



Annual Reporting for Faculty Supported Research Centres and Networks

All Centres (provisional Centres; McGill Centres), Research groups and Networks that receive funding from the Faculty of Medicine are required to provide two components of reporting:

- Annual Report of Activities, Outcomes
- End-of-Year Financial Report/Proposed Budget

The Annual and End of Year Reports covering the period from the **1st May until the 30th April** are due by 4pm on May 27th, 2019. Future funding will be dependent on the prompt receipt of all documents as well as the evaluations made by the committee *and* the Faculty funds available.

The completed Annual Report and the Financial Statement should be forwarded by email to:

riac.med@mcgill.ca
Faculty of Medicine Research Office
Phone: 514-398-5815

Annual Report for Faculty of Medicine Funded Centre's and Networks

The Annual Report should be set in the context of the Centre's, Core facility's and Network's overall goals and objectives, programs and research priorities, performance indicators outlined in the application (or subsequently developed), activities and strategies.

Please provide the following:

1. Name of Centre, Unit or Institute: McGill University Research Centre for Studies in Aging

2. Name and contact information of the Director and/or Administrative Assistant:

Director: Dr. Pedro Rosa-Neto, MD, PhD, Neurologist, Alzheimer Disease Research Unit, Associate Professor of Neurology & Neurosurgery, Psychiatry and Pharmacology and Therapeutics at McGill University, affiliated to the Douglas Hospital Research Centre.

Tel. (514) 766-2010

pedro.rosa@mcgill.ca

Administrator: Silvana Aguzzi, McGill University Research Centre for Studies in Aging

Tel. (514) 766-2010

silvana.aguzzi@mcgill.ca

3. Is the Centre recognized as an official Senate approved McGill Research Centre?

Yes, the Centre is recognized as an official Senate approved McGill Research Centre.

4. The McGill Senate approved the Centre as the McGill Centre for Studies in Aging on October 1st, 1984.

5. Please provide the **URL of the Research Centre's or Network's web site**.

Note: The Research Centre's or Network's website should contain the following information:

- all sources of funding support,
- the List of Members and their institutional affiliation,
- the activities supported by the Research Centre, Core Facility or Network, and
- Annual Reports.

URL: <http://www.aging.mcgill.ca>

6. A summary of the past year's goals and objectives, programs and research priorities and any changes to these that may have occurred during the past year. Please indicate the extent to which the objectives have been met. **(limit 200 words)**

The McGill University Research Centre for Studies in Aging (MCSA) achieved all goals and objectives expected for 2018. Please refer to section 7.1 KT activities for a list of our 2018 activities.

As part of our research efforts, the MCSA continues to foster private partnerships to expand the research capacity to novel neuroimaging techniques capable to better diagnose dementia as well as dementia therapies. We are also developing therapies and preparing our first clinical trial in conjunction with the Montreal Neurological Institute, Kalgene pharmaceuticals and the National Research Council.

Similarly to previous years, in 2018, we have made a number of significant discoveries published in reputable and high impact journals (Appendix 1). The Centre has been extremely successful in obtaining operating grants. Finally, from a business development perspective, the donation strategy implemented in 2018 has been consistent with previous years.

In 2018 we have a total of 26 McGill and International trainees at undergrad, graduate and postdoc levels and 4 International scholars.

7. Please document **the major achievements** resulting from the use of the Funds from the Faculty, including any advances in knowledge, relevant publications, or international collaboration. You may select from the menu of reporting items/performance indicators in Appendix 1 that may be relevant, but must include, at minimum, information on publications/presentations, outreach activities, quality of the training environment. (Please limit your text response to a maximum of **1 page of prose. Please include lists of publications, grants, activities as appendices.**)

The Funds from the Faculty of Medicine supporting the Centre contribute exclusively to two of the administrative positions of MCSA: (1) A management position, held by Silvana Aguzzi, who is involved in administrative/finance, research and KT activities of the Centre, and (2) a development position (part-time), held by Alexandra Triantafillopoulos, who contributes to KT and fund-raising related activities of the Centre (3) Both positions also contribute to research/administrative activities as they assist the Director of the clinical research unit of Dr. Gauthier and Dr. Rosa-Neto. Achievements resulting from the use of Funds from the Faculty should thus make reference to research, teaching and administrative accomplishments. These are:

7.1 KT activities:

- **Public lecture series - Brainy Boomers Lecture Series:** 24 lectures from May 2018/ April 2019 report period; these lecture series takes place at various dates and locations throughout Montreal. The McGill University Research Centre for Studies in Aging held a total of twenty-four (24) public lectures (see Appendix 3) and approximately 730 participants attended these various lectures. The public lecture series continues to be one of the core KT activities of our Centre. For the 2019/2020 reference period, we plan an equal number of these lectures 25.
- **MCSA Education Committee was established in 1996**, and presently consists of 12 members. Three members joined in 2018-2019 Meghan Williams, AGI Groupe Inc., Teresa Anuza, Alzheimer Society Montreal and Mr. Jean Pierre Moineau.

MCSA Education Committee's objectives:

- Identifying education needs of health care providers, seniors, caregivers, the public; and developing responses to meet some of these needs
- Enhancing the image of the aging process by addressing stereotypes and myths about aging
- Dissemination of research on aging

In 2007 the MCSA Education Committee established the "Brainy Boomer Lecture Series" ("Les Boomers Brilliants") to support its objectives, raise awareness and educate the community at large.

- **Annual Member and Donor Meeting** (June 20, 2018) On June 20, 2018 the MCSA integrated Affiliate/Associate/Adjunct Members and Donors by organizing an annual reception. This year's event was distinctive because for the first time the Centre presented "MCSA Achievement Awards" to four recipients. The first award was presented to Dr. Howard Chertkow, MD, FRCPC, in recognition of his leadership of the CCNA and his contributions to the field of cognitive decline with aging as a whole. The recipients of the second and third award were Rick Hiatt, President and CEO of Cerveau Technologies, Inc. and CEO of Enigma Biomedical Group, Inc. and Lee Gibbs, President of Enigma Biomedical Group, Inc., for the establishment of the "Dr. Serge Gauthier Fellowship Award." The last award was presented to Silvana Aguzzi for "Outstanding Contributions to MCSA's Outreach Program. Centre's Members were invited to review Centre's research and activities with the Director. The Centre's scientists then shared accomplishments in research findings and discoveries of the past year and explained new clinical trials and their therapeutic promises to members and donors of the Centre. Research Students/International Visiting Scholars, were introduced and each had the opportunity to provide a short summary of their research project. The Donor appreciation event, is a meaningful way to inform and give donors, guests, volunteers a memorable experience, builds expanding interest and continued support to our Centre's cause.
- **"Journée Santé – Health Day"** - A one day event Open House - September 21, 2018 was organized by the MCSA Education Committee. Participants were invited to register and attend various health stations to evaluate: Memory, Oral Health, Vital Signs, and Language Assessments. They also attended 7 bilingual Knowledge Transfer (KT) lectures at the Centre and CrossRoads Pavilion. Testimonials and feedback received at the Open House (85+participants) was so encouraging for all concerned that the MCSA Education Committee has decided to repeat this event in September 2019. (September 13, 2019).
- **Symposium: "Aging in the 21st Century" – "Vieillir au 21^{ème} siècle" – October 5, 2018 –** The MCSA Education Committee, in collaboration with Alzheimer Society Montreal and Alzheimer Groupe Inc., hosted a Symposium in honor of International Senior's Day. Over **130 participants**, staff members and kiosk representatives, attended the Symposium. Four lectures were presented which focused on positive aspects of aging and 12 kiosks displayed their services as well as provided valuable information/resources to all of the participants. Testimonials from participants included a deep appreciation for speaker's presentations, informative kiosks and organization of the Symposium.
- **Dr. William Klunk, MD, PhD – Lecture – October 15, 2018 –** "The 1st Laura Chalk Rowles Lectureship in Dementia," Dr. Klunk presented a lecture on "Amyloid Imaging: Influence of Very Advanced Age and Genetic Alterations." This lecture was presented at the MNI and 70 participants attended the lecture. Dr. S. Gauthier presented the 1st Laura Chalk Rowles Lectureship in Dementia Award to Dr. Klunk in recognition of his outstanding contributions in the field of imaging dementias.
- **Associazione Spignese 2018 Fund Raiser, The Ritz Reception Hall – Saturday, October 20, 2018 –** MCSA was invited to the 2nd Annual Alzheimer's fundraiser by the Associazione Spignese di Montreal. Over 230 guests attended the fund raiser and both Dr. Pedro Rosa-Neto and Dr. Paolo Vitali were guest speakers at the gala evening. This is the 2nd year that this association donates all profits to MCSA. This year we **raised a total of \$11,725.00.**
- **Foundation des Clubs Lions du Quebec & Club Lions Renaissance Laval –** held a gala fund raising evening on **February 2, 2019** and donated **\$6,986.00** to the Centre.
- **Handicap-Vie-Dignité – October 24, 2018 –** MCSA participated in a conference entitled, "Together...promoting quality of the rights of residents/HVD bilingual conference on the rights of residents and how to advocate for them in public long term care settings," which was organized by the non-profit organization Handicap Vie Dignité and sponsored by

Hélène Rumak Fund. MCSA had a kiosk where participants were given handouts/information about our Centre. We were able to network with many other associations and we were invited to attend two interesting workshops with caregivers addressing situations of mistreatment of older/vulnerable adults. Recommendations from the 8 training workshops were made and will be presented to the Minister of Seniors to improve conduct /medical care to seniors.

- **McGill Employee Health Fair 2018- Health & Wellbeing Program for Faculty and Staff, McGill University** - On October 26, 2018 MCSA participated in the 8th Annual Health Fair for Staff and Faculty. Over 100 employees visited our interactive kiosk, where they were able to obtain valuable information on the Centre’s mission, activities and ongoing research as well as resources on how to better manage their health and well-being at the workplace. (Vital Signs; Cognitive Testing; Information on age-related diseases, P.O.N.D.E.R.).
- **MCSA Newsletter 2018** - Ongoing outreach initiative which began in 2017, to disseminate progress in dementia and promote MCSA activities and fundraising. The goal of the MCSA Newsletter was to remind supporters that our Centre is active, to strengthen our relationship with our donors, to increase donor retention rate and boost public lecture participation.
3 newsletters April, August and November 2018 (Appendix 4a, 4b, 4c).

7.2 Training Activities

The MCSA offers a number of opportunities for training high qualified professionals in the area of clinical care and research. MCSA’s biggest investment is inspiring the innovators of tomorrow and making a positive difference for aging in Canada for the future generations.

- **Fellowship Award for Outstanding Students** between the McGill University Research Centre for Studies in Aging, McGill Department of Pharmacology and Therapeutics and Enigma Biomedical Group was established in 2017 and ongoing as the “Dr. Serge Gauthier Fellowship Award” to sponsor international graduate or postgraduate scholars conducting research in dementia at McGill.
- **International Exchange Program:** This is an international research program for students who would like to pursue research in analysis of large datasets of dementia patients. The training program aims at developing analytical skills in neuroimaging and has trained fellows from United States, China, Singapore, Brazil, Belgium, France, Netherland and Thailand.
- **Graduate and Postgraduate Research Training** (continuous) - The MCSA’s core scientists contribute to the training of over 31 graduate and postgraduate students fostering multidisciplinary research in neurodegeneration at McGill University (see Appendix 5)
- **Undergraduate Training:** This is a program devoted for introducing students to research in neurodegeneration. The students are exposed to research activities involving animals and patient population.
- **Undergraduate Journal Club** of the McGill University Research Centre for Studies in Aging with MCSA, speakers from McGill or other Montreal Universities’ faculty.
- **International Scientific Conferences attended 2018-2019**

Date	Name
July 9-12, 2018	Neuroreceptor Mapping, London UK
July 14-18, 2018	Alzheimer’s Association International Conference, Chicago, USA

November 13, 2018	28 th Alzheimer Europe Conference, Barcelona, Spain
January 14-18, 2019	Human Amyloid Imaging, Miami, USA
March 26-31, 2019	14 th International Conference on Alzheimer's & Parkinson Diseases

7.3 Research Activities:

- The Centre's principal investigators are engaged in numerous intramural research projects as well as provincial, national, and international collaborative projects, as evidenced by the extensive number of publications (see Appendix 1).
- The **Translational Imaging Laboratory** lead by Dr. Rosa-Neto develops ground breaking neuroimaging techniques and analytical frameworks for quantifying neurodegenerative processes including deposition of protein aggregates, metabolic abnormalities, cell transport systems, and neuroreceptors dysfunction. The laboratory encompasses a cohesive multidisciplinary team conducting integrative and multimodal neuroimaging research in human diseases as well as disease animal models. This unit collaborates with an extensive network of laboratories and is committed to scientific training in the field of neuroimaging. This year, translational imaging laboratory published in high impact journals and was featured in such news outlets: Radio Canada, Daily Mail (UK), Psych Central (USA), Medical Press (USA), MedIndia Senior Health News, Technology.Org, Health Medicine Network, and AmyScience. Dr. Rosa-Neto and PhD student Joseph Therriault were interviewed by Medical Research.com, about the implications and findings in anosognosia. We started in 2017; the McGill Aging and Dementia biomarker longitudinal cohort (McGill longitudinal ABC) study. This cohort is funded by the CIHR and Weston Brain Foundation. Using the most advanced imaging biomarkers currently available; this cohort will describe the accumulation of protein aggregates, neuroinflammation and synaptic changes in 24-months.
- **TRIAD** is longitudinal observation trial focusing on cognitive and biomarker progression from normal cognitive states to MCI or dementia. In addition to the information regarding the progression of amyloid tau and neurodegeneration, TRIAD unique study design quantifies in its participants, neuroinflammation, epigenetics and synaptic depletion in these individuals. As the TRIAD cohort was specially designed to assess the trajectory of gold standard biomarkers in clinical populations, it serves as a benchmark for testing novel biomarkers in the field of dementia. Today, TRIAD has screened (N=620) and enrolled (N=240) people with MRIs and four gold-standard PET modalities (epigenetics, neuroinflammation, amyloid and tau aggregates). TRIAD registry has already recruited (N=1140) people to be screened and enrolled in the present study. The TRIAD cohort participants undergo cognitive tests, lumbar puncture, MRI and PET every 2 years; donate blood, urine and saliva samples every 6 months. These assessments will serve for ultimate validation of biomarkers based on body fluids using as references PET gold-standard outcomes. The TRIAD cohort became an asset for the McGill participation in applications such as the TéraQuébec, which aims to accelerate basic research in biomarkers using tera laser technologies and the Strategic Innovation Fund—Stream 4 project called ReImagining Healthcare (RIH)" consortium deploys the unique "EVIDENS" artificial intelligence (AI) discovery platform and aggregates the expertise of the AI institutes and key healthcare institutions and industrial partners across Canada.
- The **outreach activities of the MCSA** play a crucial role in maintaining study retention. This cohort will certainly play a major role on the understanding of risk factors leading to dementia as well as determining potential therapeutic targets for disease modification. This cohort nurtures a large community of basic researchers interested in conducting research in this population.

- The **Alzheimer’s Disease Research Unit (ADRU)** led by Dr. Gauthier conducts academic and industry-sponsored clinical trials, including the NIH-sponsored Dominantly Inherited Alzheimer Network Trial (DIAN-TU) and the National Dementia Cohort part of the Canadian Consortium on Neurodegeneration in Aging (CCNA). The ADRU is conducting ground-breaking clinical trials with Merck, Sharp & Dohme and Enigma Radiopharmaceuticals on a novel PET tau imaging agent called MK6240. It is expected that the MK6240 will accelerate clinical trials on Alzheimer’s disease. The MCSA, Kalgene Pharmaceuticals and the National Research Council of Canada (NRC) have signed an agreement to develop a promising novel Alzheimer’s treatment in Canada. This treatment will be tested in a phase I clinical trial led by Dr. Pedro Rosa-Neto and Dr. Serge Gauthier through a \$ 1.5 million grant provided by the Weston Brain Institute. Dr. Pedro Rosa-Neto and Dr. Serge Gauthier will also conduct another observational study focusing on neuroinflammatory pathways in Alzheimer’s disease sponsored by Weston Brain Institute (\$ 1.5 million) and CCNA-CIHR (\$120 thousand).
- The initiative lead by Mrs Claire Webster (Dementia External Faculty family caregiver geriatric medicine hs-communications Jose Morais Medical Simulation Centre) to give seminars about dementia to caregivers using the McGill Simulation Centre has been endorsed by the MCSA Education Committee. The Faculty of Medicine is exploring through the Department of Geriatrics how such an approach may benefit medical, nursing and occupational therapy students.
- **Progress on Artificial Intelligence applied to personalized medicine:** Our research group made significant advances on precision and personalized medicine by applying artificial intelligence on large datasets (see below). As such, we are working with the colleagues from the centre of intelligence machines, particularly Dr. Joelle Pineau team to develop novel algorithms to diagnose and predict dementia. These novel techniques have immediate applications on clinical trials.
- **Japan Broadcasting Corporation National TV of Japan NHK –“NIPPON HOSO KYOKAI”** – made a documentary film at MCSA in May 2018 about AI (Artificial Intelligence). This documentary film was based from the scientific paper authored by Sulantha Mathotaarachchi entitled, “Identifying incipient dementia individuals using machine learning and amyloid imaging.” The publication showed that AI technique developed at MCSA, is capable to identify individuals on the verge of developing dementia, based on a brain scan. The Japanese TV program described these advances of AI for human health and medical prevention.
- <https://www3.nhk.or.jp/nhkworld/en/tv/documentary/20181223/4001317/> (see Appendix 9)
- **Research outreach:** Our team in conjunction with the office of Communications and External Relations at McGill University diffused our research across numerous specialized and lay press.(see Appendix 8 – McGill Reporter)

7.4 Clinical Activities:

- The **clinical activities** can be categorized into memory clinic activities, efforts for early diagnosis of neurodegenerative disease, and clinical trials. These are consistent activities of the Centre coordinated by the Director of the ADRU, Dr. Serge Gauthier. The Clinic’s primary focus is evaluation to provide treatments – both symptomatic and preventive - to ensure the best practice care for patients and to enhance the quality of life for patients and caregivers.
- **Dr. Rosa-Neto’s** clinical work focuses on patients with atypical and early onset dementia. He established advanced clinical protocols for investigating these clinical populations. The lumbar puncture (LP) clinic lead by Dr. Rosa-Neto completed 200 patients. This is the only clinic devoted to conduct diagnostic LPs in Canada. Dr. Rosa-Neto is the director of the training program in LPs, which is accredited by the Royal College of Physicians.
- **Dr. Stéphane Ledoux** conducts clinical care focusing on cognitive neurology in special populations such as Down’s syndrome and in headache management.

- **Dr. Paolo Vitali** clinic focuses in cognitive neurology and neuropsychology of language. He runs our program in primary progressive aphasia.
- **Dr. Simon Ducharme** is a neuropsychiatrist with expertise in frontotemporal dementia. He conducts imaging research in this population, funded by the Weston Brain Institute.
- **Laura Robb** is a Genetic Counsellor responsible for communicating with patients and families affected by genetic forms of dementias regarding the current understanding of factors associated with dementias and options for genetic testing. She is involved in recruiting patients for various studies and clinical trials.
- **Electronic Medical records** constitute the next stage in recording and apply medical knowledge in the context of medical care. As an academic unit, these electronic records serve as an instrument to rapidly identify the needs of our clinical population as well as optimize the recruitment of patient interests to participate in our research projects. We started to implement the system in September last year and we are optimizing the use of this instrument in our working environment. Medesync EMR (Electronic Medical Record) was implemented at the McGill University Research Centre for Studies in Aging, Alzheimer Disease Research Unit on September 11th 2017 and went “live” on September 17, 2017. Medesync is a web based EMR program which can be customized to our unique clinic needs. It facilitates the transmission of pharmacy prescriptions, test requisitions, etc. and customizes our patient notes and summaries. The goal of the use of the Medesync system is to eventually be a paperless clinic. In the summer of 2018 the process of scanning patient files commenced and the process is taking longer than anticipated (takes 3 hours to scan up to 20 files and 3 hours to sort 5-10 patient files depending on the size of the file) and we are now estimating that it will take us up to December 2020 to scan over 5000 patient files. Even though we have set an estimated target date for completion, we anticipate delays due to the lack of human and financial resources.

8. Please provide a **List of New Members** who joined in the past year (Full, Associate, Trainee noting whether graduate student or post-doctoral fellow) and **institutional affiliations**. Please also indicate any members who have left the Centre or Network. Add rows as necessary.

Please indicate total number of affiliate/associate/adjunct members: **71** (Appendix 5)

Refer to (Appendix 6) – Potential New Members 2019-2020

Please indicate total number of McGill Faculty of Medicine members: **45**

Please indicate total number of student members: **31** (Appendix 7)

Last, First Name	Member Type	Institutional Affiliation(s)
Dr. Hua Zhang, MD, PhD	Visiting Scholar (August 2017 – August 2018)	First Affiliated Hospital of Chongqing Medical University, Chongqing, China
Dr. Dan Li, MD	Visiting Scholar (March 2019 – March 2020)	Xuan Wu Hospital of Capital Medical University, China
Eva Wachtelaer	Visiting Graduate Research Trainees (November 2018-May 2019)	University Antwerp – Belgium
Sophie Van Den Brink	Visiting Graduate Research Trainees (March 2019 – September 2019)	Vrije University, Netherlands

Paul Balchine	Observer Traineeship (July 2018 – August 2018)	Université de Reims Champagne-Ardeene, France
Thais Alberti	Exchange Student (March 2018 – September 2018)	Universidade Federale de Santa Catarina (UFSC), Brazil –Exchange Student –Leaders of America Scholarship Program (Biotechnology and Biosciences)
Rim Nazar	Trainee Member	UdeM
Miloudza Omand	Trainee Member	UdeM
Marlee Parsons	Trainee Member/ MSc	McGill University
Haseeb Khan	Trainee Member	McGill University
Firoza Lussier	Trainee Member	McGill University
Camille Legault-Deni	Trainee Member	UQAM
Sarah Sabeiti	Trainee Member	UdeM
Marcus Sefranek	Trainee Member	McGill University
Naveed Iqbal Muhammad Qureshi	Trainee Member/ Post-Doc	Gwangju Institute for Science and Technology – South Korea
Luciano Minuzzi, MD, PhD	Affiliate Member	Department of Psychiatry and Behavioural Neurosciences McMaster University Head of Service – Mood Disorders Program and Anxiety Treatment and Research Centre St. Joseph’s Healthcare Hamilton, Ontario
Eduardo Rigon Zimmer, PhD	Affiliate Member	Department of Pharmacology, Universidade Federal do Rio Grande do Sul, Brazil
Lucas Porcello Schilling, MD, PhD	Affiliate Member	Hospital São Lucas Catholic University of Rio Grande do Sul, Brazil
David Elmenhorst, PhD	Affiliate Member	Institute of Neuroscience and Medicine, Germany
Ng Kok Pin, MD	Affiliate Member	National Neuroscience Institute, Department of Neurology
Liyong Wu, M.D, PhD	Affiliate Member	Department of Neurology, Xuanwu Hospital Capital Medical University, Beijing, China
Marc-Andre Bedard	Affiliate Member	McGill –Deceased
Avram Mark Clarfield	Affiliate Member	McGill – Non-Renewal
Francoise Forette	Affiliate Member	McGill – Retired
Helene Masson	Affiliate Member	UdeM – Non-Renewal
Francois Rousseau	Affiliate Member	Hôpital Saint-François d'Assise – Non-Renewal
Rubin M. Becker	Associate Member	McGill – Non-Renewal

Patricia J. Boksa	Associate Member	McGill – Non-Renewal
Joseph Rochford	Associate Member	McGill – Non –Renewal

9. Please describe how your activities align with the Academic or Research mission (Strategic Research Plan) of the Faculty of Medicine and/or other Faculties at McGill focusing on the activities for the current year and strategic plans for the subsequent year (**limit 200 words**)

The mission of the Faculty of Medicine of McGill University is to advance learning through teaching, scholarship and resolve the most oppressing societal challenges. This vision includes but is not restricted to offering graduate students the best education available, carrying out excellent scholarly and research activities, and providing services to society in line with our academic strengths.

In the context of mission, vision and values, the MCSA devotes a large amount of effort to offer undergraduate and graduate students superior training opportunities through the direct participation of ongoing research programs. At the MCSA, students are exposed at early phases of their courses to cutting-edge research methodologies (e.g., neuroimaging, pharmacology, cognitive and behavioral testing) and gain valuable experience. As such, these students also have the opportunity to participate in the development of scientific and clinical advances. As a result, students have a chance to attend international conferences and to being exposed to leaders of our research field. Students have an opportunity to directly interact with leaders in dementia to come to our International lecture series in dementia (i.e. Dr. Klunk- “Laura Chalk Rowles Lectureship in Dementia,”).

These unique training opportunities are nurtured by the high research performance of the MCSA, evidenced by the high productivity of our core and affiliated/associated members, numerous high impact publications, both directly at the Centre and through our affiliate/associate members at McGill University.

In addition, the MCSA shares the global outreach vision from the Faculty of Medicine. We engage in international programs focusing in prevention and biomarker research in Dementia. Core members of the Centre working on AD research have also been very successful over the past year in obtaining research grants to support their research activities. (Appendix 1). In 2018/2019, members of the Centre have been able to work with research funding from CIHR, FQRS-S, NSERC, AD Society of Canada and Alzheimer’s Association.

Work under planning for 2019-2020

The MCSA has a long-standing partnership with Asian countries in clinical research and practice.

Dr. Serge Gauthier is a founding member of the 10-year-old Asian Society against Dementia (ASAD), which aims at developing common clinical research tools in the field of dementia. Dr. Serge Gauthier has given keynote lectures at most of the annual meetings of the ASAD. Furthermore, clinical research fellows have trained at the MCSA over the years, from Thailand, Singapore and China.

We are finishing a first five-year cycle of collaborative research with Dr Jianping Jia from Beijing, China, on biomarkers in early stages of Alzheimer’s disease (AD). Thirteen (13) articles have been published, going well beyond the original objectives of the CIHR-funded program. The next collaborative research cycle will focus on randomized clinical trials (RCT)with training of multiple study sites across China with Dr. Huali Wang, and initiation of RCT using traditional medicines in vascular dementia with Dr Jinping Jia and the Shineway corporation. We will facilitate China joining the Dominantly Inherited Alzheimer Network (DIAN) observational study.

We are increasing our contribution to the Canadian Consortium on Neurodegeneration in Aging (CCNA) as it moves into its second five-year cycle, with enrolment of participants in the CCNA observational cohort, active participation in the neuroinflammation team (Dr Rosa-Neto as co-lead), the Ethical Legal Social Impact committee (Dr Serge Gauthier as member).

Current randomized clinical trials (RCT) at our Center include both familial early onset and sporadic late-onset, AD, with emphasis on the anti-tau aggregation drug LMTM in early AD.

The MCSA is organizing with the Society for Cerebral Blood Flow and Metabolism a meeting on development of imaging agents for Alzheimer's Disease entitled "Advances in Tau Imaging". The first meeting will be in 2019 in Hamamatsu, Japan and the second one will be in Montreal 2020. The MCSA took the lead in organizing an annual meeting to convene the leaders in the field of imaging and Alzheimer's Dementia.

10. Other information:

Please indicate how the Research Centre, Core Facility or Network has:

- Tackled or plans to tackle issues in a manner that may not otherwise have been achievable without the financial support of the Faculty of Medicine
 - Increased or is planning to increase the scale and focus of research activities
 - Facilitated multidisciplinary, multi-institutional or international collaborations
- (Please limit response to **200 words**)

Support from McGill is crucial for maintaining the present administrative positions of the Centre, which are vital to manage, coordinate and perform many of the KT activities of MCSA. As the integration between KT, clinical and research activities constitute the driving force behind the productivity of the Centre, these administrative assistants are fundamental in the sustainability of our present operations.

We plan to scale our present research activities and take advantage of the more optimistic funding landscape recently announced by the provincial government, such as a five year infrastructure grant for cohorts.

As part of the expansion of our research operations, in 2017 we included CrossRoads, which is a ~3000 sq foot building located on the grounds of the Douglas Hospital, Lasalle Boulevard. This satellite building serves as a site for recruitments and assessment of participants of clinical research. It is currently equipped with the infrastructure to conduct clinical procedures like lumbar punctures, blood and clinical assessments. As such, the Centre needs additional support from the Faculty to retain some of our high qualified trainees in order to maintain our provincial, national and international leadership in dementia research.

One of the most important challenges of the centre in 2018 is to upgrade our basic infrastructure to enhance the integration between clinical care and research. In order to progressively adopt the best clinical practice guidelines, the Centre urgently needed to implement electronic medical records, renovate computational network and integrate with the Quebec medical records. In 2018, the Centre successfully implemented the new electronic medical records. Patient medical records can now be assessed by medical professionals more efficiently and strengthen patient care. An additional clinical nurse will enhance our clinical capacity. New staff and faculty positions particularly are fundamental to maximize our research impact on the spectrum of our research.

SCIENTIFIC CONFERENCES 2019-2020:

- **Congress Centre in ACT CITY Hamamatsu – July 3, 2019 Fukui, Japan**

- Alzheimer’s Disease International Conference – March 18-21 2020 Singapore
- Pet Pharmacokinetics Course (PK) – June 18-20, 2020 Montreal, Quebec
- NRM 2020 – Mapping NeuroReceptors – June 20 -23, 2020, Montreal, Quebec

The Year End Financial Report reports on:

- Expenditure of funding provided by the Faculty of Medicine and other sources, towards meeting the objectives of the Research Centre or Network; and
- Details of any in-kind contributions provided to the Centre or Network.
- Please include a projected budget (including request from Faculty of Medicine) for the coming year
- See **Appendix 2** for the “Year End Financial Report” form to complete

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- Please include a projected budget (including request from Faculty of Medicine) for the coming year
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- **Appendix 3.** KT activities detail
See Brainy Boomer lecture series in attachment
- **Appendix 4** a. Newsletter April 2018; 4b. August 2018; 4c. November 2018; (in attachment)
- **Appendix 5.** Affiliated/Associate/Adjunct Members List (in attachment)
- **Appendix 6.** Potential New Members 2018-2019 List (in attachment)
- **Appendix 7.** Student and International Members 2018-2019(in attachment)
- **Appendix 8.** McGill Reporter
- **Appendix 9.** NHK Documentary –AI: Shaping the Future

- **Quantitative and Qualitative Performance Indicators**

- **1 a. Publications from Core-PIs (Dr. Gauthier, Dr. Rosa-Neto) in 2018 /2019 report period**

Dr. Serge Gauthier

Articles and book chapters

- 1) Savaskan E, Mueller H, Hoerr R, von Gunten A, Gauthier S. Treatment effects of Ginkgo biloba extract EGb 761 on the spectrum of behavioral and psychological symptoms of dementia: meta-analysis of randomized controlled trials. *International Psychogeriatrics*, 30 (3):285-293, 2018. DOI:10.1017/S1041610217001892. PMID: 28931444.
- 2) Sinyavskaya L, Gauthier S, Renoux C, Dell’Aniello S, Suissa S, Brassard P. Comparative effect of statins on the risk of incident Alzheimer’s disease. *Neurology*, 90 (3):e179-e187, 2018. DOI:10.1212/WNL.000000000004818. PMID: 29247073.
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Dr. Pedro Rosa-Neto

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- 17) P.F. Meyer, **M. Savard**, J. Poirier, A. Labonte, P. Rosa-Neto, T.M. Weitz, T. Town, J. Breitner, Bi-directional Association of Cerebrospinal Fluid Immune Markers with Stage of Alzheimer's Disease Pathogenesis, *Journal of Alzheimer's disease : JAD*, 63 577-590, 2018. PMC5929310.
- 18) S. Gauthier, **K.P. Ng, T.A. Pascoal, H. Zhang**, P. Rosa-Neto, Targeting Alzheimer's Disease at the Right Time and the Right Place: Validation of a Personalized Approach to Diagnosis and Treatment, *Journal of Alzheimer's disease : JAD*, 64 S23-s31, 2018. PMC6004905.
- 19) S. Villeneuve, J.W. Vogel, J. Gonneaud, A. Pichet Binette, P. Rosa-Neto, S. Gauthier, R.J. Bateman, A.M. Fagan, J.C. Morris, T.L.S. Benzinger, S.C. Johnson, J.C.S. Breitner, J. Poirier, Proximity to Parental Symptom Onset and Amyloid-beta Burden in Sporadic Alzheimer Disease, *JAMA neurology*, 75 608-619, 2018. PMC5885216.
- 20) **A.L. Benedet**, L. Yu, A. Labbe, **S. Mathotaarachchi, T.A. Pascoal, M. Shin, M.S. Kang**, S. Gauthier, G.A. Rouleau, J. Poirier, D.A. Bennett, P. Rosa-Neto, CYP2C19 variant mitigates Alzheimer disease pathophysiology in vivo and postmortem, *Neurology. Genetics*, 4 e216, 2018. PMC5820598.
- 21) **J. Therriault, K.P. Ng, T.A. Pascoal, S. Mathotaarachchi, M.S. Kang, H. Struyfs, M. Shin, A.L. Benedet, I.C. Walpola**, V. Nair, S. Gauthier, P. Rosa-Neto, Anosognosia predicts default mode network hypometabolism and clinical progression to dementia, *Neurology*, 90 e932-e939, 2018. PMC5858945.
- 22) **T.A. Pascoal, S. Mathotaarachchi, M. Shin, A.Y. Park, S. Mohades, A.L. Benedet, M.S. Kang**, G. Massarweh, J.P. Soucy, S. Gauthier, P. Rosa-Neto, Amyloid and tau signatures of brain metabolic decline in preclinical Alzheimer's disease, *European journal of nuclear medicine and molecular imaging*, 45 1021-1030, 2018. PMC5915512.
- 23) A.D. Henriques, **A.L. Benedet**, E.F. Camargos, P. Rosa-Neto, O.T. Nobrega, Fluid and imaging biomarkers for Alzheimer's disease: Where we stand and where to head to, *Experimental gerontology*, 107 169-177, 2018.
- 24) V. Bernard-Gauthier, A.V. Mossine, A. Mahringer, **A. Aliaga**, J.J. Bailey, X. Shao, J. Stauff, J. Arteaga, P. Sherman, M. Grand'Maison, P.L. Rochon, B. Wangler, C. Wangler, P. Bartenstein, A. Kostikov, D.R. Kaplan, G. Fricker, P. Rosa-Neto, P.J.H. Scott, R. Schirmacher, Identification of [(18)F]TRACK, a Fluorine-18-Labeled Tropomyosin Receptor Kinase (Trk) Inhibitor for PET Imaging, *Journal of medicinal chemistry*, 61 1737-1743, 2018.
- 25) C.L. Tardif, G.A. Devenyi, R.S.C. Amaral, S. Pelleieux, J. Poirier, P. Rosa-Neto, J. Breitner, M.M. Chakravarty, Regionally specific changes in the hippocampal circuitry accompany progression of cerebrospinal fluid biomarkers in preclinical Alzheimer's disease, *Human brain mapping*, 39 971-984, 2018.
- 26) **X. Li, M. Ba, K.P. Ng, S. Mathotaarachchi, T.A. Pascoal**, P. Rosa-Neto, S. Gauthier, Characterizing biomarker features of cognitively normal individuals with ventriculomegaly, *Alzheimer's & dementia (Amsterdam, Netherlands)*, 10 12-21, 2018. PMC5678356.

- 27) M. Turgeon, K. Oualkacha, A. Ciampi, H. Miftah, G. Dehghan, B.W. Zanke, **A.L. Benedet, P. Rosa-Neto, C.M. Greenwood, A. Labbe**, Principal component of explained variance: An efficient and optimal data dimension reduction framework for association studies, *Statistical methods in medical research*, 27 1331-1350, 2018.

Trainee Awards

2018-2019	Joseph Therriault, BA	Healthy Brains Healthy Lives Award – Salary Award 15.000/yr.
2018-2019	Joseph Therriault, BA	Leo and Rachel Hendlisz Award \$1000.00
2018-2019	Joseph Therriault, BA	Rémi Quirion Excellence Award \$500.00
2018	Joseph Therriault, BA	IPN Star Award – Publishing Papers \$1000.00
2018	Mira Chamoun, PhD	Alzheimer Association International Conference (AAIC Chicago) Travel Award \$1000.00
2018-2019	Mira Chamoun, PhD	Postdoctoral Grant – The Strauss Foundation Postdoctoral Grant, McGill Faculty of Medicine \$37,500.00/yr.
2019	Min Su Kang, BsC	Human Amyloid Imaging conference. Jan 16-18, 2019 Award: Human Amyloid Imaging 2019 conference Travel Scholarship \$1000.00 USD

1 b. Current active research grants of the core PIs (Dr. Gauthier, Dr. Rosa-Neto)

Industry Sponsored Clinical Trials

2015-2024

A Phase II/III Randomized, Double-Blind, Placebo-Controlled Multi-Center Study of 2 Potential Disease Modifying Therapies in Individuals at Risk for and with Dominantly Inherited Alzheimer’s Disease DIAN-TU-001

2019-2021

Randomized, Double-Blind, Placebo-Controlled, 2-Arm, 6-Month, Brain Imaging and Safety Study of Leuco-methylthioninium bis(hydromethanesulfonate) (LMTM) in Subjects with Mild Alzheimer's Disease" (Study TRx 237 039)

2019-2021

A randomized Phase IIa, multi-center, double-blind, placebo-controlled study to assess the safety, feasibility, tolerability, and efficacy of a new buccal film of montelukast in patients with mild to moderate Alzheimer's Disease Study #: IGX-CLI-2017-001 (MP-31-2019-2713)

2018

A Placebo-Controlled, Double-Blind, Parallel-Group, 24-Month Study to Evaluate the Efficacy and Safety of E2609 in Subjects with Early Alzheimer's Disease" (E2609-G000-302)

2018

Effect of LY3202626 on Alzheimer's Disease Progression as Measured by Cerebral 18F-AV-1451 Tau-PET in Mild Alzheimer's Disease Dementia" (Protocol 17X-MC-LLCF)

Research Grants of Dr. Serge Gauthier

2014-2019

CIHR. Co-applicant with H. Chertkow (PI) et al. \$4,040,000 to \$4,527,000 per year Overall, \$70,000 per year for ELSI committee. *Canadian Consortium on Neurodegeneration in Aging.*

2016-2021

CIHR. Co-applicant with S. Villeneuve (PI), J. Breitner, J. Poirier, P. Rosa-Neto, A. Evans. \$710,985 (total). *Towards a better understanding of the impact of vascular health on Alzheimer's disease pathology and clinical expression.*

2016-2021

CIHR. Co-applicant with H. Chertkow (PI). \$4,750,000. Team grant: new directions in *dementia research: big data on dementia.*

2017-2018

CIHR. Co-applicant with G. Ferland (PI), MJ Kergoat, F. Lesage, N. Presse, S. Belleville. \$100,000. Increasing vitamin K status through supplementation to improve cognition in older individuals at risk of cognition impairment: a randomized, double blind, placebo-controlled study

2017-2022

CIHR. Co-applicant with N. Rajah (PI). \$833,850. The impact of sex, menopausal status and +APOE4 risk for Alzheimer's disease on the neural correlates of episodic memory in healthy middle aged adults

2017-2023

CIHR. Co-applicant with J. Carrier & J. Montplaisir. \$665,550. Quantitative electroencephalography in rapid-eye-movement (REM) sleep: an early marker of cholinergic neurodegeneration in mild cognitive impairment

2018-2020

Weston Brain Institute. Co-applicant with P. Rosa-Neto (PI). \$1,527,750. *In vivo qualification of tau aggregates as a measure of disease progression in AD spectrum.*

2018-2021

CIHR. Co-PI with P. Rosa-Neto. \$1,262,250. *Imaging epigenetics in dementia.*

2018-2023

CIHR. Co-applicant with S. Villeneuve (PI). \$1,059,525. *Preventing the progression of Alzheimer's disease pathology by targeting the effects of lifestyle factors and personality traits.*

Research Grants of Dr. Pedro Rosa-Neto

- x Quantifying the rates of tau progression in living Human brains. Weston Brain Institute – Transformational Research (CAN \$1,525,000). **Rosa-Neto, Pedro** (PI); Gauthier, Serge; Massarweh, Gassan; Soucy, Jean-Paul. (PI);
- 2018-2021 Imaging Synaptic plasticity in Therapeutic Sleep Deprivation for Major Depression, Sleepless. FRQS-S ERA-NET NEURON. (CAN \$225,000). Elmenhorst, David (PI); Verhaeghe, Jeroen; **Rosa-Neto, Pedro**.
- 2018-2019 Imaging epigenetics in dementia. CIHR Project Grant 2018 – Priority Announcement: Aging Grant New (CAN \$100,000). **Rosa-Neto, Pedro** (PI); Gauthier, Serge; Massarweh, Gassan; Soucy, Jean-Paul.
- 2017-2022 Tracking the Progression of Neuroinflammation and Tau aggregates in Mild Cognitive Impairment using PET scanning. Canadian Consortium on Neurodegeneration in Aging (CCNA) (CAN \$120,000). **Rosa-Neto, Pedro** (PI); Masellis, Mario; Villeneuve Sylvia; Tartaglia, Carmela
- 2017-2022 Interactions between pathological processes as drivers of clinical progression in Alzheimer's disease. CIHR Project Grant 2016 (CAN \$1,377,000). **Rosa-Neto, Pedro** (PI); Gauthier, Serge; Massarweh, Gassan; Chakravarty, Mallar; Pruessner, Jens; Soucy, Jean-Paul.
- 2017-2022 The impact of sex, menopausal status and +APOE4 risk for Alzheimer's Disease on the neural correlates of episodic memory in healthy middle aged adults. CIHR Project Grant 2016 (CAN \$ 833,850). Rajah, M. Natasha, Chakravarty, Megha M; Einstein, Gillian; Gauthier, Serge G; Poirier, Judes; Pruessner, Jens C; **Rosa-Neto, Pedro** (Co-applicant).
- 2017-2022 Cocaine Addiction: Epigenetic Studies in Living and Postmortem Brain. CIHR Project Grant 2016 (CAN \$ 1,235,475). Leyton, Marco, Benkelfat, Chawki; Booi, Linda; Clarke, Paul B; Gobbi, Gabriella; Peterson, Alan C; **Rosa-Neto, Pedro** (Co-applicant); Turecki, Gustavo X.
- 2017-2022 Role of HMG CoA reductase protective and risk variants in the pathophysiology and treatment of sporadic Alzheimer's disease (CAN\$948,600). CIHR - Project Grant. Poirier, Judes, Breitner, John C; **Rosa-Neto, Pedro** (Co-applicant).
- 2017-2018 Modeling imaging data. NSERC – Discovery Grants Program (CAN \$21,000). **Rosa-Neto, Pedro** (PI).
- 2016-2019 System-wide environmental perturbations transform understanding of relationships between high-dimensional data, exposures, and phenotypes. CIHR Project Scheme- 2016 1st Live Pilot (CAN\$ 310,000). Greenwood, Celia; Labbe, Aurelie; Blanchette, Mathieu; Ciampi, Antonio; Evans, Alan; Kleinman, Claudia; **Rosa-Neto, Pedro** (Co-applicant); Schmidt, Alexandra; Bouchard, Luigi; Hudson, Marie; Tonin, Patricia.

- 2016-2019 Longitudinal neuroimaging of disease progression and treatment in rodent models of Alzheimer's Disease. CIHR Project Scheme- 2016 1st Live Pilot (CAN\$ 920,000). Near, Jamie; Chakravarty, Mallar; Breitner, John; **Rosa-Neto, Pedro** (Co-applicant).
- 2016-2021 Broad and Deep Analyses in Neurodegeneration (BRAIN). CIHR - Team Grant: Big Data on Dementia (CAN \$5,000,000). Anderson, Geoffrey Michael; Borrie, Michael John; Chertkow, Howard Mark; Gauthier, Serge G.; Hofer, Scott Michael; Hogan, David Bryan; Phillips, Natalie Anne; Rockwood, Kenneth ; Smith, Eric Edward; Costa, Andrew Paul ; Dixon, Roger A ; Duchesne, Simon ; Finlay, Barton Brett ; Fortier, Isabel ; Herrmann, Nathan ; Liu-Ambrose, Teresa Y.L. ; Maxwell, Colleen Jean ; Menec, Verena Heidi ; Naylor, C. David ; **Rosa-Neto, Pedro** (Co-Investigator; CAN \$150,000) ; Simard, Martine ; St. George-Hyslop, Peter H. ; Taler, Vanessa ; Tuokko, Holly Anna
- 2014-2019 Canadian Consortium on Neurodegeneration in Aging - Full Proposal. CIHR - Canadian Consortium on Neurodegeneration in Aging (CCNA) (CAN \$4,160,000). **Rosa-Neto, Pedro** (Co-Investigator; CAN \$50,000; Project: Microglial Activation in Alzheimer's Disease).
- 2016-2019 Tracking the progression of neuroinflammation and tau aggregates in preclinical Alzheimer's disease. Weston Brain Institute – Transformational Research (CAN \$1,500,000). **Rosa-Neto, Pedro** (PI); Breitner, John; Massarweh, Gassan; Poirier, Judes; Soucy, Jean-Paul.
- 2016-2019 Safety and efficacy of a novel amyloid-clearing therapeutic KAL-ABP-BBB in early Alzheimer's disease patients. Weston Brain Institute – Early Phase Clinical Trials 2015 (CAN\$ 1,495,125). **Rosa-Neto, Pedro** (PI); Chakravarty, Balu; Gauthier, Serge; Stanimirovic, Danica; Waterson, Michael; Yoganathan, Nathan.
- 2015-2019 Integrated Platform for Imaging and Drug Delivery across the Human Blood-Brain Barrier. Brain Canada CQDM Focus on the Brain (CAN\$ 1,496,800). Yoganathan, Nathan; Collins, Louis; Stanimirovic, Danica; Chakravarthy, Balu; Soucy, Jean-Paul; **Rosa-Neto, Pedro**.
- 2015-2018 Developing new Alzheimer's therapeutics using novel blood brain barrier carrier technology. Brain Canada CQDM Focus on the Brain (CAN\$ 2,413,133). Yoganathan, Nathan; Collins, Louis; Soucy, Jean-Paul; Stanimirovic, Danica; Chakravarty, Balu; **Rosa-Neto, Pedro** (Co-investigator).
- 2015-2019 Non-invasive Identification of A β Plaques in Human Retina for the Diagnosis of Alzheimer's Disease. Brain Canada CQDM Focus on the Brain (CAN\$ 1,500,000). Soucy, Jean-Paul; Lesage, Frederic; Black, Sandra; Sylvestre, Jean-Philippe; Arbour, Jean Daniel; Rosa-Neto, P; Greenberg, Barry; Hudson, Chris; Farkas, Daniel.
- 2015-2019 Proof of Concept Trial of Probuocol, an Inducer of apoE for Prevention of Alzheimer's Dementia. Weston Brain Institute – Early Phase Clinical Trials 2014 (CAN\$ 1,299,954). Breitner, John; Poirier, Judes; Gauthier, Serge; **Rosa-Neto, Pedro** (Co-applicant); Evans, Alan; Etienne, Pierre; Collins, Louis; Bellec, Pierre; Multhaup; Gerhard; Hoge, Rick.
- 2015-2019 Imaging-genetics biomarkers for disease risk in Alzheimer's disease. CIHR – operating grant (CAN\$ 82,764). Chakravarty, Mallar; Pruessner, Jens; Breitner, John; Knight, Jo; **Rosa-Neto, Pedro**; Tartaglia, Maria; Voineskos, Aristotle.

1 c. Presentations at National and International Meetings

Dr. Serge Gauthier

Gauthier S. Maladie d'Alzheimer présymptomatique et développements thérapeutiques. Réunion francophone de la maladie d'Alzheimer et syndromes apparentés, Lille, 11-14 juin 2018.

Gauthier S. Participation in observational and therapeutic research to prevent dementia. 33rd International Conference of ADI, Chicago, July 26-29th 2018.

Gauthier S. Clinical trial designs and outcomes for Alzheimer's disease. International Alzheimer Disease Conference 2018, Hong Kong, September 7-8th 2018.

Gauthier S. Which are the best target populations and study design for combination therapy trials in AD/EU/US – CTAD Task Force on Anti-tau trials and combination therapy, Barcelona, October 24-27 2018.

Gauthier S. Nouveautés dans l'Alzheimer: diagnostic et traitement. 4^{ème} Congrès québécois sur la Maladie d'Alzheimer et les maladies apparentées, Laval, 7-9 novembre 2018.

1d. Presentations at National and International Meetings /Invited Talks

Dr. Pedro Rosa-Neto

Rosa-Neto P., Gold standard and simplified methods for assessing brain proteinopathies using Positron Emission Tomography. 2018 World Federation of Nuclear Medicine and Biology Congress, Melbourne, Australia, 20-24 April 2018

Rosa-Neto P., Translational neuroimaging in dementias. Aarhus PET Centre, Aarhus University, Denmark, June 5, 2018

Rosa-Neto P. Translational neuroimaging in dementias. Alzheimer's Research UK Meeting, Imperial College, UK, June 8, 2018

Mapping NeuroReceptors at Work (NRM), London, July 9-12, 2018

Alzheimer's Association International Conference, Chicago, July 22-26, 2018

Congrès québécois sur la Maladie d'Alzheimer et les maladies apparentées, Laval, 7-9 novembre 2018.

BIC (Brain Imaging Centre) Scientific Retreat, Montreal, December 10, 2018

Human Amyloid Imaging Conference (HAI), Miami, January 16-18, 2019

Japan, March 4-15, 2019

The 14th International Conference on Alzheimer's and Parkinson's Diseases, Portugal, March 26-31, 2019

American Academy of Neurology Conference, Philadelphia, May 4-10, 2019