

**Office Address:**

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**Education:**

B.A. University of Maryland, College Park, MD  
1972 Psychology  
M.A. The American University, Washington, DC  
1975 Experimental Psychology  
Ph.D. The American University, Washington, DC  
1977 Experimental Psychology

**Professional Experience:**

1972-1974 Research Assistant, The American University  
1974-1975 Teaching Assistant, The American University  
1975-1978 Instructor, The American University  
1976-1977 Psychologist, National Institute of Dental Research, National Institutes of Health (NIH)  
1978-1979 Postdoctoral Fellow, National Eye Institute, NIH  
1980-1984 Staff Fellow, National Institute of Dental Research, NIH  
1984-1989 Assistant Professor, Department of Stomatology, University of Montreal  
1985-1996 Member, Center for Neuroscience Research, University of Montreal  
1989-1993 Associate Professor (Tenure), Department of Stomatology, University of Montreal  
1993-1995 Visiting Scientist, Department of Neurobiology, Barrow Neurological Institute, Phoenix, AZ  
1993-1996 Professor, Department of Stomatology, University of Montreal  
1993-2012 Adjunct Professor, Department of Neurology and Neurosurgery, Montreal Neurological Institute  
1996-2012 Harold Griffith Professor, Department of Anesthesiology, McGill University  
1996-2002 Professor, Department of Physiology, McGill University  
1996-2012 Professor, Faculty of Dentistry, McGill University  
1999-2003 Director, Anesthesia Research Unit, McGill University  
2003-2009 Director, McGill Alan Edwards Centre for Research on Pain

**Professional Memberships:**

Society for Neuroscience  
International Association for the Study of Pain  
American Pain Society  
Canadian Pain Society

**Awards**

- 2002 Distinguished Career Award, Canadian Pain Society
- 2003 Frederick W.L. Kerr Basic Science Research Award, American Pain Society
- 2005 James McGill Professorship, McGill University
- 2009 Canada Research Chair in Clinical Pain Research, McGill University

**Teaching Experience:**

- 1974-1975 Graduate Assistant, Experimental Psychology, Sensation and Perception, Behavioral Principles, American University.
- 1975-1978 Instructor, Introductory Psychology, American University
- 1984-1993 Lecturer on pain in Neuroscience course, University of Montreal
- 1984-1993 Lecturer in Dental Neurophysiology, University of Montreal
- 1989-1996 Professor, Introduction to Clinical Research, Faculty of Dentistry, University of Montreal
- 1984-1997 Supervisor for 6 undergraduates; 9 M.Sc. and 3 Ph.D. candidates; and 4 postdoctoral fellows
- 1993 Co-director of Research Seminars Course, Montreal Neurological Institute
- 1996 (Fall) Lecturer for "Graduate Seminars in Dental Sciences," 590-771D, McGill University
- 1997 (Fall) Lecturer for "Graduate Seminars in Dental Sciences," 590-771D, McGill University
- 1997 (Fall) Lecturer in Physiology 209A, McGill University
- 1997 (Fall) Lecturer for Anesthesia Joint Resident Seminars, McGill
- 1998 (Spring) Physiology 461D (directed undergraduate student project)
- 1998 (Spring) Lecturer in "Diseases/dysfunctions of the Orofacial Complex," 590-203P, McGill Dentistry
- 1999 (Spring) Course director for "Mechanisms and Management of Pain," 590-654B, McGill
- 1999 (Spring) Lecturer in Physiology 209B, McGill
- 1999 (Spring) Lecturer in Anesthesia Joint Resident Seminars ("Critical Appraisal of the Anesthesia Literature"), McGill
- 2000 (Fall) Lecturer in Unit 6, Medical students
- 2000 (Fall) Lecturer in Psychology
- 2000 (Spring) Lecturer in "Diseases/dysfunctions of the Orofacial Complex," 590-203P, McGill Dentistry
- 2000 (Spring) Lecturer in Physiology 210B, McGill Physiology Department
- 2000 (Spring) Lecturer in "Diseases/dysfunctions of the Orofacial Complex," 590-203P, McGill Dentistry
- 2001 (Spring) Course director for "Mechanisms and Management of Pain," 590-654B, McGill Neuroscience program
- 2001 (Spring) Lecturer in Physiology 210B, McGill University
- 2001 (Spring) Lecturer in "Diseases/dysfunctions of the Orofacial Complex," 590-203P, McGill Dentistry
- 2001 (Spring) Lecturer in "Basis of Medicine," Unit 6, McGill Medical School
- 2001 (Fall) Lecturer in Physiology 314A, McGill Physiology Department
- 2001 (Fall) Lecturer in Physiology 201A, McGill Physiology Department
- 2001 (Fall) Lecturer in Physiology 209A, McGill Physiology Department
- 2001 (Fall) Lecturer in Psychology 505A, McGill Psychology Department
- 2002 (Spring) Lecturer in Unit 6, McGill Medical School
- 2001-2002 Mentor in Physiology 552-359D ("Tutorial in Physiology"), McGill University
- 2002 (Fall) Lecturer in Physiology PHYS 314A, McGill University
- 2002 (Fall) Lecturer in Psychology PSYC 710A, McGill University

- 2003 (Spring) Course co-director, "Mechanisms and Management of Pain," DENT 654B, McGill Dentistry
- 2003 (Spring) Lecturer in "Basis of Medicine," Unit 6, McGill Medical School
- 2003 (Spring) Lecturer in "Small Group Teaching," McGill Medical School
- 2003 (Fall) Lecturer in Neuroscience 591A, McGill Neuroscience program
- 2004 (Spring) Lecturer in "Basis of Medicine," Unit 6, McGill Medical School
- 2004 (Spring) Lecturer in "Small Group Teaching," McGill Medical School
- 2005 (Spring) Course director for "Mechanisms and Management of Pain," DENT654, McGill Dentistry
- 2005 (Spring) Lecturer in "Basis of Medicine," Unit 6, McGill Medical School
- 2005 (Spring) Lecturer in "Small Group Teaching," McGill Medical School
- 2006 (Spring) Lecturer in "Basis of Medicine," Unit 6, McGill Medical School
- 2006 (Spring) Lecturer in "Small Group Teaching," McGill Medical School
- 2006 (Fall) Course director for "Mechanisms and Management of Pain," DENT654, McGill Dentistry
- 2007 (Spring) Lecturer in "Basis of Medicine," Unit 6, McGill Medical School
- 2007 (Spring) Lecturer in "Small Group Teaching," McGill Medical School
- 2007 (Fall) Lecturer in Neuroscience 591A, McGill Neuroscience program
- 2008 (Spring) Lecturer in "Basis of Medicine," Unit 6, McGill Medical School
- 2008 (Spring) Lecturer in "Mechanisms and Management of Pain," DENT654, McGill Dentistry
- 2009 (Spring) Lecturer in "Basis of Medicine," Unit 6, McGill Medical School
- 2010 (Spring) Lecturer in "Basis of Medicine," Unit 6, McGill Medical School
- 2010 (Fall) Lecturer in "Mechanisms & Management of Pain," DENT 654, McGill Dentistry
- 2010 (Fall) Lecturer in "Psychology Graduate Seminar," PSYCH 660, McGill Psychology
- 2011 (Spring) Lecturer in "Basis of Medicine," Unit 6, McGill Medical School

### **Undergraduate Students Supervised:**

- Strigo, I. 1997-1998, Physiology Honours Thesis, Effects of ambient temperature on pain and temperature perception (McGill)
- Mozessohn, L. 2002-2003, Psychology Honours Thesis, Gender and menstrual cycle differences in the emotional modulation of pain (McGill)
- Peixe, T. 2002-2003, Psychology Honours Thesis, The effects of emotional modulation and attentional focus on autonomic responses to pain (McGill)
- Laferriere, A. 2007, Pre-med Directed Research, Emotional modulation of pain: Does ventral striatum play a role? (McGill)
- Ceko, M. 2007, Summer student from Berlin, Germany, Effect of dopamine depletion on pain perception (McGill)
- Juneau, M. 2008, Summer student from Concordia University, Effect of trust on the placebo response (McGill)
- Cotton, V. 2009, Neuroscience Honours Research Project, The effect of yoga on pain perception and brain anatomy (McGill)
- Lapedis, M. 2009, Summer student, Psychology, Studies of diffuse noxious inhibitory control (McGill)
- Saragosti, D. 2011, Neuroscience Research Project, Effects of chronic pain on glial response in the brain (McGill)

### **Graduate Students Supervised (including thesis title):**

- Talbot, J.D. 1986-88, M.S. "Psychophysical studies of diffuse noxious inhibitory controls" (University of Montreal)
- Marchand, S. 1987-92, Ph.D., "Effect of TENS and dorsal column stimulation on pain" (University of Montreal)

- Talbot, J.D. 1989-97, Ph.D., "PET studies of pain pathways" (University of Montreal)
- Rainville, P. 1992-98, Ph.D., "Cortical representation of the affective dimension of pain" (University of Montreal; MRC Scholarship)
- Chen, C.-C. 1992-94, M.S., "Cold perception in humans and monkeys" (University of Montreal)
- Chen, C.-C. 1994-99, Ph.D., "Thalamic mechanisms of hyperalgesia in the monkey" (University of Montreal; FRSQ Scholarship)
- Hofbauer, R. 1996-2002, Ph.D., "PET studies of hypnotic analgesia" (McGill; FRSQ Scholarship)
- Ha, B. 1997-2000, M.S., "fMRI studies of pain" (McGill)
- Strigo, I. 1998-2002, Ph.D., "Studies of visceral pain" (MRC Scholarship)
- Carrier, B. 1998-2001, M.S., "Influence of attention on pain transmission" (McGill; MRC Scholarship)
- Marchie, A. 2001-2003, M.S., "Sex differences in the perception of capsaicin-induced pain" (McGill)
- Pukall, C. 2002-2003, Ph.D., Co-supervision, "MRI studies of tactile allodynia in vulvodynia" (McGill)
- Backlund, H. 2003, Ph.D. (visiting student from Goteberg, Sweden)
- Sauro, K. 2003-2006, Ph.D., "Studies of central modulatory dysfunction in fibromyalgia" (McGill)
- Kuchinad, A. 2004-2006, M.Sc., "Attentional and emotional modulation of pain" (McGill)
- Mendelson, D. 2004-2006, M.Sc., "Role of the central nervous system in reflex sympathetic dystrophy" (McGill)
- Loggia, M. 2004-2006, M.Sc., "Effects of empathy on pain processing" (McGill)
- Loggia, M. 2006-2008, Ph.D., "Effects of genetics pain and pain modulation" (McGill)
- Ceko, M. 2008-2012, Ph.D. "Cognitive effects of living with fibromyalgia" (McGill)
- Kocsis, P. 2008-2009, M.Sc., "Longitudinal effects of chronic nerve injury on brain anatomy and function" (McGill)
- Thompson, S. 2010-2012, M.Sc., "Glial-neuron interactions in chronic pain: Micro-PET studies" (McGill)
- Bayet, S. 2010-2012, M.Sc., "Alterations in pain modulatory systems in chronic pain" (McGill)

#### **Postdoctoral Fellows Supervised:**

- Tremblay, N. 1991-93 "Thalamic processing of pain in monkey" (FRSQ Scholarship)
- Coghill, R.C. 1992-94 "PET studies of tonic and phasic pain" (MRC Scholarship)
- Morin, C. 1992-96 "Psychophysical studies of opiate analgesia" (FRSQ Scholarship)
- Kupers, R. 1994-95 "Trigeminal hyperalgesia model in the monkey" (MRC Scholarship)
- Olausson, H. 1998-2000 "fMRI studies of abnormal pain processing" (Fellowship from Swedish MRC)
- Villemure, C. 1999-2003 "Modulation of pain perception by olfactory stimulation" (MRC fellowship)
- Frot, M. 2001- 2003 "Gender differences in human pain processing" (fellowship from Foundation pour la recherche médicale du France)
- Schweinhardt, P. 2006-2008 "The role of dopamine in pain and placebo analgesia" (AECRP Fellowship)
- Seminowicz, D. 2007-2010 "Human and rat brain network morphological changes associated with chronic pain and psychological factors related to pain perception" (CIHR Fellowship)
- Low, L. 2010-now "Effects of environmental enrichment on pain and brain anatomy in rats" (IASP Fellowship)

#### **McGill University Activities:**

- 1996-2003 Director of Research, Department of Anesthesia

1996-2012 Council Member, Faculty of Dentistry  
 1996-2000 Council Member, Faculty of Graduate Studies  
 1996-2012 Tenure Committee, Faculty of Dentistry  
 1996-2012 Tenure Committee, Department of Anesthesia  
 1997-1998 Chair, Primate Users Group  
 1996- 2008 Organizer of annual McGill Pain Day  
 1997-2003 Executive Committee, Department of Anesthesia  
 1998 Member, PET Planning Committee, Montreal Neurological Institute  
 1998-2001 Member, Faculty of Dentistry Graduate Student Admissions and Advisory Committee  
 1999-2012 Member, PET Working Committee (MNI)  
 1999 Member, Dean's Advisory Committee for Anesthesia Chairman  
 1999 President, Dental Faculty Promotion Committee for Dr. Feine  
 1999-2001 Member, Physiology Department Curriculum Committee  
 1999 Member, Anesthesia Promotion Committee for Dr. Backman  
 1999 Member, Physiology Promotion Committee for Dr. Cullen  
 1999-2000 Member, Search Committee for Oral Medicine, Faculty of Dentistry  
 2000 Member, Advisory Committee for Dean of Dentistry  
 2000 Member, Ad hoc Committee on WEB Posting for Faculty of Medicine  
 2000 Member, Search Committee for EP Taylor Chair, Psychology Department  
 2000-2003 Member, Faculty of Medicine Promotion Committee  
 2000-2012 Member, Faculty of Dentistry Promotion and Search Committee  
 2001-2012 Member, Dentistry Graduate Studies and Research Committee  
 2001-2004 Member, University Academic Planning and Policy Committee  
 2002-2003 University Tenure Committee, Alternate Representative of Senate  
 2002-2003 Alternate member, Tenure Committee, Faculty of Science  
 2002-2012 Chairman, Department of Anesthesia Promotion and Tenure Committee  
 2002-2005 Member, University Tenure Committee for Recruitment  
 2003-2009 Director, McGill Alan Edwards Centre for Research on Pain  
 2005-2008 Alternate member, University Tenure Committee for Recruitment  
 2006-2008 Senate representative, University Tenure Committee for Faculty of Management  
 2006-2012 Member, Small Animal Imaging Working Committee  
 2009-2010 VP-Research Taskforce on University Centres  
 2009-2011 McGill CRC Internal Review Committee  
 2011-2012 McGill Awards Committee

#### **Thesis Committees and Student Advisory Committees (since 1999)**

2000 William Lariviere, Ph.D. thesis committee, McGill Psychology  
 2000 Graham Pitcher, Ph.D. thesis committee, McGill Physiology  
 2000 Brian Ha, M.Sc. thesis committee, McGill Physiology  
 2000 M. Faymonville, Ph.D. thesis committee, Université Liège  
 2000 Jen-I Chen, M.Sc. thesis committee, McGill Neurology  
 2001 Jing Wang, M.Sc. thesis committee, McGill Physiology  
 2001 Annie-Kim Gilbert, Ph.D. thesis committee, McGill Psychology  
 2001 Wang Ninghua, Ph.D. thesis committee, Hong Kong Polytechnic University  
 2001 Maud Flot, Ph.D. thesis committee, University of Lyon  
 2001 Alfonse Marchie, M.Sc. student advisory committee, McGill Dentistry  
 2001 Benoit Carrier, M.Sc. thesis committee, McGill Dentistry  
 2001 Reza Sharif, M.Sc. thesis committee, McGill Physiology  
 2001-2002 Reza Sharif, Ph.D., student advisory committee, McGill Physiology  
 2001 Sarah Hyams, M.Sc. thesis committee, McGill Dentistry

- 2001 Carl Saab, Ph.D. thesis committee, University of Texas  
 2001-2002 Anne Landau, M.Sc., student advisory committee, McGill Physiology  
 2002 Annie Cloutier, M.Sc., student advisory committee, McGill Physiology  
 2002 Robert Hofbauer, Ph.D. thesis committee, McGill Neurology and Neurosurgery  
 2002 Irina Strigo, Ph.D. thesis committee, McGill Physiology  
 2003 Alfonse Marchie, M.Sc. thesis committee, McGill Dentistry  
 2004-2005 Shad Smith, Ph.D., student advisory committee, McGill Psychology  
 2005 Cynthia Grelik, M.Sc. thesis, external examiner  
 2005-2011 Cynthia Robillard, student advisory committee, McGill Physiology  
 2006 Anil Kuchinad, M.Sc. thesis committee, McGill Neurology and Neurosurgery  
 2006 Anita Mendelson, M.Sc. thesis committee, McGill Neurology and Neurosurgery  
 2008 Marco Loggia, Ph.D. thesis committee, McGill Neurology and Neurosurgery  
 2008 Julie Masse, M.Sc. thesis, external examiner, McGill Physiotherapy  
 2009 Mathieu Roy, Ph.D. thesis, external examiner, University of Montreal  
 2009 Cynthia Tsipora Mankovsky, M.Sc. student advisory committee, McGill Psychology  
 2009 Jerry Chen, Ph.D. thesis, external examiner, University of Toronto  
 2010 Wiebke Tiede, M.Sc., student advisory committee, McGill Dentistry  
 2010 Cynthia B. de Medeiros, M.Sc., external examiner, McGill Psychiatry  
 2010 Pro-Dean for Dietetics and Human Nutrition Department  
 2011 Genevieve Chaput, M.A., external examiner, McGill Department of Educational and Counseling Psychology  
 2011 Joshua Grant, Ph.D. thesis, external examiner, Université de Montréal, Department of Physiology  
 2011 Cynthia Robillard, Ph.D. thesis, internal examiner, McGill Department of Physiology

**Related Activities (since 1984):**

- 1985 Member, special NIH study section to review project grant (University of Washington)  
 1987 Member, Organizing Committee, Montreal Pain Group  
 1989-1992 Member, Neurological Sciences Committee, Medical Research Council of Canada  
 1990 Member, Organizing Committee, 12th International Symposium of the Neuroscience Research Center, University of Montreal ("Chronic Neuromuscular Pain")  
 1992 Member, Scientific Program Committee, Canadian Pain Society  
 1991-1994 Member, Editorial Board, *Pain Forum*  
 1993-1994 Member, Medical Research Council Advisory Committee for Peer Review  
 1994-2000 Member, Editorial Board, *Pain*  
 1995-2006 Member, Editorial Board, *Clinical Journal of Pain*  
 1995-2005 Member, Editorial Board, *Journal of Neurophysiology*  
 1995-1998 Member, Scientific Program Committee, Society for Neuroscience  
 1996-2002 Councilor, International Association for the Study of Pain  
 1997 Scientific Advisory Committee, Hydro Quebec  
 1997-2005 Associate Editor, *Experimental Brain Research*  
 1998-2000 Member, Lindsley Prize Selection Committee, Society for Neuroscience  
 1999-2000 Chairman, Lindsley Prize Selection Committee  
 1997-1998 Member, Scientific Program Committee, 4<sup>th</sup> International Conference on Functional Mapping of the Human Brain

- 1998-2005 Associate Editor, *Journal of Neuroscience*  
 1999-now Member, Editorial Board, *Pain Medicine*  
 2000-2003 Section Editor, *Pain*  
 2000 Member, NIH Study Section on Somatosensory and Chemical Senses  
 2000 Member, Parke-Davis Multidisciplinary Advisory Board  
 2001 –2008 Member, Editorial Board, *European Journal of Pain*  
 2001 Member of Wilder-Penfield Prize Committee (Ministère de la Recherche, de la Science et de la Technologie, Québec)  
 2002 Member, NIH Study Section on Complementary and Alternative Medicine  
 2002-2004 Pfizer Pain NeuroImaging Research Group Advisory Board  
 2002-2005 Member, International Pain and Plasticity Research Group  
 2003-2010 Editor-in-Chief, IASP Press  
 2002-2012 Member, Neuroscience Canada Science Advisory Council  
 2003-2005 Axis Co-director, FRSQ Neuroscience Network  
 2003-2012 External Advisor, Center for Neurovisceral Sciences and Women’s Health, UCLA School of Medicine  
 2003-2007 Member, Scientific Advisory Board, Louise Edwards Foundation  
 2003-2006 Member, Society for Neuroscience Publications Committee  
 2003 Member, CIHR Behavioral Science C Review Committee (December 2003)  
 2004 Member, NIH Program Project evaluation committee  
 2004 Member, Scientific Program Committee, International Congress of NeuPSIG, Madrid, May 13-16, 2004  
 2005 Member of Wilder-Penfield Prize Committee (Ministère de la Recherche, de la Science et de la Technologie, Québec)  
 2005 Member, NIH Study Section on Complementary and Alternative Medicine  
 2006 Member, Ultram ER 2006 Advisory Board  
 2008 Member, Program Committee, IBRO Summer School 2008  
 2008-2012 Member and Axis Director, Scientific Committee, Quebec Pain Research Network  
 2009-2010 Member, Local Arrangements Committee, 12<sup>th</sup> World Congress on Pain.  
 2009-2010 Member, Scientific Program Committee, American Pain Society  
 2009-2011 President-elect, Canadian Pain Society  
 2009 Member, NIH Special Review Committee on “Exploratory studies in the Neurobiology of Pain in Sickle Cell Disease”  
 2008-present Member, Editorial Board, *Pain*  
 2010-2011 Member, Scientific Program Committee, IBRO  
 2010-2012 Member, Board of Directors, Louise and Alan Edwards Foundation  
 2010-2011 Member, Board of Directors, Canadian Pain Coalition  
 2010-2012 Treasurer, International Association for the Study of Pain  
 2011 Member, NIH Special Review Committee on “Vulvodynia”  
 2011-2012 President, Canadian Pain Society  
 2011-2015 Member, National Advisory Council for Complementary and Alternative Medicine, NCCAM, National Institutes of Health  
 2011-2012 Editor, Special Issue of *Neuroscience Letters* on Pain Imaging

### **Research Funding:**

#### *Personal Awards:*

- 1978-1979 Extramural Postdoctoral Fellowship, National Eye Institute

- 1984-1994 Research Scholarship, Medical Research Council of Canada  
 1984-1987 Research Scholarship, FRSQ (supplement to MRC scholarship)  
 2005-2009 James McGill Professorship, McGill University  
 2009-2016 Canada Research Chair (CRC Tier I) Award
- Operating Grants:*
- 1985-1987 "The role of thalamus in pain perception," Medical Research Council of Canada (MRC)  
 1985-1987 "Psychophysical studies of the intensity and unpleasantness of pain," MRC  
 1987-1989 "The role of thalamus in pain perception," MRC  
 1987-1989 "Psychophysical studies of the intensity and unpleasantness of pain," MRC  
 1988-1990 "Effects of thalamic stimulation on facial pain perception in monkey and man," MRC  
 1988 "Orofacial pain: psychophysical and neurophysiological investigations," MRC equipment grant  
 1989-1992 "Psychophysical studies of the intensity and unpleasantness of pain," MRC  
 1989-1992 "The role of thalamus in pain perception," MRC  
 1990-1992 "Effects of thalamic stimulation on facial pain perception in man and monkey," MRC  
 1992-1995 "Psychophysical studies of pain and temperature perception," MRC  
 1992-1995 "Processing of thermal and nociceptive information in thalamus and cingulate cortex," MRC  
 1992-1995 "Studies of cerebral pain processing in humans using positron emission tomography," MRC  
 1993-1994 "Pain and movement limitations: Objective clinical evaluation methods," LOMEDIC  
 1993-1997 "Positron imaging of neural systems: Physiology and pathophysiology of neuronal activation," MRC (program grant in collaboration with Montreal Neurological Institute)  
 1995-2000 "Thalamic processing of pain and temperature in monkey," MRC MT-9772  
 1997-1998 "Studies of cerebral pain processing in humans using positron emission tomography," MRC MA-13950  
 1998-2001 "Human pain processing and modulation by conscious state," MRC MT-14993  
 1998-2002 FRSQ Réseau de recherche en santé bucco-dentaire (Axe 4--Douleur et dysfonctions bucco-faciales; 6 investigators)  
 1999 "Effect of gabapentin on thermal and tactile hyperalgesia and allodynia: A human psychophysical study," Contract from Parke-Davis.  
 2000-2004 "Neural mechanisms of peripheral and central neuropathic pain," CIHR MOP-9772  
 2002-2006 "Pain research from molecules to community: Collaborative national training program," CIHR training program grant (co-investigator)  
 2002-2006 "Cognitive approaches to modifying human pain perception," NIH 1-R01-NS44036-01  
 2002-2003 "Effect of dopamine agonists on pain perception" (pilot project), FRSQ Réseau de recherché en santé buccodentaire du Québec.  
 2004-2007 "Endogenous pain modulation in patients with fibromyalgia," CIHR MOP-9772



- 2005-2006 "Role of the central nervous system in reflex sympathetic dystrophy," Louise Edwards Foundation
- 2005-2006 "A Positron Emission Tomography (PET) study to investigate dopamine function in healthy subjects and fibromyalgia patients," Glaxo-Smith-Kline
- 2006-2011 "Role of dopamine in pain and placebo analgesia," CIHR MOP-81091
- 2007-2012 "Parietal mechanisms of pain perception: Somatotopy of pain and relevance to phantom limb pain," CIHR 66993 (Co-Investigator)
- 2008-2010 "Determining the longitudinal changes in brain morphology and function associated with chronic pain in rat models of neuropathic pain," Pfizer Neuropathic Pain Research Awards Program
- 2009-2010 "The impact of fibromyalgia on brain aging and cognitive function," American Fibromyalgia Syndrome Association
- 2009-2010 "Glial-neuron interactions in chronic pain: Micro-PET studies," Quebec Pain Research Network and Pfizer
- 2010-2012 "Functional brain activation following nerve injury in the rat: A model to test analgesic efficacy," Alan Edwards Centre for Research on Pain and AstraZeneca
- 2011-2012 "Influences of environment upon long-term changes in pain, emotional and cognitive behavior, and brain structure associated with chronic neuropathic pain in the rat," Lilly Canada

*CFI grants in which I was on a 10-member team:*

- 1999-2005 "Infrastructure for oral health research and pain control"
- 2000-2005 "Multicentre pain research initiative"

*VRQ grants on which I was a team (steering committee) member:*

- 2001-2006 Multi-Institute Quebec Pain Research Institute

**Invited Lectures:**

- 1978 Department of Neurology, Georgetown University Hospital, Neurophysiology Seminar
- 1980 Winter Conference on Brain Research (Visuomotor coordination: orientation to visual stimuli)
- 1981 Winter Conference on Brain Research (Behavioral modulation in sensory systems)
- 1982 American Pain Society meeting, Symposium on the study of pain mechanisms in awake, behaving primates
- 1982 American Association for the Advancement of Science meeting, Symposium on measurement of pain in animals and man
- 1983 Winter Conference on Brain Research (Multiple mechanisms of analgesia in man and animals)
- 1984 NIH Neuroscience Seminar Series, invited speaker
- 1984 University of Montreal Neuroscience Research Center, invited speaker
- 1984 5th World Congress on Pain, Symposium on "Wide-dynamic-range neurons: Do they contribute to the sensory-discriminative aspect of pain perception?"

- 1985 Society for Neuroscience, Symposium on "Effects of behavioral state and motor activity on sensory neuronal processing"
- 1985 Society for Neuroscience Press Conference, invited speaker
- 1986 Canadian Pain Society, plenary speaker ("Update on neurophysiological aspects of pain")
- 1988 Laval University, Quebec, "State-dependent modulation of thalamic somatosensory activity"
- 1988 Notre-Dame Hospital, Montreal, Symposium on functional neurosurgery (Physiological basis of behavioral modulation of pain)
- 1988 American/Canadian Pain Societies meeting, Symposium on thalamic mechanisms of pain
- 1989 Charles Lemoyne Hospital, invited speaker (Neurophysiology of Pain)
- 1990 6th World Congress on Pain, Symposium on "Modulation of thalamic and cortical activity during behavior"
- 1990 6th World Congress on Pain, luncheon meeting on "The role of thalamocortical mechanisms in pain modulation"
- 1990 Symposium on "Chronic musculoskeletal pain," University of Montreal
- 1990 Montreal Neurological Institute, invited speaker (Mapping of human pathways with PET)
- 1990 University of Montreal, Biology Department., invited speaker (The role of thalamus and cortex in the perception of pain and temperature)
- 1991 McGill University, School of Physiotherapy, invited speaker (Laboratory assessment of pain) (Same lecture again in 1992)
- 1991 Montreal Neurological Institute, invited speaker (Pain processing in the thalamus and cortex of primates)
- 1991 IBRO, Symposium on "Neuronal mechanisms of selective attention in primates"
- 1992 Canadian Pain Society, Symposium on "Pain measurement"
- 1992 University of Montreal, Faculty of Dentistry Scientific Day, invited speaker (Physiology of pain)
- 1992 Barrow Neurological Institute, Phoenix, AZ, invited speaker (Thalamic and cortical processing of pain in primates)
- 1992 Gatineau Hospital Center, Scientific Day, invited speaker (Physiology of Pain)
- 1992 Society for Neuroscience, Symposium on "Thalamic mechanisms of nociception"
- 1992 American Pain Society meeting, Breakfast Session on "Relief of clinical and experimental pain in man by implanted stimulation devices"
- 1993 38th George H. Bishop Lecture in Experimental Neurology, "Thalamic and cortical pain processing in human and monkey," Washington University Sch. Med., St. Louis, MO
- 1993 Lecturer in Neuroscience Short Course, "New Views of Cognition," Washington, DC
- 1993 IUPS, Symposium on Cognitive Neuroscience, "Selective attention in somatosensory and pain systems"
- 1993 IASP, Symposium on "Imaging Pain" (Chairman and speaker)
- 1994 New England Pain Association, "Thalamic and cortical pain processing in the primate brain," Boston, MA (Invited speaker)
- 1994 Winter Conference on Brain Research, Symposium on "Cold Pain" (Speaker)
- 1994 University of Leuven, Leuven, Belgium, Invited speaker

- 1994 University North Carolina, Chapel Hill, NC, Invited speaker (Pain and temperature processing in human and monkey)
- 1994 Concordia University, Montréal, Invited speaker (Pain and temperature processing in human and monkey)
- 1994 UQAM, Montréal, Invited speaker (Etude psychophysique et neurophysiologique de la douleur chez le singe et l'humain)
- 1994 Psychology Department, University Montréal, Invited speaker (Etude psychophysique et neurophysiologique chez le singe et l'humain)
- 1994 American Pain Society, Symposium on "Cold Pain" (speaker)
- 1995 Université Laval, Québec, Québec, Invited speaker (Thalamic and cortical processing of pain and temperature)
- 1995 Symposium on "Forebrain Areas Involved in Pain Processing," Dinard, France (Invited speaker)
- 1995 IBRO, Kyoto, Japan, "Multiple pain processing in the human brain revealed by positron emission tomography," symposium speaker
- 1995 4e Congrès Conjoint Annuel des Sciences Neurologiques du Québec, Magog-Orford, Québec, Invited speaker (Les voies de la douleur sont-elles impénétrables?)
- 1995 UCSF, San Francisco, CA, Invited speaker (Thalamic and cortical processing of pain and temperature)
- 1996 Anesthesia Department, McGill University, Invited speaker (The multidimensional nature of pain: Human and monkey studies of forebrain mechanisms)
- 1996 Physiology Department, McGill University, Invited speaker (The multidimensional nature of pain: Human and monkey studies of forebrain mechanisms)
- 1996 Spring Brain Conference, Sedona, AZ (Plenary speaker: Distributed pain processing in human cerebral cortex)
- 1996 Neuropsychology Seminar, Montreal Neurological Institute, Invited speaker (Forebrain mechanisms of pain processing)
- 1996 International Symposium of the Sonderforschungsbereich 353 (Pathobiology of the Generation and Processing of Pain, Invited plenary speaker, Mainz, Germany (Forebrain mechanisms of normal and pathological pain)
- 1996 Neurobiology of Disease Workshop, Washington, D.C., Invited speaker (Functional imaging of pain and migraine)
- 1997 Pharmacology Department, McGill University, Invited speaker (Neural correlates of pain perception: PET studies of the human brain)
- 1997 Canadian Pain Society, Niagra on the Lake, Invited speaker (Imaging pain) (May 1997)
- 1997 Winter Conference on Brain Research, Organizer and speaker (The insular cortex: An island of pain and depression, or the interoceptive image of the emotional self?) (January 1997)
- 1997 Scandinavian Pain Society, Aarhus, Denmark, Keynote Speaker (Cerebral processing of pain and an illusion of pain: PET studies) (April 1997)
- 1997 Karolinska Institute, Stockholm, Sweden, Invited speaker (Neural correlates of pain perception: PET studies of the human brain) (April 1997)
- 1997 Grand Rounds, Department of Neurology and Neurosurgery, Montreal Neurological Institute (February 1997)
- 1997 Grand Rounds, Department of Anesthesia, Royal Victoria Hospital (April 1997)
- 1997 Grand Rounds, Department of Anesthesia, Jewish General Hospital (May 1997)
- 1997 Department of Neurosurgery, Upstate Medical Center, Syracuse, NY, Invited speaker
- 1997 NIH Symposium on "New directions in pain research," Invited plenary speaker (November 1997)

- 1998 Psychiatry Department, McGill University, invited speaker (Neural correlates of pain perception: PET studies in the human brain) (February 1998)
- 1998 Harold Griffith Lecture, McGill Anesthesia (Studies of pain and consciousness) (April 1998)
- 1998 Grand Rounds, Department of Surgery, Montreal General Hospital (May 1998)
- 1998 Meeting on Clinical Psychophysiology of Pain, Teubingen, Germany, Invited Speaker (Neural correlates of pain perception: Neuroimaging studies in the human brain) (June 1998)
- 1998 NIH Pain Mechanisms Think Tank, Invited participant, National Institutes of Health, Bethesda, MD (September 1998)
- 1998 NIH Symposium on "Symptom Perception & Respiratory Sensation in Asthma," Invited speaker (September 1998)
- 1998 Annual Meeting of Association des Algologistes du Québec, Invited Speaker, (Pain Imagery with PET) (October 1998)
- 1998 Grand Rounds, Department of Neurology and Neurosurgery, Montreal Neurological Institute (October 1998)
- 1998 Presidential Symposium, Society for Neuroscience, Invited Speaker (Imaging pain perception in the human brain) (November 1998)
- 1998 French Pain Society, Paris, Invited Speaker (Neural correlates of pain perception: PET studies of the human brain) (November 1998)
- 1998 Mount Royal United Church, Invited Speaker (Pain) (December 1998)
- 1998 National Academy of Sciences, Irvine, CA, Colloquium on "The Neurobiology of Pain," Invited Discussant (December 1998)
- 1999 Montreal Neurological Institute, Brain Imaging Center, Invited speaker "Update on brain imaging studies of pain" (February 1999)
- 1999 University of Toronto, Invited Speaker, "Neuroimaging studies of pain perception" (March 1999)
- 1999 Symposium on "Orofacial Pain: From Basic Science to Clinical Management," Vancouver BC, Invited speaker (Perception and Behavioral Modulation of Pain) (March 1999).
- 1999 NIH Meeting on "Biomarkers for Pain Assessment," Invited Speaker, "Imaging Pain: Promise for Diagnosis" (April 1999)
- 1999 Columbian Pain Society, Plenary speaker (5 lectures), Bogota, Columbia (June 1999)
- 1999 ACUDA Annual Meeting, Calgary, Alberta, Invited Speaker, "Anesthesia Research Infrastructure: Status and Needs" (June 1999)
- 1999 IASP meeting, Vienna, Austria, Invited Plenary Speaker "Non-Invasive Brain Imaging during Experimental and Clinical Pain" (August 1999)
- 1999 IASP meeting, Vienna, Austria, Symposium Chairman, "Modulation of Pain by Manipulation of Consciousness, Anesthesia, Hypnosis and Sleep" (August 1999)
- 1999 IASP Satellite meeting on "Pain and Consciousness: Interfacing on Common Issues," Invited Speaker, "Human Functional Brain Imaging: The Bridge from Neurophysiology to the Mind," Innsbruck, Austria (August 1999)
- 2000 McGill Faculty of Dentistry Table Clinics, Plenary Speaker, "Imaging Pain" (February 2000)
- 2000 AAAS meeting, Washington, D.C. Invited Symposium Speaker, "Imaging Pain" (February 2000)
- 2000 University of Utah, Salt Lake City, Invited speaker, "Forebrain mechanisms of pain and cognitively-induced analgesia" (February 2000)
- 2000 Spring Pain Conference, Grand Cayman, Invited symposium speaker, "Role of cortex in pain processing" (May 2000)

- 2000 World Congress of Anesthesiologists, Montreal, Invited symposium speaker, "Monitoring analgesia" (June 2000)
- 2000 International Symposium of Regional Anesthesia, Invited speaker, "Imaging of Chronic Pain," Quebec City (June 2000)
- 2000 Society for Intravenous Anesthesia, Invited speaker, "How does anesthesia alter pain processing?," Quebec City (June 2000)
- 2000 Special Symposium on Futures for Functional Brain Imaging, Oxford University, Invited speaker, "The Future of Functional Imaging of Pain" (July 2000)
- 2000 American Pain Society, Invited Plenary speaker, "Forebrain mechanisms of chronic pain states," Atlanta, Georgia (November 2000)
- 2000 Toronto Neuropathic Pain Workshop, Invited speaker, "Imaging studies of neuropathic pain patients" (November 2000)
- 2000 Asian Pain Symposium, Invited speaker, "Forebrain mechanisms of chronic pain states: Human imaging studies," Kyoto, Japan (December 2000)
- 2001 NeuroImagerie de la Douleur, Invited speaker, "Neuroimaging of pain: more than old wine in new bottles?" Saint Etienne, France (March 2001)
- 2001 Canadian Pain Society, Invited Symposium Speaker, "Pain and Brain Imaging," Montreal (May, 2001)
- 2001 Annual European Congress of Rheumatology, Invited symposium speaker, "Spr-spinal mechanisms of pain and non-invasive imaging in the study of chronic pain in humans," Prague (June 2001)
- 2001 International Myopain Society, Invited speaker, "Imaging pain in the brain," Portland (September 2001)
- 2001 Member, Novartis Consultants' Forum, New York (October 2001)
- 2001 University of Ottawa, Invited Lecturer, "Human forebrain mechanisms of normal and aberrant pain states," Ottawa (Oct 2001)
- 2001 Neuro at Night, Invited public lecture, "Imagerie de la douleur," Montreal Neurological Institute (November 2001)
- 2001 Neuropathic Pain Consensus Meeting, Invited participant, Orlando, Florida (November 2001)
- 2001 NIH Workshop on RSD/CPRPS: State-of-the-Science, Invited speaker, Bethesda, MD (December 2001)
- 2002 International Neuronal Plasticity Research Group, Invited participant, London UK (January 2002)
- 2002 McGill Pharmacology Department, Invited speaker, "Neural mechanisms of normal and aberrant pain states" (February 2002)
- 2002 Chronic Pelvic Pain: Pathogenic mechanisms, treatment innovations and research implications, Invited speaker, Bethesda MD (April 2002)
- 2002 University of California at San Francisco, Invited Lecturer, "Neural mechanisms of neuropathic pain" (April 2002)
- 2002 Canadian Anesthesia Society, Plenary lecture, "Psychophysical and brain imaging approaches to the study of clinical pain syndromes," Victoria, BC (June 2002)
- 2002 International Pain and Neural Plasticity Research Group, Invited participant, Dublin, Ireland (July 2002)
- 2002 Pain Refresher Course, Invited speaker, 10th World Congress on Pain, San Diego, CA (August 2002)
- 2002 Imaging Visceral Pain, Invited Workshop Speaker, 10th World Congress on Pain, San Diego, CA (August 2002)
- 2002 4<sup>th</sup> Annual Conference on the Mechanisms and treatment of neuropathic pain, Invited speaker, "Pain and the brain," Bermuda (November 2002).

- 2003 National Institutes of Health Neuroscience Lecture Series, "Forebrain mechanisms of pain and analgesia" (January 2003)
- 2003 Johns Hopkins University, Blaustein Pain Conference Lecture, "Pain and pleasure: Neural correlates of emotional somatosensation" (February 2003).
- 2003 International Pain and Neural Plasticity Research Group, Invited participant, Miami (February 2003)
- 2003 American Pain Society Annual Meeting, Plenary Lecture, "Searching for the neural basis of pain perception: 25 years of behavioral neurophysiology" (March 2003)
- 2003 American Pain Society Annual Meeting, Dinner Symposium Lecture, "Is cortical plasticity relevant to chronic pain?" (March 2003)
- 2003 American Pain Society Annual Meeting, Invited Symposium Speaker, "Cortical mechanisms of acute and chronic pain: Single or multiple networks" (March 2003)
- 2003 Washington University Department of Anesthesiology, Invited Lecturer, "Pain and pleasure: Neural correlates of emotional somatosensation" (April 2003)
- 2003 Columbia University Centre for Neurobiology and Behavior, Invited Lecturer, "Neural basis of pain and pleasure" (April 2003)
- 2003 University of Washington, Eighteenth Annual Gunn-Loke Lecture, Invited Lecturer, "Pain and emotion: Neural correlates of psychological influences on pain" (July 2003)
- 2003 A Day in Psychiatry, Stratford, Ontario, Invited Lecturer, "Neural correlates of emotional and attentional influences on pain perception" (September 2003)
- 2004 Southern Clinical Neurology Society Meeting, St. Thomas, VI, Invited Lecturer, "Brain imaging of pain" (January 2004)
- 2004 The 6<sup>th</sup> International Symposium on Pain & Chemical Dependency, New York, Invited Lecturer, "Imaging of Pain" (February 2004)
- 2004 American Academy of Pain Medicine Meeting, Orlando, FL, Invited Speaker, "Experimental evidence of differences in brain perception in chronic pain syndromes: Implications for therapy" (March 2004)
- 2004 Research Seminar Series at the Montreal Children's Hospital, Invited Speaker, "Pain and emotion: Neural correlates of psychological influences on pain." (March 2004)
- 2004 AstraZeneca R&D Montreal 10<sup>th</sup> Anniversary Symposium, Invited Speaker, "Pain Imaging" (April 2004)
- 2004 International Congress of NeuPSIG, Madrid, Symposium organizer, "Role of cerebral cortex in neuropathic pain states" (May 2004)
- 2004 International Congress of NeuPSIG, Madrid, Speaker, "Attentional and emotional influences on cortical pain processing" (May 2004)
- 2004 Japanese Anesthesiology Society, Nagoya Japan, Invited Speaker, "Forebrain mechanisms of pain and analgesia" (May 2004)
- 2004 Brain Disorder Management Series: Pain in Multiple Sclerosis, Montreal, Invited Speaker, "Forebrain mechanisms of acute and neuropathic pain" (June 2004)
- 2004 International Neuropsychology Symposium, Porto Heli Greece, Invited Speaker, "Evolving ideas about the role of prefrontal and cingulated cortices in pain" (June 2004)
- 2004 ICNeP Global Neuropathic Pain Summit, Barcelona Spain, Invited Speaker, "Making the subjective objective: Imaging pain" (June 2004).
- 2004 Symposium on New Oral Health Knowledge for the 21<sup>st</sup> Century, McGill, Invited speaker, "How the mind can alter pain" (September 2004)
- 2004 World Institute of Pain, Barcelona Spain, Invited Speaker, "Attention and emotion: psychological modulation of pain" (September 2004)

- 2004 World Institute of Pain, Barcelona Spain, Invited Speaker, "Neural correlates of intrinsic pain modulation" (September 2004)
- 2004 Society for Neuroscience, San Diego, CA, Invited Symposium speaker, "C-fibers are not just for pain anymore" (October 2004)
- 2004 University of Maryland, Invited speaker, "Pain and emotion" (December 2004)
- 2005 Southern Clinical Neurology Conference, Huatulco, Mexico, Invited speaker, "Influence of psychological state on neural processing of chronic and acute pain" (January 2005)
- 2005 UCLA Center for Neurovisceral Science & Women's Health, Los Angeles CA, "Neural correlates of intrinsic modulation of pain" (January 2005)
- 2005 Conference on Emerging Strategies in Pain Control, Phoenix, AZ, Invited speaker, "Brain imaging as a surrogate measure of pain: human and animal studies" (April 2005)
- 2005 University of Florida Pain Research Day, Invited Keynote Speaker, "Psychological modulation of pain" (May 2005)
- 2005 Slovenian Pain Society, Invited Plenary Speaker, "Neural Basis of Psychological Modulation Pain" (June 2005)
- 2005 Dalhousie Pain Network Speaker Series, Invited Speaker, "Neural correlates of the conscious experience of pain" (October 2005)
- 2005 NIH Chronic Pelvic Pain/Prostatitis Scientific Workshop, Baltimore MD, Invited Speaker, "Influence of cognition and emotion in pain perception" (October 2005)
- 2005 ACNP 44<sup>th</sup> Annual Meeting, Waikoloa, Hawaii, Invited Discussant, "Stress, pain and emotions" (December 2005)
- 2006 Finnish Pain Society Annual Meeting, Turku, Finland, Invited Plenary Speaker, "Neural Basis of Psychological Modulation of Pain" (March 2006)
- 2006 NIH First Annual Pain Consortium Symposium: Advances in Pain Research, Bethesda, MD, Invited Speaker, "Effects of attention and emotion on pain perception" (April 2006)
- 2006 Medtronics International Headquarters Visiting Scientist Lectures, Minneapolis, MN, Invited Speaker, "Brain imaging as a surrogate measure of pain" (April 2006)
- 2006 Glaxo-Smith-Kline, London, UK, Invited Speaker, "Brain imaging as a surrogate measure of pain" (May 2006)
- 2006 Antal'J Deuxiemes Journées Scientifiques en Antalgie, Paris, France, Invited Speaker, "Neuroimagerie de la douleur" (May 2006)
- 2006 53rd Annual Meeting of the Japanese Society of Anesthesiologists, Kobe, Japan, Invited Speaker, "Neural correlates of the conscious experience of pain" (June 2006)
- 2006 Canada Pension Appeals Board Seminar, Quebec City, Quebec, Invited speaker, "The many faces of pain" (July 2006)
- 2006 Eastern Pain Society Annual Meeting, New York, NY, Invited speaker, "Neural basis of psychological modulation of pain" (September 2006)
- 2006 Harvard Medical School, Covino Memorial Lecture, "Pain, emotions and functional disorders" (November 2006)
- 2007 Pittsburgh University, Invited Lecturer, "Pain, psychological state and functional disorders" (January 2007)
- 2007 UCLA Center for Neurovisceral Science & Women's Health, Los Angeles CA, "Altered central modulating processes in fibromyalgia patients" (February 2007)
- 2007 UCSF Pain Centre, Invited Lecturer, "Pain, emotions and functional pain syndromes" (March 2007)
- 2007 Second International Congress on Neuropathic Pain, Berlin, Invited symposium speaker, "What can brain morphometry tell us about chronic pain?" (June 2007)

- 2007 Academy of Behavioral Medicine meeting, Park City, Utah, Invited speaker, "New approaches from basic to clinical science on fatigue and pain" (June 2007)
- 2007 McGill University Neurology Grand Rounds, "Altered central nervous system processing in chronic pain" (September 2007)
- 2007 Goteborg University, Invited Lecturer, "Altered central nervous system processing in chronic pain" (October 2007)
- 2007 AOSPine International, Davos, Switzerland, Guest Lecturer, "Low back pain—a different perspective" (December 2007)
- 2008 Forest Laboratories, Jersey City, NJ, Invited Lecturer, "Altered central nervous system processing in chronic pain" (January 2008)
- 2008 American Academy of Pain Medicine, Orlando, FL, Plenary Lecturer, "Altered central nervous system processing in chronic pain" (February 2008)
- 2008 Columbia University, New York, Continuing Education Lecturer, "Supraspinal mechanisms of acute and chronic pain" (March 2008)
- 2008 University of Iowa, Iowa City, Invited Lecturer, "Altered central nervous system processing in chronic pain" (April 2008)
- 2008 Pfizer Pain Imaging Spring Retreat, Winsor UK, Invited Speaker and Participant, "Deformation-based morphometry in rat to examine structural changes related to chronic pain" (April 2008)
- 2008 IBRO Pain School, Montreal, Invited Speaker, "Forebrain mechanisms of pain and analgesia" (May 2008)
- 2008 IADR Congress, Toronto, Invited Symposium Speaker, "Imaging pain in the brain: differences in chronic and acute pain" (July 2008)
- 2008 IASP, Glasgow, Scotland, Invited Refresher Course Speaker, "Pain: Basic Mechanisms" (August 2008)
- 2008 IASP, Glasgow, Scotland, Invited Workshop Speaker, "Empathy hurts: compassion for another increases pain perception" (August 2008)
- 2008 IASP, Glasgow, Scotland, Invited Workshop Speaker, "Brain imaging evidence for a role in pain processing in primary somatosensory (S1) cortex" (August 2008)
- 2008 Current Trends in Biomedicine Workshop: Understanding pain from transduction to sensation, Baeza, Spain, Invited speaker, "Role of the Cerebral Cortex in the Conscious Experience of Pain" (October 2008)
- 2008 Mind & Body 08: Converging perspectives on pain management, Invited speaker, Vienna, Austria, "Neuroimaging: Insights into normal and pathological pain mechanisms" (November 2008)
- 2009 CSBN Winter 2009 Colloquium and Workshop, Concordia University, Invited speaker, "Neuroimaging: Insights into normal and pathological pain mechanisms" (January 2009)
- 2009 Psychiatry Grand Rounds, University of Vermont, Invited speaker, "Altered central nervous system processing in chronic pain" (January 2009)
- 2009 Mind & Body 08: Pathophysiology of Pain, Invited speaker, Vienna, Austria, "Neuroimaging: Insights into normal and pathological pain mechanisms" (January 2009)
- 2009 Congress of Clinical Rheumatology, Invited speaker, Destin, Florida, "Brain dysfunction in fibromyalgia" (April 2009)
- 2009 London Pain Consortium, Invited speaker, Imperial College, London, England, "Altered central nervous system processing in chronic pain" (June 2009)
- 2009 8<sup>th</sup> European Congress on Pain (EFIC), Invited Symposium speaker, Lisbon, Portugal, "Anatomy of central sensitization and its role in chronic pain" (September 2009)



- 2009 European DPNP Regional Educational Conference, Invited Plenary Speaker, Brussels, Belgium, "Neuroimaging: Mapping the brain for pain" (November 2009)
- 2010 4<sup>th</sup> Annual Salk Institute and Foundation IPSEN Symposium on Biological Complexity, Invited Plenary Speaker, La Jolla, California, "Altered central nervous system processing in chronic pain" (January 2010)
- 2010 Quebec Bio-Imaging Network Scientific Day, Invited Plenary Speaker, Montreal, "Insights from neuroimaging into normal and pathological pain mechanisms" (January 2010)
- 2010 University of North Carolina Center for Neurosensory Disorders, Invited Speaker, Chapel Hill, North Carolina, "Altered central nervous system processing in chronic pain" (March 2010)
- 2010 University of Maryland Dental School, Invited Speaker, Baltimore, Maryland, "From monkey to man: How the mind alters pain" (March 2010)
- 2010 Lilly-BI Latin American Regional Informational Conference, Invited speaker, Mexico City, "Neuroimaging: Mapping the brain for pain" (April 2010)
- 2010 American Pain Society, Symposium speaker, Baltimore, Maryland, "Anatomical and functional imaging of the rodent brain" (May 2010)
- 2010 Spanish Pain Society, Invited speaker, Madrid, Spain, "Brain dysfunction in fibromyalgia" (May 2010)
- 2010 Spanish Pain Society, Invited speaker, Madrid, Spain, "Placebo in pain medicine" (May 2010)
- 2010 Imaging Pain: From Cells to Brain (IASP Satellite Symposium), Quebec, Quebec, Organizer and speaker, "Changes in brain gray matter in chronic pain." (August 2010)
- 2010 Latin American Mood Regional Information Meeting (Lilly), Lima, Peru, Plenary speaker, "What psychiatrists need to know about pain and why." (August 2010)
- 2010 18<sup>th</sup> International Congress on Palliative Care, Montreal, Canada, Invited speaker, "Neural basis of pain processing and modulation: What every clinician should know in order to control pain." (October 2010)
- 2010 34<sup>th</sup> Annual Meeting of the Mexican Academy of Neurology, León, Mexico, Invited speaker, "Neuroimaging: Mapping pain in the brain." (October 2010)
- 2010 Egyptian Pain Society meeting, Cairo, Egypt, Plenary Speaker, "Fibromyalgia: A disorder of the brain?" (October 2010)
- 2010 MMD and GAD Expert Forum Meeting, Barcelona, Spain, Invited speaker, "The neurobiology of pain and how it links to emotions and cognition." (November 2010)
- 2010 Eli Lilly Canada Medical Advisory Board Meeting, Toronto, Canada, Invited speaker, "Neurobiology of pain." (December 2010)
- 2011 DOD-NIH Workshop on Acupuncture for Treatment of Acute Pain, Bethesda, Maryland, Invited speaker, "Factors that affect pain." (January 2011)
- 2011 Accelerating the Development of Advanced Pain Treatments (ADEPT), Bermuda, Invited lecture, "Imaging the placebo response." (March 2011)
- 2011 Australian and New Zealand College of Anaesthetists Faculty of Pain Medicine Refresher Course, Hong Kong, Invited speaker, "Neural basis of psychological modulation of pain." (May 2011)
- 2011 ANZCA-HKCA Combined Scientific Meeting, Hong Kong, Keynote speaker, "Imaging pain: From research to clinical application." (May 2011)
- 2011 ANZCA-HKCA Combined Scientific Meeting, Hong Kong, Invited symposium speaker, "Brain dysfunction in fibromyalgia." (May 2011)
- 2011 European Pain School, Sienna, Italy, Invited speaker for two talks: "Imaging Pain" and "Mood and attention differentially control pain." (June 2011)

- 2011 Combined British and Canadian Pain Society meeting, Edinburgh, Scotland, Plenary speaker, "Altered central nervous system processing in chronic pain disorders." (June 2011)
- 2011 Lilly Neuroscience Forum, Vienna, Austria, Plenary lecture, "Neurobiology of Pain." (July 2011)
- 2011 Lilly Neuroscience Forum, Vienna, Austria, Workshop, "Mapping the brain for pain." (July 2011)
- 2011 University of Minnesota, Minneapolis, Minnesota, Invited speaker, "Altered central nervous system processing in chronic pain disorders." (October 2011)
- 2011 AstraZeneca R&D Montreal, Invited speaker, "Anatomical and functional imaging in the rodent brain" (October 2011)
- 2011 National Center for Complimentary and Alternative Medicine, NIH, Bethesda, Maryland, Invited speaker, "Psychological control of pain and its disruption in chronic pain." (November 2011)
- 2011 Society for Neuroscience annual meeting, Washington, D.C., Invited symposium speaker, "Imaging anomalous connectivity and cortical thinning in pain patients." (November 2011)
- 2012 New Jersey Dental School, Newark NJ, "How psychological states affect pain" (February 2012)
- 2012 Webinar speaker, Canadian Institute for the Relief of Pain and Disability, "Outthinking pain—how the mind can control pain" (February 2012)
- 2012 McGill University Mini-Science Series, Invited speaker, "How the mind can alter pain" (April 2012)
- 2012 Quebec Psychiatric Association meeting, Quebec City, Quebec, Invited speaker, "Imaging pain: from research to clinical application" (May 11, 2012)
- 2012 NIH Pain Consortium Symposium, Invited speaker, "Background and Current Hurdles in Approaches for CAM Therapies and Cognitive Biobehavioral therapy used for pain" (May 30, 2012)
- 2012 Invited symposium speaker, IASP Orofacial Pain SIG Satellite Symposium, "Functional magnetic resonance imaging as a biomarker of orofacial pain" (August 26, 2012)
- 2012 Workshop organizer and speaker, Society for Neuroscience Neurobiology of Disease Workshop on "Persistent pain: Too much plasticity?" (October 12, 2012)

### **Interviews**

- 1997 CFCF12 Medical Report
- 1998 BBC Science News
- 1999 CFCF12 Medical Report
- 1999 Discovery Channel ("Can You Believe It?")
- 1999 PBS show on "Pain"
- 1999 ABS Nightly News with Peter Jennings
- 2000 CBC Radio One Morning Show
- 2002 CBC Nature of Things
- 2002 CFCF 12 Medical Report
- 2002 CBC Nightly News
- 2003 CFCF 12 Medical Report
- 2003 CBC Radio
- 2003 Newsweek
- 2003 Medical Post

2004	Actualité
2005	ABC News Online
2005	The Scientist
2006	New York Times
2006	Discovery channel (La Decouverte)
2007	The Westmount Examiner
2007	Self Magazine
2008	Discovery Canada
2010	Radio Canada

**Publications:**

Bushnell, M. C. and Weiss, S. J. The effect of reinforcement differences on choice and response discrimination during stimulus compounding. *J. Exp. Anal. Behav.* 27: 351-362, 1977.

Bushnell, M. C. and Weiss, S. J. Microanalysis of variable interval performance in the rat during stimulus compounding. *Animal Learning and Behavior* 6: 66-71, 1978.

Bushnell, M. C. and Weiss, S. J. An investigation of peak shift and behavioral contrast for autoshaped and operant behavior. *J. Exp. Anal. Behav.* 33: 101-118, 1980.

Goldberg, M. E. and Bushnell, M. C. The role of the frontal eye fields in visually guided eye movements. In: *Progress in Oculomotor Research*, edited by A. Fuchs and W. Becker, New York: Elsevier, 1981, p. 185-192.

Robinson, D. L., Bushnell, M. C. and Goldberg, M. E. The role of posterior parietal cortex in selective visual attention. In: *Progress in Oculomotor Research*, edited by A. Fuchs and W. Becker, New York: Elsevier, 1981, p. 203-210.

Bushnell, M. C., Goldberg, M. E., and Robinson, D. L. Behavioral enhancement of visual responses in monkey cerebral cortex. I. modulation in posterior parietal cortex related to selective visual attention. *J. Neurophysiol.* 46:755-772, 1981.

Goldberg, M. E. and Bushnell, M. C. Behavioral enhancement of visual responses in monkey cerebral cortex. II. Modulation in frontal eye fields specifically related to saccades. *J. Neurophysiol.* 46: 773-787, 1981.

Price, D. D., Bushnell, M. C. and Iadarola, M. J. Primary afferent and sacral dorsal horn neuron responses to vaginal probing in the cat. *Neurosci. Lett.* 26: 67-72, 1981.

Bushnell, M. C., Taylor, M. B., Duncan, G. H., and Dubner, R. Discrimination of noxious and innocuous thermal stimuli in human and monkey. *Somatosen. Res.* 1:119-129, 1983.

Dubner, R., Bushnell, M. C., and Duncan, G. H. Behavioral and neural correlates of nociception. In: *Current Topics in Pain Research and Therapy*, edited by T. Yokota and R. Dubner. Amsterdam-Oxford-Princeton: Excerpta Medica, 1983, p. 45-55.

Bushnell, M. C., Duncan, G. H., Dubner, R., and He, L. F. Activity of trigeminothalamic neurons in medullary dorsal horn of awake monkeys trained in a thermal discrimination task. *J. Neurophysiol.* 52:170-187, 1984.

Bruce, C. J., Goldberg, M. C., Bushnell, M. C., and Stanton, G. B. Primate frontal eye fields. II. Physiological and anatomical correlates of electrically evoked eye movements. *J. Neurophysiol.* 54:714-734, 1985.

Bushnell, M. C., Duncan, G. H., Dubner, R., Jones, R. L., and Maixner, W. Attentional influences on noxious and innocuous cutaneous heat detection in humans and monkeys. *J. Neurosci.* 5:1103-1110, 1985.

Dubner, R., Bushnell, M. C., and Duncan, G. H. Sensory-discriminative capacities of nociceptive pathways and their modulation by behavior. In: *Spinal Afferent Processing*, edited by T. L. Yaksh. Plenum, 1986, p. 3310-344.

Goldberg, M. E., Bushnell, M. C., and Bruce, C. J. The effect of attentive fixation on eye movements evoked by electrical stimulation of the frontal eye fields. *Exp. Brain Res.* 61:579-584, 1986.

Kim, J. S., Bushnell, M. C., Duncan, G. H., and Lund, J. P. The modulation of sensory transmission through the medullary dorsal horn during cortically driven mastication. *Can. J. Physiol. Pharmacol.* 64:999-1005, 1986.

Maixner, W., Dubner, R., Bushnell, M. C., Kenshalo, D. R., and Olivéras, J. -L. Wide-dynamic-range dorsal horn neurons participate in the encoding process by which monkeys perceive the intensity of noxious heat stimuli. *Brain Res.* 374:385-388, 1986.

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Olivéras, J. -L., Maixner, W., Dubner, R., Bushnell, M. C., Duncan, G., Thomas, D. A., and Bates, R. Dorsal horn opiate administration attenuates the perceived intensity of noxious heat stimulation in behaving monkey. *Brain Res.* 371:368-371, 1986.

Bushnell, M. C., Duncan, G. H., and Lund, J. P. Gating of sensory transmission in the trigeminal system. In: *Higher Brain Functions: Recent Explorations of the Brain's Emergent Properties*, edited by S. P. Wise. New York: John Wiley & Sons, Inc., 1987, p. 211-240.

Bushnell, M. C. and Duncan, G. H. Mechanical response properties of ventroposterior medial thalamic neurons in the alert monkey. *Exp. Brain Res.* 67:603-614, 1987.

Chapman, C. E., Bushnell, M. C., Miron, D., Lund, J. P., and Duncan, G. H. Sensory perception during movement in man. *Exp. Brain Res.* 68:516-524, 1987.

Duncan, G. H., Bushnell, M. C., Bates, R., and Dubner, R. Task-related responses of monkey medullary dorsal horn neurons. *J. Neurophysiol.* 57:289-310, 1987.

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Talbot, J. D., Duncan, G. H., Bushnell, M. C., and Boyer, M. Diffuse noxious inhibitory controls (DNICs): psychophysical evidence in man for intersegmental suppression of noxious heat perception by cold pressor pain. *Pain* 30:221-232, 1987.

Duncan, G. H., Feine, J. S., Bushnell, M. C., and Boyer, M. Use of magnitude matching for measuring group differences in pain perception. In: *Pain Research and Clinical Management, Vol. 3*, edited by R. Dubner, G. F. Gebhart and M. R. Bond. Amsterdam-New York-Oxford: Elsevier, 1988, p. 382-390.

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Dupuis, R., Lemay, H., Bushnell, M. C., and Duncan, G. H. Preoperative flurbiprofen in oral surgery: A method of choice in controlling postoperative pain. *Pharmacotherapy* 8:193-200, 1988.

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Dubner, R., Kenshalo, D. R., Jr., Maixner, W., Bushnell, M. C., and Olivéras, J. -L. The correlation of monkey medullary dorsal horn neuronal activity and the perceived intensity of noxious heat stimuli. *J. Neurophysiol.* 62:450-457, 1989.

Duncan, G. H., Bushnell, M. C., and Lavigne, G. J. Comparison of verbal and visual analogue scales for measuring the intensity and unpleasantness of experimental pain. *Pain* 37:295-303, 1989.

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Miron, D., Duncan, G. H., and Bushnell, M. C. Effects of attention on the intensity and unpleasantness of thermal pain. *Pain* 39:345-352, 1989.

Talbot, J. D., Duncan, G. H., and Bushnell, M. C. Effects of diffuse noxious inhibitory controls (DNICs) on the sensory-discriminative dimension of pain perception. *Pain* 36:231-238, 1989.

Feine, J. S., Chapman, C. E., Lund, J. P., Duncan, G. H., and Bushnell, M. C. The perception of painful and nonpainful stimuli during voluntary motor activity in man. *Somatosens. Motor Res.* 7:113-124, 1990.

Bushnell, M. C., Marchand, S., Tremblay, N., and Duncan, G. H. Electrical stimulation of peripheral and central pathways for the relief of musculoskeletal pain. *Can. J. Physiol. Pharmacol.* 69:697-703, 1991.

Duncan, G. H., Bushnell, M. C., and Marchand, S. Deep brain stimulation: A review of basic research and clinical studies. *Pain* 45:49-59, 1991.

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