

**CONTACT INFORMATION**

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**PRESENT POSITIONS**

Professor, Department of Clinical Neurosciences (Neurosurgery), University of Calgary  
Director: Neuromodulation Program, Alberta Health Services, Calgary Zone  
Medical Director: MR guided Focused Ultrasound program, University of Calgary  
Deputy Editor: Brain Stimulation  
Chair: Royal College of Physicians and Surgeons of Canada Clinician Investigator Specialty Committee

**EDUCATION/RESEARCH & CLINICAL TRAINING**

- 1982-1984 Faculty of Science, Carleton University (Ottawa)  
first two years of BSc Honours in Biochemistry
- 1984-1988 School of Medicine, University of Ottawa  
MD *cum laude* granted in 1988
- 1988-1989 Comprehensive Intern in Surgery, Ottawa Civic Hospital  
Program Director: Dr. Leslie P Ivan
- 1989-1997 Resident in Neurosurgery  
University of Toronto (Toronto General and Western Hospitals, Sunnybrook Health Science Centre, Hospital for Sick Children, St. Michael's Hospital, 3 month elective University Hospital with Dr. J Girvin, London Ontario)  
Program Chairman: Dr. Charles H Tator
- 1992-1996 Graduate student, Neurophysiology, Institute of Medical Science, University of Toronto  
Supervisors: Drs. Ron R Tasker and Jonathan O Dostrovsky  
PhD defended in 1998  
*Thesis Title: Plasticity in the Adult Human Somatosensory Thalamus*
- 1998 Post-doctoral Fellowship in Neurophysiology/Neurosurgery (Movement disorder program), Centre Hospitalier Universitaire Grenoble  
Labo. Neurobiologie Préclinique INSERM U.318, Universitaire Joseph Fourier  
Grenoble, France  
Supervisor: Prof. A-L Benabid

## **QUALIFICATIONS**

1988	Doctor of Medicine, University of Ottawa
1988	Licentiate Medical Council of Canada (LMCC)
1990	General Medical Licence (Ontario) CPSO No: 59590
1993	Federation of State Medical Boards Licensing Examination (FLEX)
1997	American Board of Neurological Surgeons: eligibility examination
1997	Certification in Neurosurgery: Royal College of Surgeons of Canada
2000	Medical License (Alberta) CPSA No: 12590
2003	Diplomate of the American Board of Neurological Surgeons

## **PROFESSIONAL APPOINTMENTS**

### **Hospital**

1992-1997	Courtesy Staff, Division of Neurosurgery, Mississauga Hospital
1998-2000	Attending Staff, Division of Neurosurgery, The Ottawa Hospital, Civic Campus
2000-	Attending Staff, Division of Neurosurgery, Foothills Hospital
	Associate Staff, Department of Radiation Oncology, Tom Baker Cancer Clinic

### **University**

1999-2000	Assistant Professor, Department of Surgery, University of Ottawa
2000-2006	Assistant Professor, Department of Clinical Neurosciences, University of Calgary
2006-2017	Associate Professor, Department of Clinical Neurosciences, University of Calgary
2012-	Tenure awarded, University of Calgary
2017-	Professor, University of Calgary

## **AWARDS**

### **Undergraduate**

1982	Award for Excellence (Carleton University)
1982	Ottawa Ladies College Scholarship (Carleton University)
1983, 1984	Deans' Honour List (Carleton University)
1983	Jacob Freedman Scholarship (Carleton University)
1984	Ben and Mary Steinberg Scholarship (Carleton University)
1984	National Science and Engineering Research Council Undergraduate Bursary
1987	Med-Chem Award (from the Canadian Association of Medical Biochemists for 1 of 3 best poster presentations at the 31st Annual Conference)

### **Graduate/Post-graduate**

1992	University of Toronto Open Fellowship
1993	Ontario Graduate Student Scholarship (University of Toronto)
1993	Dr. Alan Wu Prize (best Clinical Research Poster at Annual Scientific Day of the Institute of Medical Science, University of Toronto)
1993	Elekta/Radionics/Trent Wells Award in Stereotactic Neurosurgery (from the World Society of Stereotactic and Functional Neurosurgery for the best paper submitted by a resident or junior staff neurosurgeon to the 11th meeting of the WSSFN)
1994	T.P. Morley Prize (best research paper submitted by a resident in the Division of Neurosurgery, University of Toronto)
1994-1996	Medical Research Council of Canada Fellowship

1995	William H. Sweet Young Investigator Award in Pain Medicine (from the American Association of Neurological Surgeons/AANS Section on Pain for the best paper submitted by a resident or junior staff neurosurgeon)
1996	J.C. Laidlaw Competition Award of Excellence (from Institute of Medical Science, University of Toronto for 1 of 2 best papers submitted by a graduate student to Annual Scientific Day)
1996	McKenzie Prize in Clinical Neuroscience (from the Canadian Neurosurgical Society for the best research paper submitted by a resident in Canada)
1997	William P. Van Wagenen Fellowship (from the AANS, 1 awarded annually to a graduating resident from North America)
1998	Bernard Langer Surgeon-Scientist Award (one awarded annually from the University of Toronto, Department of Surgery for a graduate of the Gallie program with the most promise for an academic surgical career)

**Faculty**

1998-2001	Medical Research Council of Canada, Clinician-Scientist Phase 1 Award (salary award)
2001-2002	American Association of Neurological Surgeons Research Foundation, Young Investigator Award (used as start-up & operating funding, 40,000 USD)
2001-2004	Canadian Institutes for Health Research, Clinician-Scientist Phase 1 Award Renewal (salary award)
2003-2006	Alberta Heritage Foundation for Medical Research Clinical-Investigator Award (salary + operating and start-up funds, details in grants section)
2004-2007	Canadian Institutes for Health Research, Clinician-Scientist Phase 2 Award (salary award + 40,000 CAD/year operating grant)
2006-2009	Alberta Heritage Foundation for Medical Research Clinical-Investigator Renewal (salary award)
2007-2010	Canadian Institutes for Health Research, Clinician-Scientist Phase 2 Award Renewal (salary award)
2009-2016	Alberta Heritage Foundation for Medical Research Clinical-Scholar award (salary award + 28,000 operating grant bonus + 35,000 CAD operating allowance)

**SUCCESSFUL GRANTS** (as PI and peer-reviewed, unless otherwise stated)

**Local:**

2001-2002: The Arthur Henry and Alice Elizabeth Zoe Fitzgerald Fund in Alzheimer's disease Research, University of Calgary Medical Endowment (11,000 CAD)

Title: Remote effects of deep brain stimulation (DBS) on sensorimotor cortex

2006: Robertson Fund for Cerebral Palsy Research, University of Calgary Endowment (30,000 CAD)

Title: Mechanisms of DBS action for dystonia

2007: Hotchkiss Brain Institute, Clinical Research Unit, University of Calgary (10,000 CAD)  
Supplemented by the Calgary Health Region, Adult Research Committee Fund (5000 CAD)  
Co-PI (with Raj Ramasubbu)  
Title: Therapeutic Brain Stimulation for Refractory Depression: A Pilot Study

2013: Equipment repair and replacement grant from the Hotchkiss Brain Institute (HBI), University of Calgary Endowment (10,000 CAD)

2013: Operating grant from the Rose Family Funds from the Hotchkiss Brain Institute (10,000 CAD)  
Title: Database for movement disorder surgery (*not peer-reviewed*)

2014: Operating grant from HBI Rose Family Funds (40,000 CAD)  
Title: Role of cholinergic modulation in the mechanisms of DBS for Parkinson's disease (*not peer-reviewed*)

2015: Robertson Fund for Cerebral Palsy Research, University of Calgary Endowment (30,000 CAD)  
Title: Electrical stimulation for CP dystonia: Mechanisms of action

2017-18: HBI/DCNS Pilot Research Fund Program (20,000 CAD)  
Title: Brain maps in dystonia and reorganization with treatment  
Co-PI with Davide Martino

2017-18: HBI/DCNS Pilot Research Fund Program (20,000 CAD)  
Title: Fiberoptic tools for studying neurovascular coupling in deep brain stimulation  
Co-PI with Kartikeya Murari

2018: AMHSP South Sector grant (20,000 CAD)  
Title: Cost effectiveness of movement disorder surgery by MR guided focused ultrasound and deep brain stimulation (DBS)

2020-22: Calgary Parkinson Research Initiative (CaPRI) - Movement Disorders Neuroteam pilot project (73,321 CAD)  
Title: Creating a model of deep brain stimulation for activation of zona incerta dopaminergic pathways  
Co-I with Whelan (PI) and Murari (Co-I)

2022-24: HBI/DCNS Pilot Research Fund Program (20,000 CAD)  
Title: Developing a new LIFU neuromodulation method to suppress tremor

2022-25: CaPRI HBI 75,000 pilot project (75,000 CAD)  
Title: Electrophysiological markers of long-term benefit vs. early cognitive decline in PD patients treated with STN-DBS

**Provincial/National/International:**

1995: Physicians' Services Incorporated Foundation (15,000 CAD)  
Title: Plasticity in the human somatosensory thalamus

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1998-2000: Canada Foundation for Innovation, New Opportunities Competition (198,136 CAD) and matching funds from Ontario Research & Development Challenge Fund (198,136 CAD)  
Title: Electrophysiologic recording *in vitro* and *in vivo* to study the mechanism of deep brain stimulation (DBS)

1999: JP Bickell Foundation Grant (30,350 CAD)  
Title: Cellular mechanisms underlying deep brain stimulation therapy

2001-2002: International Parkinson's disease Foundation (*declined 35,000 USD*)

2001-2002: The Banting Research Foundation Grant (20,000 CAD)  
Title: Cellular mechanisms underlying deep brain stimulation (DBS) therapy

2003: Canadian Institutes of Health Research, Dyskinesia and Torticollis Fund (6,513 CAD) supplemented by the Calgary Health Region, Adult Research Committee Fund (3,440 CAD)  
Title: A multicentre pilot study of pallidal deep brain stimulation for cervical dystonia

2003-2006: Alberta Heritage Foundation for Medical Research Clinical-Investigator Establishment Award (280,000 CAD)  
Title: Mechanisms of deep brain stimulation (DBS): Local and remote effects in humans and its cellular basis

2006-2011: Canadian Institutes of Health Research, Strategic initiative in regenerative and nano-medicine, Team Grant Program (1.4M CAD total, my component 32,000/y)  
Co-investigator (PIs: B Hu and I Whishaw)  
Title: Sensory cueing, neuroplasticity and Parkinson's disease rehabilitation

2007-2011 (extended to 2014): Canadian Institutes of Health Research (383,947 CAD)  
Title: Mechanisms of therapeutic deep brain stimulation (DBS) for dystonia

2009-2014 (extended to 2015): Alberta Heritage Foundation for Medical Research Interdisciplinary Team Grant Program (5M CAD total, my component 43,087.20/y)  
Co-leader with V Mushahwar and R Stein (University of Alberta)  
Title: Smart neural prostheses to restore motor and sensory function

2013-2016 (extended to 2017): Alberta Innovates Health Solutions: Collaborative Research and Innovation Opportunity Project Grant (750,000 CAD total)  
PI (with R Ramasubbu as co-PI)  
Title: Deep brain stimulation for treatment resistant depressive disorders

2017-2022 (extended to 2023): Natural Sciences & Engineering Research Council (NSERC) Discovery Grant *RGPIN-2017-0412628* (168,000 CAD)  
Title: High frequency electrical stimulation and the brain: neurovascular coupling and long-term effects

2018-23: Canadian Foundation for Innovation (8,090,300 CAD)

Title: MR Guided Focused Ultrasound Research Platform

PI: GB Pike; Co-Applicants: G Cairncross, J Dunn, R Frayne, A Kirton, **Z Kiss**, D. Martino, O Monchi, G Sutherland, P Whelan

2019-2020 (extended to 2022): Dystonia Medical Research Foundation of Canada (50,000 CAD)

Title: Mechanisms of action of DBS for dystonia: cholinergic contributions to plasticity.

2021-2024: ERA-NET (Research Projects on Ethical, Legal and Social Aspects of Neuroscience)  
NEURON (Network for European Funding for Neuroscience Research)

Canadian Institutes of Health Research contribution (225,000 CAD)

Title: International Neuroethics Patent Initiative

PIs: Spranger (Germany) and Illes (Canada); co-PI (Canada): Kiss

### Industry-sponsored FUNDING

2007-2008 Medtronic Incorporated: Co-PI (with W Becker)

Occipital nerve stimulation for the treatment of chronic migraine headaches: Pilot study

### PUBLICATIONS (my trainees are underlined)

#### Peer-reviewed

1. **Kiss Z**, Simo IE, Ooi TC, Mueffels M, Hindmarsh JT: Presence of unsedimented precipitate in visually non-turbid supernates in the heparin-manganese method for HDL-cholesterol quantitation. *Clin Biochem* 19:209-211, 1986. [PMID: 3093118]
2. **Kiss Z**, Simo IE, Ooi TC: Falsely high values for triglyceride in ultrafiltered HDL supernates. *Clin Chem* 33:418-419, 1987. [PMID: 3815817]
3. Simo IE, **Kiss Z**, Ooi TC: Falsely high HDL-triglyceride values by the heparin-manganese precipitation method. *Clin Chem* 34:2127-2129, 1988. [PMID: 3168230]
4. **Kiss ZHT**, Dostrovsky JO, Tasker RR: Plasticity in human somatosensory thalamus as a result of deafferentation. *Stereot Funct Neurosurg* 62:153-163, 1994. [PMID: 7631060]
5. Davis KD, Tasker RR, **Kiss ZHT**, Hutchison WD, Dostrovsky JO: Visceral pain evoked by thalamic microstimulation in humans. *Neuroreport* 6:369-374, 1995. [PMID: 7756631]
6. Fazl M, Houlden DA, **Kiss ZHT**: Spinal cord mapping with evoked responses for accurate localization of the dorsal root entry zone. *J Neurosurg* 82:587-591, 1995. [PMID: 7897519]
7. Lozano AM, Hutchison WD, **Kiss ZHT**, Tasker RR, Davis KD, Dostrovsky JO: Methods for microelectrode-guided posteroventral pallidotomy. *J Neurosurg* 84:194-202, 1996. [PMID: 8592221]
8. Davis KD, **Kiss ZHT**, Tasker RR, Dostrovsky JO: Thalamic stimulation-evoked sensations in chronic pain patients and in non-pain (movement disorder) patients. *J Neurophysiol* 75:1026-1037, 1996. [PMID: 8867115]
9. Tsoukatos J, **Kiss ZHT**, Davis KD, Tasker RR, Dostrovsky JO: Patterns of neuronal firing in human lateral thalamus during sleep and wakefulness. *Exp Brain Res* 113:273-282, 1997. [PMID: 9063713]
10. Tasker RR, Munz M, Junn FSCK, **Kiss ZHT**, Davis KD, Dostrovsky JO, Lozano AM: DBS and thalamotomy for tremor compared. *Acta Neurochir* 68[Suppl]:49-53, 1997. [PMID: 9233413]
11. Davis KD, **Kiss ZHT**, Luo L, Tasker RR, Lozano AM, Dostrovsky JO: Phantom sensations

- generated by thalamic microstimulation. *Nature* 391:385-387, 1998. [PMID: 9450753]  
{News Item in Lancet and Editorial Highlight in Nature}
12. Davis KD, Lozano AM, Manduch M, Tasker RR, **Kiss ZHT**, Dostrovsky JO: Thalamic relay site for cold perception in humans. *J Neurophysiol* 81(4):1970-1973, 1999. [PMID: 10200232]
13. **Kiss ZHT**, Mooney DM, Renaud LP, Hu B: Neuronal response to local electrical stimulation in rat thalamus: Physiological implications for mechanisms of deep brain stimulation. *Neuroscience* 113(1):137-143, 2002. [PMID: 12123692]
14. **Kiss ZHT**, Davis KD, Tasker RR, Lozano AM, Hu B, Dostrovsky JO: Kinaesthetic neurons in thalamus of humans with and without tremor. *Exp Brain Res* 105(1): 85-94, 2003. [PMID: 12698220]
15. **Kiss ZHT**, Anderson TR, Kirstein DD, Hansen TL, Suchowersky O, Hu B: Neural substrates of microstimulation-evoked tingling: A chronaxie study in human somatosensory thalamus. *Eur J Neurosci* 18(3):728-732, 2003. [PMID: 12911770]
16. **Kiss ZHT**, Wilkinson M, Kreck J, Suchowersky O, Hu B, Murphy W, Hobson D, Tasker RR: Is the target for thalamic DBS the same as for thalamotomy? *Mov Disord* 18(10):1169-75, 2003. [PMID: 14534922]
17. **Kiss ZHT**, Doig K, Eliasziw M, Ranawaya R, Suchowersky O: The Canadian multicentre trial of pallidal deep brain stimulation for cervical dystonia: Preliminary results in three patients. *Neurosurg Focus* 17(1): E5, 32-38, 2004. [PMID: 15264774]
18. Anderson TR, Hu B, Pittman Q, **Kiss ZHT**: Mechanisms of deep brain stimulation: An intracellular study in rat thalamus. *J Physiol* 559(Pt 1):301-313, 2004. [PMID: 15218068]
19. Hunka K, Suchowersky O, Wood S, Derwent L, **Kiss ZHT**: Nursing time to program and assess deep brain stimulators in movement disorder patients. *J Neurosci Nursing* 37(4): 204-210, 2005. [PMID: 16206546]
20. Anderson TR, Hu B, Iremonger KJ, **Kiss ZHT**: Selective attenuation of afferent synaptic transmission as a mechanism of thalamic deep brain stimulation induced tremor arrest. *J Neurosci* 26(3): 841-850, 2006. [PMID: 15218068]
21. Setiawan M, Kraft S, Doig K, Hunka K, Haffenden A, Trew ME, Longman S, Ranawaya R, Furtado JCS, Lee RG, Suchowersky O, **Kiss ZHT**: Referrals for movement disorder surgery: Under-representation of females and reasons for refusal. *Can J Neurol Sci* 33(1): 53-57, 2006. [PMID: 16583722 ]
22. Iremonger KJ, Anderson TR, Hu B, **Kiss ZHT**: Cellular mechanisms preventing sustained activation of cortex during subcortical high frequency stimulation. *J Neurophysiol* 96(2): 613-621, 2006.[PMID: 16554516] {Cited by Faculty of 1000 Biology}
23. Haffenden A, Khan U, **Kiss ZHT**, Suchowersky O: Surgery for Parkinson's disease improves disability but not impairment components of the UPDRS-II. *Parkinsonism Relat Disord* 13(7):399-405, 2007. [PMID: 17368072]
24. **Kiss ZHT**, Doig-Beyaert K, Eliasziw M, Tsui J, Haffenden AM, Suchowersky O, for the Canadian Neurosurgical Society Stereotactic/Functional Section and the Canadian Movement Disorders Group. The Canadian multicentre study of deep brain stimulation for cervical dystonia. *Brain* 130 (Pt 11):2879-2886, 2007. [PMID: 17905796]
25. Young CK, Koke SJ, **Kiss ZHT**, Bland BH: Deep brain stimulation of the posterior hypothalamic nucleus reverses akinesia in bilaterally 6-hydroxydopamine lesioned rats. *Neuroscience* 162 (1): 1-4, 2009. [PMID: 19401216]
26. Denheyer M, **Kiss ZHT**, Haffenden AM: Behavioral effects of subthalamic deep brain

- stimulation in Parkinson's disease. *Neuropsychologia* 47(14): 3203-9, 2009. [PMID: 19664645]
27. Oropilla JQ, Diesta CC, Itthimethan P, Suchowersky O, **Kiss ZHT**: Both thalamic and pallidal DBS for myoclonic dystonia. *J Neurosurg* 112 (6): 1267-70, 2010. [PMID: 19929196]
28. Lu C, Bharmal A, **Kiss ZHT**, Suchowersky O, Haffenden AM: Attention and reach-to-grasp movements in Parkinson disease. *Exp Brain Res* 205 (1): 69-80, 2010. [PMID: 20585762]
29. Heming E, Sanden A, **Kiss ZHT**: Designing a somatosensory neural prosthesis: Percepts evoked by different patterns of thalamic stimulation. *J Neural Eng* 7(6): 64001, 2010. [PMID: 21084731]
30. Heming EA, Choo R, Davies JN, **Kiss ZHT**: Designing a thalamic somatosensory neural prosthesis: Consistency and persistence of percepts evoked by electrical stimulation. *IEEE Trans Neural Syst Rehabil Eng* 19(5):477-82, 2011. [PMID: 21622082]
31. **Kiss ZHT**, Becker W: Occipital stimulation for chronic migraine: patient selection and complications. *Can J Neurol Sci* 39(6):807-12, 2012. [PMID: 23041402]
32. Ramasubbu R, Anderson S, Haffenden A, Chavda S, **Kiss ZHT**: Double-blind optimization of subcallosal cingulate deep brain stimulation for treatment-resistant depression: A pilot study. *J Psychiatr Neurosci* 38(5):325-32, 2013. [PMID: 23527884]
33. Lee JR, **Kiss ZHT**: Interhemispheric difference of pallidal local field potential activity in cervical dystonia. *J Neurol Neurosurg Psychiatry*. 85:306-310, 2014. [PMID: 23990682]
34. Wile DJ, Ranawaya R, **Kiss ZHT**: Smart watch accelerometry for analysis and diagnosis of tremor. *J Neurosci Methods*. 230: 1-4, 2014. [PMID: 24769376]
35. McCracken CB, **Kiss ZHT**: Time- and frequency-dependent modulation of local field potential synchronization by deep brain stimulation. *PLoS One* 9(7): e102576, 2014. [PMID: 25029468]
36. Ramasubbu R, Vecchiarelli HA, Hill MN, **Kiss ZHT**: Brain derived neurotrophic factor and subcallosal deep brain stimulation for refractory depression. *World J Biol Psychiatry* 16(2): 135-8, 2015. [PMID: 25226864]
37. Semrau JA, Herter TM, **Kiss ZHT\***, Dukelow SP (\*corresponding author, i.e. co-senior author): Disruption in proprioception from long-term thalamic deep brain stimulation: A pilot study. *Front. Hum. Neurosci.* 9:244, 2015. [PMID: 25983689]
38. McDougall L, Kiernan D, **Kiss ZHT**, Suchowersky O, Welch TN: Abnormal surround inhibition does not affect asymptomatic limbs in people with cervical dystonia. *Neurosci Lett*. 604:7-11, 2015. [PMID: 26219986]
39. Radic J, Beauprie I, Chiasson P, **Kiss ZHT**, Brownstone RM: Motor cortex stimulation for neuropathic pain: A randomized cross-over trial. *Can J Neurol Sci* 42(6):401-409, 2015. [PMID: 26324857]
40. Luo F, **Kiss ZHT**: Cholinergic mechanisms of high frequency stimulation in entopeduncular nucleus. *J Neurophysiol*. 115(1): 60-67, 2016.[PMID: 26334006]
41. Zhang X, Noor MS, McCracken CB, **Kiss ZHT**, Yadid-Pecht O, Murari K: CMOS image sensor and system for imaging hemodynamic changes in response to deep brain stimulation. *IEEE Trans Biomed Circuits Syst* 10(3):632-42, 2016. [PMID: 26357405]
42. Noor MS, Murari K, McCracken CB, **Kiss ZHT**: Spatiotemporal dynamics of cortical perfusion in response to thalamic deep brain stimulation. *Neuroimage* 126: 131-139, 2016. [PMID: 26578359] {\*our figure was selected as the cover image for this volume}
43. Clark DL, Brown EC, Ramasubbu R, **Kiss ZHT**: Intrinsic beta oscillations in the subgenual cingulate relate to symptoms in treatment resistant depression. *Biol Psychiatry* pii: S0006-3223(16)31113-1, 2016. [PMID: 27129412]

44. Roskams-Edris D, Anderson-Redick S, **Kiss ZHT\***, Illes J\* (\*co-corresponding authors): Situating brain regions among patent rights and ethical wrongs. *Nat Biotechnol* 35(2): 119-121, 2017. [PMID: 28178252]
45. Kim LH, McLeod RS, **Kiss ZHT**: A new psychometric questionnaire for reporting of somatosensory percepts. *J Neural Eng* 15(1):013002, 2018. [PMID: 29076455]
46. Magown P, Andrade RAA, Soroceanu A, **Kiss ZHT**: Deep brain stimulation parameters for dystonia - A systematic review. *Parkinsonism Relat Disord*. 54:9-16, 2018 [PMID: 29705556].
47. Ramasubbu R, Lang S, **Kiss ZHT**: Dosing of electrical parameters in deep brain stimulation (DBS) for intractable depression: A review of clinical studies. *Front. Psychiatry* 9: 302, 2018 [PMID: 30050474].
48. Luo F, Kim LH, Magown P, Noor MS, **Kiss ZHT**: Long-lasting electrophysiological after-effects of high frequency stimulation in the globus pallidus: human and rodent slice studies. *J Neurosci* 38(50): 10734-10746, 2018. [PMID: 30373767]
49. Strzalkowski NDJ, Chau AD, Gan LS, **Kiss ZHT**: Depressing cerebellar activity with continuous theta burst transcranial magnetic stimulation. *Cerebellum* 18(2):157-165, 2019. [PMID: 30117122]
50. Sarva H, Trosch R, **Kiss ZHT**, Furtado S, San Luciano M, Glickman A, Raymond D, Ozelius LJ, Bressman SB, Saunders-Pullman R: Deep brain stimulation in isolated dystonia with a *GNAL* mutation. *Mov Disord* 34(2):301-303, 2019. [PMID: 30536916]
51. Roskams-Edris D, Anderson-Redick S, Illes J, **Kiss ZHT**: Medical methods patents in neuromodulation. *Neuromodulation* 22(4): 398-402, 2019. [PMID: 30748045]
52. Mazerolle EL, Seasons GM, Warwaruk-Rogers R, Romo P, Nordal R, Sevick RJ, Martino D, Pichardo S, **Kiss ZHT**, Pike GB: Successful high intensity focused ultrasound thalamotomy for tremor in a patient with previous radiosurgery: MRI evidence for resolution of persistent radiation-related change. *Radiol Case Rep*. 14(10): 1233-1236, 2019. [PMID: 31440321]
53. Seasons GM, Mazerolle EL, Sankar T, Martino D, **Kiss ZHT**, Pichardo S, Pike GB: Predicting high intensity focused ultrasound thalamotomy lesions using 2D magnetic resonance thermometry and 3D Gaussian modelling. *Med Phys*. 46(12): 5722-5732, 2019. [PMID: 31621080]
54. Cabrera LY, Courchesne C, **Kiss ZHT**, Illes J: Clinical perspectives on psychiatric neurosurgery. *Stereotact Funct Neurosurg*. 97(5-6):391-398, 2019. [PMID: 31955163]
55. Ramasubbu R, Clark DL, Golding S, Dobson KS, Mackie A, Haffenden A, **Kiss ZHT**: Long versus short pulse width subcallosal cingulate stimulation for treatment-resistant depression: A randomised, double-blind, crossover trial. *Lancet Psychiatry* 7(1): 29-40, 2020. [PMID: 31860455]
- {highlighted with commentary: Putting deep brain stimulation for depression in a wider perspective}
56. Martino D, Rockel C, Bruno V, Mazerolle EL, Jetha S, Pichardo S, Pike GB, **Kiss ZHT**: Dystonia following thalamic neurosurgery: A single centre experience with MR-guided focused ultrasound thalamotomy. *Parkinsonism Relat Disord*. 71:1-3, 2020. [PMID: 31923520]
56. Clark DL, MacMaster FP, Brown EC, **Kiss ZHT**, Ramasubbu R: Anterior cingulate glutamate predicts response to subcallosal cingulate deep brain stimulation for treatment-resistant depression. *J Affective Disord* 266: 92-94, 2020. [PMID: 32056951]
57. Noor MS, Yu L, Murari K, **Kiss ZHT**: Neurovascular coupling during deep brain stimulation. *Brain Stimul* 13(3): 916-927, 2020. [PMID: 32289725]
58. Adair DSP, Gomes KS, **Kiss ZHT**, Gobbi DG, Starreveld YP: Tactics- An open source platform

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- for planning, simulating and validating stereotactic surgery. *Comp Assist Surg* 25(1): 1-14, 2020. [PMID: 32401082]
59. Clark DL, Johnson K, Butson C, Lebel C, Gobbi D, Ramasubbu R, **Kiss ZHT**: Tract-based analysis of target engagement by subcallosal cingulate DBS for treatment resistant depression. *Brain Stimul* 13(4): 1094-1101, 2020. [PMID: 32417668]
  60. Brown EC, Clark DL, Forkert ND, Molnar CP, **Kiss ZHT**, Ramasubbu R: Metabolic activity in subcallosal cingulate predicts response to deep brain stimulation for depression. *Neuropsychopharmacology* 45(10):1681-1688, 2020. [PMID: 32580207]
  61. Strzalkowski NDJ, Sondergaard R, Gan LS, **Kiss ZHT**: Case studies in neuroscience: Deep brain stimulation changes upper limb cortical motor maps in dystonia. *JNeurophysiol* 124(1):268-273, 2020. [PMID: 32579422]
  62. Magown P, Becker WJ, **Kiss ZHT**: Outcomes of occipital nerve stimulation for craniofacial pain syndromes. *Can J Neurol Sci.* 48(5): 690-697, 2021. [PMID: 33234176]
  63. Kwan V, Shum D, Haffenden A, Yeates KO, Kwok A, Lau H, Poon WS, Chan D, Zhu XL, Chan D, Mok V, Chan A, Ma K, Yeung J, Lau C, Bezchlibnyk Y, **Kiss ZHT**, Tang V: A retrospective comparison of cognitive performance in individuals with advanced Parkinson disease in Hong Kong and Canada. *Appl Neuropsychol Adult.* 2021 Mar 15:1-9. (in press doi: 10.1080/23279095.2021.1898396.) [PMID: 33721508]
  64. Ramasubbu R, Golding S, Williams K, Mackie A, MacQueen GM, **Kiss ZHT**: Recruitment challenges for studies of deep brain stimulation for treatment resistant depression. *Neuropsychiatr. Dis. Treat.* 17:765-775, 2021. [PMID: 33731996]
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  63. Lee JR\*, Arriagada A, Gomes KS, **Kiss ZHT**: Effect of chronic pallidal deep brain stimulation on EMG coherence in cervical dystonia: A case study. *J Neural Transm* 120(7):1148, 2013 (2<sup>nd</sup> International Congress on Treatment of Dystonia. Hannover, Germany).
  64. Gomes KS\*, Becker WJ, Anderson S, Corbett C, **Kiss ZHT**: Occipital nerve region stimulation for chronic head and facial pain. *Canadian Neuromodulation Society Proceedings* (Victoria, BC 2013).
  65. Ramasubbu R, Vecchiarelli HA, Hill MN, **Kiss ZHT**: Reduction in serum BDNF concentration with subcallosal DBS treatment for refractory depression. *CINP World Congress Proceedings* (Vancouver, BC 2014).
  66. Kim LH\*, **Kiss ZHT**: Developing a psychophysical questionnaire for somatosensory neural prostheses, *Neuromodulation* 17(5): e50, 2014.
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  75. Mosca SJ\*, **Kiss ZH**, Innes AM: Genetics of trigeminal neuralgia: Insight from 15 families and whole exome sequencing. *American Society for Human Genetics* (Vancouver BC 2016).
  76. Luo F\*, **Kiss ZHT**: Cellular mechanisms of simulated deep brain stimulation (sDBS) in rat infralimbic cortex. *Soc Neurosci Abstr* Online Program No. 74.09, 2016.
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  78. Strzalkowski NDJ\*, Gan LS, Kirton A, **Kiss ZHT**: Does pallidal DBS change the motor cortex representation of upper limb muscles in dystonia? *IBaGS* (Merida, Mexico Mar 2017).
  79. Noor MS\*, Murari K, **Kiss ZHT**: Thalamic-DBS-induced cortical perfusion is dependent on baseline cortical state. *Minnesota Neuromodulation Conference* (Minneapolis, MN Apr 2017).
  80. Clark DL\*, MacMaster F, Brown EC, **Kiss ZHT**, Ramasubbu R: Cingulate glutamate relates to symptom improvement in response to DBS in treatment-resistant depression. *Biol Psychiatry* 81:S229, 2017.

81. Brown EC\*, Clark DL, Boggess M, Widge A, Ramasubbu R, Protzner A, **Kiss ZHT**: Oscillation changes in EEG measured in the ON and OFF DBS state in patients with treatment resistant depression. *Biol Psychiatry* 81:S401, 2017.
82. Johnson KA\*, Clark DL, Duffley G, Ramasubbu R, **Kiss ZHT**, Butson CR: Structural imaging evaluation of subcallosal cingulate DBS for treatment-resistant depression. *Human Brain Mapping* (Vancouver, BC Jun 2017).
83. Roskams-Edris D\*, Anderson-Redick S, **Kiss ZHT**, Illes J: Medical method patents and neuromodulation: Understanding the present and shaping the future. *AJOB Neuroscience* 9(1):W11, 2018. Award winning poster *International Neuroethics Society* (Washington DC Nov 2017).
84. Brown EC\*, Clark DL, Molnar CP, **Kiss ZHT**, Ramasubbu R: Imaging biomarkers of subcallosal cingulate deep brain stimulation for treatment resistant depression. *Biol Psychiatry* 83 (9, Suppl):S303, 2018.
85. Ramasubbu R\*, Golding S, Mackie A, **Kiss ZHT**: Randomized double-blind study of different pulse width subcallosal cingulate stimulation for treatment-resistant depression. *Biol Psychiatry* 83 (9, Suppl):S406, 2018.
86. **Kiss ZHT\***, Mazerolle E, Warwaruk-Rogers R, Pike GB, Sankar T, Pichardo S, Zaroor M, Martino D: Brain mapping, lesion size, tremor suppression, and side effects with MR-guided focused ultrasound thalamotomy: Early results. *ASSFN meeting* (Denver, CO Jun 2018).
87. Sankar T\*, Duan A, Danyluk H, Clark DL, **Kiss ZHT**, Ramasubbu R: Subcortical and cortical grey matter alterations in treatment resistant depression. *Human Brain Mapping* (Singapore, Jun 2018).
88. Strzalkowski NDJ\*, Gan LS, **Kiss ZHT**: Deep brain stimulation changes cortical motor maps: A dystonia case study. *Neural Interfaces Conference* (Minneapolis, MN Jun 2018).
89. Sondergaard R\*, Strzalkowski NDJ, Clark D, Kim LH, Luo F, **Kiss ZHT**: Latency of response evoked by touch vs. thalamic electrical stimulation: Implications for neural prostheses. *Neural Interfaces Conference* (Minneapolis, MN Jun 2018).
90. Kim LH\*, **Kiss ZHT**, Whelan PJ: Electrophysiological characteristics of incertohypothalamic A13 neurons. FENS 2018 Online Planner D018. 11<sup>th</sup> *Federation of European Neuroscience Societies Forum of Neuroscience* (Berlin, Germany Jul 2018).
91. Clark DL\*, Johnson K, Butson C, Lebel C, Gobbi D, Ramasubbu R, **Kiss ZHT**: White matter tracts activated by successful subgenual cingulate DBS. *Eur Neuropsychopharmacol* 29(Suppl 1): S532-533, 2019. (Presented at the European College of Neuropsychopharmacology and selected as 1 of the top 12 out of approximately 900 to participate in a poster jam session) (Barcelona, Spain Oct-2018).
92. Mazerolle EL\*, Pichardo S, Warwaruk-Rogers R, Seivick R, Sankar T, Zaaroor M, Martino D, **Kiss ZHT**, Pike GB: MR-guided focused ultrasound for essential tremor: Initial MRI observations. *6th International Symposium on Focused Ultrasound* (Reston Virginia, USA Oct 2018).
93. Weiner CA\*, Macesmchuk C, Mazerolle E, Pike GB, **Kiss ZHT**, Pichardo S: Navigational analysis and sensory responses of MR-guided focused ultrasound thalamotomy: Early results. *6th International Symposium on Focused Ultrasound* (Reston Virginia, USA Oct 2018).
94. Sondergaard R\*, Gan LS, Jasaui Y, **Kiss ZHT**, Martino D: Rapid-paired associative stimulation induces changes in the excitability profile of unaffected hand muscles in patients with idiopathic dystonia. *Brain Stimul.* 12(2):542, 2019. (Brain Stimulation Conference, Vancouver, BC Feb 2019)
95. Clark DL\*, Brown EC, Skarsgard M, Ramasubbu R, **Kiss ZHT**: 1/f neural noise predicts outcome to subcallosal cingulate deep brain stimulation for treatment-resistant depression. *Biol Psychiatry* 85(10): S350-S351, 2019.
96. Brown EC\*, Folkert ND, Clark DL, **Kiss ZHT**, Ramasubbu R: Using multimodal neuroimaging and machine learning to determine response to subcallosal cingulate deep brain stimulation (SCC-DBS) for depression. *Biol Psychiatry* 85(10): S252-S253, 2019.
97. Brown EC, Clark DL, Protzner A, Ramasubbu R, **Kiss ZHT**: Evidence for the involvement of the serotonergic system in the therapeutic mechanism of deep brain stimulation of the subcallosal cingulate (SCC-DBS) for treating depression. *Biol Psychiatry* 85(10): S353-S354, 2019.
98. McAusland L\*, Chopra S, Brown EC, **Kiss ZHT**, Ramasubbu R: Personality changes in subcallosal cingulate deep brain stimulation for treatment resistant depression. *Biol Psychiatry* 85(10): S338, 2019.
99. McAusland L\*, Clark DL, **Kiss ZHT**, Ramasubbu R: Effects of subcallosal cingulate deep brain stimulation on emotion regulation in patients with treatment resistant depression. *Biol Psychiatry* 85(10): S267-S268, 2019.
100. Ploquin NP\*, Agnew S, Hudson A, Nordal R, Loewen S, **Kiss ZHT**: Stereotactic linac radiosurgery in the treatment of trigeminal neuralgia: dosimetric evaluation and long-term follow-up. *Journal of Radiosurgery & SBRT* (International Stereotactic Radiosurgery Society, Rio de Janeiro Brazil Jun 2019).
101. Seasons GM\*, Mazerolle EL, Warwaruk-Rogers R, Romo P, Sankar T, Martino D, **Kiss ZHT**, Pichardo S, Pike GB:

- Predicting high intensity focused ultrasound thalamotomy lesions using magnetic resonance thermometry and 3D Gaussian modelling. *ISTU/EUFUS* meeting (Barcelona Jun 2019).
102. Varshney V\*, Pereira JX, Shinkaruk K, Hallett K, **Kiss ZHT**: Demographic analysis of spinal cord stimulation in the Calgary Neuromodulation Program. *Canadian Neuromodulation Society* (Iqaluit, Jul 2019).
103. Kim LH\*, Molina L, **Kiss ZHT**, Whelan PJ: Lessons learned from crowd-sourcing whole-brain manual cell counting OR Whole-brain cell count analysis: Crowd-sourcing manual cell counting. *Soc Neurosci Abstr* Online Program No. 707.11, 2019.
104. Cabrera LY\*, Courchesne C, **Kiss ZHT**, Illes J: Practice, perceptions and predictions: Clinical opinions about psychiatric neurosurgery. *International Neuroethics Society* meeting, 2019.
105. Swytink-Binnema CA\*, Pike GB, Martino D, Pichardo S, Dukelow SP, Kiss ZHT: Quantitative measures of reaching and proprioception following MRgFUS thalamotomy for tremor. *7th International Symposium on Focused Ultrasound* (online conference, 8-13 Nov 2020).
106. Hesselink J\*, Krasnichuk C, Benaceur A, **Kiss Z**, Pichardo S: Identifying auditory artifacts in small rodent focused ultrasound neuromodulation. *7th International Symposium on Focused Ultrasound* (online conference, 8-13 Nov 2020).
107. Ghaderi AH\*, Brown E, Clark DL, Ramasubbu R, **Kiss ZHT**, Proztner A: Deep brain stimulation changes functional brain network features in patients with treatment resistant depression. *European Society for Cognitive and Affective Neuroscience* (on-line conference, 23-26 Jun 2021).
108. Rotenberg A\*, Anderson-Redick S, Lawson A, **Kiss ZHT**, Illes J: Early indications: A neuroethical review of patent practices in neuroscience. *International Neuroethics Society* (on-line conference, 4-5 Nov 2021).

#### INVITED ADDRESSES / PRESENTATIONS

1. **Toronto Sports Medicine** Rounds, Invited speaker: “Facet Joint Problems”  
Toronto, Ontario *29 Jun 1994*
2. **The Parkinson's Institute** Invited speaker: “Do kinaesthetic cells in thalamus of Parkinson's disease patients differ from those of other tremor/pain patients?”  
San Francisco, California *11 Aug 1995*
3. **University of Toronto** Keith Symposium on Surgery of Movement Disorders: “Kinaesthetic cells in the thalamus”  
Toronto, Ontario *11 Feb 1997*
4. **University of Toronto** Neurology Subspecialty Rounds, Invited speaker: “Peripheral Surgery for Movement Disorders”  
Toronto, Ontario *16 Sept 1997*
5. **University of Utah** Neuroscience Rounds, Invited speaker: “Plasticity in Human Somatosensory Thalamus”  
Salt Lake City, Utah *7 Jan 1998*
6. **Neurochirurgische Universitätsklinik**: Rounds, Invited speaker: “Plasticity in Human Somatosensory Thalamus studied by Microelectrode Recordings”  
Vienna, Austria *13 May 1998*
7. **University of Toronto**, Symposium of Advances in Neurosurgery and Related Sciences in commemoration of 75 years of Neurosurgery in Canada (1923-1998), Invited speaker: “Does intra-operative microstimulation predict the best site for chronic STN-DBS?”  
Toronto, Ontario *30 Oct 1998*
8. **University of Calgary** Clinical Neuroscience Rounds, Invited speaker: “A Tour of Functional Neurosurgery”  
Calgary, Alberta *8 Apr 1999*
9. **Canadian Congress of Neurological Sciences (CCNS)**, Auxiliary course on Neuromodulation

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- therapies, Invited speaker: "STN-DBS: The Grenoble experience"  
Edmonton, Alberta *19 June 1999*
10. **Workplace Safety and Insurance Board**, Team North Branch, Clinical Day on Pain, Invited speaker: "Neurosurgical options for chronic pain"  
Ottawa, Ontario *3 Nov 1999*
11. **University of Manitoba** Neuroscience Rounds, Invited speaker: "What can we learn from microelectrode recordings in humans undergoing functional neurosurgery - Organization and reorganization in sensory thalamus"  
Winnipeg, Manitoba *19 May 2000*
12. **Canadian Association of Neuroscience**, Neurobiology Review Course, Invited speaker: "Physiological basis for surgical interventions in movement disorders"  
Ottawa, Ontario *13 Jun 2000*
13. **University of Toronto**, Botterell Symposium, Invited speaker: "Hard or soft wiring in CNS: Evidence for plasticity in the human thalamus"  
Toronto, Ontario *28 Nov 2000*
14. **Banff Neuroscience Conference**, Universities of Calgary and Alberta: "Deep brain stimulation: what it does and how it works"  
Banff, Alberta *2 Feb 2001*
15. **American Association of Neurological Surgeons (AANS)** Breakfast Seminar, Invited speaker: "Neurosurgical Management of Intractable Pain: Diagnosis and Approach"  
Toronto, Ontario *26 Apr 2001*
16. **CCNS & Association of Physical Medicine and Rehabilitation** Combined Special Symposium, Invited speaker: "Neurosurgical options for neuropathic pain after spinal cord injury"  
Halifax, Nova Scotia *16 Jun 2001*
17. **McGill Pain Rounds**, Invited speaker: "Pain neurosurgery: Does it work and why not? "  
Montréal, Québec *5 Feb 2003*
18. **CCNS Neuroanatomy Review Course**, Invited speaker: "The basal ganglia and thalamus: Surgical Aspects"  
Québec, Québec *18 Jun 2003*
19. **CCNS Movement disorders Video Session**- Invited presenter  
Calgary, Alberta *9 Jun 2004*
20. **Johns Hopkins University**, Department of Neurosurgery Grand Rounds, Invited speaker: "Therapeutic brain stimulation - Applications and potential"  
Baltimore, USA *20 Jan 2005*
21. **AANS Breakfast Seminar**, Moderator: "Current surgical alternatives and complications in the treatment of Parkinson's disease"  
New Orleans, USA *20 Apr 2005*
22. **International Functional Electrical Stimulation Society** meeting, Chair and Speaker for Special Session: "Deep brain stimulation and Neuroplasticity in the Human: How electrical stimulation affects thalamocortical neurons"  
Montréal, Québec *6 Jul 2005*
23. **University of Alberta** University Hospital Neuroscience Grand Rounds (co-presentation with Dr. Ian Parney): "Stereotactic radiation in Alberta"  
Edmonton, Alberta *23 Sep 2005*

24. **Case Western Reserve University and Cleveland Clinic** Neural Prosthesis Seminar, Invited speaker: “Therapeutic brain stimulation - Applications, mechanisms, and potential”  
Cleveland, USA *17 Mar 2006*
25. **AANS** Speaker Breakfast Seminar, Invited speaker: “Treatment of Complex Regional Pain Syndrome and Hyperhydrosis: Therapeutic electrical stimulation”  
San Francisco, USA *26 Apr 2006*
26. **CCNS** Half-day course, Invited speaker: “Management of Trigeminal Neuralgia and Cluster Headache: Surgical management of cluster headache”  
Montréal, Québec *14 Jun 2006*
27. **American Association for the Advancement of Science (AAAS)** Symposium, Invited speaker (Moderated by Rusty Gage): “Smart Prosthetics: Interfaces to the Nervous System to Restore Independence”  
San Francisco, USA *16 Feb 2007*
28. **AANS** Speaker Breakfast Seminar, Invited speaker: “Treatment of Complex Regional Pain Syndrome and Hyperhydrosis: Basics of management”  
Washington, USA *16 Apr 2007*
29. **Brazilian Society for Stereotactic and Functional Neurosurgery (BSSFN)**, Invited speaker: “How does deep brain stimulation work?” and “Surgical management of cervical dystonia”  
Rio Quente, Goias, Brazil *16-19 May 2007*
30. **The National Academies Presidents’ Circle Meeting** on Smart Prosthetics, Invited speaker: “Communicating with the Brain - Restoring function in brain disorders”  
Wood’s Hole, USA *11 Jun 2007*
31. **AANS** Breakfast Seminar, Invited speaker: “Treatment of Complex Regional Pain Syndrome and Hyperhydrosis: Basics of management”  
Chicago, USA *29 Apr 2008*
32. Visiting professor for **University of Alberta** Neuroscience Graduate Students Seminar: “Therapeutic brain stimulation: What it does, how it does it, and what it could potentially do”  
Edmonton, Alberta *19 Jun 2008*
33. **University of Minnesota** Neurology Grand Rounds, Invited speaker: “Therapeutic brain stimulation and beyond, toward neural prostheses”  
Minneapolis, USA *20 Nov 2008*
34. **Indo-Canadian Neuro Update**, Invited speaker: “Outcomes of DBS for PD” and “DBS surgery and microelectrode recording in cervical dystonia and tremor”  
Kolkata, India *22-24 Jan 2009*
35. **Satellite Indo-Canadian Neuro Update conference**, Invited speaker: “Surgical Management of advanced PD” and “Pallidal stimulation for cervical dystonia”  
Siliguri, India *30 Jan 2009*
36. **Canadian Neurological Sciences Federation** , Invited speaker for the What’s new in neurosurgery symposium: “Novel indications for DBS and neuromodulation”  
Halifax, Nova Scotia *12 Jun 2009*
37. **Canadian Neuromodulation Society**, Keynote speaker: “The basic science of deep brain stimulation”  
Halifax, Nova Scotia *13-14 Jun 2009*
38. XIV Congress of the **World Federation of Neurosurgical Societies (WFNS)**, Invited speaker for Breakfast Seminar on Surgical treatment of dystonia: “DBS for cervical dystonia”

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- Boston, USA 2 Sep 2009
39. 31<sup>st</sup> International Conference of the Institute of Electrical and Electronics Engineers (**IEEE**) **Engineering in Medicine and Biology Society (EMBS)**, Invited speaker for Minisymposium on Neuromodulation: “Clinical and experimental aspects of deep brain stimulation”  
Minneapolis, USA 4 Sep 2009
40. **Québec Club des Mouvements Anormaux** 10<sup>th</sup> anniversary meeting, Invited speaker: “DBS for dystonia”  
Saint-Alexis-des-Monts, Québec 8 Nov 2009
41. **Canadian Neurological Sciences Federation (CNSF)** Headache Course: “Neurosurgical Interventions for Intractable Headache - State of the Art in 2010”  
Québec, Québec 9 Jun 2010
42. **CNSF** Functional neurosurgery course: “Overview of Face and Head Pain”  
Vancouver, BC 15 Jun 2011
43. **Congress of Neurological Surgeons (CNS)** practical course on DBS: “The Dystonias: Indications and Emerging Applications”  
Washington DC, USA 2 Oct 2011
44. **Killam lecture Montreal Neurological Institute / McGill University**: “Why therapeutic electrical brain stimulation improves movement disorders”  
Montréal, Québec 25 Oct 2011
45. **University of Sydney Brain & Mind Research Institute**: “Therapeutic brain stimulation: Applications, mechanisms and potential”  
Sydney, Australia 30 Apr 2012
46. **International Functional Electrical Stimulation Society**: “Use of thalamic stimulation to restore somatosensory perception”  
Banff, Alberta 12 Sep 2012
47. **Congress of Neurological Surgeons (CNS)** luncheon course W33 - Update on Movement Disorders: Novel Targets, Indications, and Approaches on DBS: “New neuromodulation strategies for dystonia”  
San Francisco, USA 23 Oct 2013
48. **North American Neuromodulation Society (NANS)** meeting, S2 Rehabilitation: “Electrical stimulation for somatosensory restoration”  
Las Vegas, USA 7 Dec 2013
49. **Dalhousie University** Visiting professor and judge for Clinical Neuroscience resident research day: “DBS and how it may work”  
Halifax, Nova Scotia 26 Mar 2014
50. **Canadian College of Neuropsychopharmacology (CCNP)** Chair of symposium on “Outcomes and rationale for DBS targets used for psychiatric conditions”  
Banff, Alberta 20 Jun 2014
51. **Congress of Neurological Surgeons (CNS)** luncheon course W22 - Update on Movement Disorders: Patient selection & outcomes for PD/ET/dystonia  
Boston USA 22 Oct 2014
52. **Royal Ottawa Hospital** research seminar/rounds: “Deep brain stimulation: mainly good, some bad, and now getting ugly”  
Ottawa ON 5 Jun 2015
53. Plenary lecture at **World Haptics IEEE conference**: “Can we restore natural somatosensory

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- perception with electrical stimulation?”  
Chicago USA 23 Jun 2015
54. Invited moderator & speaker for the **1<sup>st</sup> Middle-Eastern Conference on Stereotactic & Functional Neurosurgery**: “Neuromodulation for pain - Essential issues”  
Dubai, UAE 17-18 Jan 2016
55. Invited professor for **University of Alberta** Neuroscience Seminar: “Long term mechanisms of deep brain stimulation: Clinical and experimental issues”  
Edmonton, AB 9 Aug 2016
56. Invited **Sir Victor Horsley Lecturer Queen Square University College London**: “History of stereotactic and functional neurosurgery - A marriage of science and surgery”  
London, UK 23 Nov 2016
57. Invited speaker for the **WSSFN** Education and Training workshop: “A comprehensive fellowship in SFN – what should it include?”  
Berlin, Germany 26 Jun 2017
58. Invited professor for **University of Lethbridge** Neuroscience Seminar: “Neuroscience in the operating room: From mechanisms of DBS to somatosensory prosthetics”  
Lethbridge, AB 27 Jul 2017
59. Invited speaker for **NYC Neuromodulation Conference & NANS Summer Series**:  
“Spatiotemporal dynamics of cortical perfusion in response to thalamic DBS” and “Optimization of subcallosal cingulate DBS for treatment-resistant depression”  
New York City, US 24-26 Aug 2018
60. Invited panel discussant at the **Sunnybrook - Gairdner Foundation** “Focused Ultrasound: A New Frontier for Brain Therapy - Scientific Symposium”  
Toronto, ON 21 Nov 2018
61. Workshop lead and speaker for the **International Brain Stimulation Conference**: DBS Hot topics and Demo  
Vancouver, BC 26 Feb 2019
62. **Plenary** lecture at the **3<sup>rd</sup> International Brain Stimulation Conference**: “Do we know how DBS works and does it matter?”  
Vancouver, BC 27 Feb 2019
63. **University of Saskatchewan Neuroscience Grand Rounds**: “Focused ultrasound and the re-discovery of brain lesioning”  
Saskatoon, SK 31-May-19
64. Invited speaker for **Canadian Neurological Sciences Federation (CNSF)** Innovation and Technology in Neurosurgery symposium  
Montreal, PQ 18-Jun-19
65. Invited panel member for **Alberta Pain Society** joint meeting with western provinces on Neuromodulation  
Lake Louise, AB 18-Oct-19
66. Invited panel member for **Canadian Pain Society** meeting (converted to on-line virtual webinar) Women in Learning and Leadership (WILL) 21-May-20
67. Workshop speaker/moderator for for the **International Brain Stimulation Conference**: DBS Hot topics - Development of techniques over the decades  
Charleston, SC 8 Dec 2021
68. Invited speaker for **International Neuromodulation Society** conference: Deep brain stimulation

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for depression: Predictors of response  
Barcelona, Spain 25 May 2022

## MEMBERSHIPS

1985-	Ontario (-2000), Alberta (2000-) /Canadian Medical Association
1992-	International Association for the Study of Pain
1994-	Society for Neuroscience/Canadian Association for Neuroscience
1996-	Canadian Congress/Federation of Neurological Sciences/Canadian Neurosurgical Society
1998-	International Basal Ganglia Society
1998-	Fellow of the Royal College of Surgeons of Canada
1999-	World /American Society for Stereotactic and Functional Neurosurgery
2003-	International Functional Electrical Stimulation Society
2010-	Lake O'Hara Trails Club
2014	Union of Concerned Scientists
2019-	Canadian/International Neuromodulation Society

## COMMITTEES/LEADERSHIP

### Local University /Hospital

1994-1996	Member (as 1 of 2 research trainees) of the Research Committee of the Faculty Council, Faculty of Medicine, University of Toronto
1994-1995	Member (student) of Faculty Council, Faculty of Medicine, University of Toronto
1998-2000	Member, Research Committee of the Department of Surgery, University of Ottawa
1999-2000	Member, Ethics and Professionalism Committee of the Department of Surgery, University of Ottawa
2001-2003	Member, Research Committee of the Department of Clinical Neurosciences, University of Calgary
2001-2006	Member, Neuromodulation Steering Group (Province-wide Services until 2003), Calgary Health Region
2002-2004	Member, Alberta Stereotactic Radiosurgery Working Group, Calgary Health Region and Tom Baker Cancer Centre
2003-2007	Member, Rounds Committee of the Department of Clinical Neurosciences, University of Calgary
2003-2004	Member, Executive Committee of the Neuroscience Research Group, University of Calgary
2004-2007	Member, Research Committee of the Hotchkiss Brain Institute (HBI)
2004-2007	<b>Co-leader</b> of the Movement disorders-Therapeutic brain stimulation Program of HBI
2004-2007	<b>Co-Medical Director</b> , Alberta Radiosurgery Centre
2006-	<b>Medical Director</b> , Neuromodulation Program of the Dept Clinical Neurosciences
2006-2012	Steering Committee Member, Clinical Research Unit of the HBI
2009-2011	Member, Equity & Teacher-Learner Relations (ETLR) Advisory Group, Faculty of Medicine
2012-2013	Departmental representative, The University of Calgary Faculty Association
2014-2016	Faculty Tenure and Promotion Committee, University of Calgary
2015-2019	<b>Co-leader</b> of the Movement Disorders NeuroTeam, HBI
2016-	<b>Medical Director</b> , MR guided Focused Ultrasound program, University of Calgary

2019- Nominating Committee, Faculty of Medicine, University of Calgary  
2021- Member, International Strategy Working Group of the HBI

### National /International Scientific-Medical Organizations

2005 **Founder** of the Canadian Radiosurgery Society as Co-Chair (local and scientific review committee) of the first annual meeting (Banff, 4-5 Mar 2005)  
2005 **Co-Chair**, Scientific Technical Program, International Functional Electrical Stimulation Society Annual meeting (Montréal, 4-9 Jul 2005)  
2008-09 **Chair**, KG McKenzie Prize Committee of the Canadian Neurosurgical Society  
2008-2011 **Secretary-Treasurer**, Stereotactic & Functional Section of the Canadian Neurosurgical Society  
2011-2015 **President**, Stereotactic & Functional Section of the Canadian Neurosurgical Society  
2012-2018 Member, Steering committee, NIH Neural Interfaces Conference (Salt Lake City Jun-12, Dallas Jun-14, Baltimore Jun-16, Minneapolis Jun-18)  
2013-2019 Member, Board of Directors, World Society for Stereotactic and Functional Neurosurgery

### Invited Chair/Moderator

17 Jun 2000 CCNS, Auxiliary Course *Chair* on “Implantable Drug Infusion Therapies for Pain and Movement Disorders” Ottawa, Ontario  
26 May 2009 World Society for Stereotactic & Functional Neurosurgery (WSSFN) quadrennial conference, *Moderator* Breakfast Seminar: “Psychiatric Neurosurgery and Society: Worldwide Experience” Toronto, Ontario  
8 Jun 2010 Congress of the Canadian Neurological Sciences Federation (CNSF) *Co-Chair* for the, Neurobiology Course: “Principles of neuroscience/ basal ganglia” Québec, Québec  
Jun 2010 American Society for Stereotactic and Functional Neurosurgery (ASSFN) biannual meeting, *Chair* of poster review committee, New York City, USA  
17 Jun 2011 CNSF Congress *Co-Chair* for the Neurobiology Course: “Basic science of placebo” Vancouver, BC  
5 Jun 2012 ASSFN biannual meeting, *Moderator* for Neuroimaging II session, San Francisco USA  
18 Jun 2012 Neural Interfaces Conference: *Moderator/Organizing Chair* for “New stimulation approaches for chronic pain” session, Salt Lake City, USA  
28 May 2013 WSSFN meeting: *Moderator* for lunch Bento Box Debate: “Tourette’s Syndrome”, Tokyo Japan  
20 Jun 2016 ASSFN meeting: *Chair* of poster session, Chicago, USA  
27 Jun 2016 Neural Interfaces Conference: *Moderator/Organizing Chair* for “New stimulation paradigms for pain” Baltimore, USA  
4 Jun 2018 ASSFN meeting: *Chair* of poster session, Denver, USA  
Feb 2019 *Co-chair* and speaker at 3<sup>rd</sup> International Brain Stimulation Conference symposium on Neuroethics and brain stimulation- open market or restraint: “Patenting brain stimulation - Regions or methods?” Vancouver, BC  
Jan-Jun 2020 ASSFN meeting (converted to on-line virtual): *Chair* of poster session, Abstract Review Committee; *Moderator* Psychiatric Neurosurgery session (28-Jun-20)  
Dec-2021 *Moderator* for the International Brain Stimulation Conference symposium: “Patient-specific network modeling to personalize neurostimulation treatment in depression” Charleston, USA

Jun-2022 ASSFN meeting: *Moderator* for MD surgery session and *Chair* of poster session, Atlanta, USA

### Courses/Workshops Attended

- 2006 4<sup>th</sup> Annual **National Academies Keck Futures Initiative (NAKFI)** conference: Smart Prosthetics: Exploring Assistive Devices for the Body and Mind (Newport Beach, CA) 9-11 Nov  
An **invitation only** workshop in which ~100 leading researchers in the field spent 3 days at the Beckman Center to catalyze interdisciplinary research. A timely and important topic is selected for this workshop by the US National Academies of Science, Engineering, and Medicine.
- 2006 CMA Leadership Workshops & Doctors in the House (Ottawa, ON), 19-21 Nov
- 2011 Physicians Management Institute Courses (Vancouver, BC)  
Self Awareness and Effective Leadership, 20-22 Mar; Engaging Others, 23-25 Mar
- 2012 Association of American Medical Colleges (Austin, TX)  
Mid-Career Women Faculty Professional Development Seminar, 1-4 Dec
- 2015 NIH workshop on Public Private Partnerships and Facilitating Early Access to Neuromodulation/Recording Devices for Human Research (NIH Neuroscience Center, Rockville, Maryland) 3-4 Jun  
Invited workshop
- 2016 Physicians Leadership Institute Course (Ottawa, ON)  
Facilitating meetings, 13 Sep
- 2017 Final **National Academies Keck Futures Initiative (NAKFI)** conference: Beyond Boundaries (Newport Beach, CA), 9-11 Nov  
An **invitation only** workshop in which ~100 leading researchers in the field spent 3 days at the Beckman Center to catalyze interdisciplinary research. This final of 15 annual conferences was designed to expand upon all previous conferences to explore the boundaries between the science, engineering, medicine and the arts.
- 2022 Physicians Leadership Institute Course (Alberta Health Services virtual)  
Building and leading teams, 19-20 Jan

### Grant Review Panels

- 2004-2007 Member, **CIHR** Health Professionals A (HPA) and Fellowship committee
- 2007-2010 Member, **CIHR** Movement & Exercise Committee (**Scientific Officer** 2008-2010)
- 2007-2014 Member, Scientific Advisory Board of the **Parkinson Society Canada**
- 2014 Invited panel member, **National Institutes of Health/National Institute of Neurological Disorders and Stroke (NIH/NINDS)** P50 and P20 (Udall Centers Study Sections)
- 2016 Member, **Alberta Innovates Health Solutions (AIHS)** Clinician Investigator committee
- 2016 Invited panel member, **NIH BRAIN Initiative** (UG3/UH3 Special emphasis panel)
- 2017 **Scientific Officer, CIHR** Movement & Exercise Committee
- 2018 Invited panel member, **NIH BRAIN Initiative** (UG3/UH3/U44 Recording and Modulation in the Human CNS)
- 2018 Invited panel member, Clusters of Excellence within the German Excellence Strategy, **Deutsche Forschungsgemeinschaft (DFG)**
- 2019 Invited panel member, **National Institutes of Mental Health/NIMH** (ZMH1 ERB-D(03)S Early phase clinical trials – pharma/devices)
- 2020-21 **Scientific Officer, CIHR** Movement & Exercise Committee
- 2022 Invited panel member, **DFG** International Review Panel for Clinician Scientist Program
- 2022-26 Member, **Dystonia Medical Research Foundation** Medical and Scientific Advisory

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Council

**Editorial Boards**

2006- Journal of Neural Engineering  
2014- Neuromodulation  
2016-2017 Stereotactic/Functional **Section Editor**, World Neurosurgery  
2018- **Deputy Editor**, Brain Stimulation

**External Reviewer** (*ad hoc*) for

**Granting Agencies:** Brain Canada, Canadian Institutes of Health Research (CIHR), Canada Foundation for Innovation (CFI), Fondation pour la Recherche Médicale (France), Mitacs Elevate (Canadian), Natural Sciences & Engineering Research Council (NSERC), Netherlands Organisation for Scientific Research (NWO, the Dutch Research Council), The Netherlands Organisation for Health, Research and Development (ZonMw), The Research Foundation – Flanders Belgium, Swiss National Science Foundation, UK Medical Research Council, US National Institutes of Health, Ontario Mental Health Foundation

**Journals** (*underlined indicates impact factor > 5*): American Journal of Physical Medicine & Rehabilitation, Archives of PM&R, Biomedical Engineering Online, BMC Neurology, Brain, Brain Behavior Immunity (*declined*), Brain Research, Brain Stimulation, Canadian Journal of Neurological Sciences, Clinical Neurology & Neurosurgery, ELife, European Journal of Neurology, European Journal of Neuroscience, Experimental Brain Research, Experimental Neurology, Expert Review of Medical Devices, Frontiers in Computational Neuroscience, IEEE Transactions on Neural Systems & Rehabilitation Engineering, JAMA Internal Medicine, Journal of Neurodevelopmental Disorders, Journal of the Neurological Sciences, Journal of Neurology Neurosurgery & Psychiatry, Journal of Neurophysiology, Journal of Neuroscience, Journal of Pain Research, Journal of Psychiatry and Neuroscience, Lancet Neurology, Molecular Psychiatry, Movement Disorders, Nature Communications, Neurobiology of Disease, Neurobiology of Stress (*declined*), Neuroimage, Neuroscience, Neuroscience & Biobehavioral Reviews (*declined*), Neuroscientist (*declined*), Neurosurgery, Pain, Pain Reports, PLoS ONE, Progress in Neurobiology, Progress in Neuropsychopharmacology & Biological Psychiatry (*declined*), Scientific Reports, World Neurosurgery

**Consulting Activities** (all unpaid)

17 May 2000 Invited consultant on the first microelectrode recording and DBS implant performed in Manitoba  
6 Jun 2003 Invited to full-day “brain-storming” session with SanBio Inc. (biotech start-up), Mountain View, California  
25 Apr 2006 Invited to half day consulting session for Kinetic Foundation, Stanford University, Palo Alto, California  
23 Feb 2008 Invited to full day consulting session on “Innovations in Surgery: Looking to the Horizon” organized by University of Alberta and Alberta Health and Wellness, Banff, Alberta  
2012-2013 Medical advisor to Avatar EEG Solutions Inc., Calgary Alberta  
15-16 Aug 19 Cleveland Course for Advanced Neuromodulation: Key opinion leader planning meeting invited participant, Case Western Reserve University, Cleveland Ohio  
10-11 Sep 19 Strategic Planning Consensus Workshop invited participant, CIHR, Ottawa Ontario

## TEACHING

### Undergraduate

- 1992 OSCE examiner for the Foreign Medical Graduates Qualifying Exam  
 1994-95 OSCE examiner for the Medical Council of Canada Qualifying Exam Part II  
 2009, 2015 Introduction to Neuroscience undergraduate course (**NEUR 201**) (1.5 h/y)  
 2010- Neurosciences & Aging: Neuroanatomy labs & small group seminars (**MDCN 450**) (3-8 h/y)

### Graduate/Post-graduate

- 1998-2000 Neurosurgical resident teaching seminars and in-training exams, University of Ottawa  
 2001- Neurosurgery (occasional neurology, psychiatry) resident teaching seminars and in-training exams, University of Calgary ( $\approx 10$  h/y)  
 26 Nov 2002 Behavioural Neuroscience Seminar: "Plasticity in the human somatosensory thalamus" Department of Psychology, University of Calgary  
 7-9 Feb 2003 **National Residents' Course in Movement disorders**: "Functional neuroanatomy of the basal ganglia", "Surgery for Parkinson's disease", and "Surgery for other movement disorders", Vaudreuil-Montréal, Québec  
 2004 -2010 Neuroscience II (Systems) graduate course (**MDSC 619.02**): Motor control section lecture, seminar and exam/essay component on Basal ganglia and extrapyramidal motor system (2-4 h/year)  
 2004 - Biomedical technology graduate course (**MDSC 674.01**) lecture: "Neural prosthetics: Technology, basic, and clinical neuroscience" (2 h/year)  
 2006 Advanced medical image processing graduate course (**MDSC 689.03**) guest lecture: "Imaging issues in stereotactic & functional neurosurgery" (2 h)  
 2010 Neural Basis of Human Movement (**KNES 353/653.01**) lecture: "Role of the basal ganglia" (1.5 h)  
 3 Mar 2012 Rocky Mountain Basic Science Symposium (course for neurology residents from Alberta / Saskatchewan): "DBS for movement disorders", Kananaskis, Alberta (4 h)  
 2013- **Ottawa Neurosurgery Review Course** (review course for senior Canadian residents in preparation for RCPS exams): "Anatomy and Physiology of Basal Ganglia, Thalamus, Cerebellum" and "Surgical Management of Parkinson's disease, dystonia, spasticity", "Anatomy and Physiology of the Limbic System", Ottawa, Ontario (2-3 h each year)  
 17-18 Sep 13 Mentorship workshops panel member (3 sessions), Canadian Society for Clinical Investigation (CSCI)/Clinical Investigator Trainee Association of Canada (CITAC), Ottawa, Ontario  
 Apr-14 External Examiner/Reviewer for University of Alberta graduate course, Neuro 621: The Art of Grant Writing (4 h)

### Continuing Medical Education

- Apr 1999 University of Ottawa Continuing Medical Education Refresher Course for Family Practitioners: "What can the neurosurgeon do for chronic pain?"  
 16 Jan 2003 Calgary Pain Interest Group Alberta-wide Videoconference: "Surgical approaches to pain management", Calgary, Alberta  
 20 Nov 2003 Family Practice Review and Update Course, University of Calgary: "Neuropathic pain: What neurosurgery can and cannot do"

- 1 Mar 2002 University of Calgary Neuroscience Grand Rounds: “Stimulating the brain: From strange surgery to wired science”
- 1 Apr 2005 University of Calgary Neuroscience Grand Rounds: “Therapeutic brain stimulation: Why all the excitement”
- 10 Apr 2008 Hotchkiss Brain Institute, Research Day: “Neuroplasticity and functional modulation: What have we learned from therapeutic brain stimulation”
- 13 Jan 2010 University of Calgary Psychiatry Rounds: “Neural prostheses: Past, present and hopeful future
- 13 May 2011 Hotchkiss Brain Institute, Research Day: “New Indications for DBS: From movement to psychiatry”
- 20 Nov 2012 Psychiatry Grand Rounds: “Therapeutic brain stimulation for treatment-resistant depression” (co-presented with Dr. Raj Ramasubbu)
- 22 Apr 2015 Neuropsychiatry Rounds: “Potential biomarkers for depression response to DBS” (co-presented with Dr. Raj Ramasubbu)

### Education related committee work

- 2006 Co-Chair of Alberta Neurosurgical Society meeting (annual meeting in Banff for resident presentations of research)
- 2005-08 **Research Director** for Residency training program/Division of Neurosurgery, University of Calgary
- 2006-08 Member, Education Committee of the Hotchkiss Brain Institute
- Nov 2007 Presentation on the Clinician Investigator Program at the Department of Medicine Retreat, University of Calgary
- 2007-10 Member, Neuroscience Graduate Education Committee, Faculty of Medicine
- 2007-19 **Director, Clinician Investigator Program**, Post-graduate Medical Education, University of Calgary
- 2008 Member, AHFMR Trainee Program Review Advisory Committee
- 2009- **Royal College of Physicians and Surgeons of Canada** Clinician Investigator Program Specialty Committee (**Vice-Chair** 2015-18; **Chair-Elect**, 2018-20; **Chair** 2020-)
- 2012-19 Member, Education Committee of the Hotchkiss Brain Institute
- 2016- Steering committee for **Ottawa Neurosurgery Review Course** (national course)
- 2019 Co-Chair, Clinician Investigator Trainee Association of Canada / Canadian Society of Clinical Investigation annual conference (Banff, AB)

### Trainees

#### Post-doctoral fellows

- 2002-2005 Trent Anderson, PhD (2001 Queens University)  
Awarded **fellowship** from **Parkinson Society of Canada** 2003-05  
Received **Melvin Yahr fellowship award** from the **World Federation of Neurology** 2005  
Present position: Associate Professor, University of Arizona Medical College
- 2005-2007 Ying Wu, PhD (2004 University of New Mexico)  
Present position: Research associate, University of Calgary
- 2008-2010 Tatiana Britvina, PhD (2007 University of Calgary)

Present position: Sessional instructor, University of Calgary

2008-2010 Salim Yalcin Inan, PhD (2004 University of Cukurova, Adana Turkey)

Received **Postdoctoral Travel Award** from the local chapter **Society for Neuroscience**, 2009 (\$1000)

Present position: Associate Professor, Pharmacology, Meram Faculty of Medicine, University of Selcuk, Konya, Turkey

2010-2014 Clinton B McCracken, PhD (2005 Wake Forest University, Winston-Salem USA)

Awarded **Hotchkiss Brain Institute Post-Doctoral Fellowship** 2011 (\$48,000)

Awarded **fellowship** from **Parkinson Society of Canada** 2011-13 (\$100,000)

Awarded the **Rafaelsen Young Investigator Award** from Collegium Internationale Neuro-Psychopharmacologicum 2012 (\$3000)

Awarded the **Neural Systems and Behavior Travel Award** from Hotchkiss Brain Institute, 2012 (\$500)

Present position: Medical Science Liaison for Merck & Co.

2010- 2013 JungRyun Lee, PhD (2007 University of Science & Technology, Daejeon, Korea)

Awarded **Hotchkiss Brain Institute PDF Support** 2011 (\$20,000)

Awarded **NSERC/CREATE** (Collaborative Research and Training Experience) **fellowship** 2011 (\$20,000)

Awarded **CIHR fellowship** 2012-2013 (\$75,000)

Present position: Senior Research Consultant in Technology Planning for Trimaran Inc., Seoul, Korea

2012-19 Feng Luo, PhD (2007 Institute of Zoology Chinese Academy of Sciences, Beijing, China)

Present position: Staff scientist NINDS, Bethesda MD

2012-13 Daryl Wile MSc (2006 McGill) MD (2009 University of Calgary)

*Resident research project: Smartphone-based diagnostic tool for tremor*

Awarded Clinical Neuroscience **Resident Prize** for Excellence in Basic Science Research (\$500)

Present position: Movement disorder neurologist, Kelowna BC

2013-14 Yarema Bezchlibnyk, PhD (2006 McMaster University) MD (2010 University of Toronto)

*Resident research project: Mechanisms of long-term DBS for dystonia*

Awarded Alberta Neurosurgical Society **Resident Prize** Excellence in Clinical Research (\$500)

Present position: Assistant Professor of Neurosurgery, University of South Florida, Morsani School of Medicine, Tampa FL

2014- Darren L Clark, PhD (2009 University of Alberta)

Awarded I3T **NSERC-CREATE fellowship** 2014 (\$20,000), 2015 (\$5,000)

Awarded **AIHS fellowship** 2015-2019 (extended for mat leave, \$165,000)

Awarded HBI Trainee Publication Award 2016-17 (\$100)

Awarded **Parkinson Alberta fellowship** , 2019-20 (\$40,000)

Present position: Chief Research Officer for Luft Botanicals Inc. and Founder/Partner of Cogent Pathways Consulting

- 2015-18 Elliot C Brown, PhD (2013 Ruhr University, Germany)  
Awarded **Mathison-HBI fellowship** 2015-2017 (\$110,000)  
Awarded **I3T NSERC-CREATE fellowship** 2015 (\$5,000)  
Awarded **AIHS fellowship** 2016-2019 (\$165,000)  
Awarded **Society of Biological Psychiatry International Travel Fellowship** 2019 (2000 USD)  
Present position: Lecturer, Arden University, Berlin Germany
- 2016-18 Nicholas DJ Strzalkowski, PhD (2015 University of Guelph)  
Awarded **UofC Eyes High fellowship** 2016-2018 (\$100,000)  
Awarded **Parkinson Alberta fellowship** 2017 (\$30,000)  
Awarded **Parkinson Foundation fellowship** 2017-2019 (110,000 USD)  
Present position: Assistant Professor, Mount Royal University, Calgary
- 2020- Amirhossein Ghaderi, PhD (2017 University of Tabriz, Iran)  
Awarded **UofC Eyes High fellowship** 2020-2022 (\$100,000)  
Awarded **Parkinson Alberta fellowship** 2022-2023 (\$25,000)
- 2021- Ana Paula Arantes, PhD (2021 University of New Brunswick, Canada)  
Awarded **Brain CREATE Postdoctoral fellowship** 2021-2022 (\$22,000/y)
- Clinical fellows in stereotactic and functional neurosurgery
- 2006-07 Parunut Itthimethan, MD (1998 Mahidol University, Bangkok Thailand)  
Present position: Consultant in neurosurgery, Bangkok Thailand
- 2007-08 Jean Quint Oropilla, MD (1996 University of the Philippine/Philippine General Hospital)  
Awarded **Kenichiro Sugita International Fellowship** from **Congress of Neurological Surgery**, 2007  
Present position: Consultant in neurosurgery, Makati Medical Center, Philippines
- 2009 Benjamin Jonker, MB BS (1999 University of Sydney), MMed (2008 University of Sydney) FACS (2008)  
Present position: Consultant neurosurgeon, Lecturer, University of Sydney, Australia
- 2009-10 Swati Chavda, MBBS (1996 Christian Medical College) MCh (2005 Christian Medical College, Vellore India)  
Awarded **University of Calgary International Fellowship** 2009 (\$6500)  
Awarded the **Denyse Lajoie Lake Fellowship in Brain Research** (Hotchkiss Brain Institute, UofC) 2009-2010 (\$50,000)  
Present position: writer
- 2012-13 Keith Gomes, MBBS (1996 Monash University, Melbourne, Australia) FACS (2011)  
Present position: Consultant neurosurgeon, Alfred Hospital, Melbourne
- 2015-16 Philippe Magown, MD CM (2005 McGill University) PhD (2015 Dalhousie University)  
Awarded **AANS Neurosurgery Research & Education Foundation fellowship** (\$40,000 USD)

Present position: Locum stereotactic & functional neurosurgeon, Winnipeg

Graduate students (as primary supervisor)

2003- 2005 Karl Iremonger, BSc MSc

Thesis title: “Cellular mechanisms preventing sustained activation of motor cortex during simulated thalamic deep brain stimulation”

Present position: Senior Lecturer in Physiology, University of Otago, New Zealand

2004- 2006 Krissy AR Doyle, BA MSc

Thesis title: “Subcortical electrical stimulation modulates cortical activity and output in humans”

Awarded **Dr. Frank Ramsay Graduate Award** 2005

Present position: Research Associate, Bloorview Research Institute, Toronto ON, Sessional Professor at Mohawk College, Assistant Clinical Professor (Adjunct) in Rehabilitation Sciences at McMaster University

2007-2010 Ethan Heming, BSc BA MSc

Thesis title: “The electrophysiology of rhythm and musical cuing in human basal ganglia”

Awarded **Graduate Research Scholarship Neuroscience Entrance Award** 2007

Awarded **Queen Elizabeth II Graduate (Master’s) Scholarship** 2008

Awarded **Alberta Advanced Education Graduate Student Scholarship** 2009

Awarded **Dr. Frank Ramsay Graduate Award** 2009

Present position: PhD Research Associate Scott lab Queen’s University, and MESH-AI Co-founder, Operations and Product manager

2012-2018 M Sohail Noor, BScEng, MEEng, MBEng, PhD

Thesis title: “Intrinsic optical imaging of cortex during deep brain stimulation: Parameters, spatiotemporal dynamics and neurovascular coupling” (co-supervised with Dr. Kartikeya Murari)

Awarded **UofC Biomedical Engineering (BME) Graduate Recruitment Prize** 2012 (\$10,000)

Awarded **Queen Elizabeth II Doctoral Scholarship** 2012 (\$5000)

Awarded **UofC Graduate Biomedical Engineering 15th Anniversary Prize** 2013 (\$3000)

Awarded UofC BME Graduate Program Student Equipment Grant 2013 (\$6,523)

Awarded **Queen Elizabeth II Doctoral Scholarship** 2013-14 (\$15,000)

Awarded **NSERC/CREATE Doctoral Studentship** 2013-14 (\$6000)

Awarded **Queen Elizabeth II Doctoral Scholarship** 2014-15 (\$15,000)

Awarded **NSERC/CREATE Doctoral Studentship** 2014-15 (\$11,000)

Awarded NSERC/CREATE Travel Award, 2013 (\$500)

Awarded BME Travel Award, 2013 (\$1000)

Awarded **Best Overall poster at Alberta BME Conference** (of 52 posters) 2014

Awarded **Alberta Graduate Citizenship Award** 2014-15 (\$2000)

Awarded UofC BME Graduate Program Student Equipment Grant 2014 (\$5000)

Awarded **BME Director Leadership Prize** 2015 (\$2500)

Awarded **Robert B. Paugh Memorial Scholarship** in Engineering 2015 (\$1000)

Awarded BME Research Award, 2015-16 (\$7000)

Awarded **Faculty of Graduate Studies Doctoral Scholarship** 2015-16 (\$9000)

Awarded HBI Trainee Publication Award 2015-16 (\$100)

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Awarded UofC BME Graduate Program Student Equipment Grant 2015 (\$5000)

Awarded **UofC Silver Anniversary Graduate Fellowship** 2016 (\$17000)

Awarded **Parkinson Society Canada Studentship**, 2016-18 (\$30,000)

Awarded Minnesota Neuromodulation Symposium Travel Award, 2017

Present position: Post-doctoral fellow, Duke University, Durham NC

2013-2015 Linda H Kim, BSc MSc

Title: "Embodiment of the rubber hand across different somatosensory modalities"

Awarded **Queen Elizabeth II Scholarship**, 2014, 2015 (\$10,800/y)

2015- (co-supervised with Dr. Patrick Whelan)

Title: "Properties and connections of A13 neurons and their role in gait and Parkinson's disease"

Awarded **Eyes High UofC Doctoral Award** 2015-2019 (\$100,000)

Awarded (*declined*) **Achievers in Medical Science Graduate Recruitment Scholarship** 2015

Awarded Dr. James Emmett Graduate Award in Neuroscience 2016 (\$1000)

Awarded **Parkinson Alberta graduate studentship** 2017-2019 (\$40,000)

Awarded **runner up for PhD Researcher of the Year Award** 2018 (2<sup>nd</sup> place out of 57 PhD students enrolled in the Neuroscience Program)

Awarded **Parkinson Canada graduate studentship** 2019-2021 (\$20,000)

Awarded **Society for Neuroscience** Trainee Professional Development Award 2019 (1000 USD)

Awarded Arun Anbazhagan HBI Travel Award 2019 (\$1000)

Awarded **Dean's Doctoral Scholarship** 2020 (\$15,000)

2017- Rachel Sondergaard, BSc (Engineering)

Title: Neuromodulation for dystonia: Using TMS to dissect pathophysiology and mechanisms of improvement with therapy (co-supervised with Dr. Davide Martino)

Awarded **Neuroscience Graduate Program award** 2018 (\$1,454)

Awarded (*declined*) **Queen Elizabeth II Graduate (Doctoral) Scholarship**, 2018

Awarded **Harley N Hotchkiss Doctoral Scholarship** 2018-2021 (\$60,000)

Received **Travel Award for Neural Interfaces Conference** Jun 2018 (1000 USD)

Awarded **NSERC Doctoral Scholarship** 2019-2022 (35,000/ y)

2018- Catherine (Weiner) Swytink-Binnema, BSc MSc

Title: Focused ultrasound neuromodulation: Mechanisms and clinical outcomes (co-supervised with Dr. Bruce Pike)

Awarded **Queen Elizabeth II Graduate (Doctoral) Scholarship**, 2018 (\$15000)

Awarded **University of Calgary Doctoral Scholarship**, 2019 (\$15,000)

Awarded **Alberta Graduate Excellence Scholarship** (\$15,000) 2020-21

Awarded **BME Graduate Program Director Leadership Prize** (\$2500) 2020

Awarded **NSERC/ Brain CREATE PhD Studentship** (\$21,000) 2020-22

Awarded **BME Research Scholarship** (\$5000) 2021

Awarded the **John D. Petrie, QC Memorial Graduate Scholarship** (\$15000) 2021, 2022

2020- Nicole Zalasky, BA

Title: Role of human subgenual cingulate and basal ganglia in emotion and decision

Awarded **NSERC/ Brain CREATE MSc Studentship** (\$21,000), 2020-22

2021- Jake Hesselink, BSc  
Title: In vivo studies of focused ultrasound in murine models (co-supervised with Dr. Samuel Pichardo)  
Awarded **BME Graduate Program Entry Award** (\$10,000), 2020  
Awarded **NSERC/ Brain CREATE MSc Studentship** (\$10,500), 2020-21  
Awarded **NSERC/Canadian Graduate Scholarship** (\$18,000), 2021-22  
Awarded **BME Research Scholarship** (top-up) (\$1000), 2021  
Awarded **Alberta Blue Cross Graduate Scholarship** in Health and Wellness (\$1500), 2021  
Awarded University of Calgary Graduate Studies Scholarship (\$1000), 2022  
Awarded UofC Silver Anniversary Recruitment Graduate Fellowship (\$20,000) 2022

#### Undergraduate students

2000 Scott Wiebe, MSc (summer student, MD received 2003)  
Awarded **University of Ottawa Faculty of Medicine Summer Studentship**  
2002-03 Dolen Kirstein (summer student and research assistant, BSc received 2003)  
2004-06 Michael Kwan (summer student, BSc received 2007)  
Awarded **Calgary Health Region Summer Research Studentships** (2005, 2006)  
2007-09 Sydney J Koke (4<sup>th</sup> year thesis and research assistant, BA received 2008)  
2010 Ryan Choo (summer student, B.Eng. Biomedical received 2011)  
Awarded **Markin Undergraduate Student Research Program (USRP) summer studentship** in Health & Wellness, and University of Calgary Program for Undergraduate Research Experience (**PURE**) **studentship** (*declined*)  
2010 Raveena Dhaliwal (summer student in BSc Neuroscience)  
2010 Anne Kemp (summer student in BSc Neuroscience)  
2010-11 Cole Bowerman (4<sup>th</sup> year thesis and summer student, BHSc received 2011)  
2011 Rachel Sondergaard (4<sup>th</sup> year thesis BEng Biomedical received 2011)  
2011 Daekeun Kim (summer student BSc Biology received 2012)  
Awarded **Alberta Innovates Health Solutions summer studentship**, Markin Undergraduate Student Research Program (USRP) in Health & Wellness (*declined*), NSERC CREATE summer studentship (*declined*)  
2013 David Adair (co-supervised co-op/summer student Computer Engineering)  
Awarded **1<sup>st</sup> prize** for best imaging presentation at Biomedical Engineering NSERC-CREATE and **2<sup>nd</sup> prize** at Hotchkiss Brain Institute summer student research symposia, **Best Overall Poster** Presentation at Alberta Biomedical Engineering Conference  
2014 Jordan Haidey (summer student from BSc Neuroscience)  
Awarded **Alberta Innovates Health Solutions summer studentship**  
2014 Regan McLeod (summer student from BSc Neuroscience)  
2015 Lily Zi Hui Su (summer student from BSc at McGill University)  
2016 Erin Williams (summer student from BHSc)  
2016-2017 Dylan Roskams-Edris, MHEthics BSc (co-supervised neuroethics-law intern from Dalhousie University)  
**International Neuroethics Society travel award** for best abstract (\$500 USD)  
**Oxford University Press Poster award** (one of 13 awards in a pool of 75 posters)  
2017 Aaron Chau (summer student from BME)  
Awarded **Branch Out Neurological Foundation summer studentship** (\$6000 + \$1000 travel)  
Awarded 11<sup>th</sup> Annual Biomedical Engineering Undergraduate Research Symposium **Best**

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- Presentation Prize** in Imaging and Biomechanics  
Awarded **Best presentation** at Branch Out Neurological Foundation Neuron Night (\$500)
- 2018 Kimberly Amador Enriquez (BME student from Mexico)  
Funded by **Mitacs Globalink** Research Internship Program
- 2018, 2019 Nicole Zalasky (summer student doing BSc Mount Royal University)  
Awarded 12<sup>th</sup> Annual Biomedical Engineering Undergraduate Research Symposium **Best Presentation Prize** in Imaging, Optics and Wearables
- 2018 Matthew Skarsgard (summer student doing BScEng from Queens)  
Awarded **Mathison Centre summer studentship**
- 2019 Talha Khalil (UofC Electrical engineering)  
Awarded **BME summer studentship**
- 2020 Adam Gulamhusein  
Awarded an **Alberta Innovates Highschool Youth Researcher Summer Studentship (HYRS)**
- 2020-21 Juliana Nudd-Seely (4<sup>th</sup> year BMEN500 research thesis project BEng Biomedical)

#### Graduate Student Committees

- 2002-2004 Selina Pearson, Neuroscience MSc Program
- 2003-2005 Noor Ramji, Neuroscience MSc Program
- 2004-2005 Ciprian Igna, Medical Physics (Radiation Oncology) MSc Program
- 2006-2009 Dr. Yuri Power, Neuroscience MSc Program
- 2008-2009 Laura McDougall, Kinesiology MSc Program
- 2011-2013 Mike Lane, Kinesiology MSc Program
- 2015-2019 Linhui Yu, Electrical Engineering PhD Program
- 2016-2020 Dr. Stefan Lang, Neuroscience PhD Program
- 2016-2022 Adrianna Giuffre, Neuroscience MSc-PhD Program
- 2017-2018 Kyle Mayr, Neuroscience MSc Program
- 2018- Jacinta Specht, Neuroscience MSc Program
- 2018- Gwen van der Wijk, Psychology PhD Program
- 2019-2022 Jak Loree-Spacek, Biomedical Engineering MSc Program
- 2019-2022 Adam Longnon, Neuroscience MSc Program
- 2019-2021 Ellie Campbell, Neuroscience MSc Program
- 2019- Anupam Bisht, Biomedical Engineering MSc-PhD Program
- 2021- Ari Rotenberg, UBC Experimental Medicine MSc Program

#### **Thesis Examining:**

- 2016 Jennifer Andrews PhD Neuroscience, University of Alberta (Supervisors: Dick Stein and Francois Roy) - external
- 2017 Lázaro Miguel Sánchez Rodríguez, MSc in BME, University of Calgary (Supervisor: Roberto Diaz) - external internal
- 2022 Mada Hashem PhD BME, University of Calgary (Supervisor: Jeff Dunn) - external internal

#### **Mentoring**

- 2008-2017 Linda Cooper, MSc MD FRCSC (Associate Professor, Department of Surgery, Ophthalmology)

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2009-2014	Carol Huang, MD PhD FRCPC (Assistant Professor, Department of Pediatrics, Endocrinology)
2013-2018	Jennifer Semrau, PhD (AIHS post-doctoral fellow)
2019	Nils Forkert, PhD (Assistant to Associate Professor, Department of Radiology)

### Visiting faculty and trainees

Apr-May 16 Rafael Albanex de Albuquerque da Cunha Andrade, MD (Pernambuco University Faculty of Health. 2011)  
Visited as senior resident, now staff neurosurgeon at Hospital Getúlio Vargas, Recife, Pernambuco, Brazil

Mar-Sep 22 Ludymila Borges, MSc (PhD student from University of Uberlandia, Brazil)  
Visiting PhD student on scholarship from Brazilian government (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES) - Coordination for the Improvement of Higher Education Personnel Programa Institucional de Internacionalização (PrInt) - Institutional Program for Internationalization)

### Teaching Courses / Faculty Development Workshops Attended

27 Feb 09	Bedside Teaching (3 h)
26 Oct 09	Feedback and the Learner in Difficulty (3 h)
14 Mar 11	Building Great Workshops (3 h)
19 Oct 11	Strategic Leadership for Medical Educators (6 h)
Oct-Nov 12	Graduate Supervisor Series on roles and responsibilities, constructive feedback, and supervision in the context of one's career (4 h)
19 Nov 14	Writing a Teaching Philosophy Statement (1.5 h)
10 May 16	How to be a Great Mentor (1.5 h)
23 Nov 20	Implicit Bias Train the Trainer workshop (4 h)

### KNOWLEDGE TRANSLATION / OUTREACH

Mar 99	Presentation to the Parkinson's Society of Ottawa-Carleton, Ottawa
Nov 99	Presentation to the Dystonia Society of Ottawa-Carleton, Ottawa
21 Apr 01	Presentation to the Parkinson's Society of Southern Alberta, Calgary
18 Dec 01	Co-presentation to the Parkinson's Society of Southern Alberta Board of Directors meeting
6 Sept 02	Radio-interview on Research directions in brain stimulation therapy, CBC Calgary Morning Show, The Eye Opener
13 Sept 02	Television-interview, Global, Commentary on Alberta Innovation
2 Nov 02	Invited speaker to the Parkinson's Society of Canada Annual General Meeting: "Stimulating the Parkinson's brain", Calgary
26 Nov 02	Petroleum Club breakfast presentation for Calgary Health Region fundraising
10 Jun 03	Presentation to the Parkinson's Society of Southern Alberta Board of Directors meeting
Summer 03	AHFMR Research News: "Restoring movement after injury - deep brain stimulation"
18 Oct 03	Brain Pacemaker: Where surgical technology meets cell science, Alberta Heritage Foundation for Medical Research public lecture series
Jan-May 04	Media interviews (television, radio and newsprint): Treating Parkinson's, exceptional team gives hope to Calgary man, Parts 2-3
19 Jun 04	Presentation to the Trigeminal Neuralgia Association of Canada, Calgary branch
Jun, Oct 04	Television-interview, Global, "Body & Health"

Nov 04	Canadian Living magazine, "Treating Parkinson's with a pacemaker for the brain"
18 Jan 05	Co-presentation to the Parkinson's Society of Southern Alberta Board of Directors meeting
Jun 05	Reader's Digest, "Mike gets his life back: A new surgical procedure and a brain 'pacemaker' are giving Parkinson's victims another chance"
28 Jan 06	Presentation to the Dystonia Society Support Group: "Therapeutic brain stimulation for dystonia: A success, but why", Calgary
23 Jun 06	Annual meeting of the Canadian Association of Medical Radiation Technologists, "Imaging for Stereotactic & Functional Neurosurgery", Calgary
15 Jan 07	Tour of Clinical Neuroscience research labs with Member of Parliament, Mr. Art Hanger, followed by photo/report in Newsletter to Constituents
Winter 07	AHFMR Research News, Responding to the Reader: "A reader asks about new research on essential tremor and how it affects the brain. Dr. Zelma Kiss responds."
14-15 Aug 07	The Banff Centre, Science Communications Course, Biomedical science panelist
22 Apr 08	Presentation to the Canada Trigeminal Neuralgia Association (patient support group): "Controversies in trigeminal neuralgia and how to solve them", Calgary
31 May 08	Invited speaker at "Hope Conference - Paving Your Path to Wellness" for the Parkinson's Society of Southern Alberta, Calgary
Jun 2009	Interview for Science Alberta Foundation News: "Bionic Humans?" by Tim Loughheed
Summer 2009	Interview for AHFMR Research News: "Smart Neural Prostheses" by Connie Bryson
17 Aug 10	Presentation with my summer student, to the Canada Trigeminal Neuralgia Association: "Trigeminal neuralgia: New research plans and our survey", Calgary
5 Nov 10	Tour of Clinical Neuroscience/Hotchkiss Brain Institute research labs with Member of Legislative Assembly of Alberta, Minister of Heritage, Lindsay Blackett
2 Jun 11	Tourmaline Golf Tournament presentation for HBI fund raising
4 Jun 11	Invited speaker at "Hope Conference" for the Parkinson's Society of Alberta, Calgary
Jun 2012	Neural Interfaces conference video for NIH Public Relations <a href="http://www.youtube.com/watch?v=gLLdAIHBesA&amp;feature=plcp">http://www.youtube.com/watch?v=gLLdAIHBesA&amp;feature=plcp</a>
27 Sep 12	Presentation to Organization of Bipolar and Depressive Disorders board and support group, Calgary
27 Sep 13	Radio interview on "DBS for depression", 770 News Talk Radio Calgary
2 Nov 13	Presentation to the Dystonia Research Foundation Canada with two of my post-doctoral trainees: "DBS for dystonia research: What we know, don't know and are learning", Calgary
22 Nov 13	Television-interview, Global News: "Researchers study 'brain pacemakers' as depression therapy" <a href="http://globalnews.ca/news/985918/researchers-study-brain-pacemakers-as-depression-therapy/">http://globalnews.ca/news/985918/researchers-study-brain-pacemakers-as-depression-therapy/</a>
28 May 14	Television-interview by my research trainee, CTV Calgary News: "An app for Parkinson's patients?" <a href="http://calgary.ctvnews.ca/video?clipId=372089">http://calgary.ctvnews.ca/video?clipId=372089</a>
18 Nov 14	Media interviews (multiple television and radio): Researchers investigate new treatment for depression
28 Oct 15	Pedal for Parkinson's Research Symposium: "DBS for PD: Current methods and future directions"
13 Nov 15	THINK BIG Calgary Public Central Library: "A Night Out with Your Brain" hosted by Jay Ingram featuring presentations by Grant Gordon PhD and Zelma Kiss MD PhD

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- 27 Apr 17      Parkinson Alberta Champions of Hope Keynote Speaker
- 1 Oct 17      Radio interview with Michael Enright of The Sunday Edition: "Unlocking the mystery of the human brain", CBC Canada  
<http://www.cbc.ca/listen/shows/sunday-edition/segment/14202199>
- 6-7 Dec-17    Media interviews (multiple television and radio, Calgary/Edmonton): MRgFUS technology - Brain surgery without breaking the skin
- 14 Sep 18      Canadian Association of Neurophysiological Monitoring conference: "Microelectrode recording and stimulation - Methods and research"
- 15 Sep 18      Dystonia Medical Research Foundation Canada Calgary Symposium: "What is new (and old) in surgery for dystonia"
- 28 Nov 18      Keynote speaker at fund raising dinner for HBI Movement Disorders NeuroTeam
- Aug 20          Interview for Nature Biotechnology News: Waltz, E. Green light for deep brain stimulator incorporating neurofeedback. *Nat Biotechnol* 38, 1014-1015 (2020).  
<https://doi.org/10.1038/s41587-020-0664-3>