

# ACCOUNTABILITY REPORT 2012



ALZHEIMER  
SOCIETY  
RESEARCH  
PROGRAM



## Contents

- 1 Message from the CEO and Chair
- 2 An overview
- 3 Research excellence through peer review
- 4 Financial information
- 5 Research projects
- 7 Researcher profiles
- 16 Contact information
- 17 Message from Rx&D

## Message from CEO, Alzheimer Society of Canada, and Chair, Research Policy Committee

The Alzheimer Society Research Program (ASRP) is a collaboration of the Alzheimer Societies across Canada. Thanks to the generosity of thousands of donors and their support of research, together we are the major source of non-governmental funding for Canadian research into Alzheimer's disease and other dementias.

In 2011, ASRP grants and awards totalling \$3.5 million supported the work of researchers who have dedicated themselves to finding ways to prevent, diagnose, and treat Alzheimer's disease and other dementias. This included projects from 27 promising young PhD students and postdoctoral trainees, as well as four young investigators and 16 established researchers. The diversity of this research, into both biomedical and quality of life aspects of the disease, is represented by an equally diverse group of researchers working at institutions across the country.

We are proud of the researchers we have supported since the launch of the ASRP in 1989. This funding has led to advances that have contributed to our understanding of dementia. Furthermore, ASRP support has helped launch the careers of many outstanding researchers: doctoral award recipients have gone on to be successful independent investigators, and young investigator grantees have gone on to obtain major research funding. These progressions bring more trainees working in dementia, thereby ensuring the next generation of well-trained and highly-skilled researchers.

We are thankful to those researchers who volunteer their time and expertise every year as members of the ASRP peer review panels (listed on page 3). We rely on this support to ensure that we fund the most promising research and make the best use of every dollar that comes to the ASRP.

We would like to acknowledge the partnerships through which we are able to leverage research funding. In 2011, the ASRP co-funded awards with both the Canadian Dementia Knowledge Translation Network (CDKTN) and Fonds de recherche du Québec-Santé (FRQS).

Finally, we would like to share our enthusiasm for research and salute the collaborative spirit that Alzheimer's disease researchers demonstrate globally. Progress will be made in tackling this public health problem by working together and sharing ideas, information, and expertise. We must all adopt this ethos if we are to achieve our vision of a world without Alzheimer's disease and other dementias.



**Naguib Gouda**  
CEO, Alzheimer Society of Canada



**Serge Gauthier, MD, FRCPC**  
Chair, Research Policy Committee



**Naguib Gouda**



**Serge Gauthier,  
MD, FRCPC**

## An overview of the Alzheimer Society Research Program

Launched in 1989, the Alzheimer Society Research Program (ASRP) is a collaboration of the Alzheimer Societies across Canada and our partners and generous donors. Together, we support research directed to both eradicating Alzheimer’s disease and other dementias and improving the lives of those affected. To do so, the ASRP focuses on two research streams:

**Biomedical:** basic biological mechanisms related to brain changes associated with the disease and into the identification of therapeutic agents to combat the disease

**Quality of Life:** aspects of the disease relating to behavioural and cognitive changes, environmental support, and caregiving issues

The ASRP supports this research through grants and awards:

**Grants:** Young Investigator Grants help launch the careers of outstanding researchers entering the first phase of their academic appointment, and Regular Grants fund established researchers.

**Awards:** Doctoral Awards provide an opportunity for promising individuals, pursuing their PhD, to begin the process of becoming future independent investigators, and Postdoctoral Awards are for graduates with a PhD or MD who wish to gain additional research experience.

Funding from the 2011 ASRP, by research stream and grant/award type, is summarized below:

	Biomedical		Quality of Life	
	Funding	Duration (max.)	Funding	Duration (max.)
<b>Grants:</b>				
Young Investigator	Up to \$75,000/year	3 years	Up to \$60,000/year	3 years
Regular	Up to \$75,000/year	2 years	Up to \$60,000/year	2 years
<b>Awards:</b>				
Doctoral	\$21,530/year	3 years	\$21,530/year	3 years
Postdoctoral	\$40,500/year (PhD) \$50,000/year (MD)	2 years	\$40,500/year (PhD) \$50,000/year (MD)	2 years



The Alzheimer Society Research Program (ASRP) is great for jump-starting new ideas because it will fund challenging new directions ... I want to express my gratitude to all the donors, big and small, who contribute to the ASRP and make this possible.

Dr. Emmanuel Planel

## Research excellence through peer review

Every year, the Alzheimer Society Research Program (ASRP) receives more funding applications than our budget can support. To choose the best research, the ASRP relies on a system of peer review to identify the most promising research projects and ensure the best use of our research funds. Applications are evaluated on their scientific merit and relevance to Alzheimer's disease and other dementias by one of two peer review panels (i.e. biomedical or quality of life). This evaluation includes a face-to-face meeting, where applications are scored by each member of the panel (excluding those with a conflict of interest, for example, panel members who are colleagues or collaborators of the applicant). Scores from the two panels are used to create rank-ordered lists of the applications, stratified by research stream and grant/award type. The results and funding allocations are then reviewed by the Alzheimer Society of Canada Research Policy Committee, which takes into account the funds available in arriving at the final recommendation for funding. The Alzheimer Society of Canada Board of Directors then reviews and confirms the recommendations for funding.

### 2011 Biomedical Peer Review Panel

**Chair: Frédéric Calon** – Université Laval  
**Steffany Bennett** – University of Ottawa  
**Balu Chakravarthy** – National Research Council Canada  
**Avijit Chakraborty** – University of Toronto  
**Nicole Gallo-Payet** – Université de Sherbrooke  
**Othman Ghribi** – University of North Dakota  
**Sébastien Hébert** – Université Laval  
**Kagan Kerman** – University of Toronto  
**Charles Krieger** – Simon Fraser University  
**Diane Lagace** – University of Ottawa  
**Danielle Laurin** – Université Laval  
**Christine Lavoie** – Université de Sherbrooke  
**Laurent Lecanu** – McGill University  
**John McLean** – Memorial University  
**Karen Mearow** – Memorial University  
**Linda Mills** – Toronto Western Research Institute  
**John Rossiter** – Queen's University  
**Robert Sutherland** – University of Lethbridge  
**Benjamin Wolozin** – Boston University

### 2011 Quality of Life Peer Review Panel

**Chair: Deborah O'Connor** – University of British Columbia  
**Michel Bédard** – Lakehead University  
**Myra Fernandes** – University of Waterloo  
**Lorna Guse** – University of Manitoba  
**Brad Hagen** – University of Lethbridge  
**Pamela Hawranik** – Athabasca University  
**Kristen Jacklin** – Northern Ontario School of Medicine  
**Sven Joubert** – Université de Montréal  
**Deborah Kiceniuk** – Dalhousie University  
**Carrie McAiney** – McMaster University  
**Belinda Parke** – University of Alberta  
**Natalie Phillips** – Concordia University  
**Jeff Small** – University of British Columbia  
**Kerstin Stieber Roger** – University of Manitoba  
**Jennie Wells** – Western University  
**Elaine Wiersma** – Lakehead University

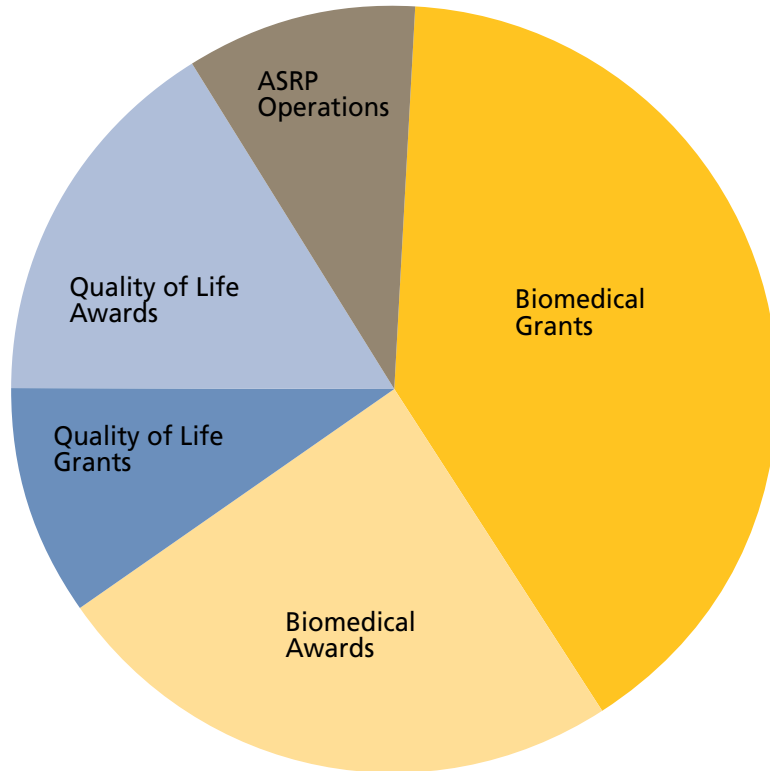


**Our families have been greatly affected by Alzheimer's disease as three of four parents have suffered from this insidious disease. We feel compelled to provide financial support for research so that all of our loved ones may be free from this affliction.**

**Murray and Debbie Chant**

## Financial information

### Alzheimer Society Research Program (ASRP) Expenditures, 2011/12



Biomedical	
Grants	\$ 1,575,409
Awards	\$ 967,178
<b>SUBTOTAL</b>	<b>\$ 2,542,587</b>
Quality of Life	
Grants	\$ 385,811
Awards	\$ 623,562
<b>SUBTOTAL</b>	<b>\$ 1,009,373</b>
ASRP Operations	
<b>SUBTOTAL</b>	<b>\$ 381,940</b>
<b>TOTAL</b>	<b>\$ 3,933,900</b>

### Alzheimer Society Research Program (ASRP) Federation Partner Contributions, 2011/12

	Alzheimer Society of Canada	\$ 1,122,991
Provincial Alzheimer Societies	British Columbia	\$ 393,222
	Alberta	\$ 240,938
	Saskatchewan	\$ 17,423
	Manitoba	\$ 79,184
	Ontario	\$ 1,430,338
	Quebec	\$ 564,413
	New Brunswick	\$ 17,185
	Nova Scotia	\$ 48,643
	Prince Edward Island	\$ 10,111
	Newfoundland and Labrador	\$ 9,452
	<b>TOTAL</b>	<b>\$ 3,933,900</b>

# Research projects

## BIOMEDICAL – GRANTS

**Allan, Douglas** – University of British Columbia, BC: *Genetic mechanisms underlying the maintenance of neuronal differentiation in adult and aging neurons*

**Bamji, Shernaz** – University of British Columbia, BC: *PGRN and TDP-43 function in neuronal connectivity*

**Beg, Mirza Faisal** – Simon Fraser University, BC: *Discrimination between Alzheimer's disease and Frontotemporal dementia using novel anatomical features from brain MRI scans*

**Camicioli, Richard** – University of Alberta, AB: *High field MRI and Mild Cognitive Impairment: subtypes and prediction of progression*

**Finger, Elizabeth** – Western University, ON: *Delineating early neural pathology in Frontotemporal dementia with functional neuroimaging and protein biomarkers*

**Hayden, Michael** – University of British Columbia, BC: *Function and regulation of cell-type specific ABCA1 in Alzheimer's disease*

**Johnston, Gerald** – Dalhousie University, NS: *Alzheimer's disease and dysfunction of the retromer complex: genetic approaches to novel therapeutic targets*

**Leclerc, Nicole** – Université de Montréal, QC: *The retina: a window into the molecular mechanisms and the progression of Alzheimer's disease*

**Maysinger, Dusica** – McGill University, QC: *Alzheimer's disease and lipid droplets: A new link and a novel nanotherapeutic approach*

**McDonald, Robert** – University of Lethbridge, AB: *Interactions between beta-amyloid and other co-factors linked to Alzheimer's disease*

**Wellington, Cheryl** – University of British Columbia, BC: *Progestins as novel therapeutic agents for Alzheimer's disease*

**Williams, Sylvain** – Douglas Mental Health Institute, McGill University, QC: *Hippocampal rhythm change is a biomarker expressed precociously before Alzheimer's disease*

**Wilson, Derek** – York University, ON: *Understanding the molecular basis of amyloidogenesis in Alzheimer's and other neurodegenerative diseases*

## BIOMEDICAL – YOUNG INVESTIGATOR GRANTS

**Bellec, Pierre** – Université de Montréal, QC: *Structural and vascular correlates of the reorganization of functional brain networks in Alzheimer's disease*

**Panel, Emmanuel** – Université Laval, QC: *Real time imaging of brain immune responses in mouse models of tauopathies*

## BIOMEDICAL – POSTDOCTORAL AWARDS

**Bouvier, David** – Douglas Hospital Research Centre, QC: *Alzheimer, glia and retinoic acid* (Supervisor: Dr. Rémi Quirion)

**Dal-Pan, Alexandre** – Université Laval, QC: *Genetically-induced p21-activated kinase (PAK) dysfunction in triple-transgenic mice model: effects on Alzheimer disease neuropathology* (Supervisor: Dr. Frederic Calon)

**Devito, Loren** – The Hospital for Sick Children, ON: *Facilitation of hippocampal neurogenesis and memory using deep brain stimulation in a model mouse of Alzheimer's disease* (Supervisor: Dr. Paul Frankland)

**Kastyak-Ibrahim, Marzena** – University of Winnipeg, MB: *Imaging of white matter changes in Alzheimer's disease by magnetic resonance microscopy* (Supervisor: Dr. Melanie Martin)

**Muir, Susan** – Western University, ON: *Physical and cognitive exercises (dual-task training) to prevent falls in dementia* (Supervisor: Dr. Manuel Montero Odasso)

**Wang, Zhe** – University of British Columbia, BC: *Regulation of UCHL1 in neurodegeneration* (Supervisor: Dr. Weihong Song)

## BIOMEDICAL – DOCTORAL AWARDS

**Dhaliwal, Jagroop** – University of Ottawa, ON: *Role of presenilin in the regulation of adult neurogenesis in Alzheimer’s disease* (Supervisor: Dr. Diane Lagace)

Recipient of the Dr. and Mrs. Albert Spatz Doctoral Award

**El Khoury, Noura** – Université Laval, QC: *Impact of PP1 and PP2A on the splicing and phosphorylation of Tau protein in vivo* (Supervisor: Dr. Emmanuel Planel)

**Fraser, Leanne** – Dalhousie University, NS: *A behavioural characterization of the 3xTg mouse model of Alzheimer’s disease* (Supervisor: Dr. Richard Brown)

**Goldman, Jennifer** – McGill University, QC: *A novel relationship between APP, Ab, and netrin-1 may elucidate Alzheimer’s pathology and provide an important substrate for treatment* (Supervisor: Dr. Timothy Kennedy)

**Hamilton, Laura** – Université de Montréal, QC: *Mechanisms underlying the suppression of adult neurogenesis in Alzheimer’s disease* (Supervisor: Dr. Karl Fernandes)

This project is jointly funded by the ASRP and the Fonds de recherche du Québec - Santé (FRQS)

**Iulita, Maria** – McGill University, QC: *Studies on Nerve Growth Factor metabolism at the “onset” of Alzheimer’s disease and in Down’s syndrome* (Supervisor: Dr. Claudio A. Cuello)

**Ma, Keran** – University of Toronto, ON: *Mechanism of neuroprotection conferred by scyllo-inositol via POMC and POMC-related product a-MSH* (Supervisor: Dr. Joanne McLaurin)

**Podor, Borbala** – Dalhousie University, NS: *Alzheimer pathogenesis and pathophysiology* (Supervisor: Dr. Allan Fine)

**Ramana, Pradeep Kumar** – Simon Fraser University, BC: *Early detection of probable Alzheimer’s dementia with a novel multi-classifier fusion approach* (Supervisor: Dr. Mirza Faisal Beg)

**Smith, Pascal** – Centre de recherche universitaire de Québec, QC : *MicroRNAs and the regulation of Tau, a protein implicated in Alzheimer’s disease and other dementias*. (Supervisor: Dr. Sébastien Hébert)

## QUALITY OF LIFE – GRANTS

**Lanctôt, Krista** – Sunnybrook Health Sciences Centre, ON: *A discontinuation trial of cholinesterase inhibitors for severe Alzheimer’s disease in a long term care setting*

**Racher, Frances** – Brandon University, MB: *Living with dementia: the experiences of older couples in managing their lives together*

**Smith, André** – University of Victoria, BC: *Investigating discontinuation of cholinesterase inhibitor therapy from the perspective of Alzheimer’s caregivers*

## QUALITY OF LIFE – YOUNG INVESTIGATOR GRANTS

**Bier, Nathalie** – Institut Universitaire de Gériatrie de Montréal, QC: *Activity participation rehabilitation in semantic dementia*

**Smart, Colette** – University of Victoria, BC: *Feasibility and impact of mindfulness-based stress reduction on cognitive and psychological functioning in older adults with cognitive complaints*

## QUALITY OF LIFE – POSTDOCTORAL AWARDS

**Anderson-Gosselin, Penny** – University of Toronto, ON: *Efficacy of a communication and cognitive intervention program for amnesic Mild Cognitive Impairment: a randomized control trial* (Supervisor: Dr. Margaret Kathleen Pichora-Fuller)

**Meschino, Lisa** – University of Waterloo, ON: *From imagination to quality of life: building relationship-centred care through the creative arts for individuals with Alzheimer’s disease* (Supervisor: Dr. Sherry Lee Dupuis)

**Roach, Pamela** – University of Alberta, AB: *Developing a family-centered model of transition and health expectations in young-onset dementia* (Supervisor: Dr. Neil Drummond)

## QUALITY OF LIFE – DOCTORAL AWARDS

**Azevedo, Nancy** – McGill University, QC: *Investigating linguistic changes in Alzheimer’s disease, mild cognitive impairment, and healthy aging* (Supervisor: Dr. Eva Kehayia)

**Burton, Rachel** – University of Saskatchewan, SK: *Delivering cognitive rehabilitation by telehealth to people with dementia in rural areas* (Supervisor: Dr. Megan O’Connell)

**Cooke, Heather** – University of Victoria, BC: *The dementia care milieu: the impact of the care facility environment on the provision of person-centred care* (Supervisor: Dr. Neena Chappell)

**Dion, Melissa** – Université Laval, QC: *Between normal aging and mild cognitive impairment: the characterization of subjective cognitive impairment* (Supervisor: Dr. Carol Hudon)

**Duncan, Hilary** – Concordia University, QC: *Language and attention in mild cognitive impairment and Alzheimer’s disease* (Supervisor: Dr. Natalie Phillips)

**Eritz, Heather** – University of Regina, SK: *Life history, nurse empathy, and aggressive behaviours in individuals with dementia* (Supervisor: Dr. Thomas Hadjistavropoulos)

**Jouk, Alexandra** – University of Victoria, BC: *Driving and dementia: adapting an applied theatre resource for use with caregivers* (Supervisor: Dr. Holly Tuokko)

This project is jointly funded by the ASRP and the Canadian Dementia Knowledge Translation Network (CDKTN)

**Moalem, Shira** – University of Toronto, ON: *A phenomenological inquiry into the experiences of LGBT caregivers of Alzheimer’s disease patients* (Supervisor: Dr. Lynn McDonald)



# Researcher profiles

Introducing just some of the talented researchers funded by the Alzheimer Society Research Program



**"I strongly believe that basic research aimed at elucidating cellular and molecular mechanisms of brain function lies at the foundation of applied clinical advances."**

## Shernaz Bamji

University of British Columbia, BC

*PGRN and TDP-43 function in neuronal connectivity*

Shernaz Bamji is an associate professor in the department of cellular and physiological sciences at the University of British Columbia (UBC), a member of the Brain Research Centre, and the head of the Neuroscience Research Group at the Life Sciences Institute. Shernaz was raised in St. Bruno, Quebec. She did her PhD with Dr. Freda Miller at McGill University in the Montreal Neurological Institute. She then moved to San Francisco to do her postdoctoral training with Dr. Louis Reichardt at the University of California, San Francisco. She joined UBC in 2005 and is now living in Vancouver, BC, with her husband and two children.

Shernaz's grandfather and three of his siblings died of Alzheimer's disease. Watching the mental deterioration of family members had a profound impact on her decision to focus her training in neuroscience research as a means of understanding and treating neurodegenerative disorders and dementias.

Shernaz has always been fascinated with the brain's ability to regulate simple motor tasks as well as sophisticated emotional and cognitive behaviours. Preliminary data from Shernaz's lab demonstrates that decreasing PGRN levels in cultured brain cells can profoundly impact how these cells communicate with one another. They have also demonstrated a connection between PGRN and the subcellular localization of the protein TDP-43 within nerve cells. In this study, they will further elucidate the role of progranulin and TDP-43 in regulating neuronal connectivity by disrupting their function in cultured nerve cells.



**“This human dimension of the disease is a very important aspect for everyone to acknowledge, and especially for someone like me conducting research in this area, to better understand.”**

## Mirza Faisal Beg

Simon Fraser University, BC

*Discrimination between Alzheimer’s disease and Frontotemporal dementia using novel anatomical features from brain MRI scans*

Faisal Beg is originally from Bhopal, India, and lives in Coquitlam, BC. He is an associate professor in the school of engineering science at Simon Fraser University. He received his B. Tech at Indian Institute of Technology, Kharagpur, his MS in biomedical engineering at Boston University, and his PhD in biomedical engineering at Johns Hopkins University. Faisal is an avid hiker, and is one of 10 people to climb Mt. Kilimanjaro recently to raise funds for the Alzheimer Society of BC and to raise awareness of Alzheimer’s disease (AD).

Faisal is interested in the early detection of AD and building mathematical tools to measure changes in the shape, volume, and form of brain structure. By the time a clinical diagnosis of dementia occurs, the pathology that causes changes in behaviour has already been at work for several years, if not decades, and the destruction of brain tissue, at this stage, is not easily reversible. Hence, there is a strong need to develop biomarkers that can be used to signal the onset of pathology such as in AD in a non-invasive and accurate manner.

Several approaches are being tested for the development of these biomarkers; however, several other dementias, such as Frontotemporal dementia (FTD), appear similar to Alzheimer’s disease in the early stages, often leading to misdiagnosis as AD. Faisal proposes to develop a method that will increase the ability to distinguish between AD and FTD.



**“If drugs or interventions that can slow down the progression of the disease are discovered in the future, an early diagnosis would then have a dramatic impact on the life of persons living with AD.”**

## Pierre Bellec

Université de Montréal, QC

*Structural and vascular correlates of the reorganization of functional brain networks in Alzheimer’s disease*

Pierre Bellec was born in Versailles, France. He completed a master’s degree in mathematics, vision, and learning at Ecole Normale Supérieure, and a PhD in medical imaging (physics), from Université Paris XI Orsay. From 2006 to 2010, he was a postdoctoral fellow at the McConnell Brain Imaging Center (BIC), Montreal Neurological Institute. He is now a researcher at the Centre de Recherche de l’Institut de Gériatrie de Montréal (IUGM), as well as in the department of computer science and operations research (DIRO) at Université de Montréal.

The hallmarks of Alzheimer’s disease (AD) are abnormal protein accumulations in brain tissues that eventually lead to massive neuronal death. This impacts the structure of the brain in patients: the grey matter quickly gets thinner, while some lesions may also be seen in the white matter. To date, the relationship between the changes in brain function and structure over the course of AD is still poorly understood. The main purpose of Pierre’s project is to establish some comprehensive maps of the reorganization of functional networks and their associated structural modifications through the use of functional magnetic resonance imaging (fMRI).

This funding has already had a great impact on Pierre’s career. It played a big role in the success of his application as a “chercheur boursier” at the Fonds de recherche du Québec – Santé (FRQS). This grant will also let him secure more of his time for research and was his first chance to get access to functional imaging with patients with Alzheimer’s disease.



**“Individualization may make the therapy even more effective since the person suffering from semantic dementia will recognize the therapy’s potential to increase his/her participation in everyday activities.”**

## Nathalie Bier

Institut Universitaire de Gériatrie de Montréal, QC  
*Activity participation rehabilitation in semantic dementia*

Nathalie Bier is an occupational therapist who graduated from the Université de Montréal in 1999. After completing her PhD on Alzheimer’s disease rehabilitation at the Université de Sherbrooke, she pursued her postdoctoral fellowship in Québec City (Centre de recherche Université Laval – Robert Giffard) on atypical dementias and rehabilitation. She is now an assistant professor at the Université de Montréal and a researcher at the Institut Universitaire de Gériatrie de Montréal.

Nathalie’s study will explore the effectiveness of a new rehabilitation approach for semantic dementia (SD), a form of degenerative disease characterized by a gradual loss of knowledge about the world. Her approach is based on rehabilitation studies conducted for Alzheimer’s disease (AD). The general objective of this study is to explore the effectiveness of the activity participation approach in SD to foster the learning or relearning of everyday significant activities. Non-pharmacological treatments for dementia are promising. They can directly address those difficulties people encounter in the community and also be highly personalized. This individualization may increase motivation to take an active role in the program, and this increased participation may have a positive impact on their quality of life.

Nathalie hopes this project will enhance day-to-day function and quality of life. Ultimately, she hopes to postpone institutionalization of these persons by offering a rehabilitation program oriented toward their everyday needs. The ASRP funding will increase her chances of obtaining other sources of funding, and thus, of pursuing research in this domain.



**“One of my first clients was an 80-plus-year-old woman with dementia who lived with her blind, 90-plus-year-old husband. I visited them two or three evenings a week to make them dinner, right at the time she would begin to ‘sun-down.’ She taught me many things about the world of an individual with dementia and I am indebted to her for setting me on my career path.”**

## Heather Cooke

University of Victoria, BC  
*The dementia care milieu: the impact of the care facility environment on the provision of person-centred care* (Supervisor: Dr. Neena Chappell)

Heather Cooke was born in England and emigrated to Calgary at the age of 10. She has a BA in psychology from the University of Calgary and a post-baccalaureate diploma and MA in gerontology from Simon Fraser University. She is currently a doctoral candidate in interdisciplinary studies (sociology, nursing, geography) at the Centre on Aging at the University of Victoria, working under the supervision of Dr. Neena Chappell.

The overall objective of Heather’s study is to explore the relationship between the physical and organizational care environments and person-centred care provision. Using an ethnographic approach, observations will be conducted on a traditional dementia care unit in a larger facility and a neighbourhood-style unit that is arranged more like a typical home. Interviews will be conducted with care aides on both units to identify what constitutes good quality dementia care and how the physical and organizational environment promotes or inhibits their ability to provide such care. Interviews will also be conducted with residents, to better understand their experience of the care setting.

Findings from the study will highlight which person-centred care approaches are used successfully and those for which further training or environmental modification is required. They will also identify environmental features that enhance person-centred care provision and inform administrators and health-care planners of the environmental features toward which resources could be directed.

Funding from the ASRP will allow Heather to focus full time on her doctoral research and travel to present her work both nationally and internationally.



**“While there has been important progress in the scientific understanding of Alzheimer’s disease, there remains an unmet urgent need to identify drug targets for prevention therapies in order to avert an overwhelming public health problem.”**

## Alexandre Dal-Pan

Université Laval, QC

*Genetically-induced p21-activated kinase (PAK) dysfunction in triple-transgenic mice model: effects on Alzheimer’s disease neuropathology* (Supervisor: Dr. Frederic Calon)

Alexandre was born in Provins, France, but lived all his childhood in Nogent-sur-Seine in beautiful Champagne-Ardenne. He completed all his education, from primary school to PhD, in France. He then decided on a scientific adventure abroad via postdoctoral training in the Research Center of Laval University Hospital of Quebec. Alexandre’s academic career has allowed him to discover various areas of research related to aging, such as energy balance impairment, physical decline, or cognitive deficiencies.

During his postdoctoral work, Alexandre plans to investigate the p21-activated kinase (PAK) protein. His main goal is to provide data supporting a therapeutic use of PAK modulators in AD. The expected results would confirm that PAK plays a key role in an animal model of AD, and, in the near future, to develop drugs that target this enzyme.

This postdoctoral project will give Alexandre the opportunity to discover a new animal model particularly adapted to this type of research. He will also explore new analytical techniques essential to specialize in the study of AD and other age-related disorders. Subsequently, he hopes to get a research position, specializing in AD, in a university or a research centre.



**“We can identify key cellular and molecular players responsible for sustaining adult neurogenesis in a naïve brain and use them in an attempt to slow down or perhaps even halt the degeneration of brain cells over the course of Alzheimer’s disease.”**

## Jagroop Dhaliwal

University of Ottawa, ON

*Role of presenilin in the regulation of adult neurogenesis in Alzheimer’s disease* (Supervisor: Dr. Diane Lagace)

Recipient of the Dr. and Mrs. Albert Spatz Doctoral Award

Upon graduating from high school, Jagroop wanted to pursue his passion for the life sciences, and he obtained his degree in biomedical sciences at the University of Ottawa. He then became a full-time graduate student in the laboratory of Dr. Diane Lagace, in the university’s neuroscience program, beginning as a master’s student in the lab but soon afterward transferring to the PhD program.

In the lab, he studies cellular and molecular mechanisms at play during adult neurogenesis (birth of new neurons that occurs throughout life) in the naïve, uninjured brain; however, he is also interested in how this process is affected during brain insult, such as the massive loss of neurons over the course of Alzheimer’s disease (AD). He believes that increased quality of life can be achieved by reducing the negative impact of AD on memory, for instance, if we can harness the innate potential of the brain to repair itself.

Jagroop feels fortunate to have received continuous support and encouragement from his supervisor, which further enticed him to get involved in Alzheimer’s research. Funding from ASRP has provided him with a great opportunity to perform basic science research on adult neurogenesis and its potential implication for AD. It has also greatly enhanced his ability to interact with and get feedback from other scientists working in the same field, by enabling him to attend seminars and conferences both in Ottawa and elsewhere.



**“Every little piece each researcher contributes brings us one step closer.”**

## Laura Hamilton

Univeristé de Montréal, QC

*Mechanisms underlying the suppression of adult neurogenesis in Alzheimer’s disease*

(Supervisor: Dr. Karl Fernandes)

This project is jointly funded by the ASRP and the Fonds de recherche du Québec – Santé (FRQS).

Laura Hamilton was born in Montreal, Quebec. An abnormal psychology class at Dawson College piqued her interest in the link between brain biology and behaviour, and this led to what is now her neuroscience career. She became fascinated with how the brain makes you who you are, as well as the devastating consequences when the biology of the brain goes wrong. To study this further, she pursued a BSc in behavioural neuroscience at Concordia University. After her bachelor’s degree, Laura did an internship with the Fernandes lab. Following the three-month training, she started her MSc, continuing the work she had begun, and published her first research article within the year. She has since transferred to the PhD program.

The cause and progression of Alzheimer’s disease (AD) are not well understood. Deficits in neurogenesis (the production of new brain cells from stem cells) could contribute to the early changes in learning and memory seen in patients with AD. In their lab, Laura and colleagues had previously shown that widespread deficits in adult neurogenesis are already present at middle age in a mouse model of AD. The next steps include uncovering how early in the disease progression the changes in neurogenesis occur and the mechanisms underlying these changes. They will then attempt to alter the behaviour of the endogenous stem cells still present in the adult brain to compensate for the cells lost or never produced under AD conditions.



**“Although it may seem that yeast cells have little in common with our own cells, nothing could be further from the truth. The beauty of simple cell types like yeast is that they can be analyzed and manipulated experimentally to a far greater degree and more rapidly than human cells.”**

## Gerald Johnston

Dalhousie University, NS

*Alzheimer’s disease and dysfunction of the retromer complex: genetic approaches to novel therapeutic targets*

Gerry Johnston was born in Truro, England. He moved to Canada before starting school and currently lives in Center Rawdon, near Halifax. He received his PhD at York University and his early training in genetics with Dr. Leland H. Hartwell in the department of genetics at the University of Washington (Seattle). In 1975, he was recruited to the department of microbiology at Dalhousie University. He is currently associate dean, research, and a professor in the department of microbiology and immunology in the faculty of medicine at Dalhousie University.

In Alzheimer’s disease (AD), the production of plaques and tangles appears to result from a decreased ability of the nerve cells to move material to its proper locations inside the cell. Gerry and his colleagues intend to study the machinery in yeast cells, which are easier to work with in the laboratory, and which move material around inside the cell in the same way nerve cells do. They hope that the knowledge they gain will eventually be able to guide the search for new therapies to help nerve cells affected by AD.

Research is an intensive and expensive activity and requires both costly reagents and talented people. Without the funding they have received from ASRP, they would only be able to contemplate the potential to intervene in the progression of AD. Now they have the opportunity to explore new ideas and approaches to have a real impact on the disease.



**“This work will move beyond information gathering and incorporate the expressed needs of caregivers to translate knowledge into a powerful toolkit that will ultimately improve the lives of older drivers with dementia.”**

## Alexandra Jouk

University of Victoria, BC

*Driving and dementia: adapting an applied theatre resource for use with caregivers*

(Supervisor: Dr. Holly Tuokko)

This project is jointly funded by the ASRP and the Canadian Dementia Knowledge Translation Network (CDKTN).

A native San Franciscan, Alexandra Jouk completed her undergraduate degree at Scripps College in Claremont, California. She graduated cum laude in 2007 with a major degree in neuroscience and minor degree in Russian language. After working as a research assistant for a year in the Genetics of Brain Function program at Stanford University, she returned to school at the University of Victoria to pursue a doctoral degree in clinical neuropsychology. Her clinical and research interests include understanding and improving the assessment and rehabilitation of everyday functioning in older adults with mild cognitive impairment and dementia.

Alexandra was particularly drawn to research about driving because her family, like many others, had to have the conversation about driving cessation with her grandmother as they noticed her becoming increasingly unsafe on the road. Her study will use a research-based applied theatre production, entitled *No Particular Place to Go*, as a creative, new, and interactive medium. A caregiver viewer guidebook will be developed to accompany the DVD. The toolkit will also be available to other researchers as an example of a creative, yet effective, alternative to print-based resource materials for individuals with Alzheimer’s disease (AD) and their caregivers.

The generous grant from the ASRP/CDKTN has eased Alexandra’s financial burden, allowing her to focus on her coursework, research, and clinical practica. She is grateful to be one of the recipients of this award and looks forward to making her contribution to Alzheimer research.



**“The success of that first grant and support from the Alzheimer Society started a career in Alzheimer’s disease.”**

## Krista Lanctôt

Sunnybrook Health Sciences Centre, ON

*A discontinuation trial of cholinesterase inhibitors for severe Alzheimer’s disease in a long term care setting*

Krista Lanctôt was born in Cornwall, Ontario. She is a clinical pharmacologist and received her PhD from the University of Toronto in 1998, with additional training in pharmacoepidemiology. She is a senior scientist in the Brain Sciences Research Program at Sunnybrook Health Sciences Centre, the head of Neuropsychopharmacology Research and the executive director of the Medical Outcomes and Research in Economics (MORE®) Research Centre. She is a full professor in the departments of psychiatry and pharmacology/toxicology at the University of Toronto.

In research trials, cholinesterase inhibitors (ChEIs) such as donepezil have been shown to modestly improve memory, function, and problem behaviours in people with mild to moderate Alzheimer’s disease (AD). The clinical significance of these benefits has been questioned, as has their cost effectiveness. Less is known about the use of ChEIs in people with severe AD; in addition to the same concerns about modest benefits, it is unknown if the benefits for those individuals are sustained long term.

Krista proposes the first randomized, multi-centre, placebo-controlled trial of ChEI discontinuation after long-term use in those who no longer appear to be benefitting from the treatment. This would allow them to determine when, and in which individuals with advanced AD, it is appropriate to stop ChEI treatment.

From her first ASRP grant, Krista’s team has been able to contribute knowledge about behaviour changes in people with AD, such as apathy and aggression. This work continues, and they also train future researchers in the area of AD.



**“Research using these models should reveal a clear understanding of the mechanisms of brain dysfunction associated with the disease and ultimately provide a map to effective treatment and preventative regimens.”**

## Robert McDonald

University of Lethbridge, AB

*Interactions between beta-amyloid and other co-factors linked to Alzheimer’s disease*

Robert J. McDonald was born in Calgary, Alberta. He obtained his BSc from the University of Lethbridge and his PhD from McGill University. He also did postdoctoral training at the University of New Mexico. He was an academic scientist and professor at the University of Toronto for ten years before taking a Canada research chair in the department of neuroscience at the University of Lethbridge. He is currently a board of governors research chair in neuroscience and the director of the Canadian Center for Behavioural Neuroscience.

Robert’s research team will focus on interactions between beta-amyloid accumulations, a defining pathological feature of Alzheimer’s disease (AD), and other factors linked to this disease. The factors of interest are depletions of the neurotransmitter acetylcholine and stress. Future work can be directed at developing ways of determining which factors are present in a particular patient in order to provide specific preventative treatments and/or therapeutic treatments. This work will lead to the development and utilization of more realistic animal models of AD. This grant gives Robert the opportunity to complete more sophisticated experiments that he would not normally be able to do. It also signals to other researchers in the field that the idea of multiple combinations of co-factors causing variants of AD is an important new approach to understanding the etiology of this disease.



**“Making art with others who share the experience of memory loss creates a supportive social environment and a sense of belonging.”**

## Lisa Meschino

University of Waterloo, ON

*From imagination to quality of life: building relationship-centred care through the creative arts for individuals with Alzheimer’s disease*

(Supervisor: Dr. Sherry Lee Dupuis)

Lisa Meschino earned her PhD in cognitive neuroscience at the University of Waterloo, where her research on overt attention and reading was funded by a Natural and Social Sciences Research Council (NSERC) doctoral fellowship. She received an MA in philosophy from the University of Toronto and an honours BA in philosophy from York University. She studied at Central Technical School, York University Fine Arts, and The Toronto School of Art. She currently works from her art studio in Toronto. Lisa is a postdoctoral fellow at the Murray Alzheimer Research and Education Program (MAREP) at the University of Waterloo, supported by the ASRP.

Lisa became involved in Alzheimer’s research through an intersection of her interests in cognition and visual arts. As a doctoral student in cognitive neuroscience, she was struck to learn not only about the memory loss that characterizes Alzheimer’s disease, but also the isolation from loved ones and the dislocation from what is recognizable as one’s own life. As a practicing visual artist, she was curious to learn more about the potential for visual arts to nurture a sense of connection to self and others. Guided by a relationship-based care philosophy and phenomenological methods, Lisa’s postdoctoral research focuses on the therapeutic potential of creative arts for the health of individuals with dementia.

ASRP funding will enable Lisa to continue to work with community partners to develop and research programs that promote a purposeful sense of self and a strong sense of community through a responsive, humanist approach to care for people living with Alzheimer’s disease.



**“Falls and dementia are two common health problems in older adults. People with dementia are twice as likely to fall as healthy older adults and have more serious injuries when they do fall, such as hip fractures.”**

## Susan Muir

Western University, ON

*Physical and cognitive exercises (dual-task training) to prevent falls in dementia*  
(Supervisor: Dr. Manuel Montero Odasso)

Susan Muir grew up in Toronto and obtained her bachelor’s degree in physiotherapy from the University of Western Ontario in 1990. She completed her PhD in the department of epidemiology and biostatistics at the University of Western Ontario in 2009. Her PhD thesis focused on the clinical assessment of balance to identify fall risk in community-dwelling older adults. She is currently doing a postdoctoral fellowship in the area of cognition, dementia, and mobility through the department of geriatric medicine at the University of Western Ontario.

The most important reversible causes for falling are balance and walking problems and leg weakness. An exercise program that combines physical and cognitive exercises (called dual-task training) has been shown to improve walking and balance and decrease fall risk in people without dementia. Importantly, we know that people with dementia can learn and perform these kinds of combined exercises.

Dual-task training of physical and cognitive exercises to reduce fall risk has not been studied yet in people with dementia. Susan’s study hypothesizes that it will improve strength, walking, and balance in people with dementia and decrease future fall risk. The study will also identify barriers to exercise participation.

The ASRP funding will allow Susan to devote her time fully to her proposed research, and it forms the foundation for her future career of an ongoing research program focused on evaluating and developing of successful rehabilitation strategies among older adults with cognitive impairment and dementia.



**“I kept asking myself, ‘How can we avoid separating spouses? How can we do things better? How can we better understand the needs of these couples and be more effective in working with them?’ ”**

## Frances Racher

Brandon University, MB

*Living with dementia: the experiences of older couples in managing their lives together*

Fran Racher has worked with seniors throughout much of her nursing career. Born and raised in Souris, Manitoba, a rural community with a population of about 1600, she returned to work as a staff nurse in the local hospital and a direct care nurse for home care. She later completed her BScN and BA (psychology) at Brandon University.

Over the years, Fran has completed several studies and published extensively on rural health, access to health services, community development, and gerontology. She encountered difficult situations when elderly couples, who often had been married for over 60 years, were separated because one spouse was eligible for personal care and the other was not. Now a full professor in the Brandon University School of Health Studies, Fran, along with W.D. Care and Nancy McPherson, proposed a two-year research project to interview urban and rural elderly couples living with dementia.

The team is excited to learn from the couples in this pilot study. The research team is grateful to the ASRP for the opportunity to undertake this work and plans to have important information from the study to share in the near future.





**“Working with these families is by far the most rewarding aspect of my work, and I believe that by working toward improving clinical understanding of family experiences, the effectiveness and efficacy of interventions for younger people and their families can only be improved.”**

## Pamela Roach

University of Alberta, AB

*Developing a family-centered model of transition and health expectations in young-onset dementia*  
(Supervisor: Dr. Neil Drummond)

Pamela Roach was born in Winnipeg, Manitoba, but grew up in Alberta and considers Calgary home. She completed her BSc in primatology at the University of Calgary, after which she worked in the Calgary Health Region, mainly focused on working with people with mental health issues. She relocated to the U.K. in 2004 and worked in education and training for the National Health Service (NHS). She then worked as a mental health researcher at the University of Manchester. While there, she obtained a competitive award from the Medical Research Council U.K. to complete her PhD. She undertook a family-centred study with younger people with dementia and completed her doctoral studies in 2010. She then returned to Canada, and will be starting her postdoctoral work, funded by the ASRP, in September 2012.

Pamela became interested in dementia research while at the University of Manchester. Through collaboration with Professor John Keady, she became more interested and passionate about helping people living with dementia and their families, and focused her work on younger people with dementia (under age 65). This project aims to broaden our knowledge of how families experience transitions in young-onset dementia, by working with families to understand their experiences and also their needs from health and social care providers.

She feels that funding from the ASRP has greatly benefitted her career by not only allowing her to continue to work with people living with a diagnosis of dementia and their families but also by providing her with the opportunity to complete a postdoctoral fellowship and return to her home province of Alberta.



**“When I was working as a clinician, I became increasingly despondent at having to diagnose various dementias without being able to offer anything in the way of practical assistance.”**

## Colette Smart

University of Victoria, BC

*Feasibility and impact of mindfulness-based stress reduction on cognitive and psychological functioning in older adults with cognitive complaints*

Colette is a clinical neuropsychologist and assistant professor of psychology at the University of Victoria in Victoria, BC. She is originally from Glasgow, Scotland, and obtained her undergraduate training in psychology and basic neuroscience at the University of Glasgow. She completed her PhD in clinical psychology from Loyola University Chicago, with a pre-doctoral internship at New York Presbyterian Hospital/Weill Medical College of Cornell University. She then went on to complete her postdoctoral residency in clinical neuropsychology at the JFK-Johnson Rehabilitation Institute/New Jersey Neuroscience Institute, after which she worked as an attending neuropsychologist. She has been at the University of Victoria since July 2010.

With the aging of the “baby-boom” generation and increased numbers at risk for developing Alzheimer’s disease, researchers must increase their efforts toward early detection of those at risk for the disease, and find interventions that can decrease their risk for later progression. Colette believes that one of the early changes in adults with perceived decline in their thinking ability is impairment in “cognitive control,” and that this difficulty could be remediated with attention training. Using standardized cognitive testing and brain imaging procedures, she aims to better understand the role of complex attention in these older adults as compared to healthy older adults.

This grant funding will allow Colette to take the initial steps in the implementation of a potentially highly impactful line of research. Additionally, as a junior faculty member, receiving financial support from an internationally recognized organization such as ASRP will undoubtedly have a significant impact on her academic career.



Without the funding that we have received from ASRP, we would only be able to contemplate the potential to intervene in the progression of Alzheimer's disease. Now we have the opportunity to explore new ideas and approaches to have real impact.”

Dr. Gerald Johnston

## Contact Information

Alzheimer Society of B.C.  
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[www.alzheimerbc.org](http://www.alzheimerbc.org)

Alzheimer Society of Alberta and Northwest Territories  
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[www.alzheimer.ab.ca](http://www.alzheimer.ab.ca)

Alzheimer Society of Saskatchewan  
Toll-free: 1-800-263-3367  
[www.alzheimer.ca/sk](http://www.alzheimer.ca/sk)

Alzheimer Society of Manitoba  
Toll-free: 1-800-378-6699  
[www.alzheimer.mb.ca](http://www.alzheimer.mb.ca)

Alzheimer Society of Ontario  
Toll-free: 1-800-879-4226  
[www.alzheimer.ca/on](http://www.alzheimer.ca/on)

Federation of Quebec Alzheimer Societies  
Toll-free: 1-888-636-6473  
[www.alzheimerquebec.ca](http://www.alzheimerquebec.ca)

Alzheimer Society of New Brunswick  
Toll-free: 1-800-664-8411  
[www.alzheimernb.ca](http://www.alzheimernb.ca)

Alzheimer Society of Nova Scotia  
Toll-free: 1-800-611-6345  
[www.alzheimer.ca/ns](http://www.alzheimer.ca/ns)

Alzheimer Society of Prince Edward Island  
Toll-free: 1-866-628-2257  
[www.alzheimer.ca/pei](http://www.alzheimer.ca/pei)

Alzheimer Society of Newfoundland and Labrador  
Toll-free: 1-877-776-0608  
[www.alzheimernl.org](http://www.alzheimernl.org)

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For more information about the Alzheimer Society Research Program and the research we fund, or to obtain copies of this report, please contact us at:

**Alzheimer Society**  
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Charitable registration number: 11878 4925 RR0001

## Message from Rx&D

### Discovery, Collaboration and Hope

Great strides in health research continue to make headlines across our country and around the world. Canadian researchers are amongst the most lauded, making new scientific discoveries that further our knowledge and provide hope for future health innovations – the kind of innovations that lead to new, more effective treatments and one day, to cures for some of the most difficult medical challenges including Alzheimer's disease.

The Alzheimer Society of Canada (ASC), its volunteers and donors play an essential role in supporting Canadians with Alzheimer's, advocating for better care and support, and funding the research that will lead to a future without this devastating disease.

At Canada's Research-Based Pharmaceutical Companies (Rx&D), we are honoured to engage with ASC. We share a commitment to the future of the healthcare system in Canada and the sustainability of our life sciences sector. With over 50 member companies, we partner with researchers across the country to transform scientific discoveries into new medicines that help Canadians live longer, healthier, and more productive lives.

The road to new medicines is long and requires both commitment and resilience to make a difference – nowhere more so than in the quest to find new treatments for Alzheimer's disease. Recent media headlines have highlighted challenging results in late stage Alzheimer's drug development. However, let me assure you that our companies and researchers around the world remain absolutely determined to find new treatments in this field. While they can be discouraging, every failure teaches us about the science and brings us closer to successful new treatments.

We also work with governments to ensure Canadians have access to the latest medications and to create an attractive Canadian environment for international research investment. We believe the proposed Comprehensive Economic and Trade Agreement (CETA) between Canada and the European Union is a tremendous opportunity for Canada's life sciences sector and for Canadian patients. Stable and reliable protection for inventions and research will generate funding for more research, more clinical trials, and more innovative treatments for Canadians. We appreciate the support of the Alzheimer Society of Canada in this work, and for helping spread this important message. *For more information about CETA, please visit [www.ceta-aecg.ca](http://www.ceta-aecg.ca).*

Collaboration is the key. By working together with governments, health charities and other health-care stakeholders we build hope for the future. New, more effective medicines are a critical component to the sustainability of the Canadian health-care system, and to Canadians experiencing the best health outcomes possible. Rx&D members remain committed to partnering with government and stakeholders as we continue to find the best way forward for Canadians.

Congratulations to the ASC's staff, researchers, donors and volunteers who make such an important contribution in communities from coast-to-coast-to-coast. We are proud to work with you, and to celebrate your leadership and commitment to the over 500,000 Canadians living with Alzheimer's disease and their families.



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