral

- | | |
|-----------------------|----------------------|
| Blanchet, Sophie | Hadj Tahar, Abdallah |
| Boudia, Baya | Khalfa, Stéphanie |
| Carpentier, Normand | Monchi, Oury |
| Carrié, Isabelle | Saumier, Daniel |
| Champagne-Lavau, Maud | Tannenbaum, Cara |
| Ecuyer-Dab, Isabelle | Taylor, Laurel |
| Guérette, Anne | Whatmough, Christine |

Students

	students
Post-doctoral	14
Doctorate	70
Masters	50
Total:	134

Faculties

	students
Arts and Science	58
Medicine	55
Nursing	13
Other faculties	8
Total:	134



Ms. Nathalie Walter
Graduate Student
Representative at the
Centre

Blanchet, Sophie (Ph.D., Psychology, INSERM U320, Université de Caen, France; Dr. Sylvie Belleville's laboratory). Recipient of a grant from the *Valorisation Recherche Québec* (VRQ) program. Dr. Blanchet's research aims to develop neuropsychological and electrophysiological markers in elderly subjects with mild cognitive impairments who present a risk of evolving towards dementia. She is also trying to identify the neuronal correlates involved in the improvement of cognitive functioning following reeducation in elderly patients. Dr. Blanchet is using research on memory and executive functions to identify tools for assessment and intervention that will be useful for clinicians.

Carrié, Isabelle (Ph.D., Biology of Aging, Université Paris 7 Denis-Diderot; Dr. Guylaine Ferland's laboratory). Recipient of a *Bourse d'excellence* from the Québec government and the *Prix de l'Institut Danone*, France. Dr. Carrié is interested in the definition of the nutritional status of the elderly and her goal is to make specific recommendations to prevent malnutrition in the elderly. Her current research deals with the influence of the nutritional state in vitamin K on brain function according to a basic (animal research) and clinical approach.

Carpentier, Normand (Ph.D. Sociology, Université de Montréal; Dr. Francine Ducharme's laboratory). Recipient of a grant from the Canadian Institutes of Health Research. Dr. Carpentier's research addresses the issue of seeking help on behalf of the loved ones of people suffering from Alzheimer's disease. Using the social networks approach and the perspective of the care trajectory, Dr. Carpentier is trying to identify and analyze these behavioural processes in order to provide markers that are essential to the planning of intervention programs.

Caron, Chantal (Ph.D. Nursing, University of Madison-Wisconsin, United States; Dr. Francine Ducharme's laboratory). Recipient of a scholarship from the Canadian Institutes of Health Research. The goal of Dr. Caron's post-doctoral research is a better understanding of the decision-making processes of family caregivers as it relates to placement of a relative with dementia. This research will contribute to a better knowledge of the phenomenon of institutionalization of elderly demented patients and will propose orientations favouring a more harmonious process for families coping with this often difficult and unavoidable decision.

Champagne, Maud (Ph.D., Cognitive Sciences, neuropsycholinguistic mention, E.H.E.S.S. Paris; Dr. Yves Joanette's laboratory). Recipient of a scholarship from the Heart and Stroke Foundation of Canada. Dr. Champagne is studying the difficulties experienced by elderly individuals who have suffered a right-

hemisphere lesion in comprehending non-literal language. She is testing two hypotheses proposed to explain these problems. In this perspective, Dr. Champagne is attempting to establish, through a comparative study between pathologies that have different underlying manifestations, the presence or absence of a correlation between these difficulties of a pragmatic nature and a disturbance on the level of the Theory of the Mind (attribution of mental states) on the one hand, and these same difficulties of a pragmatic nature and a disturbance of the executive functions, on the other hand.

Ecuyer-Dab, Isabelle (Ph.D., Psychology, Université de Montréal, Dr. Romedi Passini and Dr. Yves Joanette's laboratories). Recipient of a *Bourse des Gouverneurs* from the Foundation of the Institute. Dr. Ecuyer-Dab's research over the past year aims to achieve a better understanding of the processes of aging of the abilities to orient oneself in real, tri-dimensional space, that is to find landmarks during daily outings. She studies these abilities in men and women aged 65 to 75 who are then compared to younger adults (20- to 40-year olds) using a life-size labyrinth that was installed in the Research Centre. Approximately 60 subjects who do not present any neurological impairment have participated in this research to date and the coming year will be devoted to the inclusion of 80 additional subjects, 40 of whom are 40 to 65 years old.

Hadj Tahar, Abdallah (Ph.D. in Neurobiology, Université Laval; Dr. Julien Doyon's laboratory). Recipient of a *Bourse des Gouverneurs* from the Foundation of the Institute. Dr. Hadj Tahar's research deals with the neurobiological bases of the acquisition and consolidation of motor skills. This research uses a pharmacological approach that allows for better understanding of the role of certain brain circuits for motor learning. Thus, Dr. Hadj Tahar uses amantadine to understand the role of the circuits that depend on a specific neurotransmitter, glutamic acid. Similar studies were conducted with elderly patients suffering from Parkinson's disease. Once completed, this research will allow for the identification of pharmacological means to help with the acquisition and maintenance of motor learning in spite of aging and its diseases.

Khalifa, Stéphanie (Ph.D., Neuropsychology, Université Claude Bernard Lyon 1, France; Dr. Isabelle Peretz's laboratory). Dr. Khalifa is studying certain fundamental aspects of cognitive functioning, and more specifically, the physiological mechanisms involved in the processing of musical emotions. She is addressing the organization of emotions within the central nervous system through evoked potentials associated with the physiological measures related to the autonomous nervous system such as heart and respiratory rhythms, skin temperature, and electrodermal activity.

Post-Doctoral | Fellows

Kozlowski, Lorena (Ph.D. in Language Sciences, Université de la Sorbonne, Paris III, France; Professor at the Universidade Tuiuti do Paraná – Curitiba-Parana-Brasil). Recipient of a grant from the *Conselho Nacional de Desenvolvimento Científico e Tecnológico* (Cnpq), Brazil. The aim of Dr. Kozlowski's research is to study the effect of a training program on the auditory and visual intelligibility of speech in communication partners of people with an auditory impairment. To date, there are very few indicators that allow us to evaluate if the speech-perception skills of a hearing impaired person can be improved by training his/her communication partners to use clear speech. The phenomenon according to which one modifies his or her manner of articulating in an effort to improve the intelligibility of his speech is known as "clear speech." It is defined as being a manner of articulating that a speaker adopts in order to improve his intelligibility. This research project will allow for evaluating the theoretical effectiveness of an intervention technique that could be applied to the communication partners of people with a hearing impairment.

Monchi, Oury (Ph.D., Neuronal Modeling, King's College, University of London; Dr. Julien Doyon's laboratory). Recipient of a *Bourse des Gouverneurs* from the Foundation of the Institute. Dr. Monchi's work deals with the consequences of Parkinson's disease on the pre-frontal cortex and the striatum. A study using functional neuroimaging has already allowed us to show difference in the activity within the pre-frontal cortex and the striatum of patients with Parkinson's disease, as compared to control subjects, during the performance of an executive task. A new functional neuroimaging study is in progress with young, healthy subjects; the goal is to better separate the role in cognition of the striatum from that of the pre-frontal cortex. This research will allow for a better understanding of the cerebral origins of cognitive impairments observed in Parkinson's disease that affect the quality of life of seniors.

Saumier, Daniel (Ph.D., Psychology, Université de Montréal, Dr. Martin Arguin and Dr. Howard Chertkow's laboratory). Recipient of a *Bourse des Gouverneurs* from the Foundation of the Institute. Dr. Saumier's research deals with certain cognitive mechanisms that can be affected in Alzheimer's disease. More specifically, Dr. Saumier is interested in the mechanisms associated with the visual recognition of objects and faces according to the cognitive neuropsychological approach. These studies will continue working towards evaluation of a neuropharmacological method of treatment that could slow the progress of these impairments in Alzheimer's disease.

Tannenbaum, Cara (M.D. M.Sc., Epidemiology, McGill University; Dr. Marie-Jeanne Kergoat's laboratory). Recipient of a *Bourse des Gouverneurs* from the Foundation of the Institute. Dr. Tannenbaum, a geriatric specialist and an epidemiologist, aims to identify the priorities of elderly women in terms of health care and their physiological and psychic needs. To accomplish this Dr. Tannenbaum developed a questionnaire, which has been validated. The goal of this questionnaire is to assess women's perceptions of health and clinical needs. It will help to guide clinical research in geriatric care for elderly women, and will offer the possibility of describing ethnocultural differences between the perceptions and priorities of women from the francophone and anglophone communities. This questionnaire may be used as part of a national survey on the health priorities of elderly women.

Tsapkini, Kyrana (Ph.D., Neuropsychology, Biomedical Science, Université de Montréal; Gonia Jarema's laboratory). Recipient of a grant from the *Valorisation Recherche Québec* (VRQ) program. Dr. Tsapkini is interested in the study of the mental lexicon across languages. Her research deals with the evaluation of the processing of words in normal and aphasic subjects at the behavioural and electrophysiological levels using ERPs (evoked potentials), an electrophysiological response in the brain that allows for revealing its functioning in time. This research aims to contribute to a better understanding of the representation of words and access to the mental lexicon in aphasia, and to apply this knowledge to the introduction of strategies for the rehabilitation of these language impairments that interfere with the quality of life of many of our seniors.

Whatmough, Christine (Ph.D., Psychology, Université de Montréal, Dr. Howard Chertkow's laboratory). Recipient of a grant from the Canadian Institutes of Health Research (CIHR). Dr. Whatmough's research deals with the representation in the brain of semantic memory. Semantic deficits are rare in normal elderly people, but occur frequently in people with dementia such as Alzheimer's disease. Dr. Whatmough uses several techniques of functional brain imaging (PET and fMRI) in her research, as well as more behavioural approaches. Her research should allow for the development of clinical tools that will be useful for detecting the presence of deficits in semantic memory and, consequently, will allow for earlier detection of certain dementias.



Dr. Isabelle Ecuyer-Dab
Post-Doctoral Fellows'
Representative

Growth of research funding

and major support for the introduction of infrastructures



Mrs. Cathy Desmarais
Mrs. Johanne Dupuis

The year 2001-2002 was marked by a steady increase in all of the scholarships and grants received by the researchers. The total amount of scholarships and grants of all types rose to over \$4.5 million. Of this amount, close to \$1.5 million corresponds to scholarships and support for *chercheurs-boursiers*, while \$3 million corresponds to actual research grants. The majority of research funding came from federal granting bodies (56.2%), while provincial granting bodies contributed 42.2% of these research funds. This amount includes an infrastructure grant for the Centre from the FRSQ of \$725,000 (see table of use of the infrastructure grant).

The researchers in the *Cognitive Neuroscience and Aging* theme were awarded the majority of the scholarships and grants (54%). The share awarded to researchers in the other themes has been increasing progressively; the *Care and Services for the Elderly and Their Families* and the *Nutrition, Metabolism and Aging* themes brought in approximately 15% of the total amounts. The researchers in the other two themes each received 7% to 8% of the total funding.

The Centre really celebrated its 20th anniversary when it comes to the level of infrastructure grants. Two projects totalling close to \$10 million were funded jointly by the Canadian Foundation for Innovation and Recherche-Québec.

The first of these projects will allow for the introduction of a major functional neuro-imaging infrastructure. This infrastructure will be of benefit to all of the researchers in neuroscience at the Université de Montréal and to their colleagues at UQAM and the Université de Sherbrooke who are part of the *Regroupement neuroimagerie Québec* (Dr. Yves Joanette, principal coordinator; Dr. Julien Doyon, Scientific Director). A high-field (3 tesla) functional magnetic resonance imaging unit and a network of devices allowing for the analysis of images will be available. This unique infrastructure will be complimented with high-density evoked potentials and optic imagery devices. The total funding for this project is \$9.5 million.

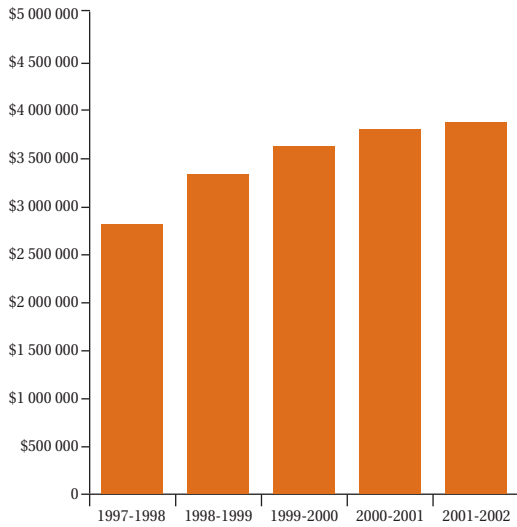
A second project of \$480,000 was allocated to Dr. Brigitte Stemmer in connection with her Canadian Research Chair in Neuropragmatism and Neuroscience. A *Fonds de relève* granted jointly by the Canadian Foundation for Innovation and Recherche-Québec will enable Dr. Stemmer to establish a high-density evoked potentials laboratory.

These two projects bring the total infrastructure investments received from the Canadian Foundation for Innovation and from Recherche-Québec to \$11 million since the inception of the program four years ago. These infrastructure additions will allow the researchers in the Centre to overcome technological challenges in research on health and aging.

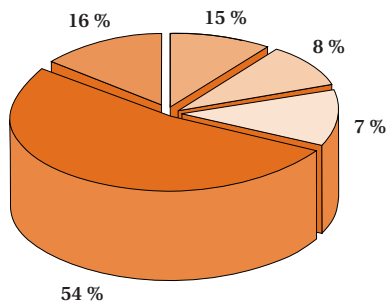
Growth of research funding

and major support for the introduction of infrastructures

Funding evolution



Funding distribution within research themes

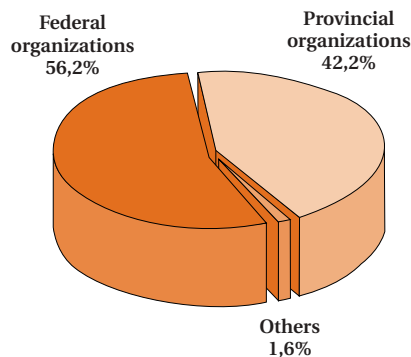


- Cognitive neuroscience and aging
- Care and services for the elderly and their families
- Nutrition and the elderly
- Positioning, mobility, and aging
- Sensory impairment and aging

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

INCOME	2001-2002
FRSQ GRANT	\$725 000
OTHER INCOME	\$94 679
TOTAL INCOME	\$819 679
EXPENSES	
Salaries and benefits	\$597 111
TOTAL SALARIES	\$597 111
OTHER COSTS	
Periodicals and volumes	\$17 505
Equipment	\$18 076
Rent and repairs office equipment	\$13 365
Professional fees	\$17 132
Scientific activities	\$7 156
Software and office supplies	\$64 363
Telephone and long-distance fees	\$2 855
Postage	\$9 120
Miscellaneous	\$35 061
Seminars and conferences	\$18 109
TOTAL OR OTHER COSTS	\$202 742
TOTAL EXPENSES	\$799 853
Surplus of the income on the expenditures	\$19 826

Distribution of funding according to grant organizations



1982-2002 | 20 Years of Research on Health and Aging

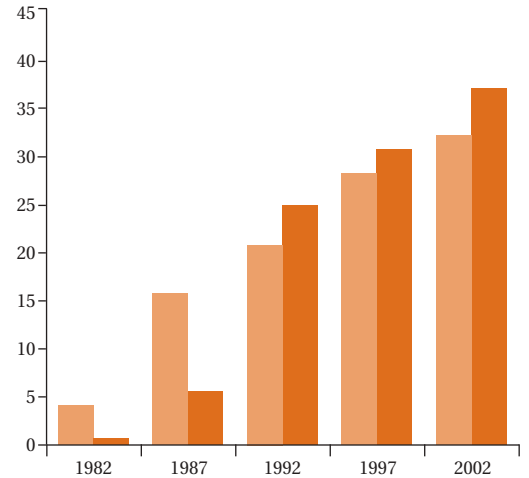
As a result of the initiatives of Drs. Pierre Bois (Dean of the Faculty of Medicine, Université de Montréal) and Yves Jetté (Director General of the Côte-des-Neiges Hospital), the Research Centre was inaugurated at a conference that took place on March 31 and April 1, 1982. The Research Centre grew into what it is today under the leadership of its founding Director,

Dr. André-Roch Lecours, and a core group of three researchers: Dr. David Caplan (now at Harvard University), Dr. Yves Joanette (the current Director of Research at the Research Centre) and Dr. Jean-Luc Nespoulous (current Director of the Laboratoire Jacques-Lordat in Toulouse).

History and Development of the Research Program

- 1982 Research Topic: *Language, Brain in Theme 1 (Cognitive Neuroscience and Aging)*
- 1986 Research Topic: *Cognitive Neuropsychology and Aging in Theme 1*
- 1989 Theme 2: *Care and Services for the Elderly and Their Families*
- 1990 Theme 3: *Nutrition and the Elderly*
- 1990-1996 Project IMAGE: Incubation of a Research Firm
- 1996 Research Topic: *Neurobiology and Neuroimaging in Theme 1*
- 1997 Theme 4: *Positioning, Mobility, and Aging*
- 1997 Theme 5: *Sensory Impairment and Aging*

■ Researchers (Nb) ■ Grants (x \$100k)



April 1st, 1982 : In the usual order Front : Drs F Lhermitte, A. R. Lecours, P. Y. Yakovlev, and J.-L. Nespoulous. Back : Drs G. Courtois, M. Poncet, J. Methellus, and Y. Joanette