



**20**ans  
YEARS  
...et déjà sa place  
dans le monde!

Report of Activities 2007-2009



**Centre de recherche  
sur le vieillissement**  
Research Centre  
on Aging



Centre de santé et de services sociaux —  
Institut universitaire de gériatrie de Sherbrooke  
Health and Social Services Centre —  
University Institute of Geriatrics of Sherbrooke

Affiliated with the

 UNIVERSITÉ DE  
SHERBROOKE



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**Word of thanks:**

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## A FEW WORDS FROM THE DIRECTOR



I had just started as director of the Research Center when we published our last annual report in 2007. I want to start by mentioning that it was with great pride that the Centre celebrated on June 12, 2008, the 20<sup>th</sup> anniversary of its founding by Réjean Hébert. We made it a memorable moment because this was a unique opportunity to bring together the staff, students, researchers and a few special guests to laugh and reminisce about the past and to draw inspiration from those 20 years of rapid growth.

As I reflect on the past two years, in my view, we took some important steps to consolidate and strengthen the Center as it looks to the future. Most significantly, we took the ambitious but crucial step of reorganizing the researchers into three research themes or axes. This increased the number of researchers in each axis while respecting and highlighting our principal research themes. It has also helped develop new collaborations which are the life blood of any research center.

Thanks to support of the Vitae Foundation, of the CSSS-IUGS and of the Canadian Foundation for Innovation, the Centre also underwent a significant expansion of its research space on the 5<sup>th</sup> floor of a wing of D'Youville Hospital. It now has first-class facilities to study how physical activity, nutrition and optimal metabolism play a role in healthy aging. The Centre has a vigorous recruitment plan and will soon need to continue this expansion!

And now Hélène Payette has just replaced me as the new interim director.

A handwritten signature in dark ink, appearing to read "Stephen Cunnane".

Stephen Cunnane, PhD  
Director of the Centre (Jan. 2007-Jan. 2009)

## Reorganization of the Research Centre on Aging

Over the past two years (2007-2009), the Research Centre on Aging has undergone many organizational changes. Professor Hélène Payette assumed the role of interim director of the Centre in January 2009. Prof. Payette had previously held the position of director from 2001 to 2006.

Over the past two years, Prof. Stephen Cunnane, who remains a researcher in the Clinical Axis, steered the structural transformations at the Centre. Under his leadership, the researchers at the Centre were reorganized from four to three axes (Clinical Axis; Society, Populations and Services Axis; and Biological Mechanisms of Aging Axis). The new grouping of researchers will increase the critical mass of researchers in each axis in a manner which encourages collaboration on research projects (interdisciplinarity) and scientific output at the Centre.

The Centre took advantage of these changes to review its managerial organization and role assignment. With the director of the Centre and with the head of administrative services, management can count on a steering committee to lead the Research Centre on Aging adequately.



## Expansion of the Research Centre on Aging

From November 2007 to October 2008, spaces were renovated to set up new infrastructures at the Research Centre on Aging. Researchers now have a metabolic unit at their disposal which includes many testing rooms. In particular, the unit is being used for research led by Prof. Isabelle Dionne, Prof. Martin Brochu and Prof. Stephen Cunnane. This expansion also made it possible to set up a fitness and exercise room for exercise research, a telerehabilitation laboratory, a clinical room, telephone interview rooms, as well as offices for researchers, research officers and students.



## The CDRV in Dordogne

The Research Centre on Aging and the Centre d'expertise en santé de Sherbrooke (CESS) received a grant of over \$1.1 million to implement the SMAF (functional autonomy measurement system) tools and initiative. SMAF, a system developed at the Research Centre on Aging, makes it possible to evaluate the autonomy of seniors or disabled persons quickly and to assess their service requirements. The grant was awarded by two French organizations – the Caisse nationale de solidarité pour l'autonomie (CNSA) and the Conseil général de la Dordogne. In Quebec, SMAF is currently the official tool of the Ministère de la Santé et des Services sociaux used to evaluate seniors and disabled persons. The implementation of SMAF in Dordogne is the subject of research projects to evaluate the pertinence of implementing its use more extensively in the country.

## Age-Friendly Cities

The Research Centre on Aging is at the core of the implementation of the *Age-Friendly Cities* project in seven cities and MRCs in Quebec. This World Health Organization (WHO) program is intended to help cities adapt their infrastructures and services to promote the health, safety and quality of their elderly residents. Two researchers, Prof. Marie Beaulieu and Prof. Suzanne Garon, participated in the research previously led by the WHO which served as a basis for the development of this program. The CDRV has received a five-year, \$470,000 grant to assist the cities of Drummondville, Quebec City, Rimouski, Rivière-du-Loup, Granby and Sherbrooke as well as the MRC de Témiscamingue throughout the implementation of this project and to measure its effects.



# Highlights

## Awards, Prizes and Acknowledgements

**Prof. Réjean Hébert was the recipient of the Prix du chercheur émérite 2008** awarded by the Quebec Population Health Research Network (QPHRN). On November 18, 2008, Dr. Hébert, Dean of the Faculty of Medicine and Health Sciences at the Université de Sherbrooke, received this award "to highlight his outstanding contribution to research in population health, his international standing, his support to young researchers, and his development of research capacity in Quebec."

**Prof. Réjean Hébert was the recipient of the Prix Imelda-Lefebvre**, awarded by the Société Saint-Jean-Baptiste of the diocese of Sherbrooke on January 27, 2008, for his community involvement. Each year since 1996, this award has highlighted the exemplary commitment of an Eastern Townships personality.

**Prof. Hélène Payette was selected by the selection committee of the Research Centre on Aging as the new chairholder of the Merck-Frosst Chair** on November 13, 2008. The \$250,000 accompanying this chair will allow her to maintain and develop the biobank of the NuAge study, the largest tool of its kind in the field of nutrition and of the aging body in Canada.

**Prof. Hélène Payette was appointed as a member of the Canadian Academy of Health Sciences (CAHS)** on September 19, 2007. She is the third researcher at the Centre to receive this distinction, the others being Johanne Desrosiers (2006) and Réjean Hébert (2005). The Canadian Academy of Health Sciences (CAHS) recognizes individuals of great accomplishment and achievement in the health sciences. The CAHS academy provides timely, informed and unbiased assessments of urgent issues affecting the health of Canadians. The CAHS works in partnership with the Royal Society of Canada and the Canadian Academy of Engineering to form the Council of Canadian Academies.

**Prof. Michel Tousignant was the recipient of the Prix d'Excellence by the Ordre professionnel de la physiothérapie du Québec** in the fall of 2007. This award recognizes the excellence of a specific project, whether in scientific, clinical, political or social fields, which is carried out either by a physiotherapist, a physical rehabilitation therapist, a group of physiotherapists or a group of physical rehabilitation therapists who have made a contribution to advance the profession. Prof. Tousignant received this award for his overall achievements and for his contribution to the advancement of the profession of physiotherapy. He shared this award with Ms. Christiane Juneau, Ms. Martine Deblois and Ms. Francine Laforce-Bisson.

**Professors Hélène Corriveau, Johanne Desrosiers and Michel Tousignant were the recipients of the Prix du doyen de la Faculté de médecine et des sciences de la santé** of the Université de Sherbrooke in October 2007 along with other members of the rehabilitation team of the Faculty of Medicine and Health Sciences. The Prix du doyen (Dean's award) is awarded to a team which has distinguished itself by developing an initiative or innovation in research or education or for the faculty and the well-being of the faculty.

## Donation by the Vitae Foundation

From 2007 to 2009, the Research Centre on Aging received funding from the Vitae Foundation.

In addition to the clinical research assistance program (\$65,000), the Vitae Foundation organizes an annual golf tournament. In 2007, a total of \$46,000 in profits from the golf tournament was given to the Centre for the acquisition of specialized equipment for research on driving practices, which is being conducted by Prof. Thérèse Audet.

In December 2008, the Vitae Foundation made a commitment to support the expansion of the Research Centre. A total of \$1.1 million was granted. The expansion work has made it possible to make better use of equipment, which favours the recruiting of new researchers. Thank you to the Vitae Foundation for its ongoing support of research initiatives!

# Appointments

**Appointment of Prof. Réjean Hébert**, founder of the Research Centre on Aging, for a second mandate as dean of the Faculty of Medicine and Health Sciences of the Université de Sherbrooke (2008-2011).

**Appointment of Prof. Hélène Payette**, Interim Director of the Research Centre on Aging, as an institute advisory board member of the Institute of Aging of the CIHR. Prof. Payette's initial mandate was renewed in September 2008 for a four-year period.

**Appointment of Prof. Hélène Payette** as a member of the board of directors of the Institut national de santé publique du Québec (INSPQ). Prof. Payette was appointed for four years in January 2009.

**Appointment of Prof. Martin Buteau**, associate researcher for the Society, Populations and Services Axis, as Secretary General of the Université de Sherbrooke, following the recommendation of Dean Bruno-Marie Béchar, Rector of the Université de Sherbrooke. Prof. Buteau is now Vice-rector of Studies, Vice-rector of Information Resources, and Secretary General of the Université de Sherbrooke. He is responsible for the Registrar's Office, the Internships and Placements Department, and the IT Department.

**Appointment of Prof. Abdelouahed Khalil**, Coordinator of the Biological Mechanisms of Aging Axis, as Director of the master's program in gerontology. He succeeds Prof. Lise Gagnon, researcher of the Clinical Axis and professor at the Université de Sherbrooke in the Department of Psychology of the Faculty of Letters and Humanities.

**Appointment of Prof. Isabelle Dionne**, Researcher at the Clinical Axis, as vice-dean of research and graduate studies for the Faculty of Fitness and Physical Education at the Université de Sherbrooke. Prof. Isabelle Dionne began her mandate on June 1, 2008. It expires on May 30, 2012.

**Appointment of Prof. Marie-France Dubois**, Researcher for the Society, Populations and Services Axis, as a representative of the Research Centre on Aging at the local management committee for the CIQSS laboratory of the Université de Sherbrooke. Prof. Dubois began her mandate on May 31, 2008. It expires on May 31, 2010. Prof. Dubois succeeds Prof. Marie Beaulieu, who is also a researcher in this axis.

**Appointment of Prof. Johanne Desrosiers**, Researcher for the Clinical Axis, as vice-dean of rehabilitation for the School of Rehabilitation of the Faculty of Medicine and Health Sciences. Prof. Desrosiers began her four-year mandate on January 1, 2008.

**Appointment of Prof. Marie Beaulieu**, Researcher for the Society, Populations and Services Axis, as senior scientific consultant for the development of the first action plan against elder abuse in Quebec. Prof. Beaulieu began her mandate in August 2008.

**Appointment of Prof. Gina Bravo**, Researcher for the Society, Populations and Services Axis, as chair of the research ethics committee on aging for the Health and Social Services Centre – University Institute of Geriatrics of Sherbrooke. Prof. Bravo was appointed for a four-year mandate on September 1, 2008.

**Appointment of Prof. Gina Bravo** as scientific consultant for the Fonds de la recherche en santé du Québec in September 2007.

**Appointment of Prof. Martin Brochu**, researcher for the Clinical Axis, as interim director of the Department of Kinanthropology of the Faculty of Fitness and Physical Education of the Université de Sherbrooke. Prof. Brochu began his mandate in June 2008. It expired in March 2009.

# TWENTY YEARS AND AN EYE ON THE WORLD

*On June 12, 2008, the Research Centre on Aging celebrated its 20<sup>th</sup> anniversary by organizing a huge celebration in its garden. Two hundred people paid tribute to the history and role of the CDRV in gerontology and geriatrics research.*

**20**ans  
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For 20 years, the Research Centre on Aging has been pursuing its mission at the Sherbrooke Geriatric University Institute, renamed the Health and Social Services Centre - University Institute of Geriatrics of Sherbrooke.

It all began in 1988 when Prof. Réjean Hébert, the current dean of the Faculty of Medicine and Health Sciences at the Université de Sherbrooke, founded a gerontology and geriatrics research centre. "We dreamt of giving Sherbrooke and Quebec a new research centre on aging. To me, this project was essential if we wanted to solve the problems which have since become current in Quebec society and in the health-care system," noted Dr. Hébert.

Thanks to grants, funding and committed researchers, the Centre grew rapidly. In 1991, it received a grant from the Fonds de la recherche en santé du Québec (FRSQ) as a *research team* (Équipe de recherche). In 1995, the Centre was given the status of *research group* (Groupe de recherche). This laid the groundwork for when it officially became a research centre (Centre de recherche) of the FRSQ in 1998.

At the same time, the affiliation of the CDRV with the Université de Sherbrooke continued to evolve. It grew from a centre of excellence (Centre d'excellence) from 1997 to 2003 to a research centre for the *Programme interne de financement d'infrastructure* (internal infrastructures funding program). It has been recognized as a «Research Institute» of the Université de Sherbrooke since 2005.





## MISSION

To encourage the development of new knowledge on aging in order to prevent, delay or alleviate loss of autonomy of seniors; to disseminate knowledge and its applications in clinical and community environments; and to train future care providers, researchers and clinician researchers.

To ensure its growth, the CDRV sought at its very foundation to attract researchers from the Université de Sherbrooke, clinicians from the health care network and students. Research teams have also clearly opted for an interdisciplinary approach to their projects. Interdisciplinarity is essential to the field of gerontology because of the significant relationships among biological, psychosocial and social factors in elderly persons. Functional decline and loss of autonomy are often the result of interactions among these factors. The studies led at the Centre have resulted in the development of a general perspective of aging and of the measures required to promote healthy aging or to compensate for age-related losses as best as possible.

Research on aging is now entering a phase of maturity. While pursuing fundamental research, the challenge is to promote the transfer of acquired knowledge to the public in order to encourage the adoption of healthier lifestyles among the younger generations and thus to better respond to public issues created by aging.

## OBJECTIVES OF THE RESEARCH CENTRE ON AGING

- Promote and develop fundamental, clinical, evaluative, epidemiological, psychological and social research in the three priority axes;
- Coordinate the development and execution of research activities at the institution;
- Optimize interactions among the different research axes and clinical services;
- Support the emergence of new approaches and intervention methods among seniors - both sick and healthy - and rigorously evaluate their effectiveness;
- Encourage interdisciplinarity in the development and execution of research projects;
- Participate in the training of clinicians and master's, doctoral and postdoctoral students in fields related to aging;
- Disseminate research results to the scientific community and to the general public, and enhance the transfer of knowledge to users;
- Develop partnerships with other organizations.



Research work and studies in the Clinical Axis aim at preventing, screening, diagnosing, treating and discovering the causes of various age-related conditions. The research projects are also intended to determine the relevance, effectiveness and impact of interventions on physical and mental health in order to improve the quality of life of seniors. Interventions may be therapies or diagnoses or involve the use of technology. Researchers focus on the physical or mental health problems which are encountered in the medical field and which involve health care professionals such as physicians, kinesiologists, physiotherapists, occupational therapists, psychologists and neuropsychologists.

The Clinical Axis groups together many research topics under divisions which factor in the physiological, physical and psychological aspects of aging.

### Physical and metabolism theme

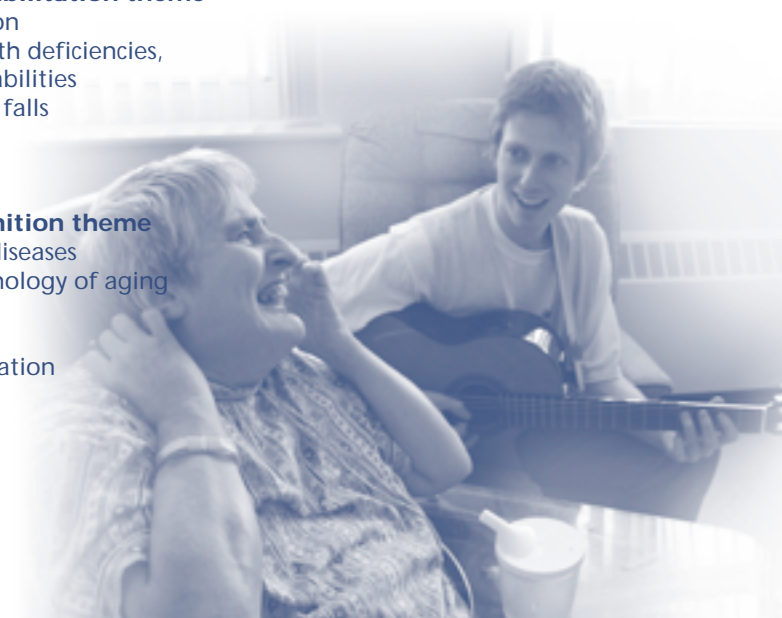
- Chronic diseases among seniors
- Energy and lipid metabolism
- Diabetes
- Obesity
- Sarcopenia

### Adaptation and rehabilitation theme

- Geriatric rehabilitation
- Factors associated with deficiencies, impairments and disabilities
- Postural balance and falls
- Social participation
- Telerehabilitation

### Psychology and cognition theme

- Neurodegenerative diseases
- Cognitive neuropsychology of aging
- Emotions and music
- Road safety
- Sleep and brain activation



Audet, Thérèse	<i>Ph.D., Psychology, Full Professor, Vice-Dean of Research and Graduate Studies</i>	Department of Psychology, Faculty of Letters and Humanities
Boissy, Patrick	<i>Ph.D., Biomedical Sciences, Associate Professor</i>	Department of Kinanthropology, Faculty of Fitness and Physical Education
Brochu, Martin	<i>Ph.D., Physiology and Biology, Human Kinetics, Associate Professor</i>	Department of Kinanthropology, Faculty of Fitness and Physical Education
Corriveau, Hélène	<i>Ph.D., Clinical Sciences (Geriatrics), Full Professor</i>	School of Rehabilitation, Faculty of Medicine and Health Sciences
Cunnane, Stephen	<i>Ph.D., Physiology, Full Professor</i>	Department of Medicine, Department of Physiology and Biophysics, Faculty of Medicine and Health Sciences
Desrosiers, Johanne	<i>Ph.D., Clinical Sciences, Full Professor, Vice-Dean of Rehabilitation, Director</i>	School of Rehabilitation, Faculty of Medicine and Health Sciences
Dionne, Isabelle	<i>Ph.D., Biology and Exercise Physiology, Associate Professor, Vice-Dean of Research and Graduate Studies</i>	Department of Kinanthropology, Faculty of Fitness and Physical Education
Gagnon, Lise	<i>Ph.D. Neuropsychology, Associate Professor</i>	Department of Psychology, Faculty of Letters and Humanities
Lorrain, Dominique	<i>Ph.D., Psychology, Full Professor</i>	Department of Psychology, Faculty of Letters and Humanities
Roy, Pierre-Michel	<i>M.D., Medicine, Associate Professor</i>	Department of Medicine, Faculty of Medicine and Health Sciences
Smeesters, Cécile	<i>Ph.D., Engineering Sciences, Associate Professor</i>	Department of Mechanical Engineering, Faculty of Engineering
Tessier, Daniel	<i>M.D. Internal Medicine, Geriatrics, Full Professor</i>	Department of Medicine, Faculty of Medicine and Health Sciences

# Research topics

## Prof. Thérèse Audet



What affects a person's ability to drive? This very question is at the heart of research studies led by Prof. Audet on seniors and driving. She hopes that the results of these

studies will help seniors remain autonomous as long as possible while screening and identifying individuals who pose a genuine risk to themselves and to others on the road

Many studies were completed which referred to the law affecting drivers and which govern the granting of licenses by age as well as to the medical guidelines which associate certain physical conditions with the ability to drive. The researcher also completed work on methods implemented to help older drivers adapt their driving to the effects of aging. Such methods include reducing speed, being accompanied when behind the wheel, and avoiding driving in bad weather. One of the research projects was about the driving abilities of people suffering from Alzheimer's disease. Two other studies measured the legibility of traffic signs. Finally, Prof. Audet's team was able to conduct an initial study on braking response time among older drivers thanks to the installation of a driving simulation laboratory.

## Prof. Patrick Boissy



Population aging is increasingly prompting the use of technologies to respond to the growing pressure on the health care system to increase effectiveness and access to care as well as to facilitate the

evaluation of outcomes measures.

Through his research, Prof. Patrick Boissy is seeking to develop technologies, outcomes measurement tools and intervention methods in the fields of telehealth and geriatric rehabilitation. Over the past two years, Prof. Boissy and his team have made significant advances in the development of a home telehealth platform (TERA) and outcomes measurement methods based on actimetrics (measurement and analysis of motor activities of a subject in his environment by using sensors worn by the subject or which are integrated into the environment). In a user-friendly manner, the TERA platform integrates the management and control of videoconferencing equipment, the posting in real-time of wireless network sensor data, and the clinical and administrative management of telerehabilitation treatments as well as the patient's record. This platform is now at the centre of many research projects, in particular the systematic follow-up of seniors who have a disability following orthopaedic surgery of a lower limb. Finally, a combination of specialized sensors and analysis algorithms are used for characterization studies on the mobility and activities of people in their home environments (i.e. wheelchair-bound user mobility) and in clinical environments (i.e. characterization of the dose-response relationship in geriatric rehabilitation).

## Prof. Martin Brochu



Prof. Martin Brochu is leading a research program on obesity and its related complications among seniors. The research programming focuses on the effects of training and nutrition on body composition (fat mass and lean body mass), on the distribution of adipose tissue, and on metabolic syndrome among seniors. Prof. Brochu is also interested in the prevention and treatment of loss of mobility and physical capacity among obese elderly men and women.

tion and treatment of loss of mobility and physical capacity among obese elderly men and women.



## Research topics



**Prof. Hélène Corriveau**

Fall prevention among seniors is the general objective of the research program of Prof. Corriveau. She is interested in the implementation of factors which encourage the transfer of knowledge and conclusive evidence to clinicians, and in improving knowledge on how to evaluate and treat

the leading modifiable risk factor in fall prevention - postural instability. Her work centres around three components.

The first component deals with improving the quality of care in fall prevention. The research objective is to encourage a more effective use of conclusive evidence and to select reliable and quantifiable quality indicators in fall prevention. The research team is seeking to encourage knowledge transfer by developing, implementing and evaluating a practice guideline for family physicians and multidisciplinary teams. The evaluation of the implementation phase, beginning with the gathering of systematic data on different elements of the program, will lead to an analysis which will guide decisions for its subsequent phases.

The second component is intended to improve knowledge of risk factors in fall prevention and, more specifically, the mechanisms of postural instability. Laboratory and clinical measurements are carried out in the various projects to evaluate the systems used to control postural stability.

The third component will evaluate the effectiveness of interventions to improve balance. The proposed intervention programs have been developed from the analysis of results obtained over the years from Prof. Corriveau's research.



**Prof. Stephen Cunnane**

Prof. Cunnane and his team are currently leading a research project to improve our understanding of the relationship between energy uptake and function of the aging brain. In particular, their focus is on the reduction of glucose uptake, the brain's primary fuel. Lower brain glucose uptake can cause a decline in cognitive function, which in some cases this can lead to cognitive decline of the Alzheimer's type.

When the uptake of glucose by the brain is insufficient, ketone bodies take over and serve as an alternative brain fuel. However, knowledge on the brain uptake of ketone bodies is limited. That is why the team led by Prof. Cunnane wishes to study the impact of ketone uptake on aging or Alzheimer's disease. Prof. Cunnane raises the following question: does the aging brain have difficulty uptaking not only glucose, but also ketone bodies, its main alternative fuel? Answering this question may help uncover whether the aging brain obtains or not all the fuel that it requires.

The team led by Prof. Cunnane will soon be in a position to better understand how the aging brain gets energy, including among persons suffering from cognitive decline.



**Prof. Johanne Desrosiers**

Research led by Prof. Desrosiers aims to improve interventions in rehabilitation for persons who have suffered a stroke or cerebrovascular accident during the rehabilitation and post-discharge phases.

In the rehabilitation phase, an ongoing study aims to determine whether implementing better stroke rehabilitation practices for upper and lower limbs helps to significantly improve functioning in activities of everyday living.

A pan-Canadian study is also seeking to determine the impact of a physical activity and recreation program on the well-being of participants who have been discharged. The adverse, even slight effects of a stroke on quality of life are widely recognized and require further research.



### Prof. Isabelle Dionne

The benefits of exercise for the health of seniors are widely documented. Previous studies by Prof. Dionne have shown that implementing a specific exercise program combined with targeted nutritional interventions makes it possible to act on specific health parameters such as insulin sensitivity, sex hormone levels or oxidative stress.

The studies led by Prof. Dionne focus mainly on the combination of exercise and phytoestrogens to lower the risk of cardiovascular disease among post-menopausal women. She and her team of researchers have shown that women who exercise and take phytoestrogens simultaneously experience a more significant reduction in abdominal fat than women who simply exercise. The studies are being pursued to determine the biological mechanisms at hand.

Another segment in Prof. Dionne's research focuses on essential amino acid uptake through animal proteins, and their effect on muscle functioning. She is studying the potential of animal proteins for enhancing muscular gain among seniors following an exercise program. Overall, the studies conducted by Prof. Dionne make it possible to offer accessible and effective intervention strategies to improve the health of seniors.



### Prof. Lise Gagnon

Research studies led by Prof. Gagnon mainly focus on emotions recognition in Alzheimer's type dementia (ATD). More specifically, the projects are intended to provide a better understanding of the recognition of facial and musical expressions.

Initial results indicate that maintaining the ability to recognize sadness and pleasure in early ATD supports the idea that musical therapy is an effective intervention method among this population group (Gagnon, Peretz, & Fülöp, 2009; Drapeau, Gosselin, Gagnon, & Peretz, awaiting publication; FRSQ, IRSC). An ongoing project aims to verify the impact of a music listening intervention on agitation behaviour in advanced ATD (Vitae Foundation). Furthermore, Prof. Gagnon has collaborated in a multicentre project on the effect of non-pharmacological interventions on older adults suffering from light cognitive impairments (transitory phase between normal aging and ATD). The project is intended to help persons develop compensation strategies while they are at a stage in which they have the capacity to do so (QNRA-Cognition Section).

### Prof. Dominique Lorrain



Sleep is one of the elements which appear to have the greatest effect on the quality of life of seniors. It is estimated that 35-50% of people older than 65 years of age

complain of the quality of their sleep. Very light sleep, insomnia, and frequent awakenings are symptoms which accompany aging.

Normal sleep is characterized by a succession of cycles which each contain well-defined stages. REM sleep (or paradoxal sleep) is usually associated with dreams. It occurs every 90 minutes and is essential for consolidating memories and certain for cognitive abilities. The greater part of the sleep cycle consists of non-rapid eye movement sleep (NREM sleep). NREM is divided into four stages, with three and four – known as slow-wave sleep - being the deepest. These stages are characterized by the production of delta waves by the brain.

One of the most noticeable effects of aging on sleep is a sharp drop in the quantity and quality of these slow waves - the delta waves. The drop in slow-wave sleep is even more significant as this stage is associated with physical, somatic and vegetative restoration as well as with episodic memory consolidation for autobiographical memories such as events, names, dates and locations.

Researchers at the vigilance laboratory strive to gain a better understanding of the effects of aging on sleep. Prof. Lorrain and her team are trying to improve the quality of sleep by performing behavioural, cognitive and pharmacological therapies.

## Research topics

### Prof. Pierre-Michel Roy



Every year, more than a third of all seniors suffer a fall. The effects of a fall can be devastating for its victims. Falls also engender significant costs for society. Prof. Roy, in

collaboration with researchers in a multidisciplinary team at the Research Centre on Aging, is working to find solutions to prevent falls among seniors and their costly consequences. Over the past two years, Prof. Roy has essentially been evaluating two strategies to reduce falls among seniors. The first strategy consists of advising attending physicians by offering them a *practice guide* to respond to the needs of patients who suffer falls. This adapted guide is sent to physicians who are attending patients who have suffered a fall in the year preceding their admission to the emergency room of the Centre hospitalier universitaire de Sherbrooke. The second strategy involves the clientele of the Day Hospital of the CSSS-IUGS, which is often at risk of suffering a fall. Prof. Roy and his team have proposed an exercise program based on tai chi. The results of both studies will soon be made available.

### Prof. Daniel Tessier



The research topics of interest to Prof. Tessier include the pharmacology of dementia and the endocrinology of aging. He is collaborating with researchers to study

the effects of physical exercise on body composition. His studies also focus on neuroimaging for different states of pathology among elderly subjects.

### Prof. Cécile Smeesters



Falls and road accidents are the two leading causes of deaths and hospitalizations due to unintentional injuries. The topic is complex. Only a limited number of studies

have pushed the tasks associated with falls and road accidents to the limit.

Over the past few years, Prof. Smeesters and her team have shown that the ability to restore balance is not due to what makes us lose balance or the number of steps required to avoid falling; instead it is the direction in which we lose balance that prevents falls.

This research team has also shown that muscle power in the lower limbs and pace are not the best clinical or experimental indicators of the ability to restore balance. In addition, Prof. Smeesters has taken knowledge transfer to its maximum potential by studying the minimal distance required by a driver to brake a vehicle when facing an unanticipated obstacle and to avoid an accident.

Over the next few years, Prof. Smeesters will continue to study these questions and the age-associated decline in balance restoration and braking, both theoretically and in experimentally.

Her biomechanical approach may one day lead to more effective prevention and intervention programs and help seniors maintain functional autonomy.

### Associate members

- Bellehumeur, Lucie
- Bergeron, Denis
- Bonin, Claire
- Bourque, Monique
- Brazeau, Serge
- Brodeur, Katherine
- Bélisle, Denis
- Côté, Lucie
- Cyr, Renée
- Fluet, Bruno
- Garon, Suzanne
- Gauthier, Pierre
- Gray-Donald, Katherine
- Hottin, Paule
- Lacombe, Guy
- Malo, Denise
- Mercier, Louise
- Naud, Brigitte
- Péloquin, Marie
- Pigot, Hélène
- Rioux, Maryse
- Roy, Chantale
- Sévigny-Bénali, Carole
- Trousdell, Marie
- Tu, Le Mai

## Postdoctoral trainees

**Fabien Pifferi:** Ph.D., Nutrition, Faculty of Medicine and Health Sciences, Department of Medicine. Research supervisor: Stephen Cunnane

*Research topic:* Omega-3 fatty acid and cerebral functioning.

**Mélanie Plourde:** Ph.D., Health Sciences, Department of Medicine, Faculty of Medicine and Health Sciences. Research supervisor: Stephen Cunnane

*Research topics:* Ketone production stimulation in healthy young and elderly persons through the consumption of polyunsaturated fatty acids in the form of a diet or supplements; evaluation of ketone metabolism production modifications and of their ability to act as an alternative to glucose as a brain fuel.

**Johanne Filiatrault:** Ph.D., Public Health, Department of Rehabilitation, Faculty of Medicine and Health Sciences. Research supervisor: Johanne Desrosiers.

*Research topic:* Fear of falling among the elderly: determinants and impacts on the social participation of seniors who are aging normally and on the adoption of coping strategies to face aging.

**Nathalie Gosselin:** Ph.D., Psychology, Department of Psychology, Faculty of Letters and Humanities Research supervisor: Lise Gagnon.

*Research topic:* Emotions recognition in Alzheimer's-type dementia (ATD).

## Students

### Master's

Akrich, Sarah Josiane  
Alor, Francisco  
Blanchard, Daniel  
Bouchard, Danielle  
Bourdeau, Isabelle  
Cappozzolo, Barbara  
Caron, Sara  
Carrier, Annie  
Choquette, Stéphane  
Chuin, Aurélie  
Coiteux, Nadia  
Desroches, Josiane  
Doyon, Caroline  
Drapeau, Joannie  
Dugas, Isabelle  
Fontaine, Marie-Noelle  
Fournier, Stéphanie  
Freemantle, Érika  
Gigou, Pierre-Yves  
Gloutnay, Françoise  
Guay, Manon  
Hallé, Philippe  
Hamel, Mathieu  
Hubert, Geoffroy  
Lalancette, David-Alexandre  
Larochelle, Marie-Josée  
Leblanc-Lebeau, Marie-Pierre  
Maltais, Mathieu  
Marchand, Marie-Claude  
Martin, Pierre-Luc  
Noulin, Sandy  
Marinangeli, Chris  
Moliner, Carmen  
Munger, Alexandra  
Murray, Jean Christophe  
Nyinawinkindi, Juliette  
Poulin, Valérie  
Provencher, Véronique  
Rousseau, Stéphane  
Sénéchal, Martin  
Sigaud, Joanna  
Soucy, Lisa  
Therrien, France-Hélène  
Tremblay-Lavoie, Stéphanie  
Tremblay-Mercier, Jennifer  
Tremblay, Marc André  
Tremblay, Sophie  
Vallières, Florian  
Vandal, Milène

### Doctoral

Alie, Karine  
Beliaeff, Serge  
Bezzi, Gabriella  
Bier, Nathalie  
Bobeuf, Florian  
Bouchard, Danielle  
Carbonneau, Hélène  
Champagne, Danielle  
Choquette, Stéphane  
Cissé, Aboubacar  
Couture, Mélanie  
Dubiel, Evan  
Dupuis, Mariane  
Fournier, Amélie  
Goulet, Éric  
Guay, Manon  
Labonté, Daniel  
Larivière-Plante, Danaé  
Larivière, Nadine  
Lebon, Johann  
Levasseur, Mélanie  
Mathieu, Marie-Ève  
Martin, Pierre-Luc  
Mavounza, Céline  
Mélançon, Michel  
Mongeau, Charles-Étienne  
Mwillliza, Solange  
Protat, Stéphane  
Sénéchal, Martin  
Télonio, Alessandro  
Vallée, Catherine  
Viscogliosi, Chantal  
Zimmer, Benjamin



The goal of this axis is to provide a better understanding of the biological mechanisms and changes which occur during aging in order to improve the health of seniors.

The main research topics of the Biological Mechanisms of Aging Axis are:

- Oxidative stress
- Biosignalling
- Metabolism
- Tissue regeneration

The combination of biochemical, molecular and physiological methods makes it easier to study these problems. Researchers are especially interested in the molecular causes behind the diminishing ability of the aging organism to respond to the physiological and pathological stresses which render it more vulnerable.

Models being studied include cardiovascular diseases, neurodegenerative diseases (i.e. Alzheimer's disease), cancer, immune system decline, molecular regulation of the aging muscle, and the generation of 3D tissue substitutes with the aid of bioreactors and synthetic and biological scaffolds. These models and the continuity between fundamental and clinical research promotes a climate of scientific exchange among researchers from various backgrounds. The interdisciplinary approach facilitates the study of different problems concerning healthy seniors and the development of certain pathologies.



Fülöp, Tamás	<i>Ph.D., Immunology and Gerontology, Full Professor</i>	Department of Medicine, Faculty of Medicine and Health Sciences
Grenier, Guillaume	<i>Ph.D., Cell and Molecular Biology, Associate Professor</i>	Department of Surgery, Faculty of Medicine and Health Sciences
Jacques, Danielle	<i>Ph.D., Physiology, Full Professor</i>	Department of Anatomy and Cell Biology, Faculty of Medicine and Health Sciences
Khalil, Abdelouahed	<i>Ph.D., Chemistry and Physics, Associate Professor</i>	Department of Medicine, Faculty of Medicine and Health Sciences
Vermette, Patrick	<i>Ph.D., Chemistry and Engineering, Associate Professor</i>	Department of Chemical Engineering and Biotechnology, Faculty of Engineering
Wagner, Richard J.	<i>Ph.D., Biochemistry and Molecular Biology, Full Professor</i>	Department of Nuclear Medicine and Radiobiology, Faculty of Medicine and Health Sciences

## Research topics



### Prof. Tamàs Fülöp

The growing number of seniors means there will inevitably be an increasing number of age-related diseases. Many of these diseases are caused by an alteration in the immune response associated with aging. This gradual deterioration of the immune system among healthy seniors is referred

to as immunosenescence. The exact cause of immunosenescence remains unknown, but certain processes have been studied. One of the processes studied is the decline in the activation of T-cells, which leads to a drop in their proliferation. When a T-cell is stimulated by an antigen, a cascade activation of signalling molecules occurs to enable gene transcription.

Research by Prof. Fülöp targets the expression and activation of these signal molecules and the mechanisms which may explain the alteration of signalling during aging. Prof. Fülöp and his team are particularly interested in the negative regulation of the activation of the Lck et Akt molecules. Researchers use cell and molecular biology techniques to conduct their research. Physiological aging is accompanied by a low-grade inflammatory process which may influence the onset of age-associated diseases. Prof. Fülöp has an interest not only in physiological aging, but also in Alzheimer's disease, cancer and atherosclerosis. These studies will help provide more effective interventions for the age-related decline in immune response.



### Prof. Danielle Jacques

In their effort to understand cardiovascular diseases, researchers have focused in particular on the study of cardiac myocytes (or cardiomyocytes, the cells of the cardiac muscle) and forgotten the potential role of endothelial endocardial cells. It was long believed that these cells simply served as a

barrier for circulating blood and cardiac myocytes. Now we know that these cells are quite active and contribute directly to the regulation of cardiac function. A better understanding of the functioning of these cells both in healthy individuals and in those with pathologies is needed in order to develop new medications which target these types of cells.

More specifically, research by Prof. Jacques focuses on the identification and regulation of signals generated by the activation of different types of receptors, including neuropeptide Y (NPY), endothelin-1 (ET-1) and angiotensin II (Ang II) of the surface and nuclear membrane involved in the regulation of calcium homeostasis and the secretory function of endothelial endocardial cells.

In addition, the objective of the research program led by Prof. Jacques is to locate and identify different types of receptors and their roles in fetal development and in the aging of the human heart. This research has two specific goals. The first objective is to better understand the mechanisms which regulate NPY, ET-1 and Ang II expression as well as different types of receptor during fetal development and aging. The second objective of the project is to comprehend the overexpression of these peptides and their

respective receptors in cardiac pathophysiology in order to better understand endothelium dysfunctions in general and more specifically endocardial endothelium in arrhythmia and ischemia-reperfusion, hypertension and heart failure.

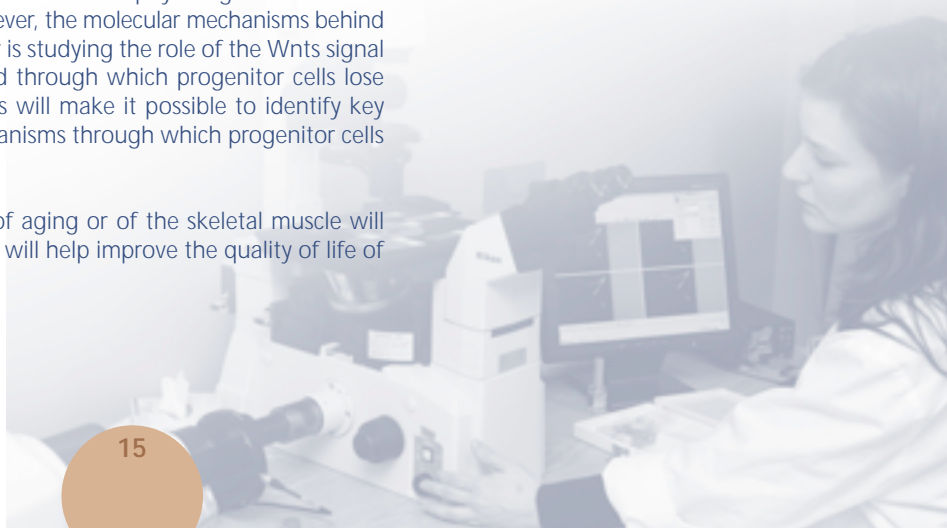


### Prof. Guillaume Grenier

Prof. Grenier studies the loss of muscle mass among elderly adults (sarcopenia). Loss of muscle mass leads to loss of mobility and a greater risk of suffering a fall or fracture. It is urgent that the mechanisms of sarcopenia be understood due to the rapid aging of the population and the inevitable financial pressure on the health care system.

There is abundant scientific literature on the physiological differences between the muscles of young and elderly persons; however, the molecular mechanisms behind these differences still need to be explained. Prof. Grenier is studying the role of the Wnts signal pathway that has recently been identified in aging and through which progenitor cells lose their regenerative property. The results of these studies will make it possible to identify key genes associated with the Wnts pathway and the mechanisms through which progenitor cells affect the aging of the skeletal muscle.

Understanding the underlying molecular mechanisms of aging or of the skeletal muscle will make it possible to develop prevention strategies which will help improve the quality of life of a significant part of the population.



## Research topics



### Prof. Abdelouahed Khalil

There is a saying in French that we are as old as our arteries. Popular wisdom, on the other hand, fails to mention that we are

able to maintain our arteries in very good condition. How? By eating a balanced diet that is rich in antioxidants in order to avoid oxidative stress. The role of antioxidants is essential in stopping damage caused by aging and reducing the risk of suffering from a cardiovascular disease such as an infarction (heart attack) or a cerebrovascular accident (CVA).

Under normal circumstances, equilibrium exists between the number of free radicals and the number of antioxidants. An over-production of free radicals or a reduction in the number of antioxidants in the blood causes an imbalance in the body which is known as *oxidative stress*. This is associated with many diseases, such as diabetes, cardiovascular diseases, cataracts, Parkinson's disease and Alzheimer's disease, which are common in advanced aging.

The damage caused by free radicals to circulating lipids (LDL and HDL) constitutes the first stage in the development of atherosclerosis. The damage occurs with increasing frequency during aging. The interests and research activities of Prof. Khalil and his team are to understand the molecular mechanisms behind a greater incidence of cardiovascular diseases among seniors (project funded by the Canadian Institutes of Health Research).



### Prof. Patrick Vermette

Along with his research team, Prof. Patrick Vermette studies molecular and cellular interactions with synthetic and biological materials as well as tissue regeneration. He is working on developing scaffoldings and bioreactors for tissue engineering as well as controlled drug delivery systems for use

in ophthalmology.

The objective of the research program led by Prof. Vermette at the Research Centre on Aging is to plan and develop a bioreactor and scaffoldings which can grow vascularised tissue masses of sufficient dimensions for clinical use. Prof. Vermette has developed a system which supports the orientation of the formation of microvessels (i.e. directional angiogenesis). The use of these microvessels is the only conceivable strategy to *feed* voluminous tissue masses and to allow the *in vitro* construction of tissues and organs which can be used in the clinical phase.

The team led by Prof. Vermette is entering the second phase of its research program. Its objective is to manufacture an implant capable of secreting insulin to alleviate the problems related to effective diabetes treatment.

### Prof. Richard Wagner



Prof. Wagner is researching DNA damage caused by free radicals, hazardous products and ionizing and non-ionizing radiation. Free radicals are by-products of our own metabolism generated during the transformation of food into energy in aerobic organisms. The reaction of free radicals with DNA damages the DNA. Repair systems composed of a few hundred proteins are mainly involved in repairing this damage. However, the lack of repairs during oxidative stress or aging results in permanent changes in the genetic code known as mutations. The studies led by Prof. Wagner aim to demonstrate just

how this damage results in mutations and how these mutations affect the development of cancer. Another project in his laboratory involves the role of vitamin C in human diseases. Although vitamin C protects cells from the effects of deterioration by free radicals, under certain conditions, the reaction of vitamin C to free radicals generates potentially toxic molecules by modifying the proteins. These reactions can subsequently result in an accumulation of modified proteins during aging such as is the case in cataracts, articular arthritis and dysfunctional neurons. Prof. Wagner and his team are now identifying protein modifications and are studying their effects on certain physiological processes.

## Postdoctoral trainees

**Nourredine Belmadoui:** Ph.D., Chemistry; Department of Nuclear Medicine and Radiology, Faculty of Medicine and Health Sciences. Research supervisor: Richard J. Wagner.

*Research topic:* Synthetic chemistry of modified nucleosides and related studies on the formation and characterization of DNA damage.

**Hicham Berrougui:** Ph.D., Physiology and Pharmacology, Department of Medicine, Faculty of Medicine and Health Sciences. Research supervisor: Abdelouahed Khalil.

*Research topics:* Lipoprotein oxidation during aging; a study of the effect of aging on the dynamics of reverse cholesterol transport; the role of phospholipids in the structural and functional maintenance of high-density lipoprotein (HDL).

**Anne Caro:** Ph.D., Physics and Chemistry of Materials, Department of Chemical Engineering, Faculty of Engineering. Research supervisor: Patrick Vermette.

*Research topic:* Development and validation of a clinical diagnosis tool for the detection of platelet activation in whole blood.

**Annabelle Caron:** Ph.D., Pharmacology, Department of Anatomy and Cell Biology, Faculty of Medicine and Health Sciences. Research supervisor: Guillaume Grenier.

*Research topic:* Identification of the genes involved in the degeneration of the skeletal muscle.

**Oifa Helal:** Ph.D., Nutrition, Department of Medicine, Faculty of Medicine and Health Sciences. Research supervisor: Abdelouahed Khalil.

*Research topic:* Loss of anti-atherogenic activity of HDLs and cardiovascular protection among elderly persons: the effects of olive oil supplementation.

**Yves Martin:** Ph.D., Chemical Engineering, Department of Chemical Engineering, Faculty of Engineering. Research supervisor: Patrick Vermette.

*Research topic:* Clinical validation of the use of a biosensor to detect platelet activation.

**Peggy Regulus:** Ph.D., Chemistry and Biology, Department of Nuclear Medicine and Radiology, Faculty of Medicine and Health Sciences. Research supervisor: Richard J. Wagner.

*Research topic:* Protein ascorbylation: a new aging mechanism.

**Alhabibi Toihiri Said:** Ph.D., Toxicology, Department of Medicine, Faculty of Medicine and Health Sciences. Research supervisor: Abdelouahed Khalil.

*Research topic:* Research on new therapeutic strategies using oily vegetable vectors in the modulation of ocular stress of toxic origin.

## Students

### Master's

Belkacémie, Ouardia  
Boutin, David  
Desrosiers, Justine  
Dubois, Justin  
Farah, Jules  
Koumbadinga, Gérémy  
Tawema, Pamphile  
Thiam, Asta  
Villeneuve, Lisabeth

### Doctoral

Avedanian, Levon  
Bobeuf, Florian  
Bramfeldt, Hanna  
Brochu, Heidi  
Centis, Valérie  
Chouinard, Julie  
Dextraze, Marie-Ève  
Dima, Abdel-Samad  
Dubiel, Evan  
Gbandjaba, Nagba Yendouble  
Höfer, Philippe  
Kuttapan-Nair, Vandana  
Loued, Soumaya  
Martin, Yves  
Meesat, Ridthee  
Monchaux, Emmanuelle  
Provost, Chantal  
Sabra, Georges  
Sukmana, Irza  
Therrien, Francine  
Trensz, Frédéric  
Zejun, Li

## Society

In the past, policies governing long-term care and services were mainly sustained by public sector resources and by the Ministère de la Santé et des Services sociaux. In the present context of budgetary constraints and of growing demand for services for seniors, the various ministries as well as the public, private and community sectors are seeking ways to work together to provide service organization delivery methods which are better suited to the needs of older persons. For example, many municipalities have already undertaken studies to adapt their services and infrastructures in order to protect the health and ensure the safety and quality of life of their seniors. The work of the *Society* component focuses on the stakes described above.

## Populations

Studies in the *Populations* component of the axis are aimed at understanding the needs of seniors and the determinants which can prevent or delay the first signs of disability and frailty. These determiners may include behaviours, lifestyles, influences which may be either beneficial or hazardous to health within the community, living conditions, access to health care services, as well as socio-economic, cultural and environmental conditions. Researchers are investigating a variety of topics including: nutrition, medication consumption, elder abuse, end-of-life decisions, ethical considerations and the needs of natural or family caregivers.

## Services

The integration of services, quality interventions, and access to a wide range of appropriate and diversified services according to clinical practices based upon proven data make up the underlying basis of the organization of health care and social services in Quebec. The *Services* component of the axis is actively involved in these areas. Researchers are also interested in the clinical and economic evaluations of existing and innovative interventions.

Arcand, Marcel	<i>M.D., Medicine, Full Professor</i>	Department of Family Medicine, Faculty of Medicine and Health Sciences
Beaulieu, Marie	<i>Ph.D., Applied Humanities, Full Professor</i>	Department of Social Services, Faculty of Letters and Humanities
Bravo, Gina	<i>Ph.D., Mathematics and Statistics, Full Professor</i>	Department of Community Health Sciences, Faculty of Medicine and Health Sciences
Caron, Chantal	<i>Ph.D., Nursing, Associate Professor</i>	School of Nursing, Faculty of Medicine and Health Sciences
Couturier, Yves	<i>Ph.D., Applied Humanities, Associate Professor</i>	Department of Social Services, Faculty of Letters and Humanities
Dubois, Marie-France	<i>Ph.D., Clinical Sciences, Associate Professor</i>	Department of Community Health Sciences, Faculty of Medicine and Health Sciences
Dubuc, Nicole	<i>Ph.D., Clinical Sciences, Associate Professor</i>	School of Nursing, Faculty of Medicine and Health Sciences
Hébert, Réjean	<i>M.D., Geriatrician, Dean, Full Professor</i>	Department of Family Medicine, Faculty of Medicine and Health Sciences
Lenoir, Anick	<i>Ph.D., Anthropology, Professor</i>	Department of Social Services, Faculty of Letters and Humanities
Mathieu, Luc	<i>M.Sc., Health Services Administration, D.B.A., Business Administration, Nurse, Vice-Dean and Director</i>	School of Nursing, Faculty of Medicine and Health Sciences
Payette, Hélène	<i>Ph.D., Clinical Sciences, Full Professor</i>	Department of Community Health Sciences, Faculty of Medicine and Health Sciences
Pilon, Danielle	<i>M.D., Specialist in Internal Medicine and in Clinical Pharmacology</i>	Department of Medicine, Faculty of Medicine and Health Sciences
Talbot, Lise	<i>Ph.D., Neuropsychology, Full Professor</i>	School of Nursing, Faculty of Medicine and Health Sciences
Tousignant, Michel	<i>Ph.D., Public Health, Full Professor</i>	School of Rehabilitation, Faculty of Medicine and Health Sciences

## Research topics



### Prof. Marcel Arcand

Following studies to reveal the experience of families confronted with medical decisions during the end of life of Alzheimer's patients, Prof. Marcel Arcand and Prof. Chantal Caron co-wrote an information guide for families entitled *Comfort Care at the End of Life for*

*Persons with Alzheimer's Disease or Other Degenerative Diseases of the Brain: A Guide for Caregivers*. This booklet attempts to answer some of the most frequently asked questions by families and caregivers, including: the prognosis and evolution of these diseases in their advanced stages, the most common clinical issues, the role of the patient's representative when the patient cannot actively participate in the decision process, pain control and respiratory problems, the final moments, and bereavement. The booklet can help families to participate in the decision process and to experience less stress during this trying period. The booklet is also a valuable learning tool which is used to improve communications among physicians, nurses and family members. The booklet has been translated and is used for further research in Canada, Italy, Japan and the Netherlands.



### Prof. Marie Beaulieu

A specialist in social gerontology, Prof. Beaulieu covers four themes in her research. In collaboration with Prof. Suzanne Garon, she is implementing and evaluating the impact of the World Health Organization *Age-Friendly Cities* program in seven municipalities and MRCs across

Quebec. These seven pilot projects concern quality of life from the perspective of the health, participation and safety of seniors in their living environments in order to promote active aging.

Prof. Beaulieu is conducting studies on the sense of safety among seniors in order to gain a perspective of the objective and subjective dimensions which affect their behaviour. She is also involved in projects dealing with end of life among seniors. Finally, for more than 20 years, she has been leading research on elder abuse.

In 2008-2009, she acted as lead scientific expert for the development of the first plan in Quebec to combat elder abuse. This contribution to the development of a social policy corresponds with her ideal of translating research into action.



### Prof. Gina Bravo

Prof. Bravo investigates two distinct but interrelated fields. The first focuses on decisionally-incapacitated adults and participation in research. She began her research on this subject as soon as section 21 of the *Civil Code of Québec* came into force. This section excludes from research

any person incapable of giving his consent without a legal representative. Prof. Bravo first led a study on the knowledge and opinions of the regulations governing the substitute consent in Quebec and then in France. This study is now being reproduced in four English—Canadian provinces. Results show lack of awareness of the rules governing substitute consent and general support for consent by the family in the absence of a legal representative. The results were used as a scientific basis for many memoranda aimed at convincing the legislator to amend section 21. An interministerial task force has recently been mandated to propose amendments to this section.

The second research topic is on the quality of care provided in retirement homes. Prof. Bravo's bleak portrayal in the late 1990s generated broad interest in both the scientific communities and in the media. The Gouvernement du Québec gradually recognized the need to regulate these living environments. It opted for certification as a mechanism to regulate retirement homes. Prof. Bravo is now planning to evaluate the effects of this mechanism on the care provided to residents.





## Research topics



**Prof. Chantal Caron**

Prof. Caron is mainly interested in caregivers and cognitively impaired persons. Over the past few years, she has been working on caregiver decision processes in the context of having to decide whether to lodge a loved one in a residential or long-term care centre. Preliminary

results have provided a comprehensive model of the elements which may influence this difficult decision. She has also collaborated on the COAT project, whose objective was to validate an evaluation tool to identify the needs of caregivers, as well as the ADP project, whose objective was to evaluate a psycho-education and support program for caregivers whose loved one has been diagnosed with dementia. Research by Prof. Caron has thus mainly been focused on the understanding and support given to caregivers.



**Prof. Marie-France Dubois**

Prof. Dubois has in-depth expertise in research methodology and the statistical analysis of data. She acts especially as a collaborator on important research projects.

Over the past two years she has participated in the analyses and dissemination through scientific publications and conventions of the PRISMA-Estrie study, a five-year, longitudinal study to evaluate the implementation of an integrated services network for seniors in loss of autonomy. She has also contributed to a study on the evaluation of the quality of care through innovative formulas for alternatives to traditional senior housing. In addition, Prof. Dubois has participated in the development of questionnaires and in preparations for the gathering of data through a pan Canadian postal survey on substitute consent in care and research for decisionally-incapacitated adults. The data will soon undergo analysis and interpretation. Finally, Prof. Dubois has recently participated in the conception of a randomized trial to promote advance directives. This project has just obtained funding and will be carried out over the next few years.



**Prof. Yves Couturier**

Prof. Couturier is interested in the analysis of professional practices in health care and social services, in particular from the perspective of interdisciplinary reports. More specifically, his research focuses on professional practices which involve coordination, such as case management.

The case manager is a professional whose role is to streamline services provided to a senior whose health or social condition requires the mobilization of a number of resources. These studies are qualitative and sensitive to the concrete work conditions which give their form to the professional practices studied. These studies shed light on how professionals are adapting social and health care services reforms in practice. A better understanding enables the identification of concrete conditions which block the renewal of practices.

**Prof. Nicole Dubuc**



Prof. Dubuc has focused her research on the evaluation of various programs and the organization mode of services associated with the concepts of autonomy and frailty among the elderly. She also pays particular attention to the development and validation of clinical and administrative management systems in long-term care.

In many instances, the knowledge acquired through her research has led to the development of tools which enable decision-makers to have validated and conclusive data at their disposal when reorganizing services. Such is the case of the implementation of a classification system based on the Iso-SMAF autonomy profiles as well as research associated with the evaluation and implementation of integrated services networks (PRISMA).

The researcher has just completed a study on the evaluation of new housing formulas for seniors suffering from severe loss of autonomy within the framework of a public-private partnership. As part of the research program involving a study on frailty, Prof. Dubuc is working on the development of clinical pathway tools to monitor within the community seniors in loss of autonomy who show signs of frailty. Finally, she is seeking to gain a better understanding of the usage and costs of care and social services associated with seniors with different frailty profiles and their trajectories.

## Prof. Réjean Hébert



Over the past few years, the research activities of Prof. Hébert have focused mainly on PRISMA (Program of research on Integration of Services for the Maintenance of Autonomy). The objective of this project is to evaluate the implementation and measure the effects of a coordinated services model for seniors. This includes: a unique entry point for access to services, an electronic clinical record, and a case manager to coordinate services. Data gathering for the study began in 2001 and ended in 2006. The latest analyses were completed in 2008. Among other findings, the study shows that integrated services for seniors have positive effects on their autonomy and satisfaction of the care and services provided, while reducing visits to the emergency room. The research team has produced two books on its results (in French and in English) which have been distributed in 20 countries. More than 15 scientific articles were published during the 2007-2009 period. The PRISMA model is now implemented throughout Quebec and is being tested in France.



## Prof. Luc Mathieu

Prof. Mathieu is interested in the development, implementation and evaluation of information and communication technologies in the health care network. Over the past two years, his research has focused on two projects. The first project, entitled "Comparaison entre l'approche *collaborative care* et l'approche traditionnelle dans un contexte de distribution de services de réadaptation" (comparison between the collaborative care and traditional method in the delivery of rehabilitation services), has made it possible to evaluate the impact of an information system on collaborative work among professionals from different health care institutions. Factors which encourage or restrain information system usage were identified. The project has been completed and a research report has been published.

The second project, entitled "Pénurie de main d'œuvre et transformation du travail" (labour shortages and work transformation) is in progress. This research-action project requires inter-institutional collaboration among health care and service providers in Estrie who are working on a clientele case management system. Prof. Mathieu will analyze the ways information and communication technologies can support care providers within the framework of the work transformation process. In matters of knowledge transfer, Prof. Mathieu continues to accompany the work of two virtual practice communities supported by the Centre d'expertise en santé de Sherbrooke. Both virtual practice communities were formed following the completion of research studies in which Prof. Mathieu participated.

## Prof. Hélène Payette



What if nutrition is the key to quality aging? Prof. Payette and a team of researcher from four Quebec universities have set up the interdisciplinary and longitudinal NuAge study (Quebec longitudinal study on nutrition as a determinant of successful aging). Over the past four years, approximately 1,800 persons aged 67 to 84 have participated in the study and have been monitored on a yearly basis.

The results of this study will make it possible to describe the changes in the dietary habits of aging seniors and to identify the individual and environmental factors behind these changes. The study will also provide information on the impact of past and present dietary habits on physical and mental health, on functional autonomy and on social functioning.

The biobanks and samples of the NuAge study are an unprecedented and valuable source of information to study the relationship between nutrition and aging. Many secondary studies are also currently being led. The various studies examine the impact of nutrition in maintaining cognitive health, the relationship between fruit and vegetable consumption and oxidative stress, the determiners of weight loss, and the relationship between muscle mass and physical capacity. As nutrition is a *modifiable* risk factor, the results of these analyses will have a considerable impact in health promotion and in the prevention of frailty and diseases associated with advanced aging.



## Research topics

### Prof. Danielle Pilon



Prof. Pilon is mainly interested in pharmaco-epidemiological research, in particular on treatments for cardiovascular disease. She focuses on the usage and effectiveness of pharmacological treatments of these patients through epidemiological observation methods. In addition, this type of study sheds light on relationships between certain medications and rare side effects. These studies can be completed thanks to the use of administrative databases. The objective is to promote a better use of medications and to recognize their limits.

### Prof. Lise Talbot



Prof. Talbot's studies focus on the implementation and use of communication technologies to train health care professionals, to assess the health care needs of seniors, to help rehabilitate persons who have suffered brain injuries, to humanize care and services, and to encourage inter-professional collaboration centred on the needs of the patient.

In a recent study, Prof. Talbot and her team evaluated the impact of a collaborative care model on the distribution of care and services in rehabilitation in a clientele which had suffered moderate and severe traumatic brain injury (TBI). Study results have shown that this method improves the quality of care and services mainly by reducing patient transfer times between the hospital centre and the rehabilitation centre. As part of a training project in inter-professional collaboration, a DVD and a conceptual map were developed and used to train students from various disciplines. In addition, a continued training web site was created for nurses who practice in the emergency ward. Finally, a pilot project is being led to observe how cooperation is expressed among care providers and women undergoing risky pregnancies who attend the Clinique de médecine foeto-maternelle (foetal-maternity medicine clinic) at the CHUS.

### Prof. Michel Tousignant



The first part of Prof. Tousignant's research on telerehabilitation answers the ongoing problem of access to telerehabilitation services. These services reduce disabilities among seniors; however the aggregate demand remains greater than the overall supply. Seeking alternatives to traditional rehabilitation service delivery has never been so pertinent.

Telerehabilitation is an alternative which offers great potential. It helps improve access to services, in particular in rural or distant communities. Three specific problems will be covered throughout the research study:

- 1) The effectiveness of home-based physiotherapy teletreatment for clientele who suffer from a disability following orthopaedic surgery of a lower limb;
- 2) The effectiveness and costs of home-based teletreatment in orthophony for clientele who suffer from a disability following a stroke (cerebrovascular accident);
- 3) The validity of the physical evaluations of patients during telerehabilitation.

The second part of Prof. Tousignant's research will focus on the cost assessment of alternatives to public housing and the evaluation of the SMAF implementation in Dordogne.



## Associate members

Bergeron, France  
 Blanchette, Danièle  
 Buteau, Martin  
 Colin, Bernard  
 Côté, Guylaine  
 Dubé, Micheline  
 Ducharme, Claire  
 Fontaine, Lyne  
 Fontaine, Réjean  
 Gosselin, Suzanne  
 Hamel, Suzanne  
 Kouri, Krystyna  
 Kouri, Robert  
 Laflamme, Lucie  
 Leclerc, Gilbert  
 Lefrançois, Richard  
 Lussier, Marie-Anick  
 Mailloux, Claude  
 Malherbe, Jean-François  
 Michaud, François  
 Noury, Norbert  
 Nootens, Suzanne  
 Poulin, Geneviève  
 Rivard, Marcel  
 Simoneau, Yvan L.

## Students

### Master's

Avila-Funès, José Alberto  
 Béland, Sarah-Gabrielle  
 Bélanger, Julien  
 Belzile, Louise  
 Boucher, Annabelle  
 Brodeur, Caroline  
 Brossoit-Richard, Mélissa  
 Cabana, François  
 Canuel, Catherine  
 Chaker, Hugues  
 Côté, Anne-Andrée  
 Côté, Anne-Marie  
 Dubé, Amélie  
 Dumas, Christian  
 Dupont, Janine  
 Etheridge, Francis  
 Guthender, Adriana Edith  
 Lacasse-Bédard, Joanie  
 Lachance, Marilou  
 Lafontaine, Bruno  
 Lavoie, Stéphane  
 Léopoldoff, Hélène  
 Lestage, Catherine  
 Lynch, Maria-Alejandra  
 Marceau, Mélanie  
 Morin, Caroline  
 Olivier, May Lissa  
 Paquet, Marie-Josée  
 Paris, Mario  
 Pépin, Lana  
 Pereira, Vickie  
 Quirion, Sonia  
 Robinson-Cohen, Cassiane  
 Rousseau-Tremblay, Émilie  
 Tugender, Adriana

### Doctoral

Boucher, Annabelle  
 Carbonneau, Hélène  
 Carrier, Sébastien  
 Chouinard, Isabelle  
 Cloutier, Lyne  
 Collette, Caroline  
 Curcio, Carmen-Lisa  
 Delli-Colli, Nathalie  
 Demers, Karine  
 Ethier, Sophie  
 Gagnon, Dominique  
 Gervais, Pauline  
 Girod, François  
 Jetté, Sylvie  
 Lamontagne, Julie  
 Landry, Marjolaine  
 Lavoie, Stéphane  
 Lestage, Catherine  
 Mandza, Matey  
 Murray, William  
 Paquet, Mariane  
 Paris, Mario  
 Pilote, Claudia  
 Pineault, Anne  
 Raïche, Michel  
 Salita, Abelardo Eliezer  
 Vilney, Christian  
 Williamson, David

## Postdoctoral trainee

**Danielle St-Arnaud Mackenzie:** Ph.D., Nutrition, Department of Medicine, Faculty of Medicine and Health Sciences. Research supervisor: Hélène Payette.

*Research topic:* The social, physiological, psychological and clinical determinants of weight loss in an aging population which appears healthy and lives at home (NuAge cohort).



# FUNDING

From 2007 to 2009, the Research Centre obtained more than \$6.7 million in research grants and bursaries from both public and private organizations.

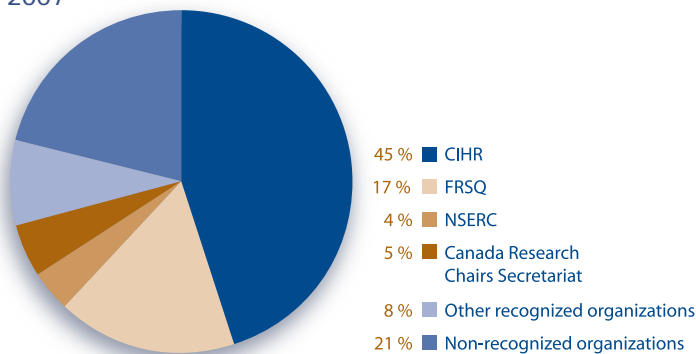
Organizations recognized by the FRSQ contributed approximately \$5.3 million during the 2007-2009 period.

All sources of funding are illustrated in the charts below. The complete list is also published below.

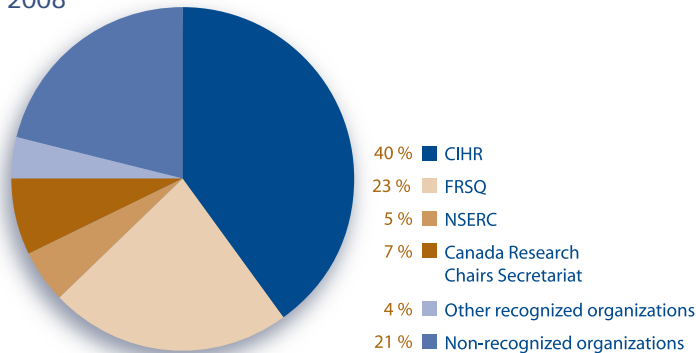
Source: FRSQ records

## SOURCES OF FUNDING 2007-2009

2007



2008



## Our partners

- Centre d'expertise en santé de Sherbrooke (CESS)
- Conseil des aînés
- Social Sciences and Humanities Research Council (SSHRC)
- Natural Sciences and Engineering Council of Canada (NSERC)
- Flax Council of Canada
- Canadian Health Research Services Foundation (CHRSF)
- Canada Foundation for Innovation (New Opportunities Fund)
- VITÆ Foundation of the CSSS-IUGS
- Fondation de recherche en sciences infirmières du Québec
- Fonds de la recherche en santé du Québec (FRSQ)
- Fonds québécois de la recherche sur la société et la culture (FQRSC)
- GlaxoSmithKline
- Canadian Institutes of Health Research (CIHR)
- Institut Nazareth et Louis Braille (INLB)
- Lundbeck Canada
- Ministère de la Famille et des Aînés (Québec)
- Ministère de la Santé et des Services sociaux (Québec)
- Ministère des Transports (Québec)
- National Institute of Health (NIH, USA)
- Ordre professionnel de la physiothérapie du Québec (OPPO)
- World Health Organization (WHO)
- Dairy Farmers of Canada
- Networks of Centres of Excellence (NCE, federal)
- Sanofi-Aventis
- Health Canada
- Canada Research Chairs Secretariat
- Alzheimer Society of Canada
- Université de Sherbrooke
- City of Sherbrooke

# TRAINING, PROGRAMS AND BURSARIES

The Research Centre on Aging provides a terrific environment for training and the development of academic excellence

The CDRV provides an excellent training environment for tomorrow's researchers by allowing them to practice and integrate an interdisciplinary approach. The Centre trains master's and doctoral students. It also welcomes postdoctoral trainees and trainees from the cooperative program offered by the Université de Sherbrooke.

## Gerontology program

The Centre universitaire de formation en gérontologie (CUFG) groups together training programs in gerontology (master's and doctoral) as well as continuous education programs. Since October 2007, the master's program in gerontology has been headed by Abdelouahed Khalil, professor at the Department of Medicine, geriatrics division, Faculty of Medicine and Health Sciences. The doctoral program is headed by Dominique Lorrain, professor at the Department of Psychology, Faculty of Letters and Humanities.

In July 2008, the Centre universitaire de formation en gérontologie (CUFG) changed its principle affiliation faculty as provided in the memorandum of understanding between the Faculty of Fitness and Physical Education, the Faculty of Letters and Humanities, and the Faculty of Medicine and Health Sciences of the Université de Sherbrooke. Over the next three years, the CUFG will be under the governance of the Faculty of Medicine and Health Sciences, and its dean, Réjean Hébert, is the administrative dean. This modification has led to administrative changes which will increase the autonomy of the CUFG.

Over the past year, the CUFG has reorganized its continuing education contingent and has developed new training programs in gerontology. The microprogram in case management has been focused on six credits, and a new microprogram in interventions in gerontology as well as a second cycle diploma in gerontology composed of two microprograms have been created. These programs are offered at the Research Centre on Aging in Sherbrooke, at the Longueuil Campus or by videoconferencing. The goal of the CUFG is to respond to the needs of professionals who intervene with seniors. In offering these programs, the CUFG has provided for bridges among them and among other programs such as the master's in clinical sciences (nursing specialization).

## Strategic Initiatives Program

Thanks to the Strategic Initiatives Program, some researchers have obtained a \$20,000 grant to finance their pilot projects in interdisciplinary research programming. The results of these pilot projects will serve as leverage to obtain funding from outside organizations. The ongoing projects include:

### 2007-2008

Corriveau H., Tousignant M., « Téléréadaptation : utilisation d'un programme d'exercices à domicile pour améliorer l'équilibre des personnes âgées ayant eu un AVC et n'ayant pas eu de réadaptation intensive ».

### 2008-2009

Arcand M., « Évaluation par les familles du livret *Soins de confort en fin de vie dans la maladie d'Alzheimer et les autres maladies dégénératives du cerveau : un guide pour les proches* ».

Grenier G., « Apo lipoprotéine O comme marqueur de la sarcopénie du muscle squelettique ».

Tousignant M., « Évaluation des obstacles et des facilitateurs à l'implantation de la téléréadaptation dans les centres de services publics et privés vers le domicile des patients : une étude exploratoire ».

## Strategic Initiatives Grant Evaluation Committee

- Richard Wagner, Researcher
- Louis Bherer, Independent Evaluator, Professor of Psychology, Department of Psychology, Université du Québec à Montréal (UQAM)
- Patrick Boissy, Researcher
- Marie-France Dubois, Researcher

# TRAINING, PROGRAMS AND BURSARIES

## Clinical Research Assistance Program

Each year, the Vitae Foundation of the CSSS-IUGS in collaboration with the Research Centre on Aging organizes a clinical research on aging funding contest.

The contest is intended for clinicians and professionals at the CSSS-IUGS. Its objective is to support research projects on aging related to clinical interventions. Projects which can have a direct impact on care and services provided to seniors are favoured.

### In 2007-2008, two applications received funding:

Mr. Lambert Dechêne, speech-language therapist, Department of Programs and Services for Seniors and Persons in Loss of Autonomy (DSPPAPA), Health and Social Services Centre – University Institute of Geriatrics of Sherbrooke, received \$15,000 to complete a research project entitled: *Téléadaptation appliquée à l'orthophonie : une étude pilote (telerehabilitation applied to speech-language therapy: a pilot project)*.

Ms. Suzanne Quénech'hdu, occupational therapist, Department of Programs and Services for Seniors and Persons in Loss of Autonomy (DSP-PAPA), Health and Social Services Centre – University Institute of Geriatrics of Sherbrooke, received \$5,000 to formulate a research project entitled: *Évaluation des impacts fonctionnels des déficits des fonctions exécutives chez la personne âgée (evaluation of the functional impacts of executive function impairments among elderly persons)*.

### Clinical Research on Aging Grant Evaluation Committee

#### 2007-2008

Michel Tousignant, Researcher

#### 2008-2009

- Tamás Fülöp, Researcher, Assistant Director, CDRV
- Marcel Arcand, Researcher
- Lise Talbot, Researcher
- Marie-France Dubois, Researcher

### In 2008-2009, three applications received funding:

Ms. Nathalie Delli-Colli, consultant for the Iso-SMAF profiles, Centre d'expertise en santé de Sherbrooke, doctoral student at the Research Centre on Aging, received \$15,000 to complete a research project entitled: *Description des activités réalisées par le service social de trois programmes-services au CSSS-IUGS : une étude de temps et mouvements (description of activities completed by the social service of three service programs at the CSSS-IUGS : a time and motion study)*.

Ms. Hélène Imbeault, neuropsychologist, Department of Programs and Services for Seniors and Persons in Loss of Autonomy (DSPPAPA), Health and Social Services Centre – University Institute of Geriatrics of Sherbrooke, received \$15,000 to complete a research project entitled: *Utilisation d'un agenda électronique chez des patients atteints de la maladie d'Alzheimer afin de favoriser leur autonomie (use of an electronic agenda among Alzheimer's patients to promote their autonomy)*.

Ms. Lyne Fontaine, recreologist, Department of Programs and Services for Seniors and Persons in Loss of Autonomy (DSPPAPA), Health and Social Services Centre – University Institute of Geriatrics of Sherbrooke, received \$15,000 to complete a research project entitled: *Impact d'une intervention d'écoute musicale sur les comportements d'agitation présents dans la démence de type Alzheimer (impact of a music listening intervention on disruptive behaviour in Alzheimer's-type dementia)*.

## Student bursaries

The quality of the supervision provided at the Research Centre on Aging is reflected by the increasing success of its students in provincial and national contests for training bursaries.

Over the past two years, two bachelor-level students, seven master's students, sixteen doctoral students, and four postdoctoral trainees obtained a training bursary from provincial (FRSQ, FQRSC), national (CIHR, SSHRC, NSERC) and other organizations.



## Institutional bursaries of the Université de Sherbrooke

The Université de Sherbrooke offers these bursaries which are all matched with an equivalent amount by the Research Centre on Aging thanks to an internal infrastructure funding program. Thanks to this program, six students enrolled in the master's program in gerontology, one student enrolled in kinanthropology, eight students enrolled in the doctoral program in gerontology, and one student enrolled in clinical sciences received financial aid between 2007 and 2009.

## FORMSAV bursaries

From 2007 to 2009, the *réseau de formation interdisciplinaire en recherche sur la santé et le vieillissement* (FORMSAV) granted three postdoctoral bursaries, eleven doctoral bursaries, twelve master's bursaries, and three bursaries at the undergraduate level. The students of the Université de Sherbrooke received 39 % of the FORMSAV bursaries in 2007-2008 and 44 % in 2008-2009.

## Communication assistance bursary

This program offered by the Centre enables students at the master's, doctoral and postdoctoral levels to present their studies at conventions, conferences and scientific conferences both regionally and internationally. Funding is provided by the internal research institutes infrastructure funding program of the Université de Sherbrooke. From 2007 to 2009, the Research Centre on Aging granted twelve bursaries at the doctoral level, ten at the master's level and four at the postdoctoral level.

## Communication Assistance Bursaries Evaluation Committee

### 2007-2008

- Patrick Boissy, Researcher
- Isabelle Dionne, Assistant Director of Scientific Affairs, Researcher
- Lise Gagnon, Researcher
- Michel Tousignant, Assistant Director of Clinical Research on Aging, Researcher

### 2008-2009

- Patrick Boissy, Researcher
- Isabelle Dionne, Assistant Director of Scientific Affairs, Researcher
- Lise Gagnon, Researcher
- Michel Tousignant, Assistant Director of Clinical Research on Aging, Researcher

## Executive Committee

The executive committee advises the board of the Research Centre on Aging on scientific and administrative committees, hiring initiatives and the internal governance of the Centre.

### Members

- Hélène Corriveau, Coordinator, Geriatric Rehabilitation Axis (2007-2008)
- Stephen Cunnane, Director (2007-2009)
- Isabelle Dionne, Assistant Director of Scientific Affairs (2007-2008)
- Nicole Dubuc, Coordinator of the Populations and Services Axis (2007-2008); Coordinator of the Society, Populations and Services Axis (since June 6, 2008)
- Tamás Fülöp, Assistant Director (2008-2009)
- Abdelouahed Khalil, Coordinator, Biological and Physical Axis (2007-2008); Coordinator of the Biological Mechanisms of Aging Axis (2008-2009)
- Dominique Lorrain, Coordinator, Psychological and Social Axis (2007-2008); Coordinator of the Clinical Axis (2008-2009)
- Hélène Payette, Interim Director (01-12-2009)
- Michel Tousignant, Assistant Director of Clinical Research on Aging (2007-2008)
- Lise Vigneux, Head of Administrative Services

## Research Ethics Committee

Since the merging of its founding institutions, the CSSS-IUGS is home to two research ethics committees. The first committee, chaired by Prof. Nicole Dubuc, evaluates projects submitted by all health and social services centres in the Estrie region and by researchers who belong to the affiliated university centre (AUC). The second committee, chaired by Gina Bravo, is intended for researchers at the Research Centre on Aging and other research institutes which require the participation of users of the institution.

The mandate of these committees is to guarantee the protection of the research participants selected by conducting an in-depth analysis of the rules of ethics involved, in particular the hiring procedures, the consent forms and the upholding of confidentiality. By virtue of section 21 of the *Civil Code of Québec*, these committees are also designated to evaluate projects which involve minors or a person of full age incapable of giving consent. Scientific validity is also examined closely. Studies which are non-scientific are unethical.

To fulfill their mandates, the committees count on the active participation of a dozen members of which there is one specialized in law and another in ethics and others representing the faculties of the Université de Sherbrooke, clinical environments and the population targeted by the research projects. They also benefit from the unconditional support of three professionals who coordinate the everyday operating activities of these committees and who provide critical assistance to the researchers. They are: Sylvianne Fumas, Lyne Turcotte and Stéphane Dubuc.

### Members of the Research Ethics Committee of the CDRV (2007-2008)

- Serge Marchand, Chairman, Professor, Researcher and Representative of the Faculty of Medicine and Health Sciences
- Katherine Morissette, Vice-Chair, Representative in the field of law and in the field of ethics, in the capacity of substitute member
- Marie-France Dubois, Researcher
- Marcel Arcand, Researcher
- Martin Brochu, Researcher
- Guylaine Côté, Professor, Representative of the Faculty of Letters and Humanities
- Francine Roy, Professor, Representative of the Faculty of Letters and Humanities
- Michel Dubreuil, Community Representative
- Pierre Deland, Community Representative
- Catherine Lestage, Representative of the doctoral students
- Nathalie Bier, member who has in-depth knowledge of the methods and fields covered by the research ethics committee
- Monique Sullivan, Legal Representative in the capacity of substitute member

### Members who completed their mandate in 2008

- Serge Marchand, Chair, Representative of the Faculty of Medicine and Health Sciences of the Université de Sherbrooke
- Katherine Morissette, Attorney, Vice-Chair, Representative in the field of law

### Members of the Research Ethics Committee of the CDRV (2008-2009)

- Marie-Josée April, Research Officer, Faculty of Medicine and Health Sciences, Université de Sherbrooke, Representative in the field of ethics
- Marcel Arcand, M.D., Researcher, Vice-Chair of the committee
- Nathalie Gosselin, Ph.D., Postdoctoral Trainee
- Gina Bravo, Ph.D., Researcher, Chair
- Martin Brochu, Ph.D., Researcher
- Guylaine Côté, Ph.D., Full Professor, Faculty of Letters and Humanities, Director of the Centre d'intervention psychologique (CIPUS), Université de Sherbrooke
- Pierre Deland, retired, Community Representative
- Marie-France Dubois, Ph.D., Researcher
- Michel Dubreuil, retired, Community Representative
- Denis Lauzière, Representative in the field of law, Université de Sherbrooke, substitute member
- Catherine Lestage, Representative of the doctoral students
- Francine Roy, Ph.D., Associate Professor, Department of Psychology, Faculty of Letters and Humanities, Université de Sherbrooke
- Monique Sullivan, Assistant to the Associate Dean's Office, Université de Sherbrooke, Representative in the field of law

## Encrâge Committee

- Martin Brochu, Researcher
- Marie-France Dubois, Researcher
- Laurent Fontaine, Information Officer
- Nancy Leclerc, Research Officer

## Liaison Committee

The Liaison Committee proposes general guidelines in research, ensures coordination between the institution and the Université de Sherbrooke, and defines the administrative and scientific orientations of the Centre.

### Members

- Johanne Archambault, Director of Coordination and Academic Affairs (DCAA), Health and Social Services Centre – University Institute of Geriatrics of Sherbrooke (DCAA)
- Jacques Beauvais, Vice-Rector of Research, Université de Sherbrooke
- Linda Bellalite, Dean, Faculty of Letters and Humanities, Université de Sherbrooke
- Jean-Pierre Brunelle, Dean, Faculty of Fitness and Physical Education, Université de Sherbrooke
- Stephen Cunnane, Director, Research Centre on Aging (2007-2009)
- Denis Lalumière, Executive Director, Health and Social Services Centre – University Institute of Geriatrics of Sherbrooke (2007-2008)
- Yves d'Ambois, Interim Executive Director, Health and Social Services Centre – University Institute of Geriatrics of Sherbrooke (2008-2009)
- Suzanne Gosselin, Director of Professional Services and of the Medical Partnership (DSPPM), Health and Social Services Centre – University Institute of Geriatrics of Sherbrooke
- Réjean Hébert, Dean, Faculty of Medicine and Health Sciences, Université de Sherbrooke
- Gérard Lachiver, Dean, Faculty of Engineering, Université de Sherbrooke
- Paul Morin, Director of Research of the Affiliated University Centre (AUC), Health and Social Services Centre – University Institute of Geriatrics of Sherbrooke
- Roger Noël, Dean, Faculty of Administration, Université de Sherbrooke
- Hélène Payette, Interim Director, Research Centre on Aging (2009)
- Pierre-Michel Roy, Director of Education, Faculty of Medicine and Health Sciences, Université de Sherbrooke
- Marie Trousdell, Interim Executive Director, Health and Social Services Centre – University Institute of Geriatrics of Sherbrooke (2008-2009)

## Clinical Research on Aging Committee

The Clinical Research on Aging Committee advises the Clinical Research Department on all internal research activities. Among others, it aims to implement liaison mechanisms between the Research Centre on Aging and the CSSS-IUGS for matters concerning the development of clinical research on aging.

### Members

- Hélène Corriveau, Researcher
- Nathalie Delli-Colli, Iso-SMAF profiles consultant, Centre d'expertise en santé de Sherbrooke
- Suzanne Gosselin, Director of Professional Services and of the Medical Partnership (DSPPM), CSSS-IUGS
- Luc Mathieu, Researcher
- Carole Proulx, Nutritionist, CSSS-IUGS
- Daniel Tessier, Researcher
- Michel Tousignant, Researcher
- Marie Trousdell, Director of Programs and Services for Seniors and Persons in Loss of Autonomy (DSPPAPA), Health and Social Services Centre – University Institute of Geriatrics of Sherbrooke
- Nicole Veilleux, Coordinator of Programs and Services for Seniors and Persons in Loss of Autonomy (DSPPAPA), Health and Social Services Centre – University Institute of Geriatrics of Sherbrooke

## Scientific Conferences Committee

- Nicole Dubuc, Researcher and Coordinator of the Society, Populations and Services Axis
- Abdelouahed Khalil, Researcher and Coordinator of the Biological Mechanisms of Aging Axis
- Dominique Lorrain, Researcher and Coordinator of the Clinical Axis
- Mélissa Letendre Lapointe, Information Officer

# RESEARCH CENTRE STAFF

## Support staff

### Administrative officers, class 1

Fumas, Sylviane  
Longpré, Rachel

### Administrative officers, class 2

Bélisle, Marie-Josée  
Bilodeau, Jade  
Binet, Christine  
Bisson, Chantale  
Duquette, Lucie  
Lambert, Jasmine

### Information officers

Fontaine, Laurent  
Letendre-Lapointe, Mélissa

### Head of administrative services

Vigneux, Lise

### Interim head of the material and financial resources division

Dubois, Julie

### Interim executive counsellor for information resources

Vaillancourt, Sylvie

### Administrative technicians

Lambert, Chantal  
Nadeau, François

### Information systems technicians

Martin, Rémi  
St-Jean, Martin

### Statistician

Trottier, Lise

## Research officers

Bégin  
Bellemare  
Bergeron  
Berrougui  
Bkaily  
Bourgeois  
Brière  
Brousseau  
Cabana  
Cadieux-Pinsonnault  
Capozzolo  
Cliche  
Cloutier  
Corbin  
Côté  
Couture  
Crevier  
Cyr  
D'Amours  
Dechêne  
Dupont  
Durand  
Duval  
Duval  
Ferland  
Fortier  
Fortin  
Gbandjaba  
Gendreau  
Girouard  
Gueye  
Hamel  
Héroux  
Imbeault  
Jaouad  
Labonté  
Labrecque  
Lachance  
Lamontagne  
Lamoureux  
Laplante  
Larivière-Plante  
Laroche

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Ghassan Bassam  
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Mélanie  
Marie  
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Monia  
Lambert  
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Diane  
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Mélanie  
Dany  
Nagba Yendoube  
Mélanie  
Diane  
Rokhaya N'Deye  
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Hélène  
Leila  
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Marie-Élise  
Marilou  
Julie  
Josée  
Marie-Ève  
Danaé  
Lucie

Lavoie  
Leclerc  
Léopoldoff  
Lestage  
Levasseur  
Lussier  
Manseau  
Mihoub  
Miller  
Morin  
Murray  
Nadeau-Dubé  
Naud  
Painter  
Pellerin  
Perreault  
Petit  
Pinard  
Pinsonneault  
Plante-Pellerin  
Pouliot  
Protat  
Provencher  
Québec-dhu  
Richard  
Riopel  
Roux  
Royer  
Roy-Petit  
Ryan  
Scimè  
Simard  
St-Laurent  
St-Louis  
Temisjian  
Therrien  
Tremblay  
Tremblay-Boudreault  
Veil  
Veilleux

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Micheline  
Marie-Anick  
Liette  
Samia  
Evelyn  
Caroline  
William  
Alexandra  
Brigitte  
Karen  
Hélène  
Karine  
Claudia  
Stéphanie  
Manon  
Geneviève  
Caroline  
Stéphane  
Véronique  
Suzanne  
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Marie-Josée  
Louise  
Marie-Pier  
Jacynthe  
Mary Ann  
Antonio  
Maryse  
Caroline  
Marie-Hélène  
Khatoune  
Hubert  
Sébastien  
Valérie  
Anne  
Isabelle

## Research assistants

Baillargeon-Blais	Annie	Leblanc	Mélissa
Beaudet	Myriam	Lefebvre	Émilie
Beaudry	Maryke	Lessard-Beaupré	Maxime
Bélanger	Julien	Letendre	Claudia
Bigonnesse	Catherine	Letendre-Jauniaux	Mathieu
Blackburn-Maltais	Érika	Macrae	Rachel
Bobéuf	Florian	Maltais	Mathieu
Boisvert	Audrey	Marcoux	Catherine
Brossoit-Richard	Mélissa	Martin	Pierre-Luc
Carrier	Marie-Ève	Mavounza	Céline
Carrier	Sébastien	Mercier	Madeleine
Chamberland	Steve	Mwilliza	Solange
Curcio	Carmen-Lucia	Nadeau	Marie-Soleil
Cyr	Sandra	Paris	Mario
D'Arcy-Dubois	Laurence	Paterson	Marty
Demers	Alexandre	Paul-Savoie	Émilie
Derivière	Sara	Pelletier	Caroline
Deschamps-Sonsino	Roxane	Pronovost	Jenny Lee
Deschênes-Beaulieu	Sara Maude	Racine	William
Doss	Philippe	Robert	Marilyn
Doyon	Caroline	Robidas-Noiseux	Julie
Drapeau	Joanie	Rousseau	Cristelle
Drouin	Geneviève	Rousseau	Stéphane
Dussault	Kathy	Roy	Nicolas
Florentin	Adrien	Sabra	Georges Emerson
Gagnon	Nicole	Sénéchal	Martin
Gendron	Suzanne	Soucy	Lisa
Giguère	Éric	Télez-Giron	Rafael
Girard	Anik	Telonio	Alessandro
Girard	Marie-Claude	Tessier	Alexandre
Godbout	Marie-Ève	Tremblay	Sophie
Grenier	Cynthia	Tremblay-Lavoie	Stéphanie
Guérin	Vincent	Tremblay-Mercier	Jennifer
Haméon-Denis	Fannie	Vandal	Milène
Hubert	Geoffroy	Vincelette	Julie
Koumbadinga	Gérémy Abdull	Viscogliosi	Chantal
Labrecque	Marie-Ève		
Lacasse-Bédard	Joanie		
Lafrance	Myriame		
Lalancette	David-Alexandre		
Laplante	Yannick		
Lavoie-Bouchard	Émilie		

## Laboratory coordinators

Douziech, Nadine  
Hamel, Mathieu

## Research coordinators

Boutier, Véronique  
Coulombe, Carole  
Jbabdi, Myriam  
Raïche, Michel

## Evaluators

Breault, Christiane  
Clément, Marcel  
Desautels-Dalpé, Laure  
Fauteux, Lise  
Messier, Lise  
Poudrier, Claire

## Research nurses

Chrétien, Sylvie  
Desgagné, Julie  
Dubois, Pascal  
Fisch, Martine  
Lefebvre, Annie  
Proteau, Jean



# DISSEMINATION OF RESEARCH FINDINGS

## Encrâge



This *Encrâge* journal is intended for study participants at the Centre. More than 5,000 copies are distributed both in English and in French twice per year. *Encrâge* may be consulted on the Centre's web site. Members of the Centre write the articles on research results or ongoing projects. This journal is a medium to inform and thank participants for collaborating in the Centre's research initiatives.

## Governors' conferences and other public conferences

French and English-speaking seniors living in the region can attend conferences free of charge that are organized by the board of governors of the Health and Social Services Centre - University Institute of Geriatrics of Sherbrooke and presented by researchers at the Research Centre on Aging. As part of these conferences, Prof. Thérèse Audet presented her work on driving and seniors. Prof. Hélène Corriveau explained how tai chi is effective in preventing falls, and Prof. Martin Brochu introduced his research on obesity among elderly persons.

Researchers also respond to the invitations made by local organizations to share their discoveries. In addition, a number of researchers are actively involved in local and community organizations. Scientists at the Centre also respond to many requests made by print, radio and TV media interested in their work.

## The NuAge study explained to participants



In May 2008, every participant in the NuAge study as well as staff, researchers and students were invited to attend a half-day workshop to meet the researchers of the NuAge study and to listen to five presentations in French and in English. The researchers presented the results based on data gathered during the NuAge study. The main objective of this workshop held in Sherbrooke and in Montreal was to inform the participants of their critical role in developing a better understanding of the underlying mechanisms of nutrition and successful aging. Another objective was to thank the participants by sharing with them the benefits of the preliminary research results so that they would become aware of the importance of adopting a healthy lifestyle and follow suite. More than 700 participants aged 72 to 86 made the trip to attend the conferences and to meet not only research staff, but also 20 researchers and students.

## CDRV presence at conventions, colloquia and conferences

The Research Centre on Aging disseminates its activities during scientific, professional and public activities. People who visit the information booth at the Centre can become aware of research programs, of ongoing research initiatives, of our researchers and their fields of expertise, of activities organized by members, of the *Encrâge* journal, and so on.

The Centre was present at Townshippers' Day at Sutton in September 2008 as well as the Forum des aînés in Magog (seniors' forum) in May 2008.

## Regular

04-25-2007

### **Nutrigénomique du risque cardiovasculaire**

Marie-Claude Vohl, Ph.D., Researcher, research centre of the Centre hospitalier universitaire de Laval; Associate Professor, Department of Food Sciences and Nutrition, Laval University

09-19-2007

### **Cancer du sein : hormones sexuelles et alimentation**

Mylène Aubertin, Ph.D., Postdoctoral Candidate, Fölkhälsan Research Center, Biomedicum, Institute of Preventive Medicine, Nutrition and Cancer, University of Helsinki, Finland

10-03-2007

### **Efficacité de l'intervention cognitive pour favoriser l'apprentissage d'information dans la démence de type Alzheimer et la démence sémantique**

Nathalie Bier, Occupational Therapist, Postdoctoral Candidate, Department of Rehabilitation, Laval University

10-31-2007

### **Facteurs psychologiques associés aux chutes chez les aînés : conceptualisation, mesure et impact d'un programme communautaire de prévention des chutes**

Johanne Filiatrault, Occupational Therapist, M.Sc., Doctoral Candidate in Public Health, Associate Clinical Professor, Faculty of Medicine – School of Rehabilitation (occupational therapy), Université de Montréal

11-07-2007

### **Une analyse critique des politiques sociales de la vieillesse en France**

Daniel Reguer, Ph.D., Sociology, Associate Professor, Institut universitaire de technologie, Université du Havre, France ; Researcher for the Centre national de la recherche scientifique.

11-14-2007

### **Principe de douleur et de pharmacologie chez la personne âgée**

Guy Lacombe, MD, FRCPC, CSPQ, Faculty of Medicine and Health Sciences, Université de Sherbrooke

11-28-2007

### **Implantation et impact d'un réseau intégré : le modèle PRISMA**

Réjean Hébert, M.Phil., M.D., Dean, Faculty of Medicine and Health Sciences, Université de Sherbrooke, Researcher, Research Centre on Aging

12-12-2007

### **La problématique des chutes chez les aînés des Andes**

José Fernando Gomez, M.D., Geriatrics, Guest Researcher at the Research Centre on Aging of the Health and Social Services Centre – University Institute of Geriatrics of Sherbrooke, member of the research group on gerontology and geriatrics, Faculty of Health Sciences, Caldas University, Manizales, Columbia

01-09-2008

### **Assessing changes in balance and gait due to Tai Chi and fire fighting (conférence en anglais)**

Elizabeth T. Hsiao-Weckslar, Ph.D., Associate Professor, Department of Mechanical Science & Engineering, University of Illinois at Urbana-Champaign

30-01-2008

### **Disability in older coronary patients (conférence en anglais)**

Philip A. Andes, M.D., FACC, Cardiology, Medicine Professor, Director, Cardiac Rehabilitation and Preventive; Associate Director, Clinical Research Center, University of Vermont

13-02-2008

### **L'évaluation d'un programme de réadaptation des maladies chroniques : le cas du programme Traité santé**

Sylvain Bernier, Ph.D., Doctor in Analysis and Public Policy Management of the École nationale d'administration publique (ENAP), Associate Professor, Department of Community Health, Faculty of Medicine and Health Sciences, Université de Sherbrooke

03-26-2008

### **L'obésité chez les personnes âgées : Devons-nous nous inquiéter?**

Martin Brochu, Associate Professor, Department of Kinanthropology, Faculty of Fitness and Physical Education, Université de Sherbrooke

04-09-2008

### **Les agrégats cytoplasmiques de la protéine prion inhibent la réponse cellulaire au stress**

Xavier Roucou, Ph.D., Associate Professor, department of biochemistry, Faculty of Medicine and Health Sciences, Université de Sherbrooke

05-07-2008

### **Pertinence de la prescription de médicaments à visée préventive en soins de longue durée**

Marcel Arcand, M.D., M.Sc., Full Professor, Department of Family Medicine, Faculty of Medicine and Health Sciences, Université de Sherbrooke

05-21-2008

### **Neuropathie diabétique : les effets sur les ajustements posturaux et l'équilibre et les impacts d'un programme de tai-chi**

Hélène Corriveau, Ph.D., Associate Professor, Department of Rehabilitation, Faculty of Medicine and Health Sciences, Université de Sherbrooke, Clinical Axis, Research Centre on Aging

10-01-2008

### **Qu'est-ce qui influence le plus l'habileté à rétablir son équilibre pour éviter une chute?**

Cécile Smeesters, eng. Ph.D., Associate Professor, Department of Mechanical Engineering, Researcher, Groupe de recherche en performance et sécurité humaine (PERSÉUS), Université de Sherbrooke, Clinical Axis, Research Centre on Aging

05-11-2008

**Lipides alimentaires et maladies neurodégénératives : études sur des modèles animaux**

Frédéric Calon, Ph.D., Associate Professor, Biochemist, Pharmacist, research centre of the Centre hospitalier universitaire de Laval; Faculty of Pharmacy, Laval University; member of the Centre de recherche en endocrinologie moléculaire et oncologique (CREMO), member of the Institut sur le vieillissement et la participation sociale des aînés (IVPSA)

12-03-2008

**Évaluation de nouvelles formules novatrices d'alternatives à l'hébergement plus traditionnel**

Nicole Dubuc, Ph.D., Associate Professor, School of Nursing, Faculty of Medicine and Health Sciences, Université de Sherbrooke, Coordinator of the Society, Population and Services Axis, Research Centre on Aging

12-10-2008

**La recherche en promotion de la santé**

Mélanie Levasseur, Ph.D. Clinical Sciences, Postdoctoral Candidate, Groupe de recherche interdisciplinaire en santé (GRIS), Université de Montréal; Associate Professor, Faculty of Medicine and Health Sciences, Université de Sherbrooke

12-16-2008

**Acides gras polyinsaturés (AGPI) n-3 et activité neuronale : existe-t-il un lien avec l'énergie cérébrale?**

Dr. Philippe Guesnet, Ph.D., Sciences, Director of Research, Nutrition and Lipid Regulation of Brain Functions, Institut national de la recherche agronomique, Jouy-en-Josas, France

12-18-2008

**L'entraînement chez la personne avec une hémiparésie à la phase chronique d'un AVC**

Marie-Hélène Milot, Ph.D., Postdoctoral Candidate, Researcher, Neuroimaging Core, University of California, Irvine

01-21-2009

**Perturbation du métabolisme protéique dans la cachexie associée au cancer du poumon**

Stéphanie Chevalier, P.Dt., Ph.D., Researcher, Nutrition and Food Sciences Centre, Research Institute – McGill University Health Centre (RI MUHC), Department of Medicine, Divisions of Geriatrics and Endocrinology, McGill University

02-04-2009

**Démystification du rôle des oxystérols dans le développement de l'athérosclérose**

Christophe Garenc, Ph.D., Chercheur-Boursier Junior-1 du FRSQ, Centre de recherche du Centre hospitalier universitaire de Laval; Associate Professor, Department of Medicine, Laval University

03-11-2009

**La reconnaissance des personnes familières : apports de la neuropsychologie des démences**

Sven Joubert, Ph.D., Researcher, Centre de recherche, Institut universitaire de gériatrie de Montréal ; Professor, Department of Psychology, Université de Montréal

## Outside of Programs

11-07-2007

**Une analyse critique des politiques sociales de la vieillesse en France**

Daniel Regueur, Ph.D., Sociology, Lecturer on Sociology, University Institute of Technology, Université du Havre, France, Researcher at the Centre national de la recherche scientifique

12-10-2008

**La recherche en promotion de la santé**

Mélanie Levasseur, Ph.D., Clinical Sciences, Postdoctoral Candidate, Groupe de recherche interdisciplinaire en santé (GRIS), Université de Montréal ; Associate Professor, Faculty of Medicine and Health Sciences, Université de Sherbrooke

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03-26-2009

**Rôles de SirT1 dans le métabolisme énergétique et la susceptibilité au cancer**

Dr. Gino Boily, Ph.D., Cancer Therapeutics, Ottawa Health Research Institute (OHRI), University of Ottawa

## PUBLICATIONS

Researchers submit their publications for peer review. All scientific publications, books, chapters, conference invitations and summaries are found in a booklet enclosed in the report of activities.