

CURRICULUM VITAE, V. WEE YONG

August 2020

Synopsis:

- Research interests lie in the area of neuroimmunology, neuroprotection and CNS regeneration, and projects are guided by multiple sclerosis (MS) and glioblastomas
- Published 320 peer-reviewed manuscripts that have been cited over 22,000 times with a h-index of 85 (Web of Science); over 35,000 citations in Google Scholar
- Written 10 reviews in Nature Reviews series, and primary data manuscripts have been published in top journals including New England J Medicine (impact factor IF 79.3), Nature (IF 41.6), Nature Neuroscience (IF 19.9, twice), Nature Communications (IF 12.4, twice), J Clinical Investigation (IF 13.3, twice), Brain (IF 10.8, thirteen times), Annals Neurology (IF 10.2, ten times) and PNAS (IF 9.7, four times).
- A leader in translating laboratory findings into clinical trials, including Phase III trials in MS and traumatic spinal cord injury; has received funding for a Phase I/IIa trial in glioblastoma
- President of the International Society of Neuroimmunology (ISNI) (2014-2016)
- Past trainees have excelled, including 28 in professorial positions worldwide and 18 medical specialists. I currently mentor 6 fellows, 2 PhD and 4 MSc students
- Directs the Alberta MS Network that facilitates training and multi-disciplinary collaboration on MS across Alberta
- Leads the Americas and Global Schools of Neuroimmunology for ISNI
- Elected fellow of both the Canadian Academy of Health Sciences (2010) and the Royal Society of Canada (2014)
- Recipient of the 2017 Allyn Taylor International Prize in Medicine for “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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Children: Sasha, Emma and Heather

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

Recipient, Killam Graduate Supervision and Mentorship Award, 2018

Recipient, Killam Research Award (single top researcher at the University of Calgary), 2019

Recipient, Clinician Investigator Program Telemachus Distinguished Mentorship Award, 2020

E. OTHER SCHOLARLY NATIONAL/INTERNATIONAL ACTIVITIES (past 9 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 (ASNI) (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; 3rd school at the University of Montreal Sept 23-26 2019 and co-directed with Dr. Nathalie Arbour – 160 trainees. The 4th ASNI school will be in Columbus, Ohio, in 2022, co-directed with Dana McTigue. He collaborated (led ISNI) with the Japanese Society of Neuroimmunology to start the inaugural Asia-Pacific School of Neuroimmunology (APSNI) in Tokyo, Aug 30 2015 (80 attendees); and with the Korean MS and Encephalitis Societies to hold the 2nd school on Oct 12, 2019 in Seoul, South Korea. The 3rd APSNI will be in Sydney 2021, co-directed with Drs. Fabienne Brillot, David Brown and Judith Greer. These self-supported regional schools (with Dr. Yong raising sponsorships from organizations and industry for the ASNI schools) 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 was in Brisbane on August 27, 2018, while the 3rd will be in Nice, Nov 2021

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. Co-chair, 5th Triennial National endMS Conference, Calgary, December 8-11 2019
2. Member, Strategic Planning Committee, MS Society of Canada, 2018 – present. I am the representative of the research/medical community

3. Member, Scientific Advisory Committee, Efficient Clinical Trials Platform of the United Kingdom MS Society. This committee decide the treatments and treatment doses to be tested for progressive MS in this funded platform.
4. Member, Advisory Committee, ACTRIMS (Americas Committee for Treatment and Research in Multiple Sclerosis), Feb 2017 – Sept 2020
5. Member, Teaching Course Committee for the MSParis2017 – 7th JointECTRIMS – ACTRIMS Meeting, 2017
6. 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)
7. Co-chair, 4th Triennial National endMS Conference, Toronto, December 4-7 2016
8. Chair, Medical Advisory Committee, Multiple Sclerosis Society of Canada, 2007 – 2011 (the first basic scientist to head this committee)
9. Member, Research Priority Advisory Committee, National MS Society of the USA, 2007-2011 (top research advisory committee of the US MS Society)
10. 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)
11. Member, Medical Advisory Committee, Multiple Sclerosis Society of Canada, 1999 – 2016
12. Host and organizer, endMS summer school on Neuroprotection and repair, May 23-27, 2011, attended by 45 MS trainees from across Canada

III) Advisory Boards of national or international scientific societies

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

IV) Editorial boards of international journals

17. Invited editor, Proc Natl Acad Sci USA, 2018
18. Handling editor of the journal Multiple Sclerosis International, 2009 - present

19. Associate Editor, *Frontiers in Multiple Sclerosis and Neuroimmunology*, of *Frontiers in Neurology*, 2011 – 2020
20. Editorial board member, *Clinical and Experimental Neuroimmunology*, 2013 - present
21. Editorial board member of *Neurotherapeutics*, 2010 - present
22. Editorial board member of the journal *GLIA*, 2001 – 2012
23. Editorial board member of the *Journal of Neuroscience Research*, 2001 – 2016
24. Editorial board member of the *Journal of Neuroimmunology*, 2005 – present
25. Honorary Editor-in-Chief, *Neuroimmunology and Neuroinflammation*, 2017 – present

V) Grant review panels (past 6 years)

1. Grant review panel member, Canadian Institutes of Health Research, Neuroscience B committee, 2020
2. Deutsche Forschungsgemeinschaft (DFG) Germany, Transregional Collaborative Research Centres Award, 2020
3. Reviewer, Brain Canada Future Leaders LOI, 2020
4. Member, Program Committee, Department of Defense Congressionally Directed Multiple Sclerosis Research Program, USA, 2016 – present
5. Grant review panel member, National Institutes of Health NINDS NSD-B, 2018
6. Grant review panel member, Canadian Institutes of Health Research, Neuroscience B committee, 2018
7. 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, 2014, 2017, 2018, 2019
8. CIHR Stage 2 Foundation grant reviewer, 2015, 2017
9. Deutsche Forschungsgemeinschaft (DFG) Germany, Transregional Collaborative Research Centres Award, 2015

VI) Advisory boards of pharmaceutical companies

1. Advisory Board (MS Exchange Learning program) member, Roche, 2020

2. Advisory Board member, EMD Serono, 2019
3. Advisory Board member, Sanofi-Genzyme, 2019
4. Advisory Board member, Teva Neuroscience USA, 2005 - 2018
5. Advisory Board member, Bayer's International Neuroprotection Advisory Board, 2009 – 2011

VII) Miscellaneous

1. **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
2. **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.
3. **Honorary councilor**, Calgary chapter of the MS Society of Canada, 2000 – present
4. **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.**
5. 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.
6. 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 Foundation grant**, July 2019 – June 2026, \$5.78 million
2. **Multiple Sclerosis Society of Canada**, Hierarchy of inhibitors in the lesion microenvironment for remyelination: combining a novel CNS-targeting therapeutic with exercise to promote repair, 2019-2022, \$415,613 over 3 years
3. **Multiple Sclerosis Society of Canada**, Elevated axonal and myelin injury with aging: Mechanisms, prevention and prospective therapeutics for progressive multiple sclerosis, 2018-2021, \$420,140 over 3 years

4. **International CoEN initiative in neurodegeneration**, with Bertrand Huard, France (The French National Research Agency), CSPG targeting for lesion regeneration in multiple sclerosis, CIHR support of \$200,000, Feb 2020 – Jan 2022
5. **Canadian Cancer Society**, Unexpected expression of PD1 on brain tumour-initiating cells: a novel regulator of glioblastoma growth, \$200,000, November 2020- October 2022

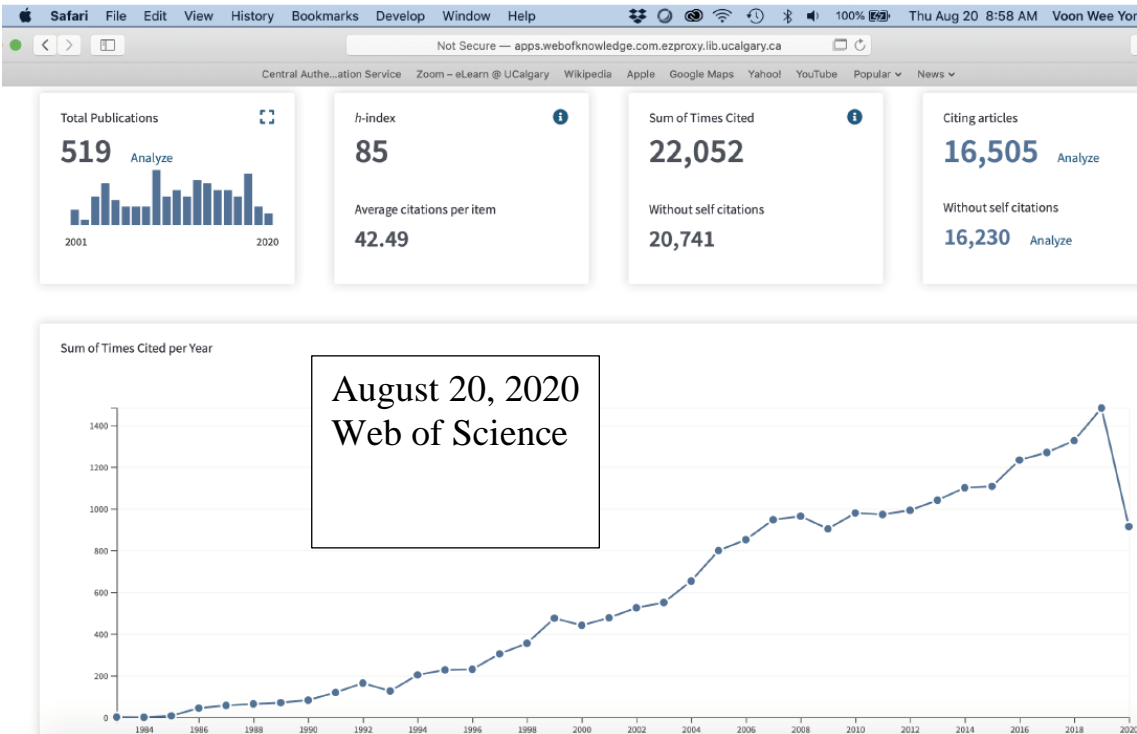
G. BRIEF DESCRIPTION OF MY RESEARCH INTERESTS

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, August 20 2020: 22,052 citations, h index: 85. Number of manuscripts cited over 100 times: 71. Number of citations per year the past 5 years: 1100 – 1500 (see figure from Web of Science)

Number of citations according to Google Scholar: >35,000



Refereed papers the past 6 years (there are 220 publications pre-2014)

221. Sarkar S, Doring A, Zemp F, Silva C, Lun X, Wang X, Kelly J, Hader W, Hamilton M, Mercier P, Dunn JF, Kinniburgh D, van Rooijen N, Robbins S, Forsyth P, Cairncross G, Weiss S, **Yong VW**, Therapeutic activation of macrophages/microglia to suppress brain tumor-initiating cells, *Nature Neurosci* 17:46-55, 2014
222. Christensen PC, Brideau C, Poon KW, Doring A, **Yong VW**, Stys PK, High-resolution fluorescence microscopy of myelin without exogenous probes, *Neuroimage* 87:42-54, 2014
223. Zhang Y, Wells J, Buist R, Peeling J, **Yong VW**, Mitchell R, Active inflammation increases the heterogeneity of MRI texture in mouse with relapsing experimental allergic encephalomyelitis, *Magnetic Resonance Imaging* 32:168-174, 2014
224. Nathoo N, **Yong VW**, Dunn JF, Utilizing magnetic resonance imaging in animal models to guide drug development in multiple sclerosis, *Multiple Sclerosis J* 20:2-11, 2014
225. Nathoo N, **Yong VW**, Dunn JF, Understanding disease processes in multiple sclerosis through magnetic resonance imaging studies in animal models, *Neuroimage Clinical* 4:743-756, 2014
226. **Yong VW**, Pathology of MS and mechanisms of MS therapies, In: *Neurology Reviews (CME accredited)*, on Deconstructing therapeutic decision-making: An expert analysis of MS treatment options, S9-S13, 2014
227. Stirling DP, Cummins K, Mishra M, **Yong VW**, Stys PK, TLR-2 mediated microglial modulation is neuroprotective following laser-induced spinal cord injury, *Brain* 137:707-723, 2014

228. Mishra MK, Wang J, Keough M, Fan Y, Silva C, Sloka S, Hayardeny L, Bruck W, **Yong VW**, Laquinimod reduces neuroaxonal injury through inhibiting microglial activation, *Annals Clin Trans Neurol* 1:409-422, 2014
229. Jensen SK, **Yong VW**, Microglia modulation as a mechanism behind the promotion of CNS well-being by physical exercise, *Clinical Experimental Neuroimmunology* 5:188-201, 2014
230. Plemel JR, Keough MB, Duncan GJ, Sparling JS, **Yong VW**, Stys PK, Tetzlaff W, Remyelination after spinal cord injury: Is it a target for repair? *Progress in Neurobiology* 117:54-72, 2014
231. Strachan-Whaley M, Rivest S, Yong VW, Interactions between microglia and T cells in multiple sclerosis pathobiology, *J Interferon Cytokine Res* 34:615-622, 2014
232. Stephenson E, Nathoo N, Mahjoub Y, Dunn JF, **Yong VW**, Iron in Multiple Sclerosis: Roles in neurodegeneration and repair, *Nature Rev Neurol* 10:459-468, 2014
233. Kang H, Metz LM, Traboulsee AL, Eliasziw M, Zhao GJ, Cheng Y, Zhao Y, Li DK; Minocycline in CIS Study Group (including Yong VW), Application and a proposed modification of the 2010 McDonald criteria for the diagnosis of multiple sclerosis in a Canadian cohort of patients with clinically isolated syndromes, *Mult Scler* 20:458-463, 2014
234. Sarkar S, **Yong VW**, The battle for the brain: Brain tumor-initiating cells versus microglia/macrophages, *Oncoimmunology* 3:e28047, 2014
235. Plemel JR, **Yong VW**, Stirling DP, Immune modulatory therapies for SCI – past, present and future, In *Neuroimmunology of Spinal Cord Injury: Special Issue in Experimental Neurology*, 258:91-104, 2014
236. Zemp FJ, McKenzie BA, Lu X, Reilly KM, McFadden G, **Yong VW**, Forsyth P, Cellular factors promoting resistance to effective treatment of glioma with oncolytic Myxoma virus, *Cancer Res* 74:7260-7273, 2014
237. Ansari MK, Yong HY, Metz L, **Yong VW**, Zhang Y, Changes in tissue directionality reflect differences in myelin content after demyelination in mice spinal cords, *J Structural Biol* 188:116-122, 2014
238. Doring A, Sloka S, Lau L, Mishra M, van Minnen J, Zhang Z, Kinniburgh D, Rivest S, **Yong VW**, Stimulation of monocytes, macrophages and microglia by amphotericin B and macrophage colony stimulating factor promotes remyelination, *J Neuroscience* 35:1136-1148, 2015
239. Kuhle J, Gaiottino J, Leppert D, Petzold A, Bestwick JP, Malaspina A, Lu CH, Disanto G, Norgren N, Nissim A, Kappos L, Hurlbert RJ, **Yong VW**, Giovannoni G, Casha S, Serum neurofilament light chain is a biomarker of human spinal cord injury severity and outcome, *J Neurol, Neurosurg Psychiatry* 86:273-279, 2015
240. Keough MB, Jensen S, **Yong VW**, Experimental demyelination and remyelination of murine spinal cord by focal injection of lysolecithin, *J Visualized Experiments* (97), e52679, 2015

241. Lampron A, Larochelle A, Plante MM, Sanchez MG, **Yong VW**, Stys P, Tremblay ME, Rivest S, Inefficient clearance of myelin debris by microglia impairs remyelinating processes, *J Exp Med* 212:481-495, 2015
242. Zhornitsky S, Johnston TA, Weiss S, Metz LM, **Yong VW**, Prolactin in combination with interferon- β reduces disease severity in an animal model of multiple sclerosis, *J Neuroinflammation* 12:55, 2015
243. Sarkar S, Zemp FJ, Senger D, Robbins SM, **Yong VW**, Identification of ADAM-9 as a mediator of tenascin-C stimulated invasiveness of brain tumor-initiating cells, *Neurooncology* 17:1095-1105, 2015
244. Kaushik DK, Hahn JN, **Yong VW**, EMMPRIN, an upstream regulator of MMPs, in *CNS biology*, *Matrix Biology* 44-46C:138-146, 2015
245. Bellavance MA, Gosselin D, **Yong VW**, Stys PK, Rivest S, Patrolling monocytes play a critical role in CX3CR1-mediated neuroprotection during excitotoxicity, *Brain Structure Function* 220:1759-1776, 2015
246. Koch MW, Korngut L, Patry D, Agha-Khani Y, White C, Sarna J, Yeung M, **Yong VW**, Heng D, Cutter G, Metz L, The promise of futility trials in neurological diseases, *Nature Rev Neurology* 11:300-305, 2015
247. Hahn JN, Kaushik DK, **Yong VW**, The role of EMMPRIN in T cell biology and immunological diseases, *J Leukocyte Biol* 98:33-48, 2015
248. Nathoo N, Rogers J, **Yong VW**, Dunn J, Detecting deoxyhemoglobin in spinal cord vasculature of the experimental autoimmune encephalomyelitis mouse model of multiple sclerosis using susceptibility MRI and hyperoxygenation, *PLOS One* 10(5):e0127033, 2015
249. Koch MW, George S, Wall W, **Yong VW**, Metz KN, Serum NSE level and disability progression in multiple sclerosis, *J Neurol Sci* 350:46-50, 2015
250. Shakhbazov A, Mishra M, Chu TH, Brideau C, Cummins K, Shcharbin D, Majoral JP, Mignani S, Blanchard-Desce M, Bryszewska M, **Yong VW**, Stys P, van Minnen J, Fluorescent phosphorus dendrimer as a spectral sensor for macrophage polarization and fate tracking in spinal cord injury, *Macromolecular Bioscience* 15:1523-1534, 2015
251. Koch MW, Zabad R, Giuliani F, Hader W, Lewkonja R, Metz L, **Yong VW**, Hydroxychloroquine reduces microglial activity and attenuates experimental autoimmune encephalomyelitis, *J Neurol Sci* 358:131-137, 2015
252. Sloka S*, Zhornitsky S*, Silva C, Metz LM, **Yong VW**, Vitamin D protects against immune-mediated killing of neurons in culture and in experimental autoimmune encephalomyelitis, *PLOS One* 10:e0144084, 2015 (*co-first authors)
253. Rawji KS, Mishra MK, Michaels NJ, Rivest S, Stys PK, **Yong VW**, Immunosenescence of microglia and macrophages: Impact on the aging white matter, *Brain* 139:653-661, 2016

254. Clemente-Casares X, Blanco J, Ambalavalan P, Singha S, Yamanouchi J, Fandos C, Tsai S, Wang J, Agrawal S, Keough M, **Yong VW**, James E, Moore A, Yang Y, Stratmann T, Serra P, Santamaria P, Expanding antigen-specific regulatory networks to treat autoimmunity, *Nature* b530:434-440, 2016
255. Keough MB, Rogers JA, Zhang P, Jensen SK, Robertson E, Chen T, Hurlbert MG, Lau LW, Rawji KS, Plemel JR, Koch M, Ling CC, **Yong VW**, An inhibitor of chondroitin sulfate proteoglycan synthesis promotes central nervous system remyelination, *Nature Communications* 7:11312, 2016
256. Rawji KS, Mishra MK, **Yong VW**, Regenerative capacity of macrophages for remyelination, *Frontiers in Cell and Developmental Biology* 4:47, 2016
257. Shakhbazou A, Schenk GJ, Hay C, Kawasoe J, Klaver R, **Yong VW**, Geurts JJ, van Minnen J, Demyelination induces transport of ribosome-containing vesicles from glia to axons: evidence from animal models and MS patients, *Mol Bio Rep* 43:495-507, 2016
258. Mewhort HEM, Lipon BD, Svystonyuk DA, Teng G, Guzzardi DG, Silva C, **Yong VW**, Fedak PWM, Monocytes increase human cardiac myofibroblast-mediated extracellular matrix remodeling through TGF- β 1, *AJP Heart and Circulatory Physiology* 310:H716-724, 2016
259. Jensen SK, **Yong VW**, Activity-dependent and experience-driven myelination provide new directions for the management of multiple sclerosis, *Trends Neurosci* 39:356-365, 2016
260. Kaushik DK, Yong HYF, Hahn JN, Silva C, Jacque FH, Lisak R, Khan O, Ionette C, Larochelle C, Prat A, Bar-Or A, **Yong VW**, Evaluating soluble EMMPRIN as a marker of disease activity in multiple sclerosis: studies of serum and cerebrospinal fluid, *PLOS One* 11:e0163802, 2016
261. Zhang Y, Jonkman L, Klauser A, Barkhof F, **Yong VW**, Metz LM, Geurts J, Multi-scale MRI spectrum detects differences in myelin integrity between MS lesion types, *Multiple Sclerosis J* 22:1569-1577, 2016
262. Mishra MK, **Yong VW**, Myeloid cells: targets of medications in multiple sclerosis, *Nature Rev Neurol* 12:539-551, 2016
263. Hahn JN, Kaushik DK, Mishra MK, Wang J, Silva C, **Yong VW**, Impact of minocycline on EMMPRIN, a factor implicated in multiple sclerosis immunopathogenesis, *J Immunol* 197:3850-3860, 2016
264. Johnson TW, Wu Y, Nathoo N, Rogers J, **Yong VW**, Dunn JF, Gray matter hypoxia in the brain of the experimental autoimmune encephalomyelitis model of multiple sclerosis, *PLOS One* 11:e0167196, 2016
265. Yang R, Sarkar S, Korchinski DJ, Wu Y, **Yong VW**, Dunn JF, MRI monitoring of monocytes to detect immune stimulating treatment response in brain tumor, *Neuro-oncology* 19:364-371, 2017
266. Mirzaei R, Sarkar S, **Yong VW**, T-cell exhaustion in glioblastoma: intricacies of immune checkpoints, *Trends Immunol* 38:104-115, 2017

267. Plemel JR, Caprariello AV, Keough MB, Henry TJ, Tsutsui S, Chu TH, Schenk GJ, Klaver R, **Yong VW**, Stys PK, Unique spectral signatures of the nucleic acid dye acridine orange can distinguish cell death by apoptosis and necroptosis, *J Cell Biol* 216:1163-1181, 2017
268. Metz LM, Li DKB, Traboulee AL, Duquette P, Eliasziw M, Cerchiaro G, Greenfield J, Riddehough A, Yeung M, Kremenchutzky M, Vorobeychik G, Freedman MS, Bhan V, Blevins G, Marriott JJ, Grand'Maison F, Lee L, Thibault M, Hill MD, **Yong VW** for the Minocycline in MS Study Team, Trial of minocycline in clinically isolated syndrome of multiple sclerosis, *New Engl J Med* 376:2122-2133, 2017
269. Poon CC, Sarkar S, **Yong VW***, Kelly JJ*, Glioblastoma-associated microglia and macrophages: targets for therapies to improve prognosis, *Brain* 140:1548-1560, 2017 (*co-senior authors)
270. Rogers JA, Mishra MK, Hahn J, Greene C, Yates R, Metz L, **Yong VW**, Gestational BPA exposure lowers the threshold for autoimmunity in a model of multiple sclerosis, *Proc Natl Acad Sci (USA)* 114:4999-5004, 2017
271. Sarkar S, Zemp F, Mirzaei R, Wei W, Senger D, Robbins SM, **Yong VW**, Activation of NOTCH signaling by tenascin-C promotes growth of human brain tumor-initiating cells, *Cancer Res* 77:3231-3243, 2017
272. Plemel JR, Liu WQ, **Yong VW**, Remyelination therapies: a new direction and challenge in multiple sclerosis, *Nature Rev Drug Discovery* 16:617-634, 2017
273. Yong HYF, **Yong VW**, Stop inflammation and you stop neurodegeneration in MS: Yes, *Multiple Sclerosis J* 23:1320-1321, 2017
274. Jones MR, Mathieu E, Dyrager C, Faissner S, Vaillancourt Z, Korshavn KJ, Lim MH, Ramamoorthy A, **Yong VW**, Tsutsui S, Stys PK, Storr T, Mutli-target-Directed Phenol-Triazole Ligands as Therapeutic Agents for Alzheimer's Disease, *Chem Sci* 8:5636-5643, 2017
275. Gerrard B, Singh V, Babenko O, Gauthier I, **Yong VW**, Kovalchuk I, Luczak A, Metz GAS, Chronic mild stress exacerbates severity of experimental autoimmune encephalomyelitis in association with altered non-coding RNA and metabolic biomarkers, *Neurosci* 359:299-307, 2017
276. Rice T, Larsen JEA, Li H, Nuttall RK, Larsen PH, Casha S, Hurlbert J, Edwards DR, **Yong VW**, Neuroprotection by minocycline in murine traumatic spinal cord injury: Analyses of MMPs, *Neuroimmunology and Neuroinflammation* 4:243-253, 2017
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322. Xue M, **Yong VW**, Neuroinflammation in intracerebral hemorrhage: immunotherapies ripe for translation, revised at *Lancet Neurol*
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324. Ghorbani S, **Yong VW**, The extracellular matrix of lesions in multiple sclerosis tunes neuroinflammation and remyelination, revised at *Brain*
325. Stys PK, Teo W, Caprariello A, Plemel JR, Proft J, Roychoudhury S, Pu A, **Yong VW**, Joseph JT, Nilsson KPR, Tsutsui S, Sensitive detection of biological processes in cells and tissues by spectral scatter analysis using environmentally-responsive fluorescent probes, submitted
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328. Camara-Lemarroy CR, Silva C, Metz LM, Cerchiaro G, Greenfield J, Dowlatabadi R, Vogel HJ, Lee CH, Giuliani F, Nakhaei-Nejad M, Silva C, Li DKB, Traboulsee A, **Yong VW**, Multimodal peripheral fluid biomarker analysis in clinically isolated syndrome and comparison to early multiple sclerosis, submitted
329. Lozinski BM, **Yong VW**, Exercise and the brain in multiple sclerosis, submitted
330. Xue M, Jiao Y, He J, Wang J, **Yong VW**, Down-regulatory changes of Nogo-A and NgR in ischemic cortex of mice with cerebral ischemic preconditioning, submitted
331. Bai Q, Xue M, **Yong VW**, Simultaneous depletion of microglia/macrophages and neutrophils enhances neuroprotection in intracerebral hemorrhage, submitted

332. Keough MB, Michaels NJ, Jensen SK, Lau LW, Pu AY, **Yong VW**, Overcoming chondroitin sulfate proteoglycan-mediated inhibition of oligodendrocyte regenerative response, submitted

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 6 years) (72 presentations before 2014)
(presentations at academic institutions are listed in Section K)**

73. 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
74. Symposium Speaker, International Society of Neuroimmunology, Nov 11 2014 Mainz, Germany, on: Overcoming inhibitors of remyelination
75. Speaker, Asia-Pacific School of Neuroimmunology, Aug 30 2015, Tokyo, Japan, The neuroimmunology of repair with a focus on remyelination
76. Symposium speaker, American Society of Neurochemistry, March 17 2015, Atlanta, Overcoming extracellular matrix inhibitors of remyelination
77. Speaker, Practicum in Neurology, Halifax May 23 2015 on: The roles of macrophages and microglia in neurological disorders
78. Symposium speaker, NCNP Neuroimmunology International Symposium, Tokyo June 10 2015, on The LPS-enhanced M2 macrophages: A new subset that robustly promotes remyelination
79. Speaker, Michigan Osteopathic Neurology Annual Meeting, July 23rd 2015, Traverse City, on Immunology of MS
80. 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
81. Speaker, Asia-Pacific School of Neuroimmunology, Aug 30 2015, Tokyo, Japan, The neuroimmunology of repair with a focus on remyelination
82. Speaker, Americas School of Neuroimmunology, Oct 2 2015, Calgary, on Neuroimmunology in repair of the nervous system
83. Symposium speaker, European Committee for Treatment and Research in MS (ECTRIMS), Oct 9 2015, Barcelona, Altering the CNS microenvironment during neurodegeneration to promote remyelination
84. 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

85. Symposium speaker, Rutgers University annual symposium, Current Advances in spinal cord injury research, May 11 2016 on: Overcoming extracellular matrix inhibitors to promote remyelination
86. Session chair and introductory speaker, on Myelin Medicines, Gordon Conference on Myelin, Luca Italy, May 15-20 2016
87. 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
88. Symposium speaker, International Society of Neuroimmunology, Jerusalem, September 26-29 2016, on: Un-appreciated regulators of neuroinflammation: the extracellular matrix
89. 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
90. Keynote speaker, First International Workshop of Cuban Network of Neuroimmunology, Varadero, June 10-14 2017, on: Modulating inflammation in multiple sclerosis
91. Speaker, XXVI AINI Congress and 16th ESNI Course, June 26-30 2017, Venice, on: The extracellular matrix as regulators of myelin repair and neuroinflammation.
92. Keynote speaker, 2017 International Translational Neurology Forum, Zhengzhou University China, July 21-23 2017, on: Bench to bedside translational medicine: steps and successes
93. Speaker, Gairdner/Alberta International symposium, Edmonton, Oct 12-13, 2017, on: Harnessing the benefits of neuroinflammation for repair
94. 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
95. Speaker, at Allyn Taylor Symposium, Western University, November 16 2017, on: Bench to bedside: the science of translational medicine in multiple sclerosis
96. Chair and introductory speaker on Macrophages and microglia in MS, ACTRIMS Forum, San Diego, Feb 3 2018
97. Coordinator and lecturer, 2nd Global Schools of Neuroimmunology, Brisbane, Aug 27 2018, on: Interactions between immune and CNS cells in neurological injury and repair
98. Keynote speaker, Congress of the International Society of Neuroimmunology, Brisbane, July 27 – 31, 2018, on: Bench to bedside neuroimmunology: Translational medicine for CNS regeneration
99. Lecturer,ECTRIMS Berlin, Oct 10 2018, on: Myeloid Cells in MS
100. Speaker, Microglia Workshop organized through Harvard, Boston Oct 21-23, 2018, on: Modulating myeloid cell activity with generic medications to improve neurological outcomes

101. Keynote speaker, Annual Conference of Chinese Medical Network for Neuroinflammation, Tianjin, China, Nov 29 2018, on: Modulating macrophage/microglia activity with generic medications to improve neurological outcomes
102. Keynote speaker, Tianjin Stroke Association, Dec 1 2018, Tianjin, China, on: Bench to bedside translational medicine
103. Symposium speaker, Canadian Immunology Society Conference, Banff, April 12-15 2019, on: Leukocyte trafficking in multiple sclerosis: Mechanisms and basis for translational medicine
104. Workshop speaker, World Parkinson Congress, Kyoto, June 7 2019, on Aging on the immune system and relevance to brain health and disease
105. Closing Plenary Speaker, MS Frontiers 2019, Annual MS meeting of United Kingdom, Bath, July 5 2019, on Advances in MS: Lifestyle, medications and repair
106. Speaker, SFB/CRC-TR128 International Symposium, Mainz, Germany, September 16-17 2019, on: Activity of leukocytes within the perivascular cuff in MS: therapeutic targets
107. Lecturer, 2nd Asia-Pacific School of Neuroimmunology, Seoul, Oct 12 2019, on: Neuroimmunology in repair of the nervous system

K. TALKS GIVEN AT ACADEMIC INSTITUTIONS

(past 6 years) (214 talks before 2014)

215. Speaker, Knowledge and Nurturing for MS Nurses symposium, Vancouver Feb 1 2014 on: New frontiers in MS
216. Seminar Speaker, Killam seminar series, Montreal Neurological Institute, Feb 18 2014, on: Overcoming inhibitors in the lesion microenvironment for remyelination
217. Speaker, Grand rounds, Montreal Neurological Institute, McGill University, Feb 19 2014, on: Battle for the brain: glioma stem cells versus microglia
218. Advisory Board Speaker, Teva Pharmaceutical, Tel Aviv, Feb 21 2014 on Laquinimod: a microglia inhibitor and a potential regenerative medication
219. Seminar Speaker, University of Manitoba, Feb 28 2014, on: Overcoming inhibitors in the lesion microenvironment for remyelination
220. Seminar Speaker, University of Virginia, March 31 2014, on: Overcoming inhibitors in the lesion microenvironment for CNS regeneration
221. Symposium Speaker, Western Canada Neuroimmunology symposium, Vancouver, June 21 2014, on: The neuroimmunology of remyelination
222. Speaker, Michigan Institute of Neurological Disorders, July 17 2014, on: Immunology of multiple sclerosis

223. Seminar Speaker, University of Michigan July 18 2014 on The chondroitin sulfate proteoglycans
224. Seminar speaker, University of Singapore, July 25 2014, on: Overcoming inhibitors of remyelination in MS
225. Seminar Speaker, Weill Cornell Medical Center, New York City, Sept 3 2014 on: Remyelination in MS
226. Seminar Speaker, Rutgers MS Diagnostic and Treatment Center, Sept 4 2014 on: Remyelination in MS
227. Seminar Speaker, New York University, Sept 5 2014 on: Remyelination in MS
228. Rounds speaker, Mount Sinai MS Center, New York City, Sept 5 2014 on: Remyelination in MS
229. Seminar Speaker, Rowe Neurology Institute, Kansas City, Sept 30 2014 on: Challenges to CNS repair
230. Speaker, Alberta Neuro Spinal cord injury symposium, Edmonton October 2014, on: Translation from lab to Phase III trials: Experience with minocycline and lessons learned
231. Speaker, Sandford-Burhnam Institute, San Diego, Jan 22 2015, on: Overcoming extracellular matrix inhibitors of myelin repair
232. Speaker, Western Canada MS Nursing Meeting, March 6 2015, on: Immunology Update: Connecting the how (it works) with the what (you see)
233. Speaker, Preceptorship – Advances in MS and NMO, July 6 2015 on: Applied immunology in MS
234. Seminar Speaker, The new frontiers of remyelination medicines in neurology, Sept 2 2015, University of Kyushu, Japan
235. Seminar Speaker, Remyelination in MS, Sept 25 2015, University of Birmingham, Alabama
236. Keynote speaker, Center for Disability Services Foundation, Albany New York, Oct 21 2015, on: Immunology and Research
237. Seminar speaker, University of California at San Francisco, Oct 29 2015, Controversies in multiple sclerosis: Immunology
238. Speaker, Neurology Grand Rounds, University of Saskatoon, Dec 11 2015 on: The new frontiers of remyelination in MS
239. Speaker, Teaching of Immunology to residents, University of Saskatoon, Dec 11 2015 on: Immunopathogenesis of MS
240. Grand rounds speaker, with Dr. Luanne Metz, University of Calgary, April 29 2016, on: Minocycline reduces multiple sclerosis risk: From bench to the clinic

241. Speaker, MS Neurology Group, University of Colorado, June 14 2016 on: Immunopathogenesis of MS
242. Speaker, Vindico CME series, Aug 2 2016, on: Oral remyelination medications
243. Speaker, Campus Alberta Neuroscience annual symposium, Edmonton, Oct 20 2016, on: Repair in MS – the next frontier
244. Speaker, Edmonton Neuroscience seminar, University of Alberta, Nov 1 2016 on The brain extracellular matrix as regulator of neuroinflammation and repair
245. Speaker, Montreal MS Exchange, November 4 2016, on: How basic scientists can guide the MS field
246. Speaker, Pediatric Demyelinating Disease mini-symposium, Calgary, Nov 16 2016, on: Remyelination therapies
247. Speaker, Stanford Neuroscience Center seminar, March 6 2017, on: Modulating inflammation in MS
248. Keynote speaker, Annual Neuroscience Research Day, University of Saskatchewan, Nov 3 2017, on: Bench to Bedside: The science of translational medicine in MS
249. Seminar Speaker, University of Pennsylvania Dec 15 2017, on: Translational medicine in MS
250. Seminar speaker, Ruhr University, Bochum Germany, Jan 14 2018, on: Repurposing generic medications for MS
251. Seminar speaker, University of Freiburg, Germany, Jan 16 2018, on: Modulating myeloid activity to improve CSN neurological outcomes
252. Seminar speaker, Department of Clinical Neurosciences, University of Calgary, March 23 2018, on: Niacin in glioblastoma: Bench to bedside and back
253. Seminar speaker, University of Singapore, April 5 2018, on: Modulating myeloid activity to improve CSN neurological outcomes
254. Seminar speaker, Dalhousie University, April 16 2018, on: Translational medicine for brain disorders: science, successes and challenges
255. Seminar speaker, University of Laval NeuroForum, June 21 2018, on: Harnessing the benefits of macrophages and microglia for CNS recovery
256. Dinner speaker, organized by Biogen, Quebec City, June 21 2018, on: Using neuroimmunology to treat multiple sclerosis
257. Seminar speaker, University of Manitoba, July 27 2018, on: Harnessing the benefits of macrophages and microglia for CNS recovery
258. Keynote speaker, [Annual Alberta Neuro-Oncology meeting, Calgary, Sept 21 2018](#), on: Rationale for a clinical trial of niacin in glioblastoma

259. Keynote speaker, Rocky Mountain Basic Science Symposium, Canmore, Nov 2-4 2018, on: Highlights of neuroinflammation: CNS Injury, repair and treatment considerations
260. Seminar speaker, Zhengzhou University China, Dec 4 2018, on Bench to clinical trials in stroke with focus on reducing neuroinflammation and injury
261. Seminar speaker, POET (Precision Oncology Experimental Therapeutics), Calgary, Dec 7 2018, on: The battle for the brain: rejuvenating immune responses against glioblastoma
262. Seminar speaker, Queen's University, March 13 2019, on: Translational medicine to improve CNS outcomes: successes and challenges
263. Seminar speaker, Zhengzhou University, China, April 25 2019, on: Harnessing the benefits of inflammation for CNS repair
264. Speaker, University of Alberta MS Center symposium, May 3 2019, on: Overcoming age-enhanced neurodegeneration and deficient remyelination
265. Speaker, endMS Summer School, Calgary, May 27 2019, on: Pathophysiology of MS

L. TALKS GIVEN TO THE LAY PUBLIC (47 before 2014)

48. Featured speaker to MS patients and families, MS Connections Conference Calgary Sept 20 2014 on Neuroimmunology: Understanding your medication
49. Speaker, Calgary MS Chapter, MS Society of Canada, November 27 2014 on: A new kind of trial for progressive MS – focus on remyelination
50. Speaker, on Neuroimmunology 101, organized by the MS Society of Canada, to MS lay community, Calgary, Feb 7 2015
51. Speaker, Patient program, Advances in MS, Fairbanks Alaska, Feb 18 2015
52. Speaker, Patient program, Advances in MS, Anchorage Alaska, Feb 19 2015
53. Speaker, on Neuroimmunology 101, organized by the MS Society of Canada, to MS lay community, Edmonton, March 21 2015
54. Speaker, on Neuroimmunology 101, organized by the MS Society of Canada, to MS lay community, Lloydminster, March 28 2015
55. Speaker, on Activity and MS, organized by Action MS, Calgary April 25 2015
56. Speaker, on Neuroimmunology 101, organized by the MS Society of Canada, to MS lay community, Lethbridge, June 23 2015
57. Speaker, Exercise and MS, during HBI MS program's research update to the public, June 27 2015

58. Keynote speaker, Albany MS Symposium for patients, Albany, New York, Oct 15 2015, on: Immunology and Research
59. Keynote speaker, Regina MS chapter, Regina, May 26 2016, on: Advances in MS research
60. Speaker, Patient program, on Immunology of MS, Troy, Michigan, Feb 1 2017
61. Speaker, Patient program, on Immunology of MS, Modesto, CA March 8 2017
62. Speaker, Patient program, on Immunology of MS, Las Vegas March 9 2017
63. Keynote speaker, MS Connect organized by the MS Society's Manitoba Division, Winnipeg, May 23 2017, on: Advances in MS Research and Treatment
64. Keynote speaker, MS Connect organized by the MS Society's Alberta and NW Territories Division, Edmonton, Sept 29 2017, on: Towards improving the treatment of MS: The Alberta advances
65. Keynote speaker, MS Connect organized by the MS Society's Ontario & Nunavut Division, Toronto, Nov 17 2018, on: Advances in MS: Lifestyle, medications and brain repair
66. Keynote speaker, MS Society of Canada, Yellowknife, May 13 2019, on: Advances in MS
67. Speaker, for Health Professionals in Yellowknife, May 14 2019, on: Generic medications repurposed for MS
68. Keynote Speaker, MS Connect, of the MS Society of Canada, Vancouver, Oct 5 2019, on: Advances in MS
69. Expert guest, NeuroSask (Saskatchewan MS group), zoom meeting with about 200 MS patients, discussing the importance of exercise in MS, May 7 2020

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, University of Calgary Research Awards Steering Committee, 2017 - present
5. Member, Leadership Forum, Faculty of Medicine, University of Calgary, 2012 - present

6. Committee member, University of Calgary's Prizes and Awards Advisory Committee, 2008 – 2010
7. Committee member, Hotchkiss Brain Institute's Strategic Research Committee, 2010 - present
8. Member, Dean's Advisory Committee on recruiting and supporting 'rising stars', 2011
9. Co-organizer, the 2011 Gairdner Foundation – Hotchkiss Brain Institute Symposium on the Frontiers of Neuroscience, March 16-18, 2011
10. 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)
11. Member, Executive Committee, Hotchkiss Brain Institute, 2004 – 2007
12. Chair, Organizing committee, Department of Clinical Neurosciences Research Day, April 2000, 2001, 2002 and 2003
13. Chair, Organising Committee, Hotchkiss Brain Institute Research Day, March 12, 2004
14. Chair, Research Committee, Department of Clinical Neurosciences, 1999 – 2003
15. Committee member, Alberta Heritage Lectureship Award, Faculty of Medicine, 2003 – 2005
16. 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 Research Associate**, Source of support: Alberta Innovates Health Solutions
2. 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
3. Reza Mirzaei (PhD, University of Tehran), **postdoctoral fellow** from October 2015. Source of funding: U Calgary Eyes High program
4. Jeff Dong (PhD, UBC), **postdoctoral fellow** from March 2018. Source of support: Alberta MS Collaboration postdoctoral fellowship

5. Samira Ghorbani (PhD, University of Tehran), **postdoctoral fellow** from July 2018. Source of support: Rebecca Hotchkiss International Scholars Exchange fellowship
6. Brian Lozinski (BSc, Mount Royal University), **PhD candidate**, from June 2018. Source of support: Alberta Graduate Excellence Scholarship
7. Dennis Brown (BSc, Dalhousie University), **MSc candidate**, from June 2018. Source of support: Canadian Institutes of Health Research Canada Graduate Scholarship
8. Dorsa Moezzi (BSc U Calgary) - **MSc candidate**, from Sept 2020
9. Cenxiao Li (3rd Year BSc U Calgary) - **BSc 3rd Year research program**, from Sept 2019
10. Taelor Evans (BSc, Mount Royal University), **MSc candidate**, from Sept 2018
11. Rajiv Jains (PhD, Western University), **postdoctoral fellow** from Feb 2019. Source of funding: U Calgary Eyes High program
12. Emily Jelinik (BSc, Western University), **MSc candidate**, from July 2019
13. Alex Palmer, **PhD candidate**, co-supervised with Shalina Ousman
14. Jacqueline Reid, **PhD candidate**, co-supervised with Hedwich Kuipers
15. Emily Wuerch (BSc, McMaster University), **MSc candidate**, from Sept 2020. Source of support: Alberta Graduate Excellence Scholarship

Laboratory manager: Claudia Silva, MSc (from 2005)

Research Associate: Susobhan Sarkar (PhD, University of Calcutta), from May 2003; Charlotte D'Mello (PhD, University of Calgary), from September 2019

Technicians:

Helvira Cavalcante Melo (from November 2017)

Rigel Chan (from October 2018)

Tina Vo (from May 2019)

Yan Fan (from 2001 – 2017; retired)

Janet Wang (December 2008 – 2017)

Administrative Assistant: Tanna Giroux (from 1997)

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

Alberta endMS or MS Network managers: Charlotte Breakey (2009 - 2014), Jessie Trufyn (2014 - 2016), Trisha Lichtenberger (from 2016 – on maternity leave, Neetu Singh 2019)

O. Past Trainees (their training period with me, and current position):

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. Current Position: Family practice, British Columbia
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: Public service, Human Rights Commissioner, Rochester
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: Senior Staff Fellow, Center for Drug Evaluation and Research, US Food and Drug Administration
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 Quebec
21. Veronika Brundula (B.Sc. Simon Bolivar University, Venezuela), from 1998 - 2000, **M.Sc. degree**. Current position: Education management, Slovenia
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 Verhaeghe, 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 O'Ferral, 4th Year **Neurology resident** on 6 month research rotation, from Oct 2006. Current position: Neurologist and Assistant Professor, McGill University
41. Jing Zhang, PhD, **Postdoctoral fellow**, from July 2006 – April 2008. Current position: Professor, School of Applied Science and Technology, Fanshawe College, London 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: Business Consultant
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. Current position: Pathologist, F.H. Wigmore Regional Hospital, Moose Jaw
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 Doring (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, Ruhr University, Bochum, 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
77. Erin Stephenson (BSc, University of Guelph, **MD/PhD candidate**, PhD defended 2018. Source of Support: HBI Chen Fong studentship, Alberta Innovates Health Solutions and Vanier Scholar CIHR. Currently in medical school for the MD part of the program.
78. Runze Yang (BSc, University of Alberta), **MD/PhD candidate**, PhD defended 2018, co-supervisor (Jeff Dunn as primary supervisor). Source of support: CIHR and Alberta Innovates Health Solutions. Currently in medical school for the MD part of the program
79. Janson Kappen (1st year McGill University), **summer student** 2018
80. Kennedy Lemmon (2nd Year University of British Columbia), **summer student** 2018
81. Linda Guo (3rd Year Western University), **summer student** 2018
82. Dorsa Moezzi (2nd Year University of Calgary), **summer student** 2018; also summer student 2019
83. Ashley Gordon (3rd Year Boston University), **summer student** 2018

84. Cristina Santamaria-Plaza (3rd Year University of Calgary), **summer student** 2018
85. Salma Zein, Grade 9 student, 2018, Gold Medal winner, Calgary Science Fair, April 14 2018
86. 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. Current position: Assistant Professor, University of Alberta
87. Khalil Rawji (MSc, Queen's University), **PhD** 2012 - 2018. Source of support: Achievers in Medical Science Award, University of Calgary, Multiple Sclerosis Society of Canada, and CIHR Varnier Scholarship. Postdoctoral fellowship at University of Cambridge from Feb 2019
88. Annie Pu (BSc, University of Toronto), **MSc** Jan 2017 – April 2019.
89. Nathan Michaels (BSc, University of Kamloops, **PhD** July 2014 – May 2019. Source of support: University of Calgary Eyes High scholarship and Multiple Sclerosis Society of Canada. Current position: Drug Review Process Manager, Ministry of Health, British Columbia
90. Candice Poon (MD, University of Alberta, and 3rd year Neurosurgery resident), **PhD** September 2014 – June 2019, co-supervisor (John Kelly as primary supervisor). Current position: Final year neurosurgery resident.
91. Anindita Bhattacharya (4th year BSc U Calgary), BSc **Honors thesis** 2018. Now in medical school.
92. Lauren Dzikowski (4th Year BSc U Calgary) - BSc **Honors thesis**, 2019.
93. Carlos Camara-Lemarroy (MD, Neurologist, University of Nuevo Leon, Monterrey, Mexico), **Clinical fellow** from August 2017 - 2019 (2 days/week in lab). Now Assistant Professor, University of Calgary