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SESSION DESCRIPTIONS AND BIOS

Have we hit the end of the road for disease course modification in dementia?

With Professor Robert Howard, Keynote speaker, presented by Dr Kenneth Rockwood

DALHOUSIE UNIVERSITY

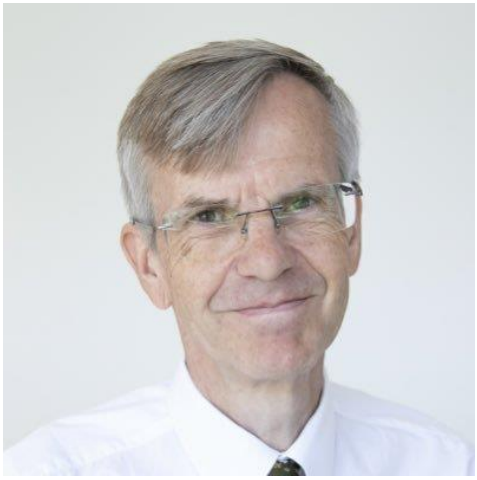
Dalhousie MEDICAL RESEARCH Foundation
WHERE BREAKTHROUGHS BEGIN

A LECTURE PRESENTED AS
THE 2020 FRANK AND DEBBI SOBEY LECTURSHIP IN ALZHEIMER'S RESEACH
AND SPONSORED BY THE DALHOUSIE MEDICAL RESEARCH FOUNDATION

The last 25 years have seen discouraging failures of our attempts to slow cognitive and functional decline in Alzheimer's disease, despite good evidence that some treatments have engaged with amyloid or tau associated pathology. It now seems unlikely that any of the agents currently under trial are going to prove to be clinically effective, although some may be licensed on the basis of selective data analysis, minute patient-level benefits and general desperation within the field for a treatment.

Some in the field have suggested that this is the time for a "Dementia Moonshot", in terms of investment and coordinated effort to overcome the failures. I would argue that putting a man on the Moon took more than 65 years from the Wright brothers' first successful powered escape from our planet's surface and a number of important discoveries and developments along the way. Neuroscience is always moving forward and it is hard to predict when an individual basic discovery that unlocks a potentially effective therapy will occur. In the meantime, perseverating with the current failing paradigm for disease modification research does not appear efficient.

Although symptomatic treatments may not have the glamour of disease modifiers, we do have agents that can modestly improve cognition and function in dementia and repurposed drugs that offer benefits in the treatment of agitation and psychosis. But we have a long way to go before we can achieve the symptomatic treatment successes seen, for example, in Parkinson's disease. I would argue that, if we want to see developments in treatment that will realistically offer benefits to people with dementia over the next 10 years, we will have to focus research on symptomatic drug treatments and other "Care" interventions.



Robert Howard is currently Professor of Old Age Psychiatry at University College London, Honorary Consultant Old Age Psychiatrist at Camden and Islington NHS Foundation Trust, Mental Health Theme Lead and NIHR Senior Investigator at UCL Hospital, and Scientific Trustee for the Alzheimer Research UK. During his research career, Professor Howard has studied dementia and psychotic disorders of older people where he coined the term very late-onset schizophrenia-like psychosis. He is interested in the neurobiology of hallucinations and delusions in older people with and without dementia and look for potential mechanisms for treatment. Pr Howard has lead trial teams to investigate the effectiveness of drug, psychosocial, educational and technology interventions, using practical and clinically meaningful outcome measures. Those trials have been extensively cited in relevant NICE Guidance.

Kenneth Rockwood, MD, FRCPC, FRCP, is Professor of Medicine (Geriatric Medicine & Neurology) and the Kathryn Allen Weldon Professor of Alzheimer Research at Dalhousie University. A leading authority on frailty, he has key roles on numerous studies in Canada and elsewhere. Ken received his MD from Memorial University in St. John's, NL, completed training in Internal Medicine at the University of Alberta, and in Geriatric Medicine from Dalhousie University.

Working together to support the implementation and advancement of the National Dementia Strategy

On June 17, 2019, the Government of Canada released its first national dementia strategy: *A Dementia Strategy for Canada: Together We Aspire*. This exciting panel will bring together leaders from organizations across Canada to explore the barriers and opportunities for collaboration to advance the strategy. Join them for this important conversation at this critical time.

***Moderator:** Jennifer Walker is a Haudenosaunee member of Six Nations of the Grand River with a Ph.D. in Community Health Services (Epidemiology). Dr. Walker's work focuses largely on Indigenous community-engaged research using large health services databases. Her program of research is supported by a Canada Research Chair for Indigenous Health at Laurentian University and through her work as a Core Scientist and Indigenous Health Lead at the Institute for Clinical Evaluative Sciences (ICES). Dr. Walker's primary academic appointment is at Laurentian University within the School of Rural and*

Northern Health; she also holds professor status at the Dalla Lana School of Public Health at the University of Toronto. Dr. Walker's research aims to work with Indigenous populations so that they are able to take ownership and control of their health data in order to use it toward the benefit and wellbeing of their people and communities.

Panelist: *Stephen McCullough is an experienced leader with international expertise in Strategy, Marketing, Business Development, Fundraising and Social Enterprise. Stephen's proven competencies in building and leading teams, turnaround, marketing (from strategy and product development through to promotion and sales), and development growth through partnerships, has delivered class-leading growth in organizations ranging from start-ups to large-scale multi-national companies and organizations. A decade in Africa working to rebuild the post-Apartheid economy was followed by leadership in service sector companies, with a transition to the not-for-profit sector in 2005. With a focus on measurable impact, Stephen has successfully lead teams to create powerful strategies and supporting products for organizations, including World Vision, Canadian Paralympics, Sunnybrook, St. Michael's. Stephen joined the Alzheimer Society of Canada in mid 2019, as Chief Marketing, Communications and Fund Development officer, and was appointed Interim CEO in January 2020. His focus is to operate at the intersection of marketing and service experience, delivering excellence of strategy, collaboration, the art of science management, and the joy of helping grow beyond their own expectations.*

Panelist: *Dr. Jennifer Zelmer joined the Canadian Foundation for Healthcare Improvement as its President and CEO in September 2018. She brings a long-standing commitment to healthcare improvement to the role, as well as expertise in spreading and scaling innovations that deliver better health, care, and value. She has been a C.D. Howe Research Fellow for several years and is also an adjunct faculty member at the University of Victoria, as well as a member of several health-related advisory committees and boards. Previously, as President of Azimuth Health Group, Dr. Zelmer was a strategic advisor to leaders who sought to advance health and healthcare at local, national, and international levels. Before that, she held senior leadership positions with Canada Health Infoway, the International Health Terminology Standards Development Organization, and the Canadian Institute for Health Information. Jennifer served on the inaugural (2004) Safer Healthcare Now! National Steering Committee convened by CPSI when she was at CIHI. She also served on CPSI's former Health System Innovation Advisory Committee, and more recently, Jennifer served on the National Patient Safety Consortium Steering Committee during her time at Infoway. Dr. Zelmer received her PhD and MA in economics from McMaster University and her B.Sc. in health information science from the University of Victoria.*
(Photo @SaraElisabethPhotography)

Panelist: *The main thrust of Dr. Bergman's work in health services research and policy has been on aging, chronic disease and frailty and on the promotion of primary care in general and primary medical care in particular. In the fields of aging, chronic disease, frailty and health services, Dr. Bergman was from 1999-2009 co founder and co-Director of Solidage. From 1999-2002, he was one 2 principal investigators in the development and evaluation of a randomized controlled trial - the SIPA model of integrated care for the frail elderly population. His work on integrated care for very frail older persons is recognized internationally in both academic, policy and government circles. Dr. Bergman led a group of Canadian and international investigators in the Canadian Initiative on Frailty and Aging and leads the International Database Inquiry on Frailty. He is internationally recognized for his research on integrated care, frailty and chronic disease with over 170 publications as well as numerous reports and book chapters.*

Dr Bergman, with Dr. Isabelle Vedel created The Canadian Team for healthcare services/system improvement in dementia care, a multidisciplinary team involving stakeholders dedicated to the evaluation and implementation of initiatives to improve the capacity of primary care to diagnose and treat older persons with Alzheimer's disease, and their caregivers including a distinguished international advisory board from five high and middle-income countries. In 2000-2001, Dr. Bergman was a member of the "Clair Commission", an independent Commission set up by the Quebec government to propose reforms to the health care system. His work in that Commission was instrumental in the recommendation on primary care reform. He is recognized as the «author» of the recommendation on the creation of Family Medicine Groups (GMF). Appointed by the Quebec Minister of Health in 2007, Dr. Bergman tabled in 2009 a proposal for the Quebec Alzheimer Plan (known in Quebec as the Bergman Plan) from prevention to end of life care, including the research agenda. He is now working with the Quebec Ministry of Health in the implementation of the plan. In 2010, Dr. Bergman was a member of the Canadian Academy of Health Sciences Expert Panel on improving chronic disease outcomes through health system transformation which in 2010 tabled its report: Transforming Care for Canadians with Chronic Health Conditions: Put People First, Expect the Best and Manage for Results. In 2010, he chaired the Initiative for the Development of a Personalized Health Care Strategy for Quebec bringing together university researchers, industry, health system managers and government. He co-authored the report Ensuring that Québec capitalizes on the development of Personalized HealthCare; A Business proposal by the Quebec Network for Personalized Healthcare.

***Panelist:** In her prior position, Dr Viviane Poupon was Director, Scientific Development and Partnerships at the Neuro - the Montreal Neurological Institute and Hospital, McGill University. Responsible for the development of major new research initiatives and alliances for the Institute, including international initiative, she spearheaded the transformation of the Neuro into an Open Science Institute. She was also Chief Operating Officer of the Tanenbaum Open Science Institute. Previously, Dr. Poupon was the Associate Director for Scientific Affairs at the Fonds de recherche en santé du Québec (FRSQ) where she managed the FRSQ's scientific programs and liaised with provincial, federal, and international scientific funding organizations. During the reorganization of the funding agency she was named Interim Scientific Director and member of the Board and advised on governance issues, organizational restructuration as well as change management. Dr. Poupon, a graduate from École normale supérieure-Paris, obtained her PhD in Immunology at Université Pierre et Marie Curie in Paris.*

Research panel: New directions for biomarker research and application in Alzheimer's disease

What are biomarkers of Alzheimer's disease (AD) and why are they important in research and application? A classic definition derives from the NIH in 1998: viz., A biomarker is an "objectively measured…indicator of normal biological processes, pathogenic processes, or pharmacologic responses to therapeutic interventions." Given the complementary facts of a long insidious onset period for AD and the multifactorial nature of AD, a range of enhanced approaches have emerged. These include the 2018 ATN research framework, which calls for evidence of three key factors to improve diagnostic accuracy: ß Amyloid deposition, pathologic Tau, and Neurodegeneration. They also include corresponding technological developments in neuroinformatics modeling of these and other biomarker modalities for early AD risk detection. This spectrum of complementary approaches is represented in the roster of four speakers in this workshop. The speakers are all members of CCNA with stellar research profiles in biomarkers of AD. Each talk is designed for a broad CCNA audience and an open discussion period follows

the presentation. Roger A Dixon (CCNA Team 9 Co-Lead, UAlberta) moderates the presentations by Pedro Rosa-Neto (Neurology and Douglas Research Centre, McGill), Mari DeMarco (St. Paul's Hospital and UBC), Cheryl Wellington (Pathology and Laboratory Medicine, UBC), and Yasser Iturria-Medina (Neurology, McGill).

Moderator: *Roger A Dixon is Professor of Psychology (Science) and member of the Neuroscience and Mental Health Institute at the University of Alberta. He is Co-Lead of CCNA Team 9 (Biomarkers of Aging and Neurodegeneration). Recent recognitions include: (1) Canada Research Chair in Cognitive Aging (Tier 1); (2) Baltes Award for Distinguished Career Research in Aging (American Psychological Association); (3) Two NIH MERIT Awards. His research interests include applications of data-driven neuroinformatics and multi-omics technologies to discovery, validation and classification of multi-modal biomarker predictors of heterogeneity in (1) dynamic individualized trajectories of decline and (2) subtypes of neurodegenerative disease.*

Panelist: Pedro Rosa-Neto: Biomarkers for staging pathophysiological progression in Alzheimer's disease

Dr. Pedro Rosa-Neto MD (Federal University Rio Grande do Sul, Brazil), PhD (Aarhus University PET Centre, Denmark) is a professor of Neurology, Neurosurgery and Psychiatry at McGill University, affiliated to the Douglas Research Centre. He is a neurologist specialized in dementia with expertise in imaging and fluid biomarkers. Dr. Rosa-Neto is the Director of the McGill Centre for Studies in Aging, a Fonds de Recherche Santé - Québec Senior Scholar, and vice chair of the CCNA team 2 'Inflammation and Trophic Factor deregulation in Alzheimer's disease. He is also committee member of the 4th and 5th Canadian Consensus Conference on the Diagnosis and Treatment of Dementia (CCCDTD). Dr. Rosa-Neto research is funded by Alzheimer's Association, Canadian Foundation for innervation (CFI), Fonds de Recherche Santé - Québec (FRQ-S), Canadian Institutes of Health Research (CIHR) and the Weston Brain Institute.

Panelist: Mari DeMarco: Alzheimer's disease CSF testing in the wild: The IMPACT-AD study

Dr. Mari DeMarco is a Clinical Chemist at St Paul's Hospital, and a Clinical Associate Professor in the Department of Pathology and Laboratory Medicine at the University of British Columbia in Vancouver Canada. Dr. DeMarco completed her PhD in the Biomolecular Structure and Design program at the University of Washington, and a clinical chemistry fellowship at Washington University School of Medicine. Dr. DeMarco was named as a Michael Smith Foundation for Health Research Scholar for her research program developing and implementing diagnostic tests for Alzheimer's disease and related forms of neurodegeneration. Her lab's overall focus is on impacting patient care through the development of new and improved biofluid tests for peptide and protein biomarkers, and the translation of these tests into routine care. For example, Dr. DeMarco is the Principal Investigator of a Canada-wide study (IMPACT-AD) to investigate the impact of Alzheimer's disease CSF biomarkers in routine care – using assays developed in her laboratory and validated for clinical use following FDA and Health Canada guidelines.

Panelist: Cheryl Wellington: Progress in fluid biomarkers for neurodegenerative diseases of aging

Dr. Cheryl Wellington is Professor in the Department of Pathology and Laboratory Medicine, Djavad Mowafaghian Center for Brain Health at the University of British Columbia. She is also Principal Investigator at the International Collaboration on Repair Discoveries at Vancouver General Hospital and Associate Member of the UBC School of Biomedical Engineering. Dr. Wellington's research interests are highly multipdisciplinary with major efforts

in the fields of Alzheimer's Disease (AD) and Traumatic Brain Injury (TBI). With respect to both AD and TBI programs, her laboratory is the leading Canadian site for research on blood biomarkers using the Quanterix single molecule array (Simoa) platform. Her work on AD focuses mainly on how lipoproteins affect AD pathogenesis, with major projects focused on apolipoprotein E (apoE). For the AD program, her laboratory uses a combination of animal models and in vitro platforms, including pioneering a human-based 3D tissue engineered model of perfusable cerebral vessels surrounded by astrocytes and neurons. Along with Dr. Peter Cripton, a Mechanical Engineer, Dr. Wellington developed the CHIMERA (Closed Head Model of Engineered Rotational Acceleration) animal model of TBI that is currently operational for mice, rats and ferrets. Dr. Wellington holds multiple leadership positions in both the dementia and neurotrauma communities, including the Canadian Traumatic Brain Injury Research Consortium, the International Traumatic Brain Injury Research Consortium, the Canadian Consortium for Neurodegeneration in Aging, and Cure Alzheimer Fund ApoE Consortium.

Panelist: Yasser Iturria-Medina: On the importance of multifactorial disease progression modeling in neurodegeneration

Dr. Yasser Iturria-Medina is an Assistant Professor in the Montreal Neurological Institute (McGill) and a Canada Research Chair in Multimodal Data Integration in Neurodegeneration. He is also an associate member of the Ludmer Centre for Neuroinformatics and Mental Health, and the McConnell Brain Imaging Centre (McGill). Iturria-Medina's Lab – Neuroinformatics for Personalized Medicine – pursues primarily the goal of making precision medicine in Neurology a reality. It focuses on defining and implementing multiscale and multifactorial brain models for further understanding of neurological disorders from a multifactorial perspective and identifying effective personalized interventions. The lab develops integrative mathematical and computational approaches to combine molecular, imaging (PET/MRI) and clinical data, creating both individual and population-based mechanistic brain models.

Trainee research panel: What is a biomarker?

This panel will showcase and discuss a few different novel and emerging biomarkers of age-related dementias. We will start with gait and retinal thickness as early biomarkers of age-related dementias. These will be followed by two talks highlighting data-driven approaches in the study of dementia biomarkers. In particular, we will hear about frailty and identification of data-driven frailty profiles, as well as data-driven approaches to increase the robustness and scalability of multisite resting-state functional MRI data. Both frailty and resting-state functional connectivity are emerging biomarkers of dementia.

Moderator: *Dr. AmanPreet Badhwar is an Assistant Professor at the University of Montreal, Faculty of Medicine, Department of Pharmacology and Physiology, and a researcher at the Centre de recherche de l'Institut universitaire de gériatrie de Montréal (CRIUGM). She is a member of CCNA Teams 7 and 9, Trainee Liaison for Team 9, and past chair of the CCNA Trainee Society. From the undergraduate to postdoc level, Dr. Badhwar's path has been to study neurological disease by combining different data types, starting with small-scale genetics and brain imaging early in her career, and progressively moving to "big data" in Alzheimer's disease (AD). Dr. Badhwar's multi-institutional PhD work combined the themes of multimodal research (neuroimaging, proteomics, and measures of neurovascular coupling), to tease apart the contributions of neuronal and cerebrovascular damage on cognitive dysfunction in AD, and the impact of drug treatment on these components. Elements of Dr. Badhwar's postdoctoral work sought to characterize the heterogeneity in AD cohorts using resting-state functional MRI connectivity, an emerging*

biomarker of synaptic or network dysfunction in AD. These investigations contributed to the understanding of connectivity measures in AD from three different perspectives: group-level connectivity, connectivity subtypes, and individual connectivity fingerprint. Another important aspect of Dr. Badhwar's postdoctoral work was focused on establishing a biomarker roadmap for the Canadian Consortium for Neurodegeneration in Aging, where she and her colleagues proposed an analytic framework for generating multiomics biomarkers from imaging, genomics, metabolomics and other modalities. Dr. Badhwar currently directs the Multiomics Investigation of Neurodegenerative Diseases (MIND) Lab that focuses on integrating observations from in-vivo imaging and molecular 'omics' in the study of AD and other neurodegenerative diseases, with the goal of discovering new biomarkers and therapeutic targets, and improving methods to speed the drug discovery process. Dr. Badhwar has held several prestigious scholarships over the years, and was recently awarded the Chercheur-boursiers Junior 1 from the Fonds de recherche du Québec.

Panelist: *Désirée Lussier is a postdoctoral research fellow with the SIMEXP laboratory at the Centre de recherche de l'Institut universitaire de gériatrie de Montréal (CRIUGM). Currently, she is focused on methods development to aid the investigation of neuromimaging biomarkers in neurological disorders (e.g. Alzheimers and related dementias) in multisite data.*

Panelist: *Amin Banihashemi is a fourth year PhD student at the University of Toronto under the supervision of Dr. Sandra Black. His research is on investigating the utility of eye biomarkers in estimating brain tissue volume and cognitive function. In addition to research he also teaches statistics as a teaching assistant in the university. Two activities he enjoys are listening to audio books and going out on hikes with friends.*

Panelist: *Linzy Bohn is a PhD student in the Department of Psychology at the University of Alberta. Her doctoral research focuses on multi-modal biomarker predictions of accelerated cognitive decline, impairment, and dementia using data-driven neuroinformatics techniques.*

Panelist: *Frederico Pieruccini-Faria has academic training in Physical Education/Kinesiology, and a PhD in Psychology in the field of Cognitive Neuroscience at Wilfrid Laurier University. His main research interest is to understand how cognitive decline affects several quantitative aspects of gait performance and the risk of falls in older adults with neurodegenerative diseases. During his postdoctoral training in Geriatric Medicine at Western University, supervised by Dr. Montero-Odasso lead of MEC-team 12, they developed cutting-edge research looking at how mild cognitive impairment, and associated clinical aspects, affect a variety of gait parameters considered early predictors of physical disability and dementia in older adults.*