

Abbreviated curriculum vitae, V. Wee Yong

A. Synopsis:

- Research interests lie in the area of neuroimmunology, neuroprotection and CNS regeneration, and projects are guided by multiple sclerosis (MS), intracerebral hemorrhage and glioblastomas
- Published 350 peer-reviewed manuscripts that have been cited over 24,700 times with a h-index of 89 (Web of Science); over 33,740 citations in Google Scholar (h-index 103, i10-index 294)
- Written 12 reviews in Nature Reviews series (impact factors 42.9 to 84.7)
- Primary data manuscripts have been published in top journals including New England J Medicine (impact factor IF 91.2), Nature (IF 50.0), Nature Neuroscience (IF 24.9, thrice), Nature Communications (IF 14.9, four times), J Clinical Investigation (IF 14.8, twice), Brain (IF 13.5, fifteen times), Annals Neurology (IF 10.4, eleven times), Lancet Neurology (IF 44.2, twice), Science Advances (IF 14.1), Science Translational Medicine (IF 18.0) and PNAS (IF 11.2, four times).
- A leader in translating laboratory findings into clinical trials, including a Phase 3 trial in MS; has an ongoing Phase 1/2a trial in glioblastoma
- President of the International Society of Neuroimmunology (ISNI) (2014-2016)
- Past trainees have excelled, including 29 in professorial positions worldwide and 18 medical specialists. Currently mentors 5 postdoctoral fellows, 3 PhD and 4 MSc students, 1 research associate and 4 technicians
- 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”
- Profiled in Lancet Neurology 20:601 (August issue), 2021

B. Identification

Current Position: Professor, Departments of Clinical Neurosciences and Oncology,
University of Calgary

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Telephone: 403-2203544

C. Education

Undergraduate: University of Manchester, Manchester, England
Pharmacology, B.Sc. (Hons), 1978 - 1981

Graduate: University of British Columbia, Canada, Ph.D., 1981 - 1986
Pharmacology and Neurochemistry, Supervisor: Dr. Thomas L. Perry Sr.

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

D. Appointments

- 1989 – 1994: Assistant Professor, Department of Neurology and Neurosurgery, McGill U.
- 1994 – 1996: Associate Professor, Department of Neurology and Neurosurgery, McGill U. (tenured)
- 1996 – 2001: Associate Professor, Departments of Clinical Neurosciences and Oncology, U. Calgary
- 2001 – present: Professor, Departments of Clinical Neurosciences and Oncology, U. Calgary (tenured)
- 2004 – 2018: Canada Research Chair in Neuroimmunology (Tier 1)
- 2009 – present: Director. Alberta MS Network
- 2013 – present: Head, Division of Translational Neuroscience, Department of Clinical Neurosciences, U. Calgary

E. Summary of my research programs

Neuroimmunology is the study of interactions and consequences between the immune and nervous systems. 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 CNS inflammation 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 extremes of immune dysfunctions: MS with chronic inflammation, and glioblastomas where the brain tumor subjugates the immune system. I believe that lessons learned from these extremes can help each condition. More recently and to return to my ethnic roots, I collaborate with the stroke program at Zhengzhou University in China to bring medications into intracerebral hemorrhage, a common condition in China and where secondary neuroinflammation drives injury and recovery. I am proud that my laboratory results have been translated into clinical trials as listed below. Collectively, my research is aimed at understanding, controlling and tipping the balance of neuroinflammation towards one of neuroprotection and regeneration from CNS insults.

F. Bench to clinical trials

I have been privileged to have taken my lab findings into clinical trials in collaboration with neurologists, neurosurgeons and oncologists. Here, I list the publication(s) describing the original bench work, the resultant clinical trial, and the clinical result if available.

Minocycline in multiple sclerosis

Yong lab primary data: *Brundula et al., Brain 125:1297, 2002* (reviewed in *Yong et al., Nature Rev Neurosci 2:502, 2001*; *Yong et al., Lancet Neurol 3:744-751, 2004*; *Yong, Nature Rev Neurosci 6:931, 2005*)

Resultant clinical trials with results: Metz et al., *Ann Neurol* 55:756, 2004 (Phase 1); Metz et al., *New England J Medicine* 376:2122, 2017 (Phase 3)

Primary outcome: Minocycline reduces relapses in early MS

Minocycline plus glatiramer acetate in multiple sclerosis

Yong lab primary data: Giuliani et al., *J Neuroimmunol* 165:83, 2005

Resultant clinical trial with results: Metz et al., *Multiple Sclerosis J* 15:1183, 2009 (Phase 2)

Primary outcome: Minocycline adds to the benefits of the leading disease modifying therapy for MS at the time, glatiramer acetate

Minocycline in traumatic spinal cord injury

Yong lab primary data: Wells et al., *Brain* 126:1628, 2003

Resultant clinical trial with results: Casha et al., *Brain* 135:1224, 2012 (Phase 2)

Primary outcome: Patients with cervical spinal cord injury regained significant improvement in motor capabilities over a one year assessment period when given high dose IV minocycline compared to placebo

Domperidone in secondary progressive MS

Yong lab primary data (with the Weiss lab): Gregg et al., *J Neurosci* 27:1812, 2007

Resultant clinical trial with results: Koch et al., *Neurol* 96:e2313, 2021 (Phase 2)

Primary outcome: Domperidone is not useful in secondary progressive MS; this paper is important because it introduces the Simon 2-stage futility trial design in neurology to rapidly screen medications for their potential outcomes in the unmet need of progressive MS

Hydroxychloroquine in primary progressive MS

Yong lab primary data: Koch et al., *J Neurol Sci* 358:131, 2015

Resultant clinical trial with results: Koch et al., *Neurol* 90:940, 2021 (Phase 2)

Primary outcome: Hydroxychloroquine slows the expected progression of disability in primary progressive MS – this is important since there is only one approved treatment (limited utility) for this form of MS

Niacin in glioblastoma

Yong lab primary data: Sarkar et al., *Nature Neurosci* 17:46, 2014 and *Science Translational Med* 12 pii: eaay9924, 2020

Resultant clinical trial: Ongoing (Phase 1 and 2, in progress, clinicaltrials.gov NCT04677049), led by Dr. Gloria Ugoiti (oncologist collaborator)

Primary outcome: Not yet available as to whether niacin added onto standard of care would improve lifespan

Combination of hydroxychloroquine and indapamide in non-relapsing secondary progressive MS

Yong lab primary data: Faissner et al., *Nature Comm* 8:1990, 2017 and Brown et al., *Neurotherapeutics* 18:387, 2021

Resultant clinical trial: Ongoing (Phase 2, in progress, NCT05013463), led by Dr. Marcus Koch (neurologist collaborator)

Primary result: Not yet available as trial is ongoing. There are no approved treatments for non-relapsing secondary progressive MS

G. Major awards and 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

Awardee, Queen Elizabeth II's Golden Jubilee Year Medallion, 2002

Canada Research Chair (Tier I) in Neuroimmunology, 2004 - 2018

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

Fellow of the Canadian Academy of Health Sciences, 2010

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

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, 2019

Recipient, Clinician Investigator Program Telemachus Distinguished Mentorship Award, 2020

H. Current research operating grants

Canadian Institutes for Health Research Foundation grant, July 2019 – June 2026, \$5.78 million

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

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

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

Canadian Cancer Society, Unexpected expression of PD1 on brain tumour-initiating cells: a novel regulator of glioblastoma growth, \$200,000, November 2020- October 2022

I. Leadership of past multi-disciplinary team grants to advance fields

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 across 5 universities. \$989,650 per annum from 2001 – 2006

Principal investigator, Brain 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

Principal investigator, 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

Principal investigator, Alberta Innovates – Health Solutions CRIO Team grant, Medicines for Remyelination in Multiple Sclerosis: The Next Frontier (PI: Yong, 10 Co-PIs in 3 universities in Alberta). \$1 million/year, 2014 – 2019

Principal investigator, Canadian Institutes for Health Research, Mobilizing anti-tumor microglia/macrophages with niacin to improve the prognosis of glioblastoma: Bench to clinical trial and back, 2018-2023, \$1,243,125 (PI: Yong; Co-PI: P de Robles, G Roldan Urgoiti, J Dunn, J Kelly) (now folded into my current Canadian Institutes for Health Research Foundation grant)

J. List of Publications

Citations of “VW Yong or Wee Yong V” in Web of Science, December 30 2021: 24,722 citations, h index: 89. Number of manuscripts cited over 100 times: 85. Number of citations per year the past 5 years: 1100 – 1840

Number of citations according to Google Scholar on Dec 30 2021: 33,741 (h-index 103).

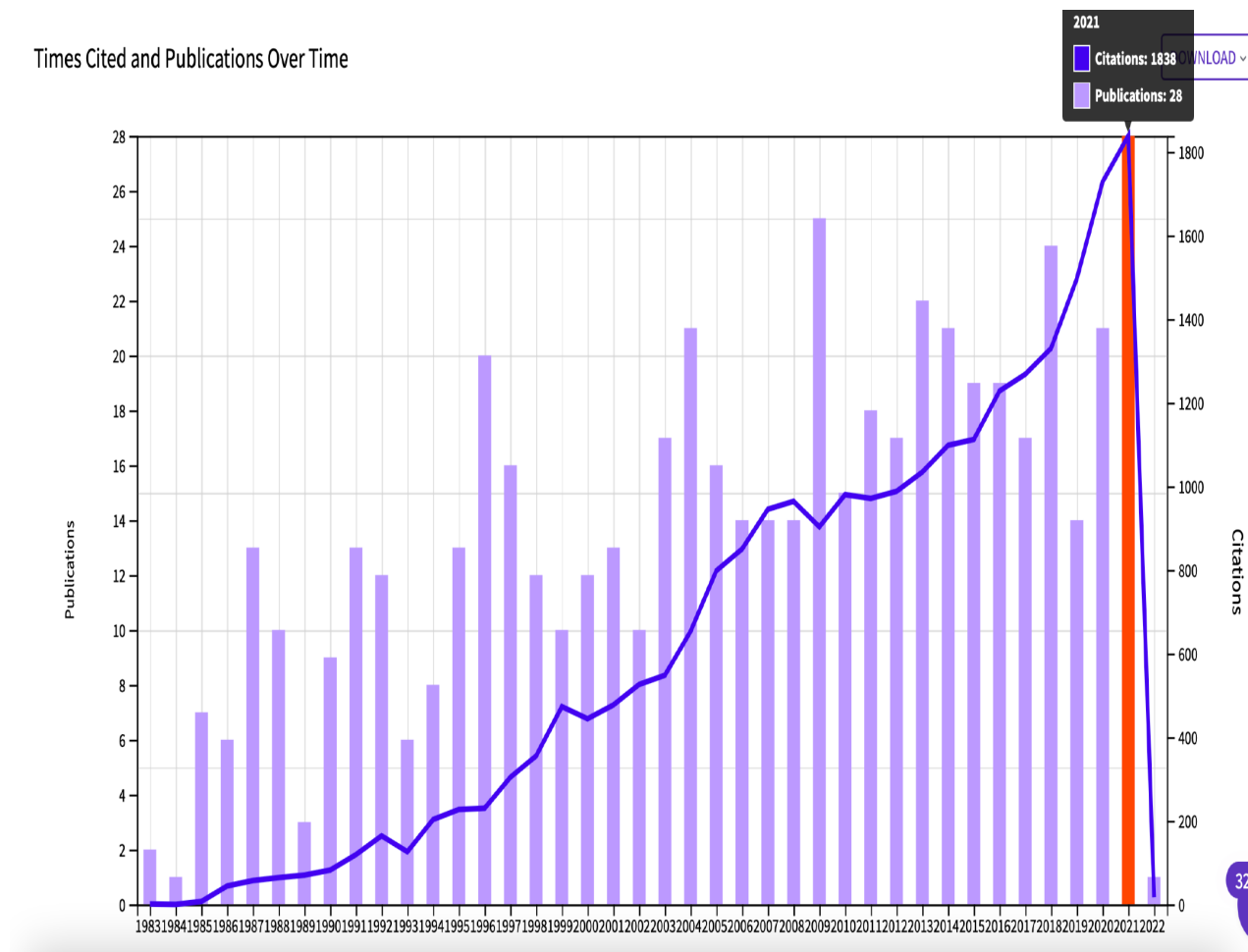
Pubmed link:

<https://www.ncbi.nlm.nih.gov/pubmed/?term=yong+vw>

<https://www.ncbi.nlm.nih.gov/pubmed/?term=wee+yong+v>

Web of Science Screen shot December 30 2021

Times Cited and Publications Over Time



The thick purple line represents the yearly citation

Current number of papers: 342 published, 8 in press, 3 in revision and 9 submitted

Publications from the past 5 years (since 2016) – selected from 97
(trainees underlined) (*IF: impact factor of journal*)

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 – *IF: 13.5*

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** 530:434-440, 2016 – *IF: 50.0*

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

– *IF: 14.9*

Jensen SK, Yong VW, Activity-dependent and experience-driven myelination provide new directions for the management of multiple sclerosis, **Trends Neuroscience** 39:356-365, 2016 – *IF: 13.8*

Mishra MK, Yong VW, Myeloid cells: targets of medications in multiple sclerosis, **Nature Rev Neurology** 12:539-551, 2016 – *IF: 42.9*

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 – *IF: 12.3*

Mirzaei R, Sarkar S, Yong VW, T-cell exhaustion in glioblastoma: intricacies of immune checkpoints, **Trends Immunology** 38:104-115, 2017 – *IF: 16.7*

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 Biology** 216:1163-1181, 2017 – *IF: 10.5*

Metz LM, Li DKB, Traboulsee 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 England J Medicine** 376:2122-2133, 2017 – *IF: 91.2*

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) – *IF: 13.5*

Roger 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 Science USA** 114:4999-5004, 2017 – *IF: 11.2*

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 Research** 77:3231-3243, 2017 – *IF: 12.7*

Plemel JR, Liu WQ, Yong VW, Remyelination therapies: a new direction and challenge in multiple sclerosis, **Nature Rev Drug Discovery** 16:617-634, 2017 – *IF: 84.7*

Faissner S, Mishra M, Wang J, Fan Y, Silva C, Rauw G, Metz L, Koch M, Yong VW, Systematic screening of generic drugs for progressive multiple sclerosis: Clomipramine as a promising therapeutic, **Nature Communications** 8:1990, 2017 – *IF: 14.9*

Rawji KS, Kappen J, Tang W, Teo W, Plemel JR, Stys PK, Yong VW, Deficient surveillance and phagocytic activity of macrophages/microglia within demyelinated lesions in ageing mice visualized by ex vivo multiphoton imaging, **J Neuroscience** 38:1973-1988, 2018 – *IF: 6.2*

Stephenson E, Mishra M, Moussienko D, Yong VW, Chondroitin sulfate proteoglycans as novel drivers of leukocyte infiltration in multiple sclerosis, **Brain** 141:1094-1110, 2018 – *IF: 13.5*

Caprariello AV, Rogers JA, Morgan M, Sarswat AK, Tsutsui S, Kotra LP, Yong VW, Stys PK, Biochemically-altered myelin triggers autoimmune demyelination, **Proc Natl Acad Science USA** 115:5528-5533, 2018 – *IF: 11.2*

Camara-Lemarroy CR, Metz L, Meddings JB, Sharkey KA, Yong VW, The intestinal barrier in multiple sclerosis: implications for pathophysiology and therapeutics, **Brain** 141:1900-1916, 2018 – *IF: 13.5*

Jensen SK, Michaels NJ, Ilyntskyy S, Keough MB, Kovalchuk O, Yong VW, Multimodal enhancement of remyelination by exercise with a pivotal role for oligodendroglial PGC1 α , **Cell Reports** 24:3167-3179, 2018 – *IF: 9.4*

Yong HYF, Rawji KS, Ghorbani S, Xue M, Yong VW, The benefits of neuroinflammation for repair of the injured central nervous system, **Cellular Molecular Immunology** 16:540-546, 2019 – *IF: 11.5*

Kaushik DK, Bhattacharya A, Rawji KS, Mirzaei R, Ann Y, Rho JM, Yong VW, Enhanced glycolytic metabolism supports transmigration of brain-infiltrating macrophages in multiple sclerosis model, **J Clin Investigation** 129:3277-3292, 2019 – *IF: 14.8*

Stephenson EL, Zhang P, Wang A, Gu J, Keough MB, Rawji KS, Mishra M, Silva M, Yong VW*, Ling CC*, Targeting the chondroitin sulfate proteoglycans: Evaluating fluorinated glucosamines and xylosides in screens pertinent to multiple sclerosis, **ACS Central Science** 5:1223-1234, 2019 (*co-senior authors) – *IF: 14.6*

Faissner S, Plemel JR, Gold R, Yong VW, Progressive multiple sclerosis: from pathophysiology to therapeutic strategies, **Nature Rev Drug Discovery** 18:905-922, 2019 – *IF: 84.7*

Dong Y, Yong VW, Adding insult to injury: when T cells collaborate with microglia in neurological disorders, **Nature Rev Neurology** 15:704-717, 2019 – *IF: 42.9*

Plemel JR, Stratton JA, Zhang E, Rawji KS, Michaels NJ, Thorburn K, Sinha S, Friedman TN, Jawad S, Caprariello AV, Hoghooghi V, Kerr BJ, Midha R, Stys PK, Biernaskie J, Yong VW, Microglia response following acute demyelination is heterogenous and limits infiltrating macrophage accumulation, **Science Advances** 6:eaay6324, 2020 – *IF: 14.1*

Bai Q, Xue M, Yong VW, Microglia and macrophages in intracerebral hemorrhage: Roles and therapies to ameliorate injury, **Brain** 143:1297-1314, 2020 – *IF: 13.5*

Rawji KS, Young A, Ghosh T, Michaels NJ, Mirzaei R, Mishra MK, Kappen J, Kohlemainen K, Pu A, Tang W, Zein S, Kaushik DK, Keough MB, Plemel J, Calvert F, Knights A, Gaffney D, Tetzlaff W, Franklin RJM, Yong VW, Niacin-mediated rejuvenation of macrophage/microglia enhances remyelination of the aging central nervous system, **Acta Neuropathol** 139:893-909, 2020 – *IF: 17.1*

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, **Science Translational Medicine** 12(537). pii: eaay9924, 2020 – *IF: 18.0*

Michaels NJ, Lemmon K, Plemel JR, Jensen SK, Mishra MK, Brown D, Rawji KS, Koch M, Yong VW, Aging-exacerbated demyelinating injury is associated with microglia-derived reactive oxygen species: alleviation by indapamide, **J Neuroscience** 40:8587-8600, 2020 – *IF: 6.2*

Xue M, Yong VW, Neuroinflammation in intracerebral hemorrhage: immunotherapies with high potential for translation, **Lancet Neurology** 19:1023-1032, 2020 – *IF: 44.1*

Mishra MK, Rawji KS, Keough MB, Kappen J, Dowlatabadi R, Vogel HJ, Chopra S, Distéfano-Gagne F, Dufour A, Gosselin D, Yong VW, Harnessing the benefits of neuroinflammation: Generation of macrophages/microglia with remarkable remyelinating properties, **J Neuroscience** 41:3366-3385, 2021 – *IF: 6.2*

Dong Y, D’Mello C, Moezzi D, Lozinski B, Kaushik D, Ghorbanigazar S, Brown D, Melo FC, Vo T, Yong VW, Oxidized phosphatidylcholines in multiple sclerosis lesions mediate neurodegeneration and are neutralized by microglia, **Nature Neuroscience** 24:489-503, 2021 – *IF: 24.1*

Ghorbani S, Yong VW, The extracellular matrix of lesions as modifier of neuroinflammation and remyelination in multiple sclerosis, **Brain** 144:1958 - 1973, 2021 – *IF: 13.5*

Brown D, Moezzi D, Dong Y, Koch M, Yong VW, Combination of hydroxychloroquine and indapamide attenuates neurodegeneration in models relevant to multiple sclerosis, **Neurotherapeutics** 18:387-400, 2021 – *IF: 7.6*

Koch MW, Sage K, Kaur S, Kim J, Cerchiaro G, Yong VW, Cutter G, Metz L, Repurposing domperidone in secondary progressive MS: A Simon 2-stage Phase 2 futility trial, **Neurology** 96:e2313-2322, 2021 – *IF: 9.9*

Plemel JR, Yong VW, An X-ray for myelin (Spotlight feature), **Trends Neurosci** 8:600-601, 2021-*IF: 14.9*

Wuerch E, Lozinski B, Yong VW, MedXercise: A promising strategy to promote remyelination, **Current Opinion Pharmacology** 61:120-126, 2021 – *IF: 5.5*

Zhang R, Xue M, Yong VW, Central nervous system tissue regeneration after intracerebral hemorrhage: The next frontier, **Cells** 10:2513, 2021 – *IF: 4.3*

Mirzaei R, Gordon A, Zemp FJ, Mehul K, Sarkar S, Luchman HA, Bellail AC, Hao C, Mahoney DJ, Dunn JF, Bose P, Yong VW, PD-1 independent of PD-L1 promotes glioblastoma growth through the NFκB pathway, **Science Advances** 7(45):eabh2148, 2021 – *IF: 14.1*

Kaushik DK, Bhattacharya A, Lozinski BM, Yong VW, Pericytes as mediators of infiltration of macrophages in multiple sclerosis, **J Neuroinflammation** 18:301, 2021 – *IF: 8.3*

Koch MW, Kaur S, Sage K, Kim J, Levesque-Roy M, Cerchiaro G, Yong VW, Cutter GR, Metz LM, Hydroxychloroquine for Primary Progressive Multiple Sclerosis, **Annals Neurol** 90:940-948, 2021 – *IF: 10.4*

Yong HYF, Yong VW, Mechanism-based criteria to improve therapeutic outcomes in progressive multiple sclerosis, **Nature Rev Neurol**, in press – *IF 42.9*

Jain RW, Yong VW, B cells in central nervous system disease: Diversity, locations and pathophysiology, **Nature Rev Immunology**, in press – *IF: 53.1*

Ghorbani S, Jelinek E, Jain R, Buehner B, Li C, Lozinski B, Sarkar S, Kaushik DK, Dong Y, Wight

TN, Karimi-Abdolrezaee S, Schenk GJ, Strijbis EM, Geurts J, Zhang P, Ling CC, Yong VW, Versican impairs remyelination by inhibiting oligodendrocytes and promoting T helper 17 cytotoxic neuroinflammation, **Nature Communications**, in revision

Dong Y, Jain RW, D'Mello C, Lozinski B, Visser F, Ghorbani S, Zandee S, Brown DI, Prat A, Xue M, Yong VW, Single cell and spatial RNA sequencing identify perturbators of microglia functions with ageing, **Nature Aging**, in revision

Selected publications prior to 2016

Stuve O, Dooley NP, Uhm JH, Antel JP, Williams G, Yong VW, Interferon- β decreases the migration of T lymphocytes in vitro: effects on matrix metalloproteinase-9, **Annals Neurology** 40:853-863, 1996 – *IF: 10.4*

Chabot S, Williams G, Yong VW, Microglial production of TNF- α is induced by activated T lymphocytes: Involvement of VLA-4 and inhibition by interferon β -1b, **J Clinical Investigation** 100:604-612, 1997 - *IF: 14.8*

Yong VW, Krekoski CA, Forsyth PA, Bell R, Edwards DR, Matrix metalloproteinases and diseases of the central nervous system, **Trends Neuroscience** 21:75-80, 1998 – *IF: 13.8*

Uhm JH, Dooley NP, Stuve O, Francis GS, Duquette P, Antel JP, Yong VW, Migratory behavior of lymphocytes isolated from multiple sclerosis patients: effects of interferon β -1b therapy, **Annals Neurology** 46:319-324, 1999 – *IF: 10.4*

Oh LYS, Krekoski C, Donovan F, Edwards D, Werb Z, Yong VW, Gelatinase B/Matrix metalloproteinase-9 is required for oligodendroglial process extension in vivo and in vitro, **J Neuroscience** 19:8464-8475, 1999 – *IF6.2*

Yong VW, Power C, Forsyth P, Edwards DR, Metalloproteinases in biology and pathology of the nervous system, **Nature Reviews Neuroscience** 2:502-511, 2001 – *IF 34.9*

Brundula V, Rewcastle B, Metz L, Bernard CC, Yong VW, Targeting leukocyte MMPs and transmigration: Minocycline as a novel therapeutic for multiple sclerosis, **Brain** 125:1297-1308, 2002 – *IF13.5*

Yong VW, Differential mechanisms of action of interferon- β and glatiramer acetate in MS, **Neurology** 59:802-808, 2002 – *IF: 9.9*

Takahashi JT, Imai Y, Power C, Yong VW, Interleukin-1 β promotes oligodendrocyte death through glutamate excitotoxicity, **Annals Neurology** 53:588-595, 2003 – *IF: 10.4*

Wells J, Hurlbert J, Fehlings M, Yong VW, Neuroprotection by Minocycline Facilitates Significant Recovery from Spinal Cord Injury in mice, **Brain** 126:1628-1637, 2003 – *IF: 13.5*

Bar-Or A, Nuttall R, Duddy M, Alter A, Pennington C, Bourgoin P, Edwards D, Yong VW, Analyses of all MMP members in leukocytes emphasize monocytes as major inflammatory mediators in MS,

Brain 126:2738-2749, 2003 – *IF: 13.5*

Larsen PH, Wells J, Stallcup WB, Opdenakker G, Yong VW, Matrix metalloproteinase-9 (MMP-9) facilitates remyelination by processing the inhibitory NG2 proteoglycan, **J Neuroscience** 23:11127-11135, 2003 – *IF: 6.2*

Metz LM, Zhang Y, Yeung M, Patry DG, Bell RB, Stoian CA, Yong VW, Patten SB, Duquette P, Antel JP, Mitchell JR, Minocycline Reduces Gadolinium-enhancing MRI Lesions in Multiple Sclerosis, **Annals Neurology** 55:756, 2004 – *IF: 10.4*

Yong VW, Wells J, Giuliani F, Casha S, Power C, Metz LM, The promise of minocycline in neurology, **Lancet Neurology** 3:744-751, 2004 – *IF: 44.2*

Yong VW, Metalloproteinases: Mediators of pathology and regeneration in the CNS, **Nature Reviews Neuroscience** 6:931-944, 2005 – *IF: 34.9*

Larsen PH, Goncalves DaSilva A, Conant K, Yong VW, Myelin formation during development of the CNS is delayed in matrix metalloproteinase-9 and -12 null mice, **J Neuroscience** 26:2207-2214, 2006 – *IF: 6.2*

Sarkar S, Nuttall RK, Edwards DR, Yong VW, Tenascin-C stimulates glioma cell invasion through matrix metalloproteinase-12, **Cancer Research** 66:11771-11780, 2006 – *IF: 12.7*

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 – *IF: 13.5*

Yong VW, Rivest S, Taking advantage of the systemic immune system to cure brain diseases, **Neuron** 64:55-60, 2009 – *IF: 17.2*

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 Science USA** 106:17992-17997, 2009 – *IF: 11.2*

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 – *IF: 6.3*

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 – *IF: 13.5*

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 Neurology** 72:419-432, 2012 – *IF: 10.4*

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K. National or international conference invitations (selected from 113)

Symposium Speaker, Symposium on Glia and neurological disorders, Japanese Society of Neurology, Tokyo, May 20-22, 2010

Speaker, Keystone symposium on MS, Taos, New Mexico, Feb 15 – 20, 2011, on: Overcoming the inhibitory microenvironment to promote remyelination

Symposium speaker, American Society of Neurochemistry, session on Proteases, March 20-22, 2011, on: EMMPRIN regulation of matrix metalloproteinases mediates neuroinflammation and neuropathology

Speaker, International Society of Neuroimmunology, Boston, Nov 4-8, 2012, on: T cell killing of neurons is promoted by microglia

Symposium speaker, American Society of Neurochemistry, March 12 2014 Long Beach CA on: The battle for the brain: glioma stem cells versus microglia

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

Symposium Speaker, International Society of Neuroimmunology, Nov 11 2014 Mainz, Germany, on: Overcoming inhibitors of remyelination

Symposium speaker, American Society of Neurochemistry, March 17 2015, Atlanta, Overcoming extracellular matrix inhibitors of remyelination

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

Symposium speaker, European Committee for Treatment and Research in MS (ECTRIMS), Oct 9 2015, Barcelona, Altering the CNS microenvironment during neurodegeneration to promote remyelination

Session chair and introductory speaker, on Myelin Medicines, Gordon Conference on Myelin, Luca Italy, May 15-20 2016

Symposium speaker, International Society of Neuroimmunology, Jerusalem, September 26-29 2016, on: Un-appreciated regulators of neuroinflammation: the extracellular matrix

Keynote speaker, First International Workshop of Cuban Network of Neuroimmunology, Varadero, June 10-14 2017, on: Modulating inflammation in multiple sclerosis

Keynote speaker, 2017 International Translational Neurology Forum, Zhengzhou University China, July 21-23 2017, on: Bench to bedside translational medicine: steps and successes

Keynote speaker, Congress of the International Society of Neuroimmunology, Brisbane, July 27 – 31, 2018, on: Bench to bedside neuroimmunology: Translational medicine for CNS regeneration

Lecturer, ECTRIMS Berlin, Oct 10 2018, on: Myeloid Cells in MS

Speaker, Microglia Workshop organized through Harvard, Boston Oct 21-23, 2018, on: Modulating myeloid cell activity with generic medications to improve neurological outcomes

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

Workshop speaker, World Parkinson Congress, Kyoto, June 7 2019, on Aging on the immune system and relevance to brain health and disease

Closing Plenary Speaker, MS Frontiers 2019, Annual MS meeting of United Kingdom, Bath, July 5 2019, on Advances in MS: Lifestyle, medications and repair

Speaker, SFB/CRC-TR128 International Symposium, Mainz, Germany, September 16-17 2019, on: Activity of leukocytes within the perivascular cuff in MS: therapeutic targets

Lecturer, 2nd Asia-Pacific School of Neuroimmunology, Seoul, Oct 12 2019, on: Neuroimmunology in repair of the nervous system

Symposium speaker, ACTRIMS MS Virtual, Feb 27 2021, on: Microglia in progressive MS: When friend goes rogue

Speaker, Neuroimmunology Australia, March 25 2021, on: Microglia: friends going rogue in neuropathology

Symposium speaker, World Congress of American Congress Sports Medicine, June 1-5, 2021, on: Exercise and its mechanisms of myelin repair

Symposium speaker, Italian Society of Neuroimmunology, Verono, Sept 16-19, 2021: Remyelination mechanisms and therapies: new directions and challenges in multiple sclerosis.

Symposium speaker, Consortium of MS Clinics, Oct 27 2021, Orlando, on: Remyelination in multiple sclerosis: From basic science to clinical translation

Featured speaker, International Progressive MS Alliance 2021 Virtual meeting, Accelerating treatments for progressive MS: A vision for success and the path forward. Dec 2 2021. My presentation topic: Understand, prevent, and reverse progression

L. Talks at Academic Institutions (selected from 278)

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

Speaker, Neurology Grand Rounds, University of Southern California, Overcoming impediments to remyelination in MS, September 14 2010

Grand Rounds Speaker, University of California at Los Angeles, Overcoming impediments to remyelination in MS, September 15 2010

Speaker, seminar at Harvard Medical School, Dec 20 2010, on: Curbing MMPs and neuroinflammation: Minocycline and anti-EMMPRIN

Speaker, Grand Rounds, Wayne State University, Detroit, March 9, 2012, on: Overcoming an inhibitory microenvironment to promote remyelination

Speaker, Glia club, University of Cambridge, March 19 2012, on: Overcoming an inhibitory microenvironment to promote remyelination

Speaker, Cleveland Clinic Neuroscience Journal Club, October 22, 2012, on: A novel factor in MS: EMMPRIN

Seminar Speaker, Feb 1 2013, University of California at San Francisco, on: A novel target in MS: EMMPRIN

Seminar speaker, Feb 13 2013, Harvard Medical School MS Partners Group, on: Novel factors in MS: EMMPRIN and proteoglycans

Seminar Speaker, University of Virginia, March 31 2014, on: Overcoming inhibitors in the lesion microenvironment for CNS regeneration

Seminar Speaker, New York University, Sept 5 2014 on: Remyelination in MS

Speaker, Sandford-Burhnam Institute, San Diego, Jan 22 2015, on: Overcoming extracellular matrix inhibitors of myelin repair

Seminar Speaker, University of Kyushu, Japan, Sept 2 2015, on: The new frontiers of remyelination medicines in neurology

Speaker, Stanford Neuroscience Center seminar, March 6 2017, on: Modulating inflammation in MS

Seminar Speaker, University of Pennsylvania Dec 15 2017, on: Translational medicine in MS

Seminar speaker, Ruhr University, Bochum Germany, Jan 14 2018, on: Repurposing generic medications for MS

Seminar speaker, University of Singapore, April 5 2018, on: Modulating myeloid activity to improve CSN neurological outcomes

Seminar speaker, Zhengzhou University China, Dec 4 2018, on: Bench to clinical trials in stroke with focus on reducing neuroinflammation and injury

Seminar Speaker, University of Toronto, Feb 3 2020, on: Overcoming lesional inhibitors to promote remyelination

Seminar speaker, University of British Columbia MS program, July 16 2020, on: Bruton's tyrosine kinase inhibitors in MS

Grand Rounds speaker, University of Alberta Division of Neurology, Oct 23 2020, on: CNS repair and associated biomarkers: Lessons from MS

Seminar speaker, National Institutes of Health, Jan 26 2021, on: Microglia in MS: When friend goes rouge

Grand Rounds Speaker, Dept of Neurology, Ruhr University, Bochum, Germany, Aril 29 2021 on: Microglia in MS: When friend goes rouge

Neurology Grand rounds speaker, University of Ottawa, May 7 2021 on Microglia in neurological disorders: When friends go rouge

Seminar speaker, Barlo MS Center, University of Toronto, Oct 8 2021, on Remyelination in MS: benefits, mechanisms and facilitators

Speaker, MS Xchange, Montreal, November 5 2021, on Mechanisms of promotion of pathology in the CNS

M. Talks to the lay public (selected from 70)

I) International

Featured speaker, National MS Society (USA) Oregon chapter Golden Circle Salon, “Challenges and advances in multiple sclerosis”, Portland, June 11 2010

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

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

Featured speaker to MS patients and families, Seattle July 28 2011, on: Advances in MS Research and Treatment

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

Speaker, Patient program, Advances in MS, Anchorage Alaska, Feb 19 2015

Speaker, Patient program, on Immunology of MS, Troy, Michigan, Feb 1 2017

Speaker, Patient program, on Immunology of MS, Modesto, CA March 8 2017

Speaker, Patient program, on Immunology of MS, Las Vegas March 9 2017

II) National

Speaker, on Neuroimmunology 101, organized by the MS Society of Canada, to MS lay community, Edmonton, March 21 2015

Speaker, Annual MS Day, Advances in MS, Winnipeg, May 23 2017

Speaker, MS Connect 2017, Edmonton, Sept 29 2017, on Towards improving the treatment of MS: The Alberta advances

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

Keynote speaker, MS Society of Canada, Yellowknife, May 13 2019, on: Advances in MS

Keynote Speaker, MS Connect, of the MS Society of Canada, Vancouver, Oct 5 2019, on: Advances in MS

Expert guest, NeuroSask (Saskatchewan MS group), zoom meeting with about 200 MS patients, discussing the importance of exercise in MS, May 7 2020

Speaker, MS Connect (annual national meeting of the MS Society of Canada) Nov 24 2020, on: Towards repair of lesions and restoration of functions in MS

N. 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 (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 with Dr. Jonathan Kipnis; 3rd school at the University of Montreal Sept 23-26 2019, co-directed with Dr. Nathalie Arbour – 160 trainees. The 4th school, co-directed with Dr. Jonathan Godbout will be held at The Ohio State University in 2022. Dr. Yong 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); and with the Korean MS and Encephalitis Societies to host the 2nd school on Oct 12, 2019 in Seoul, South Korea. The 3rd Asia-Pacific School co-hosted by ISNI (lead: Yong) and the Australian Neuroimmunology Society will be held in November 2022. 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 but was derailed in 2021 by COVID19.

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 (originally scheduled to be held in Nice) was held virtually in Nov 2021 (600 attendees).

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

II) Americas School of Neuroimmunology monthly seminar series

(<https://www.isniweb.org/asni-americas-school-of-neuroimmunology/>)

On behalf of ISNI and ASNI, Dr. Yong has led the initiation of a monthly seminar series for the Americas and elsewhere, available through zoom. Each seminar is led by a world expert and one of his/her trainees. The intent is to provide neuroimmunology education and excitement to those working on neurological and immunological conditions, so that those researching on one disease can learn from another. The first seminar was on March 25th 2021 with 520 registrants.

III) Alberta MS Network (<http://www.albertamsnetwork.ca>)

Dr. Yong directs the Alberta MS Network (~80 trainees and 60 researchers/clinicians) since 2009. Initially funded by the endMS Network of the MS Society of Canada, Yong has brought in yearly funds (>\$100,000 pa) since 2015 from industry to support research activities and training on MS across the Universities of Alberta, Calgary and Lethbridge, and Mount Royal University in the province. Trainees (graduate students, residents, postdoctoral fellows, clinical fellows) are exposed to multi-disciplinary collaboration/research, translational medicine, monthly Alberta-wide MS seminars, and top quality international speakers. Trainees have access to travel support (\$500/meeting) and free attendance at a yearly Banff retreat on MS. The high quality of training on MS has resulted in our alumni taking position as MS- or neuroscience dedicated professors, guiding medical policy and research at the provincial and national government level, becoming MS

clinicians, working within the pharmaceutical industry and health foundations, and continuing with further medical training and research training in notable research groups around the world.

IV) For MS Societies

Member, Board of Directors, ACTRIMS (Americas Committee for Treatment and Research in Multiple Sclerosis, premier North American MS organization), 2022 - 2025

Member, Working group on progression in MS, International Progressive MS Alliance, 2020 – present

Member, Scientific Advisory Committee, OCTOPUS (Efficient Clinical Trials Platform of the United Kingdom MS Society). 2020 - present. This committee decides the treatments and treatment doses to be tested for progressive MS in this UK funded platform.

Co-chair, 5th Triennial National endMS Conference, Calgary, December 8-11 2019 (~300 attendees)

Member, Advisory Committee, ACTRIMS, Feb 2017 – present

Member, Program Committee, Department of Defense Congressionally Directed Multiple Sclerosis Research Program, USA, 2016 – 2021

Co-chair, 4th endMS Conference, Toronto, December 2016 (~250 attendees). 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 (~120 attendees).

Chair, Medical Advisory Committee, Multiple Sclerosis Society of Canada, 2007 – 2011 (the first basic scientist to head this committee)

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

V) Editorial boards of international journals (current listing only)

Handling editor of the journal Multiple Sclerosis International, 2009 - present

Editorial board member, Clinical and Experimental Neuroimmunology, 2013 – present

Honorary Editor-in-Chief, Neuroimmunology and Neuroinflammation, 2017 – present

Editorial board member of Neurotherapeutics, 2010 - present

Editorial board member of the Journal of Neuroimmunology, 2005 – present

VI) Recent review panels

Member, Program Committee, Department of Defense Congressionally Directed Multiple Sclerosis Research Program, USA, 2016 – 2021

Secretary, Royal Society of Canada fellowship, Life Sciences Academy, 2021

Grant review panel member, Brain Canada Future Leaders, 2021

Grant review panel member, Canadian Institutes of Health Research, Neuroscience B committee, 2020

Deutsche Forschungsgemeinschaft (DFG) Germany, Transregional Collaborative Research Centres Award, 2020

Reviewer, Brain Canada Future Leaders LOI, 2020

Reviewer, CIHR Stage 2 Foundation grant, 2015-2019

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, 2016, 2017, 2018, 2019

VII) Advisory boards of pharmaceutical companies

Advisory Board member, Roche, 2020 - current

Advisory Board member, Novartis, 2020 - current

Advisory Board member, EMD Serono, 2019 - current

Advisory Board member, Sanofi-Genzyme, 2019 - 2020

Advisory Board member, Teva Neuroscience USA, 2005 - 2018

O. Current trainees in the laboratory

1. Reza Mirzaei (PhD, University of Tehran), **postdoctoral fellow** from October 2015. Source of funding: U Calgary Eyes High program
2. Jeff Dong (PhD, UBC), **postdoctoral fellow** from March 2018. Source of support: Alberta MS Collaboration postdoctoral fellowship and CIHR Fellowship
3. Samira Ghorbani (PhD, University of Tehran), **postdoctoral fellow** from July 2018. Source of support: Rebecca Hotchkiss International Scholars Exchange fellowship, MS Society of Canada fellowship, CIHR fellowship
4. Brian Lozinski (BSc, Mount Royal University), **PhD candidate**, from June 2018. Source of support: Alberta Graduate Excellence Scholarship and MS Society of Canada PhD studentship
5. Rajiv Jains (PhD, Western University), **postdoctoral fellow** from Feb 2019. Source of funding: U Calgary Eyes High program, Roche Canada and MS Society of Canada fellowship
6. Emily Jelinik (BSc, Western University), **MSc candidate**, from July 2019
7. Jacqueline Reid, **PhD candidate**, co-supervised with Hedwich Kuipers

8. Dorsa Moezzi (BSc U Calgary) - **MSc candidate**, from Sept 2020. Source of support: Alberta Graduate Excellence Scholarship (switching to PhD)
9. Emily Wuerch (BSc, McMaster University), **MSc candidate**, from Sept 2020. Source of support: Alberta Graduate Excellence Scholarship (switching to PhD)
10. Marlene Morch (PhD, Odense University), **postdoctoral fellow** from March 2021. Source of funding: Carlsberg Foundation, Denmark
11. Ruiyi Zhang, **PhD candidate**, Zhengzhou University, from Sept 2019, co-supervised with Mengzhou Xue. In my lab from April 2021 – 2023, supported by China Research Scholarship
12. Cenxiao Li (U Calgary) - **MSc candidate**, from Sept 2021. Source of support: Alberta Graduate Excellence Scholarship

P. Current research staff in the laboratory

1. Laboratory manager: Claudia Silva, MSc (from 2005)
2. Technician: Susobhan Sarkar (PhD, University of Calcutta), from May 2003
3. Technician, Manoj Mishra (PhD, National Brain Research Centre, India), from 2009
4. Research Associate (for bioinformatics): Charlotte D'Mello (PhD, University of Calgary), from September 2019
5. Administrative Assistant: Tanna Giroux (from 1997)
6. Administrative and graphics manager: Fiona P. Yong (from 1989)

Q. Current position of past trainees (1990 – 2021) of the Yong Lab

Training Level while in Yong lab (number)	Current Position (number)	Surname of trainees
PhD (25)	Professors (5)	Couldwell, Moundjian, Baltuch, Balasingam, Besson
	Postdoctoral Fellows (2)	Zemp, Rawji
	Medical doctors (8)	Moorhouse, Lau, Rice, Nathoo, Keough, Poon, Rogers, Jensen
	Industry (5)	Chabot, P. Larsen, Oh, DaSilva, Palmer
	Public Service/government (2)	Dooley, Michaels
	Medical School (2)	Yang, Stephenson
	Writing or education roles (1)	Cua
Post-Doctoral Fellows (19)	Professors (11)	Stuve, Zhou, Giuliani, Zhang, Stirling, Xue, Faissner, Ladiwala, Plemel, Husseini, Kaushik
	Medical doctor (1)	Skihar
	Industry (4)	J. Larsen, Todoruk, Agrawal, Doring
	Foundations (2)	Johnson, Haylock
	Maternity leave (1)	Hahn
Clinical Fellows (4)	Professors (4)	Zabad, Lu, Sloka, Camara-Lemmaroy
MSc (11)	Professors (1)	Le
	Medical doctors (3) or medical students (2)	Tejada-Berges, Weaver, Ah-Sue, Taelor, Brown
	Industry (1)	Corley
	Technicians (2) Management (1) PhD studies (1)	Boutros, Dhaliwal Brundula Pu
Residents on lab rotation (6)	Professors (1)	O'Ferrall
	Medical doctors (5)	Noble, Vecil, Takahashi, Li, Janke
Summer Students (29)	Professors (7)	Uhm, Bar-Or, Fraser, Wright, Turley, Brade, Armour
	Medical doctors (3)	Cheung, Vernaghe, Williamson
	Medical students/residents (7)	Stoian, Hurlbert, Li, Mahjoub, Moussienko, Hamilton, Bhattacharya
	Undergraduates (12)	Nair, Kappen, Zhang, Dzikowski, Lemmon, Gordon, Santamaria, Li, Guo, Lemme, Moezzi, Cisterna