

CURRICULUM VITAE, V. WEE YONG

November 2017

Synopsis:

Dr. V. Wee Yong is a Professor at the University of Calgary. He holds the Canada Research Chair (Tier 1) in Neuroimmunology. Dr. Yong co-directs the Multiple Sclerosis (MS) NeuroTeam of the Hotchkiss Brain Institute in Calgary, providing the basic science leadership, and he directs the provincial Alberta MS Network. Dr. Yong's research interests lie in the area of neuroimmunology, neuroprotection and CNS regeneration, and his projects are guided by MS and brain tumors. Dr. Yong has published 280 peer-reviewed manuscripts and his research has been translated into Phase III clinical trials in MS and spinal cord injury. His work has been cited over 17,800 times (Web of Science, h index: 75) by other authors in scientific publications. Dr. Yong is a past chair of the Medical Advisory Committee of the MS Society of Canada; this and other volunteer activities resulted in him receiving the Queen's Golden Jubilee Year Medallion. Dr. Yong is on the editorial board of 7 international journals, and he is the Honorary Editor-in-Chief of the Neuroimmunology and Neuroinflammation journal. He has been the President of the International Society of Neuroimmunology (2014-2016). Dr. Yong is an elected fellow of both the Canadian Academy of Health Sciences (2010) and the Royal Society of Canada (2014), which represent top honors for those working in the medical and academic sciences, respectively. He was awarded the 2017 Allyn Taylor International Prize in Medicine for his transformational discoveries in MS.

A. IDENTIFICATION

Name: V. Wee Yong
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Canada Research Chair in Neuroimmunology (Tier 1)
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B. EDUCATION

Undergraduate: University of Manchester, Manchester, England
Pharmacology, B.Sc. (Hons), 1978 - 1981
Graduate: University of British Columbia, Vancouver, Canada
Pharmacology and Neurochemistry, Ph.D., 1981 - 1986
Supervisor: Dr. Thomas L. Perry Sr.

Post-graduate: University of British Columbia, Canada, on Glial Cell Biology, 1986 - 1988
Supervisor: Dr. Seung U. Kim

C. APPOINTMENTS

1986 – 1988: Lecturer, Department of Pharmacology and Therapeutics,
University of British Columbia

1989 – 1994: Assistant Professor, Department of Neurology and Neurosurgery,
McGill University

1994 – 1996: Associate Professor, Department of Neurology and Neurosurgery,
McGill University

1996 – 2001: Associate Professor, Departments of Oncology and Clinical Neurosciences,
University of Calgary

2001 – present: Professor, Departments of Oncology and Clinical Neurosciences, University
of Calgary

2006 – present: Co-director, Hotchkiss Brain Institute Multiple Sclerosis Program,
University of Calgary

2009 – present: Director, Alberta Regional Research and Training Centre, endMS Network
of the MS Society of Canada (now Alberta MS Network)

2013 – present: Head, Division of Translational Neurosciences, Department of Clinical
Neurosciences

2016 – present: Co-chair, Alberta MS Collaboration (a partnership for MS research
activities and outcomes in Alberta between government, academia, non-
governmental organizations and industry)

D. SPECIAL DISTINCTIONS

Scholar. Medical Research Council of Canada, 1989 – 1994

Scholar. Fonds de la Recherche en Santé du Québec, 1989 – 1994

Senior Scholar, Alberta Heritage Foundation for Medical Research, 1998 - 2003

Scientist, Canadian Institutes for Health Research, 1998 – 2003

Cochrane Distinguished Achievement Award for excellence in research, Faculty of Medicine, University of Calgary, 2000

Multiple Sclerosis Society of Canada 2000 National Certificate of Merit. This award is given to one individual for “outstanding contribution in furthering the work of the Multiple Sclerosis Society of Canada on a national basis”.

Awardee, Queen Elizabeth II’s Golden Jubilee Year Medallion, Canada, for Multiple Sclerosis volunteer activities, 2002

Canada Research Chair (Tier I) in Neuroimmunology, 2004 - present

Medical Scientist, Alberta Heritage Foundation for Medical Research, 2005 - 2009

Multiple Sclerosis Society of Canada 2007 National Certificate of Merit. This award is given to one individual for “outstanding contribution in furthering the work of the Multiple Sclerosis Society of Canada on a national basis”.

“Compelling Calgarian”. I am one of 20 Calgarians honored by the Calgary Herald (main Calgary newspaper in a city of 1.1 million) on New Year’s Day, 2008, for various successes

“U make a difference” award, University of Calgary, 2009

Fellow of the Canadian Academy of Health Sciences, 2010. This is considered one of the highest honors for members of the Canadian Health Sciences community.

Killam Annual Professorship, University of Calgary, July 2012 – June 2013

Vice President, International Society of Neuroimmunology (elected position), 2012 – 2014

Order of the University of Calgary, 2014

Fellow of the Royal Society of Canada, 2014. This is considered one of the highest honors for members of the Canadian research community.

Peaks Scholar, University of Calgary, 2015

Smith Distinguished Award for Senior Faculty, Cumming School of Medicine, 2015. This recognizes a single faculty member for overall excellence from 2013 to 2015

President, International Society of Neuroimmunology, 2014 – 2016

Researcher of the Month, Canadians for Health Research, September 2017

Recipient, Allyn Taylor International Prize in Medicine, 2017

E. OTHER SCHOLARLY NATIONAL/INTERNATIONAL ACTIVITIES (past 8 years)

I) Schools of Neuroimmunology (<http://www.isniweb.org/schools>)

On behalf of the International Society of Neuroimmunology (ISNI), Dr. Yong founded the self-supported Americas School of Neuroimmunology (inaugural school Oct 1-2 2015, Calgary, co-directed with Dr. Phil Popovich – 150 trainees from the Americas; 2nd school at the University of Virginia, Oct 3-6 2017, co-directed by Dr. Jonathan Kipnis and Dr. Yong). He collaborated (led ISNI) with the Japanese Society of Neuroimmunology to start the inaugural Asia-Pacific School of Neuroimmunology in Tokyo, Aug 30 2015 (80 attendees). These self-supported regional schools, with Dr. Yong raising sponsorships from organizations and industry, are expected to run once every 2 years.

Together with the long-running European School of Neuroimmunology and its founder Dr. Gianvito Martino, Dr. Yong inaugurated the Global School of Neuroimmunology on the first day of the biennial Congress of Neuroimmunology in Jerusalem on September 26 2016. There, the European School, the Americas School and the Asia-Pacific School congregated to form the Global School, which will be led by Dr. Yong and Dr. Martino every 2 years on the first day of the ISNI biennial congresses. The second Global School of Neuroimmunology is in Brisbane on August 27, 2018.

The aim of these schools is to educate a large audience of trainees and researchers to the rapidly growing field of neuroimmunology.

II) For MS Societies

1. Member, Advisory Committee, ACTRIMS (Americas Committee for Treatment and Research in Multiple Sclerosis), Feb 2017 – Sept 2020
2. Member, Teaching Course Committee for the MSParis2017 – 7th JointECTRIMS – ACTRIMS Meeting, 2017
3. Member, Program Committee, Department of Defense Congressionally Directed Multiple Sclerosis Research Program, USA, 2016 – present
4. Director, Alberta endMS Research and Training Center, 2009 – 2014; the Alberta endMS Center has transitioned to the Alberta MS Network where I am the present director (responsible for increasing research activities, participation, interaction and training across the tertiary research institutions of Alberta, i.e Universities of Alberta, Calgary and Lethbridge)
5. Chair, Medical Advisory Committee, Multiple Sclerosis Society of Canada, 2007 – 2011 (the first basic scientist to head this committee)
6. Member, Future Directions Task Force of the Multiple Sclerosis Society of Canada, 2010 – 2012 (tasked with setting the priorities of the MS Society of Canada)
7. Member, Medical Advisory Committee, Multiple Sclerosis Society of Canada, 1999 – 2016

8. Host and organizer, endMS summer school on Neuroprotection and repair, May 23-27, 2011, attended by 45 MS trainees from across Canada
9. Member, National Multiple Sclerosis Society (USA) task force on “Overcoming the glial scar”. This is an international task force to determine whether glial scar is an impediment to axonal regeneration or remyelination. 2009
10. Chair, Organising committee, Inaugural national endMS meeting of the MS Society of Canada’s grantees and trainees (240 participants), Banff, Dec 10-13, 2007
11. Member, Senior Research Programs Advisory Committee, National Multiple Sclerosis Society (USA), 2002 – 2007

III) Advisory Boards of national or international scientific societies

12. Elected member, International Advisory Board of the International Society of Neuroimmunology, 2007 - present
13. Councilor, American Society of Neurochemistry, 2009 – 2011
14. Elected Vice-President, International Society of Neuroimmunology (2012) (eventually becoming President from 2014-2016)
15. Member, Nominations Committee, Canadian Association of Neuroscience, 2014 - present

IV) Editorial boards of international journals

16. Handling editor of the journal Multiple Sclerosis International, 2009 - present
17. Associate Editor, Frontiers in Multiple Sclerosis and Neuroimmunology, of Frontiers in Neurology, 2011 – present
18. Editorial board member, Clinical and Experimental Neuroimmunology, 2013 - present
19. Editorial board member of Neurotherapeutics, 2010 - present
20. Member, Review Editorial Board of Frontiers in Neurotrauma, 2010 - present
21. Editorial board member of the journal GLIA, 2001 – 2012
22. Editorial board member of the Journal of Neuroscience Research, 2001 – present
23. Editorial board member of the Journal of Neuroimmunology, 2005 – present
24. Honorary Editor-in-Chief, Neuroimmunology and Neuroinflammation, 2017 - present

V) Grant review panels (past 8 years) (not updated)

25. Grant review panel member, Fast Forward program of the US National MS Society, on evaluating proposals with prospects of commercialization for neuroprotection and repair in MS, 2011, 2013 and 2014
26. Invited panelist, US Department of Defense Congressionally Directed Medical Research Program, Idea Development Award on MS, 2013
27. Grant review panel member, Canadian Institutes of Health Research, Neuroscience A committee, 2013
28. Program project review panel member, Terry Fox new frontiers program in Cancer, 2012
29. Grant review panel member, Heart and Stroke Foundation of Canada, 2011
30. Grant review panel member, California Institute of Regenerative Medicine Stem Cell Transplantation Immunology Awards, 2010
31. Grant review panel member, Neural Regeneration and Repair (NRR) peer review panel of the 2009 Spinal Cord Injury Research Program (SCIRP) for the USA Department of Defense (DoD) Congressionally Directed Medical Research Programs (CDMRP), 2009
32. Grant review panel member, National MS Society Fast Forward Serono Partnership program, 2009
33. Grant review panel member, Canadian Institutes of Health Research, Neuroscience B committee, 2009

VI) Advisory boards of pharmaceutical companies

34. Scientific Advisory Board, Osprey Pharmaceuticals, San Francisco, 2005 – 2010
35. Scientific Advisory Board, JustBio, Quebec, 2008 – present
36. Advisory Board member, Teva Neuroscience USA, 2005
37. Advisory Board member, Bayer's International Neuroprotection Advisory Board, 2009 – 2011
38. Besides the above, I have consulted for Biogen-Idec, Novartis, NovoNordisk, EMD Serono, Teva

VII) Miscellaneous

39. **Co-chair**, 4th endMS Conference, Toronto, December 2016. This is the triennial meeting of investigators and trainees working on MS in Canada. I also chaired the inaugural endMS Conference in Banff in 2007.
40. **Director and principal investigator, Canadian Institutes of Health Research, Interdisciplinary Health Research Team Program** on: Matrix metalloproteinases in multiple sclerosis: Environmental influence, biology, pathology and therapeutic strategies. There are 14 other investigators in this program (Jack Antel, Amit Bar-Or, Pierre Duquette,

Dylan Edwards, Peter Forsyth, Charlie Hao, Paul Kubes, Luanne Metz, Ross Mitchell, Trevor Owens, Scott Patten, Jim Peeling, Christopher Power and Steven Robbins). The award is a total of \$989,650 per annum for the whole team, from 2001 – 2006. \$119,863 is awarded for equipment in 2001

41. **Director and principal investigator, Neuroscience Canada**, on: Harnessing beneficial aspects of neuroinflammation for regenerating the central nervous system. Team members: F Costello, L Metz, C Power, S Rivest, P Stys, \$500,000 per annum, 2007-2010.
42. **Honorary councilor**, Calgary chapter of the MS Society of Canada, 2000 – present
43. **Principal consultant, meeting co-organizer and lecturer**, the Kelowna Neuroimmunology series funded through Teva Neuroscience, which brings together MS clinicians from Western Canada once a year in Kelowna for updates on neuroimmunology, MS medications and mechanisms of action of MS therapeutics. **Held yearly from 2007 – 2013.**
44. I am honored to have been a teacher of neuroimmunology and the basic science of MS to MS neurologists and MS nurses in Canada for several years.
45. Member, **MS Connector Services Working Group**, an advisory group for Alberta Health and Wellness, 2010 – present

F. CURRENT ACTIVE RESEARCH OPERATING GRANTS

1. **Canadian Institutes for Health Research**, Defining EMMPRIN as a key regulator of neuroinflammation and neural injury in multiple sclerosis, 2014 - 2019, \$184,150 per annum
2. **Canadian Institutes for Health Research**, Rejuvenating deficient remyelination in aging by harnessing a beneficial inflammatory response, 2015 - 2020, \$156,384 per annum
3. **Canadian Institutes for Health Research**, A new therapeutic target in multiple sclerosis to attenuate neuroinflammation and neuropathology: the chondroitin sulfate proteoglycans, with CC Ling as co-PI, 2015 - 2020, \$208,000 per annum
4. **Canadian Institutes for Health Research**, Mobilizing anti-tumor microglia/macrophages to improve the prognosis of glioblastoma: Bench to clinical trial and back, 2017 – 2018, \$100,000
5. **Multiple Sclerosis Society of Canada**, Mechanisms and parameters of exercise-induced remyelination in mice, 2016-2019, \$414,136 over 3 years
6. **Alberta Innovates – Health Solutions/Alberta Cancer Foundation**, Activating microglia and macrophages to suppress brain tumor-initiating cells (PI: Yong, Co-PIs: J Dunn and J Kelly). \$250,000/year, 2014 – 2017
7. **Alberta Innovates – Health Solutions** CRIO Team grant, Medicines for Remyelination in Multiple Sclerosis: The Next Frontier (PI: Yong, Co-PI: L Metz, with C Power, CC Ling, G Metz, B Pike, Y Zhang, J Dunn, P Stys, M Koch, D Broadhurst). \$1 million/year, 2014 – 2019

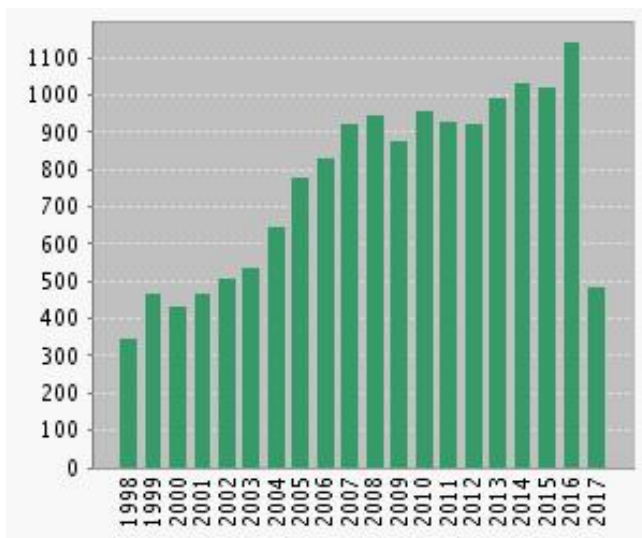
8. **Alberta/Novartis Translational Research funds**, on The genetics of progressive MS (PI: K Alikhani. Co-PI: VW Yong, S Sawcer), \$100,000/year, 2016-2019
9. **Alberta MS Collaboration**, on: Mechanisms and alleviation of aging-enhanced white matter injury following demyelination (PI: Yong, co-PI: O Kovalchuk), \$200,000 2017-2018
10. **Alberta Spinal Cord Injury Research Fund**, on: Bone marrow-derived stem cells mobilization as an acute treatment for spinal cord injury (PI: K Fouad), \$32,200, 2017-2018

G. BRIEF DESCRIPTION OF MY RESEARCH INTERESTS

Neuroimmunology is the study of inflammation in the nervous system. Virtually all neurological disorders have inflammatory components, and these include diseases traditionally associated with overt inflammation, such as multiple sclerosis (MS), and those previously thought to be purely degenerative, including Alzheimer's disease. Neuroinflammation originates from the trafficking of several leukocyte subsets into the nervous system and through the production of immune molecules by neural cells themselves. The interaction between leukocytes and neural cells further promotes neuroinflammation and injury. In recent years, reparative properties of neuroinflammation have been appreciated, so that the balance between beneficial and detrimental neuroinflammation is a crucial determinant of outcome. My research projects have been guided by 3 diseases of the central nervous system (CNS): MS, spinal cord injury (SCI) and brain tumors (malignant gliomas). MS and SCI provide my research program with diseases of chronic and acute neuroinflammation, respectively. In contrast, malignant gliomas present a disease of immunosuppression, whereby the cancer cells neutralize the activity of leukocytes that infiltrate into these tumors. My research has been translated into Phase III clinical trials in MS and in spinal cord injury (ClinicalTrials.gov Identifier: NCT00666887 and NCT01828203); the Phase III trial in MS has resulted in the demonstration that minocycline reduces the conversion of a first demyelinating event into definite MS (Metz et al., *New Engl J Med* 376:2122-2133, 2017). Collectively, my studies of neuroimmunology are aimed at understanding, controlling and tipping the balance of neuroinflammation towards one of neuroprotection and regeneration from CNS insults.

H. LIST OF PUBLICATIONS

Citations of "VW Yong or Wee Yong V" in Web of Science, Nov 20 2017: 17,748 citations, h index: 75. Number of manuscripts cited over 100 times: 54. Number of citations per year the past 10 years: 900 – 1200 (see figure)
Number of citations according to Google Scholar: >23,000



Web of Science
June 19 2017

Number of citations per year
V. Wee Yong

Refereed papers the past 8 years (there are 162 publications pre-2008)

163. Xue M, Fan Y, Liu S, Zygun D, Demchuk A, **Yong VW**, Contributions of multiple proteases to neurotoxicity in a mouse model of intracerebral hemorrhage, *Brain* 132:26-36, 2009
164. Lu JQ, Metz L, Storek J, **Yong VW**, Nash RA, Joseph JT, Continued disease activity of multiple sclerosis after allogeneic hematopoietic cell transplantation in a complete chimera: case report with histopathological findings, *Arch Neurol* 66:116-120, 2009
165. Stirling DP, Liu S, Kubes P, **Yong VW**, Depletion of Ly6G/Gr-1 leukocytes after spinal cord injury in mice alters wound healing events and worsens neurological outcome, *J Neurosci* 29 753-764, 2009
166. Lu JQ, Fan Y, Mitha AP, Bell R, Metz L, Moore W, **Yong VW**, Association of α -synuclein immunoreactivity with inflammatory activity in multiple sclerosis lesions, *J Neuropath Exp Neurol* 68:179-189, 2009
167. **Yong VW**, Prospects of repair in multiple sclerosis, *J Neurol Sci* 277S1:S16-S18, 2009
168. Goncalves DaSilva A, **Yong VW**, Matrix metalloproteinase-12 deficiency worsens relapsing-remitting experimental autoimmune encephalomyelitis through cytokine and chemokine dysregulation, *American J Pathol* 174:898-909, 2009
169. Xue M, Hollenberg MD, Demchuk A, **Yong VW**, Relative importance of proteinase-activated receptor-1 versus matrix metalloproteinases in intracerebral hemorrhage-mediated neurotoxicity in mice, *Stroke* 40:2199-2204, 2009
170. McCreary CR, Bjarnason TA, Skihar V, Mitchell JR, **Yong VW**, Dunn JF, Multiexponential T₂ and Magnetization Transfer MRI of Demyelination and Remyelination in Murine Spinal Cord, *Neuroimage* 45:1173-1182, 2009

171. Kalyvas A, Baskakis C, Magrioti V, Constantinou-Kokotou V, Stephens D, López-Vales R, Lu JQ, **Yong VW**, Dennis EA, Kokotos G, David S, Differing roles for members of the Phospholipase A2 superfamily in experimental autoimmune encephalomyelitis, *Brain* 132:1221-1235, 2009
172. Ellestad K, Tsutsui S, Noorbakhsh F, **Yong VW**, Pittman QJ, Power C, Early life exposure to lipopolysaccharide suppresses experimental autoimmune encephalomyelitis by promoting tolerogenic dendritic cells and regulatory T cells, *J Immunol* 183:298-309, 2009
173. **Yong VW**, Rivest S, Taking advantage of the systemic immune system to cure brain diseases, *Neuron* 64:55-60, 2009
174. Šišková Z, **Yong VW**, Hoekstra D, Baron W, Fibronectin perturbs process outgrowth in oligodendrocytes by misregulating MMP-9 activity, *Molecular and Cellular Neuroscience* 42:234-242, 2009
175. Skihar V, Silva C, Chojnacki A, Doering A, Stallcup WB, Weiss S, **Yong VW**, Promoting oligodendrogenesis and myelin repair using the multiple sclerosis medication glatiramer acetate, *Proc Natl Acad Sci USA* 106:17992-17997, 2009
176. Metz LM, Li D, Traboulsee A, Myles ML, Duquette P, Godin J, Constantin M, **Yong VW** for the GA/minocycline study investigators, Glatiramer Acetate in Combination with Minocycline in Patients with Relapsing-Remitting Multiple Sclerosis: Results of a Canadian, Multicenter, Double-Blind, Placebo-Controlled Trial, *Multiple Sclerosis*, 15:1183-1194, 2009
177. **Yong VW**, Marks S, The interplay between the immune and central nervous systems in neuronal injury, *Neurol* 74 Suppl 1:S9-S16, 2010
178. Sarkar S, **Yong VW**, Reduction of protein kinase C delta attenuates tenascin-C stimulated glioma invasion in three-dimensional matrix, *Carcinogenesis* 31:311-317, 2010
179. Xue M, Mikliaeva E, Casha S, Zygun D, Demchuk A, **Yong VW**, Improving outcomes of neuroprotection by minocycline: Guides from cell culture and intracerebral hemorrhage in mice, *American J Pathol* 176:1193-2202, 2010
180. Rodrigues JC, Gonzalez GC, Zhang L, Ibrahim G, Kelly JJP, Forsyth PA, **Yong VW**, Parney IF, Normal human monocytes exposed to glioma cells acquire myeloid-derived suppressor cell-like properties, *NeuroOncology* 12:351-365, 2010
181. Lu JQ, Joseph JT, Nash RA, Storek J, Stevens AM, Metz L, Clark AW, Johnson ES, **Yong VW**, Inflammation and demyelination in multiple sclerosis after allogeneic hematopoietic stem cell Transplantation, *Arch Neurol* 67:716-722, 2010
182. **Yong VW**, Inflammation in neurological disorders: A help or a hindrance, *The Neuroscientist* 16:408-420, 2010
183. Goncalves DaSilva A, Liaw L, **Yong VW**, Cleavage of osteopontin by matrix metalloproteinase-12 (MMP-12) modulates severity of experimental autoimmune

- encephalomyelitis, *American J Pathol* 177:1448-1458, 2010
- 184 Zhang Y, Metz LM, **Yong VW**, Mitchell RJ, Baseline deep gray matter 'black' T2 predicts third-year disability in multiple sclerosis, *J Neurol Sci* 297:76-81, 2010
- 185 Carnini A, Hurlbert RJ, **Yong VW**, Casha S, Braun JEA, Reduction of PrP^C in Human Cerebrospinal Fluid after Spinal Cord Injury, *Prion* 4:80-86, 2010
- 186 Agrawal S, **Yong VW**, The many faces of EMMPRIN - roles in neuroinflammation, *Biochem Biophys Acta*, in *Molecular Basis of Disease Special Issue: Multiple Sclerosis*, 1812:213-219, 2011
- 187 Sloka S, Silva C, Pryse-Phillips W, Patten S, Metz L, **Yong VW**, A quantitative analysis of suspected environmental causes of MS, *Can J Neurol Sci* 38:98-105, 2011
- 188 Agrawal SM, Silva C, Tourtellotte WW, **Yong VW**, EMMPRIN: A novel regulator of neuroinflammation in multiple sclerosis and experimental autoimmune encephalomyelitis, *J Neurosci* 31:669-677, 2011
- 189 Kwon B, Casha S, Hurlbert RJ, **Yong VW**, Inflammatory and Structural Biomarkers in Acute Traumatic Spinal Cord Injury, *Clinical Chemistry and Laboratory Medicine* 49:425-33, 2011
- 190 Broadwater L, Pandit A, Azzam S, Clements R, Vadnal J, **Yong VW**, Freeman EJ, Gregory RB, McDonough J, Analysis of the Mitochondrial Proteome in Multiple Sclerosis Cortex, *Biochimica et Biophysica Acta - Molecular Basis of Disease* 1812:630-41, 2011
- 191 Doring A, **Yong VW**, The good, the bad and the ugly of macrophages/microglia with a focus on myelin repair, *Frontiers in Bioscience*, 3:846-856 2011.
- 192 Sloka S, Silva C, Wang J, Metz L, **Yong VW**, Predominance of Th2 polarization by Vitamin D through a Stat6-dependent mechanism, *J Neuroinflammation* 8:56, 2011
- 193 Bar-Or A, Reickmann P, Traboulsee A, **Yong VW**, Targeting Progressive Neuroaxonal Injury: Lessons From Multiple Sclerosis, *CNS Drugs* 25:783-799, 2011
- 194 Haylock-Jacobs S, Keough MB, Lau L, **Yong VW**, Chondroitin sulfate proteoglycans: Extracellular matrix proteins that regulate immunity of the central nervous system, *Autoimmunity Reviews* 10:766-772, 2011

- 195 Kucharova K, Chang Y, Boor A, **Yong VW**, Stallcup W, Reduction of both myelin damage and myelin repair in the NG2 null mouse after demyelination, *J Neuroinflammation* 8:158, 2011
- 196 Zhang J*, Sarkar S*, Cua R, Zhou Y, Hader W, **Yong VW**, A dialog between glioma and microglia that promotes tumor invasiveness through the CCL2/CCR2/interleukin-6 axis, *Carcinogenesis* 33:312-319, 2012 (*co-first authors)
- 197 Agrawal SM, Silva C, Wang J, Tong J, **Yong VW**, A novel anti-EMMPRIN function blocking antibody reduces T cell proliferation and neurotoxicity: Relevance to multiple sclerosis, *J Neuroinflammation* 9:64, 2012
- 198 Casha S, Zygun D, McGowan D, Baines I, **Yong VW**, Hurlbert RJ, Results of a Phase II Placebo-Controlled Randomized Trial of Minocycline in Acute Spinal Cord Injury, *Brain* 135:1224-1236, 2012
- 199 Berard JL, Arbour N, Prat A, Jacques F, **Yong VW**, Akira S, David S, Lipocalin 2 is a novel immune mediator of EAE pathogenesis and is modulated in multiple sclerosis, *Glia* 60:1145-1159, 2012
- 200 Mishra M, Wang J, Silva C, Mack M, **Yong VW**, Relationship between circulating pro-inflammatory monocytes with disease severity in a model of multiple sclerosis: perturbation by laquinimod, *Am J Pathol* 181:642-651, 2012
- 201 Lau L, Keough MB*, Haylock-Jacobs S*, Cua R, Doring A, Sloka S, Stirling DP, Rivest S, **Yong VW**, Chondroitin sulfate proteoglycans in demyelinated lesions impair remyelination, *Annals Neurol* 72:419-432, 2012 (*co-second authors)
- 202 Lu JQ, Wilson BA, **Yong VW**, Pugh J, Mehta V, Immune cell infiltrates in atypical teratoid/rhabdoid tumors, *Can J Neurol Sci* 39:605-612, 2012
- 203 Chang A, Staugaitis SM, Dutta R, Batt CE, Easley KE, Chomyk AM, **Yong VW**, Fox RJ, Kidd GJ, Trapp BD, Cortical remyelination: A new target for repair therapies in multiple sclerosis, *Annals Neurol* 72:918-926, 2012
- 204 Koch MW, Metz L, Agrawal S, **Yong VW**, Environmental factors and immunity in multiple sclerosis, *J Neurol Sci* 324:10-16, 2013
- 205 Rogers J, Metz LM, **Yong VW**, Endocrine disrupting chemicals and immune responses: A focus on bisphenol-A and its potential mechanisms, *Molecular Immunol* 53:421-430, 2013
- 206 Zhornitsky S, **Yong VW**, Weiss S, Metz LM, Prolactin in multiple sclerosis, *Multiple Sclerosis J* 19:15-23, 2013
- 207 Keough MB, **Yong VW**, Remyelination therapy for multiple sclerosis, *Neurotherapeutics* 10:44-54, 2013
- 208 Nathoo N, Agrawal S, Wu Y, Haylock-Jacobs S, **Yong VW**, Foniok T, Barnes, Obenaus A, Dunn JF, Susceptibility weighted imaging in the experimental autoimmune encephalomyelitis model of multiple sclerosis indicates elevated deoxyhemoglobin as well as iron deposition and demyelination, *Multiple Sclerosis J* 19:721-731, 2013

- 209 Cua RC, Lau LW, Midha R, Apte SS, **Yong VW**, Overcoming neurite-inhibitory chondroitin sulfate proteoglycans in the astrocyte matrix: Evaluations of matrix metalloproteinases and ADAMTS-4, *GLIA* 61:972-984, 2013
- 210 Agrawal SM, Williamson J, Sharma R, Kebir H, Patel K, Prat A, **Yong VW**, Extracellular matrix metalloproteinase inducer shows active perivascular cuffs in multiple sclerosis, *Brain* 136:1760-1777, 2013
- 211 Sloka S, Metz LM, Hader W, Starreveld Y, **Yong VW**, Reduction of microglia activity in a model of multiple sclerosis by dipyrindamole, *J Neuroinflammation* 10:89, 2013
- 212 Zemp F, McKenzie BA, Lun X, Reilly K, McFadden G, **Yong VW**, Forsyth PA, Resistance to oncolytic Myxoma Virus therapy in $NF1^{-}/p53^{-}$ syngeneic mouse glioma models is independent of anti-viral type-1 interferon, *PLOS One* 8(6):e65801, 2013
- 213 Rawji KS, **Yong VW**, The benefits and detriments of macrophages/microglia in models of multiple sclerosis, *Clinical and Developmental Immunology* 2013:948976, 2013
- 214 Lau L*, Cua R*, Keough MB, Haylock-Jacob S, **Yong VW**, Pathophysiology of the brain extracellular matrix: A new target for remyelination, *Nature Rev Neuroscience* 14:722-729, 2013 (*co-first authors)
- 215 Koch M, Cutter G, Stys P, **Yong VW**, Metz L, Treatment trials in progressive MS: current challenges and future perspectives, *Nature Rev Neurology* 9:496-503, 2013
- 216 Zhornitsky S, **Yong VW**, Koch MW, Mackie A, Potvin S, Patten SB, Metz LM, Quetiapine fumarate for the treatment of multiple sclerosis: focus on myelin repair, *CNS Neuroscience and Therapeutics* 19:737-744, 2013

- 217 Samanani S, Mishra M, Claudia S, Verhaeghe B, Wang J, Tong J, **Yong VW**, Screening for inhibitors of microglia to reduce neuroinflammation, *CNS & Neurological Disorders – Drug Targets* 12:741-749, 2013
- 218 Lu JQ, Power C, Blevins G, Giuliani F, **Yong VW**, The regulation of reactive changes around multiple sclerosis lesions by pSTAT3, *J Neuropath Exp Neurol* 72:1135-1144, 2013
- 219 Roberts DJ, Jenne CN, Leger C, Kramer AH, Gallagher CN, Todd S, Parney IF, Doig CJ, **Yong VW**, Kubes P, Zygun D, A Prospective Evaluation of the Temporal Matrix Metalloproteinase Response After Severe Traumatic Brain Injury in Humans, *J Neurotrauma* 30:1717-1726, 2013
- 220 Roberts DJ, Jenne CN, Leger C, Kramer AH, Gallagher CN, Todd S, Parney IF, Doig CJ, **Yong VW**, Kubes P, Zygun D, Association Between the Cerebral Inflammatory and Matrix Metalloproteinase Responses After Severe Traumatic Brain Injury in Humans, *J Neurotrauma* 30:1727-1736, 2013
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- 281 Li Y*, Sarkar S*, Mirzaei R, Rawji KS, Poon CC, Wang J, Kelly J, **Yong VW**, Demeclocycline Reduces the Growth of Human Brain Tumor-Initiating Cells: direct activity and through monocytes, revised at Cancer Immunology, Immunotherapy
- 282 Stephenson E, Mishra M, Moussienko D, **Yong VW**, Chondroitin sulfate proteoglycans as novel drivers of leukocyte infiltration in multiple sclerosis, revised at Brain
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- 284 Casha S*, Rice T*, Stirling DP*, Silva C, Gnanapavan S, Giovannoni G, Hurlbert J†, **Yong VW†**, Human structural and inflammatory cerebrospinal fluid biomarkers in spinal cord injury in humans, submitted (*co-first authors; †co-senior authors)
- 285 Nathoo N, Jeong D, Keough MB, Wu Y, Foniok T, **Yong VW**, Dunn JF, Diffusion tensor imaging as a tool for assessing demyelination and axonal injury in mouse spinal cord, submitted
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- 289 Yang R, Sarkar S, **Yong VW**, Dunn JF, In vivo imaging of tumor associated macrophages: the next frontier in cancer imaging, submitted
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- 293 Sarkar S, Yang R, Rawji K, Poon C, Mirzaei R, Zemp FJ, Bose P, Kelly J, Dunn JF, **Yong VW**, Control of brain tumor growth by reactivating monocytes and macrophages with

niacin, submitted

- 294 Poon CC, Ebacher V, Liu K, **Yong VW***, Kelly JP*, Automated slide scanning and segmentation in fluorescently-labeled tissues using ImageXpress, submitted
- 295 Pu A, Stephenson E, **Yong VW**, The extracellular matrix: Focus on oligodendrocyte biology and target for remyelination therapies, submitted

Book chapters (past 8 years)

17. David S, López-Vales R, Yong VW, Harmful and Beneficial Effects of Inflammation after Spinal Cord Injury: Potential Therapeutic Implications, In: Handbook of Clinical Neurology Vo. 109: Spinal Cord Injury, Verhaagen J and JW McDonald (eds) pp. 485-502, 2012
18. Mishra MK, Yong VW, Macrophages and microglia in experimental autoimmune encephalomyelitis and multiple sclerosis, in Multiple sclerosis immunology – a foundation for current and future treatments, Ed: Yamamura T, Gran B, Springer publisher, pp 177-196, 2013
19. Rogers JA, Yong VW, Immune functions and consequences of Bisphenol-A exposure, In: Bisphenol A: Sources, Risks of Environmental Exposure and Human Health Effects, ed: Y Gilbert, Nova Publishers, in press

I. Translational research activities

Several of my basic science discoveries have been translated into the clinic. In the quest to derive medications to inhibit the matrix metalloproteinases (MMPs) that drive neuroinflammation and neurotoxicity in MS (*Yong et al., Nature Rev Neurosci 2:502, 2001; Yong, Nature Rev Neurosci 6:931, 2005*), my laboratory discovered that the commonly used anti-microbial medication, minocycline, inhibits MMPs. We tested minocycline's efficacy in an animal model of MS, experimental autoimmune encephalomyelitis (EAE), and discovered that minocycline reduced disease activity (*Brundula et al., Brain 125:1297, 2002*). These findings were translated by my clinical colleagues into a pilot trial of minocycline in patients with relapsing-remitting MS. The 3 year trial results show that minocycline rapidly decreased brain MRI activity indicative of inflammation (*Metz et al., Ann Neurol 55:756, 2004*) and serum inflammatory biomarkers including MMP-9 (*Zabad et al., MS Journal 13:517, 2007*); the majority of patients remained stable on minocycline treatment (*Zhang et al., Can J Neurol Sci 35:185, 2008*). Moreover, from my laboratory findings that minocycline adds to the ability of glatiramer acetate (a first line treatments in MS) in reducing EAE severity in mice (*Giuliani et al., J Neuroimmunol 165:83, 2005*), our group conducted a Phase II clinical trial in relapsing-remitting MS, where we found that the combination of glatiramer acetate and minocycline provided better benefits than glatiramer acetate alone (*Metz et al., MS J 15:1183, 2009*). A particular advantage of minocycline in MS is that this is an oral medication compared to most approved MS immunomodulators that are delivered parenterally. Moreover, minocycline is cheap (\$600 pa) relative to over \$30,000 pa

for current MS drugs. Led out of Calgary, minocycline has now completed a Phase III trial in early MS across 12 centers in Canada (Clinicaltrials.gov NCT00666887); results are published at the New England J of Medicine (376:2122-2133, 2017) where minocycline is expected to be the frontline medication for early MS particularly in parts of the world where the expensive MS medications are not available.

Early in our evaluation of minocycline, we discovered that it has neuroprotective activities. Moreover, minocycline administered after traumatic spinal cord injury in mice reduced tissue loss and improved functional recovery from the insult (*Wells et al., Brain 126:1628, 2003*). These results were shared with my neurosurgical colleagues who initiated in 2004 a placebo-controlled, randomized, double-blinded trial to test high dose iv minocycline following **acute spinal cord injury in humans**. The recently completed study shows that patients with cervical spinal cord injury regained significant improvement in motor outcomes over a one year assessment period when given minocycline compared to placebo (*Casha et al., Brain 135:1224, 2012*). We have begun a Phase III trial of minocycline in cervical spinal cord injury that is taking place at several Canadian centers (Clinicaltrials.gov NCT01828203). I continue to be the scientific leader.

My recent translational efforts are in **repair discoveries**. Noting that prolactin stimulates remyelination (*Gregg et al., J Neurosci 27:1812, 2007; Zhornitsky et al., Multiple Sclerosis J 19:15, 2013*), and that the chondroitin sulfate proteoglycans inhibit remyelination (Lau et al., *Ann Neurol 72:419, 2012; Change et al., Ann Neurol 72:918, 2012; Lau et al., Nature Rev Neurosci, 14:722-729, 2013*), we have teamed with our neurology colleagues for trials of remyelination in relapsing-remitting and progressive MS that are ongoing (supported by a \$5 million AIHS grant 2014-2019, where I am the principal investigator).

J. NATIONAL OR INTERNATIONAL CONFERENCE INVITATIONS (past 8 years)

(presentations at academic institutions are listed in Section K)

1. Symposium speaker, Keystone Symposium on MS, Santa Fe, Jan 21-25, 2009, on: EMMPRIN: A new regulator of neuroinflammation in multiple sclerosis
2. Keynote speaker, 4th MS-Expert Workshop in Helsinki, Finland, February 6, 2009, on: Prospects of neuroprotection and repair in MS
3. Roundtable discussant and speaker, in roundtable on “Multiple Sclerosis disease modifying therapies: Mechanisms of action and practical implications”, organised through UMDNJ–Robert Wood Johnson Medical School, New Brunswick, NJ and Bioscience Communications, US, February 28 – March 1 2009. My presentation topic: The interplay of the immune system with the CNS
4. Symposium speaker, CNSF, Halifax, June 12, 2009 on Immunopathogenesis of MS

5. Speaker, Advanced Imaging techniques in multiple sclerosis symposium, on: Linking Immunology and MRI: Implications for Better Interpretation of Clinical Trials in MS, New York City, Oct 23-24, 2009
6. Speaker, International Workshop on Neuroprotection and Oxidative Stress in Multiple Sclerosis, organized by Bayer. My presentation: Neuroprotective effects of Treatment in MS, March 18/19 2010, San Francisco
7. Plenary Speaker, 9th Annual Practicum in Neurology, on: The next frontier: Repair in MS, Montreal, March 26-27, 2010
8. Symposium Speaker, Symposium on Glia and neurological disorders, Japanese Society of Neurology, May 20-22, 2010
9. Plenary Speaker, Anatomical Sciences and Cell Biology Conference, 26-29 May 2010, Singapore, on: Harnessing the benefits of inflammation for remyelination
10. Speaker, ECTRIMS, Goteborg Sweden October 15, 2010, on: Reduction of chondroitin sulfate proteoglycans in demyelinated lesions promotes remyelination
11. Speaker, endMS conference, Whistler, Dec 6-9, 2010, on: Animal models for evaluating MS medications
12. Speaker, Keystone symposium on MS, Taos, New Mexico, Feb 15 – 20, 2011, on: Overcoming the inhibitory microenvironment to promote remyelination
13. Symposium speaker, American Society of Neurochemistry, session on Proteases, March 20-22, 2011, on: EMMPRIN regulation of matrix metalloproteinases mediates neuroinflammation and neuropathology
14. Symposium speaker, Multiple Sclerosis: Imaging, Immunology, Genetics and Treatment Strategies to Enhance Clinical Outcomes, Denver, June 25 2011. My presentation topic: Immunology and Biomarkers in MS: Inflammatory vs. Degenerative Components
15. Symposium speaker, BIT's 3rd Annual World Congress of NeuroTalk-2012, Beijing, May 18-20, 2012. My presentation topic: Targeting EMMPRIN (CD147) to alleviate neuroinflammation: Relevance to multiple sclerosis
16. Speaker, International Society of Neuroimmunology, Boston, Nov 4-8, 2012, on: T cell killing of neurons is promoted by microglia
17. Symposium speaker, Glia satellite meeting of the International Society of Neurochemistry – American Society of Neurochemistry Joint meeting, April 17-19 2013, Merida, Yucatan, Mexico. My presentation topic: The battle for the brain: Macrophages/microglia versus brain tumor initiating cells
18. Symposium speaker, 5th Cooperative Meeting of the Consortium of MS Centers and the Americas Committee for Treatment and Research in MS (ACTRIMS), May 29 – June 1 2013. My presentation title: Targeting the extracellular matrix to enhance remyelination

19. Symposium speaker, endMS triennial national meeting, Saint Sauveur, Quebec, December 10-13, 2013. My presentation title: Overcoming an inhibitory microenvironment for remyelination
20. Symposium speaker, American Society of Neurochemistry, March 12 2014 Long Beach CA on: The battle for the brain: glioma stem cells versus microglia
21. Workshop Speaker, Joint Americas Committee for Treatment and Research in MS (ACTRIMS) and European Committee for Treatment and Research in MS (ECTRIMS) meeting, Sept 12 2014 Boston, on Fluorosamine: a novel therapeutic that promotes myelin regeneration and reduces inflammation in demyelination models
22. Symposium Speaker, International Society of Neuroimmunology, Nov 11 2014 Mainz, Germany, on: Overcoming inhibitors of remyelination
23. Symposium speaker, American Society of Neurochemistry, March 17 2015, Atlanta, Overcoming extracellular matrix inhibitors of remyelination
24. Speaker, Practicum in Neurology, Halifax May 23 2015 on: The roles of macrophages and microglia in neurological disorders
25. Symposium speaker, NCNP Neuroimmunology International Symposium, Tokyo June 10 2015, on The LPS-enhanced M2 macrophages: A new subset that robustly promotes remyelination
26. Speaker, Michigan Osteopathic Neurology Annual Meeting, July 23rd 2015, Traverse City, on Immunology of MS
27. Symposium speaker, XII European meeting on glial cells in health and disease, July 15-18, Bilbao, on: Enhancement of the activity of M2-polarized macrophages/microglia promotes recovery from demyelination
28. Speaker, Asia-Pacific School of Neuroimmunology, Aug 30 2015, Tokyo, Japan, The neuroimmunology of repair with a focus on remyelination
29. Speaker, Americas School of Neuroimmunology, Oct 2 2015, Calgary, on Neuroimmunology in repair of the nervous system
30. Symposium speaker, European Committee for Treatment and Research in MS (ECTRIMS), Oct 9 2015, Barcelona, Altering the CNS microenvironment during neurodegeneration to promote remyelination
31. Symposium speaker, Society for Neuroscience satellite symposium on Neuroimmunity: Evolving role of the immune system in brain protection and repair, Chicago, Oct 16 2015. My presentation: Overcoming extracellular matrix inhibitors to promote remyelination
32. Symposium speaker, Rutgers University annual symposium, Current Advances in spinal cord injury research, May 11 2016 on: Overcoming extracellular matrix inhibitors to promote remyelination

33. Session chair and introductory speaker, on Myelin Medicines, Gordon Conference on Myelin, Luca Italy, May 15-20 2016
34. Symposium speaker, Canadian Association of Neuroscience national meeting, May 29 – June 1 2016, on Reparative inflammation that robustly promotes remyelination: Unexpected collaboration of pro- and anti-inflammatory stimuli
35. Symposium speaker, International Society of Neuroimmunology, Jerusalem, September 26-29 2016, on: Un-appreciated regulators of neuroinflammation: the extracellular matrix
36. Symposium speaker, on Pathogenesis of MS, organized by Florida Association for the study of headache and neurological disorders, May 18 2017, West Palm Beach Florida
37. Keynote speaker, First International Workshop of Cuban Network of Neuroimmunology, Varadero, June 10-14 2017, on: Modulating inflammation in multiple sclerosis
38. Speaker, XXVI AINI Congress and 16th ESNI Course, June 26-30 2017, Venice, on: The extracellular matrix as regulators of myelin repair and neuroinflammation.
39. Keynote speaker, 2017 International Translational Neurology Forum, Zhengzhou University China, July 21-23 2017, on: Bench to bedside translational medicine: steps and successes
40. Speaker, Gairdner/Alberta International symposium, Edmonton, Oct 12-13, 2017, on: Harnessing the benefits of neuroinflammation for repair
41. Speaker,ECTRIMS/ACTRIMS teaching course, in session on progressive MS, October 25-28, 2017, Paris, on: Targeting glia as the basis of treating progressive MS

K. TALKS GIVEN AT ACADEMIC INSTITUTIONS (past 8 years)

1. Seminar speaker, University of Montreal, Jan 17 2009, on: Using an old drug for neurological recovery: The story of minocycline and translational research
2. Seminar Speaker, Novo Nordisk, Copenhagen, March 31, 2009, on: Matrix metalloproteinases (MMPs) and EMMPRIN in MS
3. Seminar Speaker, University of Utah Brain Research Institute, April 2 2009, on: Inflammation promotes both injury and recovery from neurological insults
4. Seminar Speaker, University of Utah MS group, April 2 2009, on: Prospects for neuroprotection in MS
5. Neuroscience Rounds, Trillium Hospital, Toronto, April 17 2009, on: Towards promoting repair in multiple sclerosis

6. Seminar speaker, Immunopathogenesis of MS and what this means for MS medications, Michigan Institute of Neurological Disorders, Detroit, May 5 2009
7. Seminar Speaker, Detroit, May 6, 2009, on: Prospects of inducing neural repair in MS
8. Speaker, Grand Rounds, University of South Florida, Tampa, May 15 2009 on: Update in Multiple Sclerosis
9. Speaker, Grand Rounds, Department of Clinical Neurosciences grand round, University of Calgary, May 22 2009, on: An update of minocycline in spinal cord injury
10. Speaker, Institute of Inflammation, Infection and Immunity, University of Calgary, May 25 2009, on: Inflammation promotes both injury and recovery from neurological insults
11. Speaker, MS Workshop, University of British Columbia, June 5 2009, on: Inducing repair in the CNS: Taking basic research through to clinical trials
12. Speaker, Brain Research Centre Research Day, University of British Columbia, June 6 2009, on: Inflammation a double-edged sword in the pathophysiology of MS
13. Speaker, University of Alberta, June 23 2009, on EMMPRIN-mediated neuroinflammation in MS
14. Speaker and consultant, Bayer, Science and MRI of Neuroprotection Expert Advisory Board, July 24 2009, Berlin
15. Speaker and consultant, Teva Neuroscience Advisory Board, Pittsburgh, August 7 2009.
16. Organizer and speaker, Workshop for Western Canada neurologists, on: Managing the new era of risk – the future of MS treatment, Kelowna, Sept 25- 27, 2009. My presentation topic: The impact of new MS treatments on the CNS.
17. Speaker, Grand Rounds, University of Sacramento, October 1, 2009, on: Jumping on the Vitamin D band-wagon in MS: Novel insights into mechanisms
18. Speaker, Neuroimmunology Journal Club, University of California at San Francisco, October 2 2009, on: Jumping on the Vitamin D band-wagon in MS: Novel insights into mechanisms
19. Speaker, Centre for Neuroscience and Trauma, Blizzard Institute of Cell and Molecular Science, Barts and the London School of Medicine and Dentistry, London, October 14 2009, on: Jumping on the Vitamin D band-wagon in MS: Novel insights into mechanisms
20. Speaker, Centre for Neuroscience and Trauma, Blizzard Institute of Cell and Molecular Science, Barts and the London School of Medicine and Dentistry, London, October 14 2009, on: Minocycline in spinal cord injury: from bench to clinical trial
21. Speaker, Neurology Grand Rounds, University of Nebraska, Omaha, Jan 16 2010, on: Jumping on the Vitamin D band-wagon in MS: Novel insights into mechanisms

22. Speaker, Teva Canada annual national symposium for MS clinicians, Montreal, March 26 2010, on: The next frontier: Repair in MS
23. Speaker, Myelin Club (for myelin/MS researchers from the Universities of Chicago and Illinois, and from RUSH University), April 27, 2010, on: Overcoming impediments to remyelination in MS, Chicago
24. Speaker, University of Illinois, April 29, 2010, on: Challenges and advances in MS
25. Speaker, CME program of the Buffalo Neuroimaging Analysis Center, New Perspectives in MS: Epidemiology, Pathology, Imaging and Treatment, Washington DC. My presentation topic: Linking Immunology to Better Interpretation of Clinical Trials in MS, May 15 2010
26. Speaker, Neurology Grand Rounds, University of Portland, Harnessing the benefits of inflammation for repair of the CNS, June 11 2010
27. Speaker, Neurology Grand Rounds, Providence Health Care System, Portland, Harnessing the benefits of inflammation for repair of the CNS, June 12 2010
28. Meeting Organiser and speaker, the Alberta endMS Neuroimmunology School, Red Deer Alberta, June 18 – 20, 2010. This school is organized to teach aspects of neuroimmunology to MS trainees in Alberta. My presentation topic: Environmental influences on the neuroimmunology of MS
29. Speaker, Neurology Grand Rounds, University of Southern California, Overcoming impediments to remyelination in MS, September 14 2010
30. Grand Rounds Speaker, University of California at Los Angeles, Overcoming impediments to remyelination in MS, September 15 2010
31. Coordinator and speaker, Teva Neuroscience Western Canada Neurology Program on MS, Kelowna, September 24 2010, on: Ground zero: The mechanisms and risks of emerging MS medications
32. Speaker, CME program, Ann Arbor, Detroit, November 2 2010, on Influencing MS: Focus on environmental factors and repair
33. Speaker, CME program, Cleveland, Ohio, November 3 2010, on Influencing MS: Focus on environmental factors and repair
34. Speaker, CME program, Fort Collins, CO, November 15 2010, on Influencing MS: Focus on environmental factors and repair
35. Speaker, CME program, Denver, CO, November 16 2010, on Influencing MS: Focus on environmental factors and repair
36. Speaker, CME program, Phoenix, Arizona, November 17 2010, on Influencing MS: Focus on environmental factors and repair

37. Speaker, endMS national conference, Whistler, Dec 9 2010, on Animal models of MS
38. Speaker, seminar at Hamilton General Hospital, Dec 14 2010, on: Updates on MS
39. Speaker, seminar at Harvard Medical School, Dec 20 2010, on: Curbing MMPs and neuroinflammation: Minocycline and anti-EMMPRIN
40. Speaker, meeting of the Western Canada MS Nurses, Feb 4, 2011, Vancouver, on: Mechanisms of action and risk/benefit of new medications
41. Speaker, CME program, Minnesota, Feb 8 2011, on Influencing MS: Focus on environmental factors and repair
42. Speaker, CME program, La Crosse Wisconsin, Feb 9 2011, on Influencing MS: Focus on environmental factors and repair
43. Speaker, CME program, Appleton, Wisconsin, Feb 24 2011, on Influencing MS: Focus on environmental factors and repair
44. Speaker, Grand Rounds, University of Portland (OHSU) , March 2 2011, on Multiple Sclerosis
45. Speaker, Seminar, Providence Health Hospital, Portland, March 2 2011, on: Regenerative medicine in multiple sclerosis
46. Speaker, Seminar at the University of Lethbridge, on: Topical issues and challenges in multiple sclerosis research, March 24 2011
47. Speaker, CME program, Madison, Wisconsin, April 6 2011, on Influencing MS: Focus on environmental factors and repair
48. Speaker, CME program, Fargo, North Dakota, April 7 2011, on Influencing MS: Focus on environmental factors and repair
49. Speaker, CME program, Salt Lake City, Utah, May 10 2011, on Influencing MS: Focus on environmental factors and repair
50. Speaker, CME program, Cheyenne, Wy, May 11 2011, on Influencing MS: Focus on environmental factors and repair
51. Speaker, CME program, Colorado Springs, CO, May 12 2011, on Influencing MS: Focus on environmental factors and repair
52. Speaker, CME program, Albuquerque, May 18 2011, on Influencing MS: Focus on environmental factors and repair
53. Speaker, CME program, Tuscon, AZ, May 19 2011, on Influencing MS: Focus on environmental factors and repair
54. Speaker, CME program, Des Moines, Iowa, Sept 13 2011, on Regenerative medicines in MS

55. Speaker, CME program, Sioux Falls, Sept 14 2011, on Regenerative medicines in MS
56. Coordinator and speaker, Teva Neuroscience Western Canada Neurology Program on MS, Kelowna, September 17 2011, on: New frontiers of MS: Conferring neuroprotection and remyelination
57. Speaker, CME program, Saint Louis, MO, Sept 19 2011, on Regenerative medicines in MS
58. Speaker, CME program, Kansas City, Sept 20 2011, on Regenerative medicines in MS
59. Speaker, CME program, Omaha, Sept 21 2011, on Regenerative medicines in MS
60. Speaker, CME program, Oklahoma City, Oct 4 2011, on Regenerative medicines in MS
61. Speaker, CME program, Tulsa, Oct 5 2011, on Regenerative medicines in MS
62. Speaker, CME program, La Jolla, Oct 12 2011, on Regenerative medicines in MS
63. Speaker, CME program, Pasadena, Oct 13 2011, on Regenerative medicines in MS
64. Speaker, Ontario Summit of Neurologists, Oct 29 2011, Toronto, on Multiple Sclerosis
65. Speaker, Grand Rounds University Malaya Medical Centre, Updates on multiple sclerosis; the story of bench research to the clinic, Jan 4 2012
66. Speaker, Neurology Institute, Hospital Kuala Lumpur, Malaysia, on: Regenerative Medicines in Neurology, with a focus on Multiple Sclerosis, Jan 4 2012
67. Speaker, meeting of the Western Canada MS Nurses, Feb 4, 2012, Vancouver, on: Regenerative medicines in MS
68. Speaker, Practicum in Neurology, Montreal, Feb 24-25, 2012, on: Harnessing the benefits of the immune system for repair in MS
69. Speaker, Neurology Department, University of Oklahoma, March 1 2012, on: Progress in MS: Focus on remyelination
70. Speaker, Grand Rounds, Wayne State University, Detroit, March 9, 2012, on: Overcoming an inhibitory microenvironment to promote remyelination
71. Speaker, Grand Rounds, Neurology, University of Saskatoon, March 16, 2012, on: New targets in MS to curb neuroinflammation and promote remyelination
72. Speaker, Glia club, University of Cambridge, March 19 2012, on: Overcoming an inhibitory microenvironment to promote remyelination
73. Chair, Laquinimod Advisory Board Meeting, March 24, 2012, and speaker on: Impact of laquinimod on monocytoïd cells

74. Speaker, at Biogen Headquarters Boston, April 11 2012, on: New Targets in MS for Immunomodulation and Repair: EMMPRIN and Proteoglycans
75. Speaker, Neurology Department, University of Pittsburgh Medical Center, September 11 2012, on: Progress in MS: Focus on remyelination
76. Speaker, Neurology Department, University of Pittsburgh Medical Center, September 11 2012, on: Progress in MS: Focus on remyelination
77. Speaker, Cleveland Clinic Neuroscience Journal Club, October 22, 2012, on: A novel factor in MS: EMMPRIN
78. Speaker, Ontario Neurology Summit (meeting of Ontario neurologists), October 27 2012, Toronto, on: New frontiers of MS: Conferring neuroprotection and remyelination
79. Seminar Speaker, Feb 1 2013, University of California at San Francisco, on: A novel target in MS: EMMPRIN
80. Seminar speaker, Feb 13 2013, Harvard Medical School MS Partners Group, on: Novel factors in MS: EMMPRIN and proteoglycans
81. Seminar Speaker, Feb 22 2013, University of Miami, on: Remyelination
82. Keynote speaker, 16th Annual Rocky Mountain Basic Science Symposium, Kananaskis March 1-3, 2013, on: Neuroimmunology: Basis of injury and repair in neurological conditions
83. Seminar Speaker, Southern Alberta Cancer Research Institute, March 22, 2013, on: Regulation of glioma stem-like cells by the brain microenvironment
84. Speaker, Joint Hotchkiss Brain Institute/Oxford University symposium, Sept 12 2013 Calgary, on: Promoting repair in MS
85. Speaker, Knowledge and Nuturing for MS Nurses symposium, Vancouver Feb 1 2014 on: New frontiers in MS
86. Seminar Speaker, Killam seminar series, Montreal Neurological Institute, Feb 18 2014, on: Overcoming inhibitors in the lesion microenvironment for remyelination
87. Speaker, Grand rounds, Montreal Neurological Institute, McGill University, Feb 19 2014, on: Battle for the brain: glioma stem cells versus microglia
88. Advisory Board Speaker, Teva Pharmaceutical, Tel Aviv, Feb 21 2014 on Laquinimod: a microglia inhibitor and a potential regenerative medication
89. Seminar Speaker, University of Mannitoba, Feb 28 2014, on: Overcoming inhibitors in the lesion microenvironment for remyelination
90. Seminar Speaker, University of Virginia, March 31 2014, on: Overcoming inhibitors in the lesion microenvironment for CNS regeneration

91. Symposium Speaker, Western Canada Neuroimmunology symposium, Vancouver, June 21 2014, on: The neuroimmunology of remyelination
92. Speaker, Michigan Institute of Neurological Disorders, July 17 2014, on: Immunology of multiple sclerosis
93. Seminar Speaker, University of Michigan July 18 2014 on The chondroitin sulfate proteoglycans
94. Seminar speaker, University of Singapore, July 25 2014, on: Overcoming inhibitors of remyelination in MS
95. Seminar Speaker, Weill Cornell Medical Center, New York City, Sept 3 2014 on: Remyelination in MS
96. Seminar Speaker, Rutgers MS Diagnostic and Treatment Center, Sept 4 2014 on: Remyelination in MS
97. Seminar Speaker, New York University, Sept 5 2014 on: Remyelination in MS
98. Rounds speaker, Mount Sinai MS Center, New York City, Sept 5 2014 on: Remyelination in MS
99. Seminar Speaker, Rowe Neurology Institute, Kansas City, Sept 30 2014 on: Challenges to CNS repair
100. Speaker, Alberta Neuro Spinal cord injury symposium, Edmonton October 2014, on: Translation from lab to Phase III trials: Experience with minocycline and lessons learned
101. Speaker, Sandford-Burhnam Institute, San Diego, Jan 22 2015, on: Overcoming extracellular matrix inhibitors of myelin repair
102. Speaker, Western Canada MS Nursing Meeting, March 6 2015, on: Immunology Update: Connecting the how (it works) with the what (you see)
103. Speaker, Preceptorship – Advances in MS and NMO, July 6 2015 on: Applied immunology in MS
104. Seminar Speaker, The new frontiers of remyelination medicines in neurology, Sept 2 2015, University of Kyushu, Japan
105. Seminar Speaker, Remyelination in MS, Sept 25 2015, University of Birmingham, Alabama
106. Keynote speaker, Center for Disability Services Foundation, Albany New York, Oct 21 2015, on: Immunology and Research
107. Seminar speaker, University of California at San Francisco, Oct 29 2015, Controversies in multiple sclerosis: Immunology

108. Speaker, Neurology Grand Rounds, University of Saskatoon, Dec 11 2015 on: The new frontiers of remyelination in MS
109. Speaker, Teaching of Immunology to residents, University of Saskatoon, Dec 11 2015 on: Immunopathogenesis of MS
110. Grand rounds speaker, with Dr. Luanne Metz, University of Calgary, April 29 2016, on: Minocycline reduces multiple sclerosis risk: From bench to the clinic
111. Speaker, MS Neurology Group, University of Colorado, June 14 2016 on: Immunopathogenesis of MS
112. Speaker, Vindico CME series, Aug 2 2016, on: Oral remyelination medications
113. Speaker, Campus Alberta Neuroscience annual symposium, Edmonton, Oct 20 2016, on: Repair in MS – the next frontier
114. Speaker, Edmonton Neuroscience seminar, University of Alberta, Nov 1 2016 on The brain extracellular matrix as regulator of neuroinflammation and repair
115. Speaker, Montreal MS Exchange, November 4 2016, on: How basic scientists can guide the MS field
116. Speaker, Pediatric Demyelinating Disease mini-symposium, Calgary, Nov 16 2016, on: Remyelination therapies
117. Speaker, Stanford Neuroscience Center seminar, March 6 2017, on: Modulating inflammation in MS

L. TALKS GIVEN TO THE LAY PUBLIC

1. Talk to the community of Grand Prairie, Alberta, on: Progress in MS Research, February 13, 2004
2. Keynote speaker, Multiple Sclerosis Society of Canada, Saskatchewan Division Annual General Meeting, May 27, 2004, on: Progress in MS Research
3. Keynote speaker, Multiple Sclerosis Society, Calgary Chapter Annual General Meeting, Nov 8, 2004
4. Keynote speaker, Multiple Sclerosis Society of Canada series on Living well with MS: Medical Research and Hope, at:
 West Island Montreal - May 12, 2005
 Newmarket/Richmond Hill, Ontario - May 13, 2005
 Winnipeg - May 14, 2005
 Edmonton - May 25, 2005
 Victoria - May 28, 2005
 Hamilton, Ontario - Oct 14, 2005

Dartmouth, NS – Oct 15, 2005
 Hull – Oct 16, 2005
 Saskatoon – Nov 23, 2005
 Vancouver – Nov 30, 2005
 North Bay, Ontario – April 22, 2006
 Penticton, BC - May 6, 2006
 Grand Prarie, Alberta – May 7, 2006
 Montereui, Quebec - May 27, 2006
 London, Ontario - May 28, 2006
 Sydney, Nova Scotia – Sept 19, 2006
 Blerville, Quebec – Sept 20, 2006
 Brandon, Manitoba – Nov 13, 2006
 Regina, Saskatchewan – Nov 14, 2006
 Calgary, Alberta – Nov 15, 2006
 Kamloops, BC, April 17, 2007
 Ottawa, Ontario, June 12, 2007
 St. John's, Newfoundland, June 13, 2007

5. Keynote speaker, Multiple Sclerosis Society, Calgary Chapter Annual General Meeting, Nov 22, 2007, on An outstanding year of progress in MS research
6. Featured speaker, National MS Society (USA) Oregon chapter Golden Circle Salon, “Challenges and advances in multiple sclerosis”, Portland, June 11 2010
7. Plenary speaker, Western Canada Divisions, MS Society of Canada, on Challenges and advances in multiple sclerosis, October 7 2010
8. Featured speaker, Multiple Sclerosis Society, Calgary Chapter, April 4 2011, on: MS Research Update
9. Featured speaker to MS patients and families, organized by the Multiple Sclerosis Association of America, Salt lake City, May 10 2011, on: Advances in MS Research and Treatment
10. Featured speaker to MS patients and families, organized by the Multiple Sclerosis Association of America, Colorado Springs, May 12 2011, on: Advances in MS Research and Treatment
11. Featured speaker to MS patients and families, organized by the Multiple Sclerosis Association of America, Tuscon, May 19 2011, on: Advances in MS Research and Treatment
12. Featured speaker to MS patients and families, Seattle July 28 2011, on: Advances in MS Research and Treatment
13. Featured speaker to MS patients and families, Medicine Hat Sept 6 2011, on: Advances in MS Research and Treatment
14. Featured speaker to MS patients and families, Lethbridge Sept 7 2011, on: Advances in MS Research and Treatment

15. Featured speaker to MS patients and families, organized by the Multiple Sclerosis Association of America, La Jolla, Oct 12 2011, on: Advances in MS Research and Treatment
16. Featured speaker to MS patients and families, organized by the Multiple Sclerosis Association of America, Pasadena, Oct 13 2011, on: Advances in MS Research and Treatment
17. Featured speaker to MS patients and families, Medicine Hat March 18 2013, on: Updates on Progress in MS Research and Treatment
18. Featured speaker to MS patients and families, Lethbridge March 19 2013, on: Updates on Progress in MS Research and Treatment
19. Featured speaker to MS patients and families, MS Connections Conference Calgary Sept 20 2014 on Neuroimmunology: Understanding your medication
20. Speaker, Calgary MS Chapter, MS Society of Canada, November 27 2014 on: A new kind of trial for progressive MS – focus on remyelination
21. Speaker, on Neuroimmunology 101, organized by the MS Society of Canada, to MS lay community, Calgary, Feb 7 2015
22. Speaker, Patient program, Advances in MS, Fairbanks Alaska, Feb 18 2015
23. Speaker, Patient program, Advances in MS, Anchorage Alaska, Feb 19 2015
24. Speaker, on Neuroimmunology 101, organized by the MS Society of Canada, to MS lay community, Edmonton, March 21 2015
25. Speaker, on Neuroimmunology 101, organized by the MS Society of Canada, to MS lay community, Lloydminster, March 28 2015
26. Speaker, on Activity and MS, organized by Action MS, Calgary April 25 2015
27. Speaker, on Neuroimmunology 101, organized by the MS Society of Canada, to MS lay community, Lethbridge, June 23 2015
28. Speaker, Exercise and MS, during HBI MS program's research update to the public, June 27 2015
29. Speaker, on Advances in MS Research, organized by MS Society of Canada Saskatchewan division, Regina, May 26 2016
30. Speaker, Patient program, on Immunology of MS, Troy, Michigan, Feb 1 2017
31. Speaker, Patient program, on Immunology of MS, Modesto, CA March 8 2017
32. Speaker, Patient program, on Immunology of MS, Las Vegas March 9 2017
33. Speaker, Annual MS Day, Winnipeg, May 23 2017

M. CURRENT/PAST ADMINISTRATIVE RESPONSIBILITIES AT THE UNIVERSITY OF CALGARY

1. Chair, Division of Translational Neuroscience, Department of Clinical Neurosciences, 2013 – present
2. Co-Leader, MS Program of the Hotchkiss Brain Institute, 2006 – present
3. Chair, Awards and Recognition Committee, Faculty of Medicine, 2008 – present
4. Member, Leadership Forum, Faculty of Medicine, University of Calgary, 2012 - present
5. Committee member, University of Calgary's Prizes and Awards Advisory Committee, 2008 – 2010
6. Committee member, Hotchkiss Brain Institute's Strategic Research Committee, 2010 - present
7. Member, Dean's Advisory Committee on recruiting and supporting 'rising stars', 2011
8. Co-organizer, the 2011 Gairdner Foundation – Hotchkiss Brain Institute Symposium on the Frontiers of Neuroscience, March 16-18, 2011
9. Chair, Expert Advisory Committee, Hotchkiss Brain Institute, 2004 – 2007. This expert advisory for the Institute is comprised of Drs. Christian Fibiger (Vice President and Global head, Neuroscience, Amgen), Allen Hauser (Professor, Columbia University), King Li (Chair of Radiology, Methodist Hospital System, Houston), Pierre Magistretti (Director of the Centre for Psychiatric Neuroscience, Lausanne), Joseph Martin (Dean, Harvard Medical School), Richard Murphy (President, Salk Institute), Charles Tator (Professor, University of Toronto) and Li-Huei Tsai (Professor, Harvard Medical school)
10. Member, Executive Committee, Hotchkiss Brain Institute, 2004 – 2007
11. Chair, Organizing committee, Department of Clinical Neurosciences Research Day, April 2000, 2001, 2002 and 2003
12. Chair, Organising Committee, Hotchkiss Brain Institute Research Day, March 12, 2004
13. Chair, Research Committee, Department of Clinical Neurosciences, 1999 – 2003
14. Committee member, Alberta Heritage Lectureship Award, Faculty of Medicine, 2003 – 2005
15. Search Committee, Headship, Division of Neurosurgery, 2003

N. CURRENT STAFF IN THE LABORATORY

Trainees (graduate students or postdoctoral/clinical fellows)

1. Manoj Mishra (PhD, National Brain Research Centre, Manesar, India), from Sept 2009. **Postdoctoral fellow**, Source of support: Alberta Innovates Health Solutions
2. Khalil Rawji (MSc, Queen's University), **PhD candidate**, from August 2012. Source of support: Achievers in Medical Science Award, University of Calgary, Multiple Sclerosis Society of Canada, and CIHR Varnier Scholarship
3. Jason Plemel (PhD University of British Columbia), **postdoctoral fellow** (joint supervision with Peter Stys), from January 2012. Source of support: Multiple Sclerosis Society of Canada, Alberta Innovates Health Solutions and CIHR
4. Erin Stephenson (BSc, University of Guelph, **MD/PhD candidate**, from July 2013. Source of Support: HBI Chen Fong studentship, Alberta Innovates Health Solutions and Vanier Scholar CIHR
5. Deepak Kaushik (PhD, National Brain Research Centre, Manesar, India), **postdoctoral fellow** from October 2013. Source of support: University of Calgary Eyes High scholarship, Multiple Sclerosis Society of Canada and Alberta Innovates Health Solutions
6. Nathan Michaels (BSc, University of Kamloops, **PhD candidate**, from July 2014. Source of support: University of Calgary Eyes High scholarship and Multiple Sclerosis Society of Canada
7. Runze Yang (BSc, University of Alberta), **MD/PhD candidate**, from September 2014, co-supervisor (Jeff Dunn as primary supervisor). Source of support: CIHR and Alberta Innovates Health Solutions
8. Candice Poon (MD, University of Alberta, and 3rd year Neurosurgery resident), **PhD candidate**, from September 2014, co-supervisor (John Kelly as primary supervisor)
9. Reza Mirzaei (PhD, University of Tehran), **postdoctoral fellow** from October 2015. Source of funding: U Calgary Eyes High program
10. Annie Pu (BSc, University of Toronto), **MSc graduate**, from Jan 2017.
11. Carlos Camara-Lemarroy (MD, Neurologist, University of Nuevo Leon, Monterrey, Mexico), Clinical fellow from August 2017

Staff

Laboratory manager: Claudia Silva, MSc (from 2005)

Research Associate: Susobhan Sarkar (PhD, University of Calcutta), from May 2003

Technicians:

1. Yan Fan (from 2001)
2. Janet Wang (from December 2008)

Administrative Assistant: Tanna Giroux (from 1997)

Administrative and graphics manager: Fiona P. Yong (from 1989)

Alberta endMS manager: Charlotte Breakey (from 2009), Jessie Trufyn (from 2014), Trisha Finlay (from 2016)

O. Past Trainees:

1. William Couldwell, 1989 - 1991, **Ph.D. degree**, obtained 1991. Source of support: MRC Centennial Fellowship. Current Position: Chairman, Department of Neurosurgery, University of Utah
2. Robert Moundjian, 1989 - 1991, **M.Sc. degree**, obtained 1991. Source of support: Jeanne Timmins Fellowship. Current Position: Associate Professor, University of Montreal
3. Jason CB Cheung, 1989, Summer Student Source of support: McGill Medical Student Research Program. Current Position: Ophthalmologist, Washington
4. Joon H. Uhm, 1989, Winter Student; also 1990, Summer Student. Also: Neurology Resident on 6 months Basic Science Rotation, 1994 – 1995. Current Position: Staff, Mayo Clinic, Rochester
5. Amit Bar-Or, 1991, Winter Student. Source of support: McGill Medical Student Research Program. Current Position: Professor, University of Pennsylvania
6. Garnet Fraser, 1991, Summer Student, Source of support: FRSQ. Last known Position: Final Year Medical Student, Queen's University
7. Paul Noble, 1990 - 1992, Neurology Resident on Basic Science Rotation. Current Position: Neurologist in private practice, Montreal
8. Erin Wright, 1991, Summer Student; also 1991, Winter Student. Source of support: McGill Medical Student Research Program. Current position: Professor, Department of Otolaryngology, University of Alberta

9. Trevor Tejada-Berges, 1991 - 1993, **M. Sc. Degree**. Source of support: Supervisor's grant. Current position: Assistant Professor, Department of Obstetrics and Gynecology, Brown University and Women and Infants Hospital of Rhode Island
10. Jolanda Turley, 1992 and 1993, Summer Student. Source of support for 1992: Supervisor's MRC Grant. Source of support for 1993: Challenge 1993, Current position: Professor, Department of Public Health Services, University of Toronto
11. Anthony Brade, 1993, Summer Student. Source of support: McGill Medical Student Research Program. Current position: Assistant Professor, Department of Radiation Oncology, University of Toronto
12. Gordon Baltuch, 1991 - 1994, **Ph.D. degree**. Source of support: MRC Fellowship. Current Position: Professor, University of Pennsylvania
13. Vijayabalan Balasingam, 1991 - 1995, **M.D./Ph.D. degree**. Source of support: National Centre of Excellence. Current Position: Professor, Neurosurgery, University of Montreal
14. Olaf Stuve, from 1995 - 1996, **Postdoctoral Fellow**. Source of support: Deutsche Forschungsgemeinschaft (German equivalent of MRC). Current Position: Professor, University of Texas at Dallas
15. Alexis Armour, May - August, 1995, Summer student. Source of support: University of Toronto Medical Student Bursary Program and MRC. Last known position: Plastic Surgery Resident, University of Toronto
16. Tarek Boutros, 1993 - 1997, **M.Sc. degree**. Source of support: Berlex Laboratories. Current Position: Research Technician, McGill University
17. Nora Dooley, 1991 - 1998, **Ph.D. degree**. Source of support: FCAR and NCE. Current Position: Housewife
18. Jack Vecil, 1998, **Neurosurgery Resident on 6 months Basic Science Rotation**. Current position: Neurosurgeon private practice, USA
19. Luke Oh, 1994 - 1999, **Ph.D. degree**. Source of support: Multiple Sclerosis Society of Canada. Current position: Associate Director, Translational Research, Mallinckrodt Pharmaceuticals
20. Sophie Chabot (B.Sc. McGill University), 1995 – 2000, **Ph.D. degree**. Source of support: Multiple Sclerosis Society of Canada. Current position: Founder, Justbio Nutraceuticals Montreal
21. Veronika Brundula (B.Sc. Simon Bolivar University, Venezuela), from 1998 - 2000, **M.Sc. degree**. Current position: WHO, Venezuela
22. Shannon Corley (B.Sc. University of Victoria), from 1998 - 2000, **M.Sc. degree**. Current position: Laboratory supplier

23. Uma Ladiwala (M.D. India), from 1999 - 2000, **Postdoctoral fellow**. Current position: Research Scientist, India
24. Arnaud Besson (M.Sc Grenoble University, France), 1997 - 2001, **Ph.D. degree**. Source of support: National Cancer Institute of Canada and AHFMR. Current position: Professor, University Paul Sabatier, Toulouse, France
25. Leonie Moorhouse-Herx (B.Sc. McGill University), from September 1997, **MD/Ph.D. candidate**. Source of support: MRC MD/PhD Studentship and AHFMR. PhD obtained in 2001. Current position: Family doctor, Calgary
26. Le Duc (B.Sc. University of Waterloo), 1999 –2001, **M.Sc. degree**. Source of support: NSERC studentship and AHFMR. Current position: Radiation Oncologist, University of Saskatchewan
27. Charlotte Verhaege, Medical Student from the University of Alberta, for 3 months **summer studentship**, 2001. Last known position: Neurology resident, University of Alberta
28. Jennifer Takahashi, **Neurology Resident** at the University of Calgary, for 6 months laboratory basic research program, from July 2001. Current position: Neurologist, British Columbia
29. Yan Zhou (Ph.D. Justus Liebig University, Giessen), from 2000 - 2002, **Postdoctoral fellow**. Source of support: AHFMR. Current position: Scientist and Professor, Vaccine Centre, University of Saskatoon
30. Andrew Weaver (B.Sc. University of Victoria), 2001 – 2003, **M.Sc. degree**. Medical doctor, Alberta
31. Hui Li, (MD China), Neurosurgery resident on basic science rotation in my lab, January – April 2004. Current position: Neurosurgeon, Ontario
32. Peter Larsen (M.Sc. Odense University), 1999-2004, **Ph.D. degree**. Source of support: Danish Academy of Science, Multiple Sclerosis Society of Canada and Alberta Heritage Foundation for Medical Research. Current position: Scientist, Lundbeck, Copenhagen, Denmark
33. Jennifer Larsen nee Wells (PhD, Memorial University), 2000 - 2004, **Postdoctoral fellow**. Source of support: Alberta Heritage Foundation for Medical Research. Current position: Translational Medicine Scientist, Lundbeck, Copenhagen, Denmark
34. Fabrizio Giuliani (Neurologist, University of Bari, Italy), from 2001-2004, **Postdoctoral fellow**. Source of support: Alberta Heritage Foundation for Medical Research. Current position: Associate Professor, University of Alberta, Edmonton
35. Tiona Toduruk (PhD, University of Calgary), May 2003 – Nov 2005, **Postdoctoral fellow**. Source of support: Alberta Heritage Foundation for Medical Research and Neuroscience Foundation Canada. Last known position: Researcher, Comox Environmental Agency, Calgary
36. Jennifer Ah-Sue (BSc, Queen’s University), **M.Sc. degree**, Dec, 2005. Current position: Medical doctor, Vancouver

37. Rana Zabad (Neurologist, Wayne State University), from 2002 - 2005, **Clinical Fellow**. Source of support: Multiple Sclerosis Society of Canada and Biogen Canada. Current position: Professor and MS clinic director, University of Nebraska
38. Angela Janke (MD, Germany), from August 2004 - 2006, **Clinical Fellow**. Current position: Forensic pathologist, University of Toronto
39. Tiffany Rice (B.Sc. University of Calgary), **Ph.D. degree**, July 2006. Source of support: National Science and Engineering Research Corporation and Alberta Heritage Foundation for Medical Research. Current position: Anesthesiologist, University of Calgary
40. Erin Ferral, 4th Year **Neurology resident** on 6 month research rotation, from Oct 2006. Current position: Neurologist, McGill University
41. Jing Zhang, PhD, **Research Associate** in glioma biology, from July 2006 – April 2008. Current position: Research Associate, University of Western Ontario
42. Trina Johnson (PhD, University of Calgary), July 2007 – March 2008, **Postdoctoral fellow**. Source of support: Supervisor grant. Current position: Program manager, Alberta Innovates
43. Angelika Goncalves DaSilva (BSc, Carlton University), Sept 2003 – June 2008, **Ph.D. degree**. Source of support: Multiple Sclerosis Society of Canada and Alberta Heritage Foundation for Medical Research. Current position: Biotech
44. Shuhong Liu, PhD, Research Associate in **molecular biology**, from August 2005 – July 2008. Current position: Research Staff, Calgary Laboratory Services
45. Viktor Skihar (PhD, University of Saskatchewan), from 2004 - 2008, **Postdoctoral fellow**. Source of support: Multiple Sclerosis Society of Canada. Last known position: Surgical resident, University of Saskatoon
46. Dave Stirling (PhD, University of British Columbia), March 2006 – June 2008, **Postdoctoral fellow**. Source of support: Alberta Heritage Foundation for Medical Research. Current position: Assistant Professor, University of Kentucky
47. Jian-Qiang Lu, MD, **Neuropathology resident**. I mentored his basic science projects from 2007 – 2009. Current position: Associate Professor and staff pathologist at Hamilton General Hospital, McMaster University
48. Mengzhou Xue (PhD, University of Manitoba), from Nov 2004 – Dec 2009, **Postdoctoral fellow**. Source of support (2004-2007): Alberta Heritage Foundation for Medical Research and Canadian Institutes of Health Research (CIHR). Source of support from Oct 2007 - 2009: Postdoctoral fellowship for Focus on Stroke from The Heart and Stroke Foundation of Canada, the Canadian Stroke Network, and the CIHR/Rx&D Collaborative Research Program along with AstraZeneca Canada. Current position: Chair and Professor of Neurology; and Director, Institute of Neurological Disorders, Henan University, China
49. Scott Sloka (MD/PhD, Neurology residency from Memorial University), July 2008 – Nov 2009, **Basic science and Clinical fellow**. Source of support: Multiple Sclerosis Society of

- Canada and Alberta Heritage Foundation for Medical Research. Current position: Neurology director, Waterloo; Adjunct Assistant Professor, McMaster University
50. Rowena Cua (BSc, University of British Columbia), 2004-2010, **Ph.D. degree**. Source of support: Alberta Heritage Foundation for Medical Research and the Multiple Sclerosis Society of Canada
 51. Lorraine Lau (MSc, University of Calgary), defended **Ph.D. thesis** Aug 2011. Source of support: Multiple Sclerosis Society of Canada and Alberta Heritage Foundation for Medical Research. Current position: Internal Medicine resident, University of Calgary
 52. Jackie Williamson, BSc candidate, **summer student**, July- August 2010, and May – August 2011. Current position: Family doctor, British Columbia
 53. Kevin Tse, BSc **Honors thesis student**, University of Calgary, September 2010 – April 2011. **Summer student** May – August 2011. Current position unknown
 54. Axinia Doering (PhD, University Bern, Switzerland), from October 2007 – 2011, **Postdoctoral fellow**. Source of support: Multiple Sclerosis Society of Canada and Alberta Heritage Foundation for Medical Research. Currently a manager and microscopist at Olympus
 55. Matei Stoian, Summer Student (2012) from University of British Columbia. Current position: Medical student University of Toronto
 56. Mitchel Hurlbert, Summer Student (2011, 2012) from Queen’s University. Current position: Medical student Sydney
 57. Sarah Haylock (PhD, University of Adelaide), from June 2010. **Postdoctoral fellow**, Source of support: Multiple Sclerosis Society of Canada. Current position: Program director, University of Calgary
 58. Smriti Agrawal (PhD, Lund University), from June 2006, **Postdoctoral fellow** and a **Research Assistant Professor** in my laboratory, now a Medical Advisor at Novartis
 59. Franz Kemp (MSc University of Lethbridge), **PhD candidate** of Peter Forsyth, with me as co-supervisor from March 2011. Obtained PhD degree June 2013. Current position: Postdoctoral fellow, University of Calgary
 60. Teresa Li (currently medical student at the University of Alberta), summer student in 2013 and 2014 who comes into the laboratory on an ongoing basis. At the University’s 2013 Undergraduate Research Symposium, Teresa won the Faculty of Medicine – Medical Research Prize. Won: Best Oral Student Presentation Award at the Canadian Undergraduate Neuroscience Conference (CUNC), June 24 2015. Current position: Medical student at the University of Alberta
 61. Arjun Nair, 2014 while a Grade 12 high school student, who won the Sanofi BioGENEius Challenge Canada national competition (2013, on work done with Dr. D. Cramb, University of Calgary, while in Grade 11), now at the University of Pennsylvania

62. Nabeela Nathoo (BSc University of Calgary), MD/PhD degree, PhD in 2014. Current position: Neurology resident, University of Alberta
63. Michael Keough (BSc Memorial University), MD/PhD degree, PhD in 2015. Now in the MD part of his MD/PhD degree
64. Yasamin Mahjoub (3rd Year BSc Neuroscience). While in Grade 11, Yasamin's project with me won her the Calgary BioTalent Challenge Science contest (she then placed 4th in Canada-wide competition). Yasamin's 2013 summer project at the University of Calgary's 2013 Undergraduate Research Symposium won her the Faculty of Science – Biological Science Prize. Her 2014 summer project won her the HBI and University of Calgary Markin's top prize. Current position: Medical student at the University of Alberta
65. James Rogers (BSc, Nipissing University, North Bay Ontario), MD/PhD degree, PhD in 2016, Source of support: Alberta Innovates Health Solutions. Now in the MD part of his program
66. Leila Hussieni (MD and neurologist, University of Dusseldorf), **postdoctoral fellow** from April 2014 - 2016. Source of support: Novartis, Basel. Current position: Staff neurologist, Germany
67. Jennifer Hahn (PhD University of Calgary), **postdoctoral fellow** from October 2012 - 2015. Source of support: Multiple Sclerosis Society of Canada. Currently on maternity leave
68. Sam Jensen (BSc, University of Calgary), **MD/PhD candidate**, from July 2013 - 2017. PhD 2017. Source of support: Multiple Sclerosis Society of Canada and Alberta Innovates Health Solutions. Now in the MD part of his program
69. Daniel Moussienko (4th Year, BH Sciences, U Calgary) – Honors thesis student, 2017. Now in medical school.
70. Raveena Dhaliwal (BSc, University of Calgary), **MSc candidate**, from September 2014 - 2017, co-supervisor (Jeff Dunn as primary supervisor)
71. Simon Faissner (MD, Germany), **postdoctoral fellow** from January to Dec 2016. Source of funding: German funds. Current position: Assistant Professor, Bochum University, Germany
72. Janson Kappen (High school student, First prize in the 2015 National Brain Bee competition, and 5th in the International Brain Bee competition held in Australia), 2015-2017. Now in BSc program McGill
73. Eric Zhang (3rd year BSc Queen's University) - summer student 2017
74. Anindita Bhattacharya (2nd year BSc U Calgary) - summer student 2017
75. Lauren Dzikowski (2nd Year BSc U Calgary) - summer student 2017
76. Kennedy Lemmon (1st year University of British Columbia) - summer student 2017