**PERSONAL DATA:**

NAME: Stephen Charles Strother

PROFESSIONAL ADDRESS: Rotman Research Institute

 Baycrest Centre

 3560 Bathurst Street, Toronto, ON, M6A-2E1

OFFICE TELEPHONE: (416) 785-2500 x2956

ADIM. ASSISTANT: (416) 785-2500 x2904

FAX: (416) 785-2862

E-MAIL: sstrother@research.baycrest.org

**EDUCATION:**

1976 B.Sc., (Physics & Mathematics) Auckland University, Auckland, New Zealand

1979 M.Sc. (Hons., Physics), Auckland University, Auckland, New Zealand

1986 Ph.D. (Electrical Engineering), McGill University, Montreal, Canada

**POSTGRADUATE TRAINING:**

1979-1980 Visiting Postgraduate Student, Computing Laboratory, Montreal Neurological Institute, Montreal

1981-1985 Research Fellow, Brain Imaging Program, Montreal Neurological Institute, Montreal, Canada

1985-1989 Post Doctoral Fellow, PET Imaging Program, Neurology Department, Memorial Sloan Kettering Cancer Center, New York

**ACADEMIC APPOINTMENTS:**

1989-1995 Assistant Professor, Radiology Department, University of Minnesota.

1990-2004 Associate Member of Graduate Faculty, Health Informatics.

1990-2004 Assistant Professor, Neurology Department, University of Minnesota.

1995-2002 Associate Professor, Radiology Department, University of Minnesota.

1996-2004 Associate Member of Graduate Faculty, Biophysical Sciences & Medical Physics.

1999-2001 Associate Member of Graduate Faculty, Biomedical Engineering.

2000-2001 Associate Member (limited) Dept. of Community Health, University of Toronto.

2001-2004 Member of Graduate Faculty, Biomedical Engineering.

2002-2004 Professor, Radiology Department, University of Minnesota

2004-present Professor, Medical Biophysics, University of Toronto

2007-2019 Member, Institute of Medical Science, University of Toronto

2007-2019 Member, Program for Neuroscience, University of Toronto

2008-2016 Core Member, Centre Partnership for Stroke Recovery, Ontario, Canada

2010-2016 Associate Site Director, Baycrest, Canadian Partnership for Stroke Recovery, Heart & Stroke Foundation

**HOSPITAL APPOINTMENTS:**

1976-1979 Medical Physicist, Nuclear Medicine Department, Auckland Hospital, New Zealand

1980-1981 Medical Physicist, Department of Medical Physics and Biomedical Engineering, Auckland Hospital.

1989-2001 Senior Medical Physicist, PET Imaging Service, VA Medical Center, Minneapolis

2004-present Senior Scientist, Rotman Research Institute, Baycrest Centre

**CONSULTING & INDUSTRY POSITIONS:**

1991-1997 National Test Consultant for PET scanners, VA National Acquisition Center, Hines, Illinois, USA

2000 Predictive Modeling and Data Mining: Adaytum, Inc., Financial E-Planning.

2001-present Founder (with Miles Wernick, Ph.D., Illinois Institue of Technology), and Chief Scientific Officer of Predictek, Inc., and (with CEO Dawn Matthews since 2012) ADMdx, LLC in field of Predictive Modeling & Image Processing in Health Care, particularly dementia drug trials for big pharmaceutical companies. Both in Chicago, IL, USA.

2012-present Manager, Neuroimaging informatics, Brain-CODE repository funded by Ontario Brain Institute

2016-present Board member, InDoc Research (federally incorporated not-for-profit), Toronto, Canada

**HONORS AND AWARDS:**

1973-75 NZ University Grants Committee, Junior Scholarship.

1978 Medical Research Council (NZ) Postgraduate Scholarship.

1979-80 Rotary International Postgraduate Fellowship (McGill University, Montreal, Canada).

1984 Montreal Neurological Institute 50th Ann. Fellows Research Essay Award (Joint with J. Tyler, MD).

1988-93 NIH FIRST (R29) Award

2004 CIHR Institutional Establishment Grant (“to allow star recruits to begin their research programs in Canada”), $150,000 awarded to Rotman Research Institute to setup Dr. Strother’s laboratory.

**MEMBERSHIPS IN PROFESSIONAL SOCIETIES:**

1984-02 Society of Nuclear Medicine

1986-06 Institute of Electrical and Electronics Engineers.

1986-03 International Society of Cerebral Blood Flow and Metabolism.

1989-03 American Association of Physicists in Medicine

1997-06 American Association for the Advancement of Science.

1996- Organization for Human Brain Mapping.

2006- International Society for Magnetic Resonance in Medicine

**COMMITTEE AND ADMINISTRATIVE SERVICE:**

**University of Minnesota**

1989-04 Radiation Safety Committee.

1992 Co-Organizer with J-S. Liow, Ph.D., MidWest Workshop on Iterative Image Reconstruction, PET Imaging Service, VA Medical Center & Radiology Department, University of Minnesota.

1992-01 Chairman, PET Scheduling Committee, PET Imaging Service.

1993-04 Chairman, (2001-2004) Radioactive Drug Research Committee.

1996 Co-Organizer with X. Hu, Ph.D., Workshop on fMRI Data Analysis. Center for Magnetic Resonance Imaging (CMRR) & Radiology Depatment, University of Minnesota.

1997 Invited Participant, Statistics in the Health Sciences: One-Week Workshop on Imaging, Institute for Mathematics and its Applications, University of Minnesota.

1997 ad hoc Advisory Committee on the Future of Biophysical Sciences and Medical Physics. Departmental

1994-97 Doctoral Written Prelim. Exam. Committee, Health Informatics.

2000 Invited Participant, Mathematics in Multimedia: Vison, Speech & Language: One-Week Workshop on Brain Imaging. Institute for Mathematics and its Applications, University of Minnesota.

2000 ad hoc Review Committee to Prepare for External Review of Radiology Department.

2003-04 Membership Committee, Biomedical Engineering Department VA Medical Center

**Rotman Research Institute, University of Toronto**

2005-06 Co-organiser (with Randy McIntosh and Nancy Lobaugh), Workshop on Multivariate Analysis of Neuroimaging Data, Michener Institute, University of Toronto

2005-10 Chairman, Database/Website Committee, RRI, Baycrest

2005-12 Organiser, Friday fMRI Rounds, RRI, Baycrest

2008 Co-organiser (with Randy McIntosh and Nancy Lobaugh), Workshop on Multivariate Analysis of Neuroimaging Data, Michener Institute, University of Toronto.

2008-14 Planning and Priorities Committee, Centre for Stroke Recovery

2006-15 Member, Technology Transfer & Commercialisation Committee, RRI, Baycrest

2018- Open Science and IT Infrastructure, RRI, Baycrest

**Provincial & National, Canada**

2007 Ad hoc member, CIHR, Behavioural Sciences C Review Committee

2009 Invited participant, Focus group on medical devices and technology in neuroscience, The Ontario Innovation Trust

2012-present Member of Management Committee for Brain-CODE, Ontario Brain Institute.

2012 Co-Organizer (with Faisal Beg, SFU, and Alan Evans, McGill) of MITACS Workshop on Mathematics of Brain Imaging, Vancouver, Canada, July

2013-2017 Member of Advisory Council on Research for the Board of Directors of Compute Canada

2014-2017 Member Publication Committee and Research Planning Committee, The Ontario Neurodegenerative Disease Research Initiative (ONDRI)

2014 Member Ontario Research Fund-Large Infrastructure: Health Sciences Review Panel

2015 Member CIHR, New Investigators C Peer Review Committee

2015-present Executive Committee, Canadian Biomarker Integration Network for Depression (CAN-BIND)

2016 Chairman CIHR, New Investigators C Peer Review Committee, Phase 1

2016 Member CIHR, New Investigators C Peer Review Committee, Phase 2

2016 Member Ontario Research Fund-Large Infrastructure: Health Sciences Review Panel

2017-present Member CIHR, College of Reviewers

2017 Member CIHR, Behavioural Sciences C Review Committee

2018 Member, Training Committee, Canadian Open Neuroscience Platform

2018-present Executive Committee, Ontario Neurodegeneration Disease Research Initiative (ONDRI)

2018 Member CIHR, Behavioural Sciences C Review Committee

**International**

1987-2001 Ad hoc member of multiple NIH review panels (approx. 1/year) as requested and time available.

1989 Organising Committee, NINDS PET Data Analysis Working Group, New York.

1991 Co-organizer with C-T. Chen, Ph.D., MidWest Workshop on Iterative Image Reconstruction, Franklin MacLean Institute, Radiology Department, University of Chicago.

1993 Scientific Advisory Board and Program Committee, 1st Int. Symp. Quantification of Brain Function with PET, Akita, Japan.

1994-96 Scientific Program Committee: Society of Nuclear Medicine Annual Meeting

1994 Co-Chair with D. Bailey, Ph.D., Satellite Symposium on Emission Tomography for 6th World Federation Nuclear Medicine & Biology, Cairns, Australia.

1995 Scientific Program Committee: IEEE Medical Imaging Conference, Annual Meeting.

1995 Scientific Advisory Board, 2nd Int. Symp. Quantification of Brain Function with PET, Oxford, England.

1997 Invited Participant, Two-Week Workgroup, Analysis of Neural Data, Marine Biology Lab., Woods Hole

1997 Scientific Advisory Board, 3rd Int. Symp. on Quant. of Brain Function with PET, Bethesda, Washington.

1999-00 Invited Faculty, Two-Week Workgroup, Analysis of Neural Data, Marine Biology Lab., Woods Hole.

1999 Scientific Advisory Board, 19th Int. Symp. On Cerebral Blood Flow and Metabolism, and 4th Int. Symp. on Quantification of Brain Function with PET, Copenhagen, Denmark.

2001 Scientific Advisory Board, 20th Int. Symp. On Cerebral Blood Flow and Metabolism, and 5th Int. Symp. on Quantification of Brain Function with PET, Taipei, Taiwan.

2001 Visiting Professor, March-April, Institute of Mathematical Modeling, Technical University of Denmark.

2001 Co-Organiser & Lecturer, Neural Information Processing Systems’ workshop on “Concepts & Methods in Neuroimaging”, Whistler, Canada

2001-02 Invited Faculty, Neuroinformatics Summer Course, Marine Biological Laboratory, Woods Hole, MA.

2002 Invited Faculty, Copenhagen Image and Signal Proc. Graduate School, April, Bornholm, Denmark.

2002 *Chairman*, NIH (CSR) Special Emphasis Review Panel, Neuroimaging Informatics Technology Initiative (NIfTI)

2002-04 NIH, reviewer, Special Emphasis Panels, SSS-E(95) Computational Neuroscience; SSS-E(51) Biomedical Information Science and Technology Initiative (BISTI) pre-Centers.

2002-07 *Chairman*, NIMH, NINCDS, NIBIB, Data Format Working Group, NIfTI

2002-08 NIH, reviewer, Special Emphasis Panel, SSS-E(95) Human Brain Project and Neuroinformatics.

2003 Scientific Advisory Board, 21st Int. Symp. On Cerebral Blood Flow and Metabolism, and 6th Int. Symp. on Quantification of Brain Function with PET, Calgary, Canada.

2006 Invited Discussant, Linking Informatics of Neuroscience Communities (LINC) Workshop, March, NIH, Washington DC.

2006 Invited Discussant, Neuroinformatics Terminology Workshop on Neuroimaging, Satellite Worskhop, SfN, October, Atlanta

2006 Invited Discussant, NIH Knowledge Environments For Biomedical Research (KEBR) Conference, December, Washington DC.

2006-09 External Advisory Board, functional Biomedical Informatics Research Network (fBIRN), NCRR/NIH

2006-08 Reviewer, NIH (CSR) Neurotechnology Study Section, ZRG1 NT-B

2007-08 Invited Member, Society of Biological Psychiatry Task Force on Best Practices in Clinical fMRI Studies. Peer-reviewed paper published in Biol. Psych. (2008)

2009 Workshop Organiser, Measuring and Improving Reliability and Reproducibility in fMRI Annual Meeting of OHBM, June, San Francisco, USA

2009-11 Invited standing member, NIH (CSR), ZRG1 NT-B, Neurotechnology Study Section

2012 Neuroimaging Co-Organiser, University of Sao Paulo–University of Toronto Neuroscience Conference, University of Sao Paulo, Sao Paulo, Brazil, December

2016 *Chairman*, NIH (CSR), ZRG1 ETTN-F(02)M Special Emphasis Review Panel on Neuroimaging, Neuroinformatics and Neurogenetics

2017-present Canadian Representative, Council for Training, Science and Infrastructure (CTSI), a Governing Body of the International Neuroinformatics Coordinating Facility (INCF), Stockholm, Sweden

2017-2019 Co-Chair, with Pratik Mukherjee (Neuroimaging lead of Track-TBI, USA) of the Neuroimaging working group of the International Initiative for Traumatic Brain Injury Research (InTBIR).

2018 Invited Discussant, Global Inventory of Brain Initiatives Workshop, Kavli Foundation and NSF, Washington, D.C., USA, July

2018 Invited Discussant, Data Acquisition, Quality and Curation Consensus Conference, International Initiative for Traumatic Brain Injury Research (InTBIR) and One Mind, Washington, D.C., USA, September

**OTHER SELECTED PROFESSIONAL ACTIVITIES**

2003-2019 Associate Editor: Human Brain Mapping

2010 Research leave (April – September), Center for Integrated Molecular Brain Imaging, Danish Technical University and University of Copenhagen, Denmark.

2012 Invited Discussant, NIH Role in Neuroimage Data-Sharing, National Institute of Drug Abuse, NIH, USA, May

2013-present Associate Editor, Frontiers in Neuroscience: Brain Imaging Methods

2016-present Collaborator, Center for Experimental Medicine Neuropharmacology (NeuroPharm), Copenhagen University, Denmark

**GRANT SUPPORT**

1977 Auckland Medical Research Foundation - Istrumentation Grant, **Principal Investigator**. $ 4,000 Developing a microprocessor based gamma camera data system.

1987-88 American Cancer Society Institutional Grant (MSKCC), **Principal Investigator.** $ 7,500 Developing CT and MRI "templates" for functional PET brain images.

1988-93 R29, (NINDS—NS25563), **Principal Investigator.** $ 330,909 Optimizing PET measurements of biological image patterns.

1991-95 R01, (NIDA—DA07428), **Co-Investigator** (VAMC Subcontract, PI: D. Rottenberg). $ 554,405 Human brain atrophy and dysfunction in chronic cocanism.

1993-98 P01, (NINDS—NS25701), **Co-Investigator**, (Project 2, PI: D.A. Rottenberg). $ 500,000 AIDS dementia complex.

1994 Radiology Research Fund, **Principal Investigator** (University of Minnesota). $ 6,000 Visualization of Multimodality Data Sets in Brain. Equipment Grant.

1994-96 R01 (NIDA—DA09246), **Co-Principal Investigator** (with D.A. Rottenberg). $ 236,479 Visualization of Functional Connectivity in the Brain.

1994-99 P01 (NINDS—NS33718), **Co-Investigator**, (Project 4, PI: D.A. Rottenberg). $ 500,000 Quantitative Assessment of Functional Connectivity in the Hereditary Ataxias.

1994-99 R29 (NINDS—NS33721), **Co-Investigator**. (PI: J-S. Liow). $ 349,593 Optimizing 3D Iterative Reconstructions for PET.

1996-01 P20 (NIMH—MH57180), (PI: D.A. Rottenberg, MD, 3 Projects & 3 Cores). $4,764,000 Spatial and Temporal Patterns in Functional Neuroimaging. **Principal Investigator**, Project 2, Reproducible Features of Functional Neuroimages ($850,000)

2001-06 P20 Renewal (NIMH—EB02013 was MH57180), (PI: D.A. Rottenberg). $5,912,174 Spatial and Temporal Patterns in Functional Neuroimaging. **Principal Investigator**, Project 2, Consensus Patterns in Functional Neuroimaging ($1,250,806)

2004-05 R43 Phase 1, SBIR (NEI—EY15604), Co-invesigator, (Predictek, LLC., PI: A. Lukic) $ 100,000 Multispectral diagnostic imaging of the iris

2005-07 R43 Phase 1, SBIR (NIMH—MH73204), Co-investigator, (Predictek, LLC., PI: A. Lukic) $ 100,000 To improve detection of drug-no drug effects in FDG PET images in small samples using state-of-the-art machine learning techniques

2005-07 P20 (NIMH—MH072580), (PI: M.S. Gazzaniga, PhD, 4 Projects, 1 Core). $1,500,000 fMRI Research via Database Mining, Management. **Principal Investigator**, Project 3, Optimizing fMRI Processing Pipelines ($ 200,000)

2006-10 R44 Phase II, SBIR (NEI—EY15604), Co-investigator, (Predictek, Inc., PI: A. Lukic) $750,000 Multispectral diagnostic imaging of the iris

2005-10 James S. McDonnell Foundation (Bridging Brain, Mind, and Behavior) $4,170,000 (P.I., Randy McIntosh) Network mechanisms underlying cognition and recovery of function in the human brain. **Co-Investigator**, Computational Neuroscience Project

2008-10 CANARIE NEP-34:Network-Enabled Platforms Program, (PI: Alan Evans) $1,900,000 Canadian Brain Imaging Research Network (CBrain), **Co-Principal Investigator**, Subcontract to Baycrest, Rotman Research Institute

2008-11, R44 Phase II, SBIR (NIMH—MH73204), **Co-investigator**, (Predictek, Inc., PI: A. Lukic) $ 750,000 Co-investigator, Detection of Drug Effect in Small Groups using PET

2007-11, CIHR Operating Grant (MOP 84483), Principal Investigator $ 237,567 Towards clinical fMRI: Characterizing a rapid, multi-task, fMRI battery as a function of age

2011-12, CIHR Proof of Principle Program - Phase I (PI: Simon Graham) $ 116,402 Tablet Technology for Assessing Dementia, Co-Investigator

2009-12, Funds from Predictek, Inc., Co-Principal Investigator (with R. McIntosh) $ 50,000 Collaborative development of opensource, PlsNpairs Java software package

2012, R43, IIP, SBIR, USA (NSF—1256628), (ADMdx, LLC, PI: A. Lukic) $ 150,000 Co-Investigator. Early and Specific Dementia Diagnosis Using Imaging and Pattern Classification Software

2009-13, Suppl. to Baycrest Centre for Stroke Recovery Funds, $ 900,325 Principal Investigator, New allocation for CSR core platform: Stroke Patient Recovery Research Database (SPReD)

2010-13, Canadian Stroke Network/Heart and Stroke Foundation of Canada $ 600,000 (PI: E. Smith) Co-Investigator, 800-person Population Urban-Rural Epidemiological MRI-SubStudy.

2011-13, James S. McDonnell Foundation (Bridging Brain, Mind, and Behavior) $ 6,000,000 Co-Investigator, (PI: R. McIntosh) Network mechanisms underlying cognition and recovery of function in the human brain. Computational Neuroscience Project

2012-14, CIHR Operating Grant Bridge Funding, Principal Investigator $ 100,000 Optimising Variability in fMRI Measurements as a Function of Age

2013-14, CIHR Catalyst with Ontario Neurotrauma Foundation, (PI: M. Keithly) $ 92,000 Co-investigator, 'NeuroCare' as an Innovation in Intervention: A Neurophysiological Approach to Determine Readiness for Return to Activity

2013-14, CIHR Catalyst with Ontario Neurotrauma Foundation, (PI: B. Levine) $ 100,000 Co-investigator, Neurodegenerative Disease in Former Athletes with Traumatic Brain Injury

2006-15, Center for Integrated Molecular Brain Imaging $10,000,000 (Lundbeck Foundation, Denmark) (P.I., Gitte-Moos Knudsen). Co-Investigator, Project 6 (PI: L.K. Hansen) A Meta-Analytic Approach to Knowledge Discovery in Molecular Brain Imaging (Funds for a joint Danish-Canadian PhD student)

2010-16, NSERC Discovery Grant (GFN 341638), Principal Investigator $ 138,000 Optimizing signal detection in functional neuroimaging using resampled performance metrics

2012-15, Ontario Brain Institute (InDoc, PI: K. Evans) $ 6,600,000 Co-Investigator, BrainCODE. Principal Investigator of Neuroimaging Informatics Subproject

2013-15, Heart & Stroke Found. Canadian Platform for Stroke Recovery, $ 435,000 Principal Investigator, Maintenance of Stroke Patient Recovery Research Database (SPReD).

2014-15, Canadian Partnership for Stroke Recovery, Principal Investigator $ 50,000 Catalyst Grant, A system for automatic lesion delineation, with application to prediction of recovery from stroke and treatment efficacy.

2013-16, W. Garfield Weston Foundation, Co-investigator (PI: M. Prado, Western) $ 1,250,000 High-throughput behavioral platform to advance neurodegenerative disease drug discovery.

2013-16, Brain Canada, MIRI, Co-investigator (PI: Sandra Black) $ 1,500,000 Validation of ocular measures as potential biomarkers for early detection of brain amyloid and neurodegeneration.

2013-16, Universities of Toronto and Sao Paulo, Co-Principal Investigator $ 40,000 with G. Bussatto, University of SaoPaulo, Brazil. A Neuroinformatics Infrastructure for Collaborative Neuroimaging Research.

2013-17, R44, IIP, SBIR, USA (NSF—1256638), (PI: A. Lukic) $ 800,000 Co-Investigator, Early and Specific Dementia Diagnosis Using Imaging and Pattern Classification Software

2015-18, Ontario Brain Institute, Canadian Biomarker Integration Network for $ 12,000,000 Depression (CAN-BIND) ID Program (PI: S. Kennedy) Co-Principal Investigator neuroimaging program

2015-18, Ontario Brain Institute (InDoc, PI: K. Evans) $ 6,200,000 Co-Investigator, BrainCODE. Principal Investigator of Neuroimaging Informatics Project Subcontract

2013-18, CIHR Operating Grant, Co-investigator (PI: Jean Chen) $ 550,000 The Physiological Basis of Resting State fMRI.

2013-18, CIHR Team Grant with Ontario Brain Institute, (PI: M. Keithly) $ 1,066,000 Co-investigator, "NeuroCare" as Innovation in Intervention: A Neurophysiological Approach to Determine Readiness for Return to Activity.

2013-18, Ontario Brain Institute, Ontario Neurodegenerative Disease Research Initiative $ 28,500,000

 (ONDRI) ID Program (PI: M. Strong). Co-investigator Neuroimaging Platform,

 and Principal Investigator Neuroinformatics Platform

2013-18, CIHR Operating Grant, Co-investigator (PI: E. Smith) $ 1,204,705 PURE-MIND: A Population-based Study of Covert Cerebrovascular Disease and its Contribution to Age-Related Cognitive Decline

2014-19, CIHR Operating Grant, (PI: B. Levine) Co-investigator $ 760,000 Assessing the effects of remote traumatic brain injury on brain aging

2014-19, CIHR Operating Grant (MOP 201403), Principal Investigator $ 586,325 Optimising fMRI Detection of Longitudinal Changes in Age-Related Brain Disorders

2015-18, Brain Canada, Platform Support Grant, Co-investigator (PI: Alan Evans) $ 1,999,000 CBRAIN: Canadian Brain Research And Informatics Platform

2015-22, CIHR Foundation Grant, (PI: C. Grady) Co-investigator $ 1,100,000 Exploring the role of the frontoparietal control network across the adult lifespan

2015-19, CIHR Operating Grant, (PI: Black SE, Co-PI: Masellis M) $ 919,404 Co-investigator, COhort to illuminate Neurodegeneration, GENetics, Imaging Associations and Leukoaraiosis (CONGENIAL)

2016-20, CIHR Operating Grant, (PI: Tom Schweizer, Co-PI:Michael Hutchinson) $ 355,492

 Brain imaging biomarkers of recovery from sport concussion

2016-19, Brain Canada Platform Support Grant, (Principal Applicant, Morris Freedman) $ 3,000,000

 Co-Principal Investigator with D. Tang-Wai, The Toronto Dementia Research Alliance (TDRA) Research Dementia Database: A Platform in Neurodegenerative Diseases - Technology and Platform

2016-19, CFI Cyberinfrastructure, (PI: Alan Evans) Co-investigator $ 2,953,353

 CBRAIN: A national high-performance computing platform for brain research

2018-19 NIH/NIA SBIR R43 AG059540 – 01. (PI: Ana Lukic) Alzheimer's Amyloid and

 Tau Pathology Staging and Clinical Impact Prediction Using Multi-Modal MRI $ 250,000

 Pattern Classification

2018-19 NIH/NIA SBIR R43 AG060861 – 01. (PI: Ana Lukic) Multi-modal machine learning

 detection and tracking of traumatic brain injury neurodegeneration and its disease $ 300,000

 differentiation from Alzheimer's

2017-20, Brain Canada Platform Support Grant, (PI: Alan Evans) Co-investigator $10,000,000

 Canadian Open Neuroscience Platform

2018-22, Ontario Brain Institute, Canadian Biomarker Integration Network for $ 12,000,000 Depression (CAN-BIND) ID Program (PI: S. Kennedy) Co-Principal Investigator neuroimaging program

2018-22, Ontario Brain Institute, Ontario Neurodegenerative Disease Research Initiative $ 15,000,000

 (ONDRI) ID Program (PI: R. Schwarz). Co-investigator Neuroimaging Platform,

 and Principal Investigator Neuroinformatics Platform

**TEACHING AND MENTORING ACTIVITIES:**

**LECTURES: Auckland Hospital, New Zealand**

1977-78 Physics for Nuclear Medicine Technologists, Lecturer.

1980-81 Medical Physics for Radiology Residents, Course developer.

**LECTURES: Graduate Courses at University of Minnesota**

1991-92 BPhy 5174: ad hoc PET Physics Lectures.

1994-96 BPhy 5174: ad hoc PET Physics Lectures.

1991, 92, 94 HInf 8405: Computers in Medical Imaging, Course developer and lecturer.

1996-01 HInf 5431: Health Informatics II, Medical Imaging Series of Lectures.

1996,98,00,02 BPhy 8148: Advanced Medical Imaging Science, Course developer and lecturer.

2000 EE 8125, ad hoc lectures on PET Neuroimaging.

2003 BPhy 8147: Advanced Physics of MRI, ad hoc lectures on Image Reconstruction

**LECTURES: Graduate Courses at University of Toronto**

2005, 07 PSY1200S: Multivariate Statistical Inference, Jointly taught with Randy McIntosh

2006, 07, 08 Ad Hoc lectures in course: Introduction to fMRI, Jointly taught with Rotman scientists

**STUDENTS:**

**Predoctoral Supervisor or CoSupervisor**

1996 F. Xu, Health Informatics, MSc Plan B Project.

2001 L. Strawn, Electrical Engineering, Biomedical Instrumentation Undergraduate Senior Project

2002-2003 S. Pulapura, Electrical Engineering, MSc Plan B Project, University of Minnesota

2005-2007 M. Fazeli, Medical Biophysics, MSc, University of Toronto

2005-2008 W. Lee, Medical Biophysics, MSc, University of Toronto

2009-2012 Robyn Spring, Institute for Medical Science, MSc, University of Toronto

2012-2015 Jonathan Kwinta, Medical Biophysics, MSc with Jean Chen, University of Toronto

2013-2014 Jennifer Armstrong, Medical Biophysics, MSc (Withdrew), University of Toronto

2014-2015 Mirna Hennawy, Undergraduate Science Co-op Student, University of Toronto Scarborough

2015 Abiramy Uthirakumaran, Undergraduate Science Co-op Student, University of Toronto Scarborough

2015 Neshah Mathikcantan, Undergraduate Science Co-op Student, University of Toronto Scarborough

2015-2016 John Eusebio, Psychology, MSc with Randy McIntosh, University of Toronto

2016 Sujeevini Sujanthan, Undergraduate Science Co-op Student, University of Toronto Scarborough

2017 Rong Li, Undergraduate Science Co-op Student, University of Toronto Scarborough

2018 Andrew Lofts, Undergraduate Nanotechnology Engineering Co-op Student, University of Waterloo

**Doctoral Supervisor or CoSupervisor**

1998-2000 R. Kustra, Biostatistics, Ph.D. with Rob Tibshirani, University of Toronto & Stanford University. Now Professor Biostatsitics, University of Toronto

1999-2002 M. Shaw, Physics, Ph.D. with Gary Egan, Howard Florey Brain Institute, University of Melbourne.

1999-2002 S. LaConte, Biomedical Engineering, Ph.D. with Xiaoping Hu, Center Magnetic Resonance Research, University of Minnesota. Now Associate Professor, Neuroscience, University of West Virginia

2002-2005 P. Upadrashta, Computational Neuroscience, PhD. with Apostolos Georgopoulos, MD. Brain Sciences Center, VA Medical Center and University of Minnesota

2002-2005 J. Zhang, Health Informatics, PhD with Lael Gatewood, University of Minnesota

2006-2009 Jennifer Evans, Institute for Medical Science, PhD with Margot Taylor, University of Toronto

2006-2013 Grigori Yourganov, Institute for Medical Science, PhD with Randy McIntosh, University of Toronto

2008-2013 Nathan Churchill, Medical Biophysics, PhD, University of Toronto

2009-2016 Nasim Shams, Medical Biophysics, PhD, University of Toronto

2012-2013 SeyedMohammad Shams, Visiting PhD student, Electrical & Computer Engineering, University of Tehran.

2016-present John Eusebio, Psychology, with Randy McIntosh, University of Toronto

**Other Graduate Committees (Toronto)**

2004-07 Shoan Kale, Medical Biophysics, MSc (Supervisor: Jossette Chen, MICE)

2005-07 Audrey Kuo, Medical Biophysics, MSc (Supervisor: Simon Graham, Rotman)

2006-09 Mojdeh Zamyadi, Medical Biophysics, MSc (Supervisor: John Sled, MICE)

2007-08 Nathan Spreng, Psychology, PhD (Supervisor: Brian Levine, Rotman)

2007-2012 Mark Chiew, Medical Biophysics, PhD (Supervisor: Simon Graham, Rotman)

2007-2012 Omer Grigg, Institute for Medical Science, PhD (Withdrew, Supervisor: Cheryl Grady, Rotman)

2009-2014 Hatef Mehrabian, Medical Biophysics, PhD (Supervisor: Anne Martel, Sunnybrook)

2011-2017 Mahta Karimpoor, Medical Biophyiscs, PhD (Supervisor: Simon Graham, Sunnybrook)

2012-withdrew Gregory Szilagyi, Institute for Medical Science, MSc (Supervisor: Sandra Black, Sunnybrook)

2012-2016 Andrew Myrden, Institute for Biomaterials and Biomedical Engineering, PhD (Supervisor: Tom Chau, Bloorview Research Institute)

2013-2016 Melanie Morrison, Medical Biophysics, PhD (Supervisor: Simon Graham, Sunnybrook)

2014-2016 Powell Chu, Medical Biophysics, MSc (Supervisor: Jean Chen, Baycrest)

2013-present Yohan Yee, Medical Biophysics, MSc (Supervisor: Jason Lerch, Hospital for Sick Children)

2015-2018 Alborz Rezazadeh Sereshkeh, Institute for Biomaterials and Biomedical Engineering, PhD (Supervisor: Tom Chau, Bloorview Research Institute)

2016-present Alexandre Boutet, Institute for Medical Sciences, PhD (Supervisor: Dr. Andres Lozano, Krembil Research Institute)

2018-present Jordan Chad, Medical Biophysics, PhD (Supervisor: Dr. Jean Chen)

**Invited External Examiner**

1997 Oral Preliminary Examiner for N. Morch, Institute for Mathematical Modeling, Technical University of Denmark, Ph.D. (Supervisor: Lars Kai Hansen)

1998 Written External Examiner for M. Wolforth, Biomedical Engineering, M.Sc. University of McGill, Montreal. (Supervisor: Alan Evans)

2001 External Examiner for C. Thomas, University of Western Ontario, Ph.D. (Supervisor: Ravi Menon)

2005-07 Cmte./external examiner for F. Pereira, PhD. Carnegie Mellon University (Supervisor: Tom Mitchel)

2008 External Examiner for Robert Barry, University of Western Ontario, Ph.D. (Supervisor: Ravi Menon)

**Postdoctoral Fellows' Advisor**

1989-91 J-S. Liow, (Ph.D., Geophysics, Georgia-Tech.) Radiology, Promoted to Res. Assoc., University of Minnesota, 1991, Received NIH R29 (12/1/94). Moved to NIMH 2002

1991-93 X-L. Xu, (Ph.D., Electrical Engineering, University of Minnesota) Radiology/Neurology, to Mayo Clinic 1993.

1992-95 K. Rehm, (Ph.D., Medical Physics, University of Arizona) Research Fellow, Health Informatics/ Radiology, Promoted to Assist. Prof., University of Minnesota, 1996.

1997-98 C. Tegeler, (Ph.D., Physiology, University of Berlin), Visiting Postdoctoral Fellow, CMRR with S.-G. Kim, Moved to private industry.

1998-00 J. Morenu-Cantu, (Ph.D., Neurology/NeuroSurgery, McGill University) Radiology, to private industry.

2003-2004 X. Chen, (Ph.D., Biomed. Eng., Shanghai Jiaotong University) Neurology, University of Minnesota

2004-2007 X. Chen, (Ph.D., Biomed. Eng., Shanghai Jiaotong University) Rotman Institute, University of Toronto, Moved to Postdoctoral fellow at Case Western University

2007-2008 C. Thomas, (Ph.D., Medical Biophysics, University of Western Ontario) Rotman Institute, University of Toronto. Moved to Med. Phys. at Northwestern Medical Center, Chicago.

2007-2011 T. Schmah, (Ph.D., Mathematics, Ecole Polytechnique Fédérale de Lausanne, Switzerland, 2001). With Rich Zemel, Computer Science, University of Toronto. Moved to Program Manager in Neuroinformatics Group, Rotman Research Institute, Baycrest, and now Assistant Professor, Mathematics, University of Ottawa

2013-2014 Nathan Churchill, (Ph.D., Medical Biophysics, University of Toronto). Moved to Post-doctoral Fellow, Danish Technical University, Denmark & Post-doctoral Fellow, St. Michael’s Hospital

2011-2015 Babak Afshinpour, (Ph.D., Electrical and Computer Engineering, University of Tehran). Moved as Data Scientist to Real Time Data Solutions Inc., Toronto

2015-present Pradeep R. Raamana, (Ph.D., Engineering Science, Simon Fraser University)

2016-present Derek Beaton, (Ph.D., Cognition and Neuroscience, The University of Texas at Dallas)

2017-present Nasim Shams, (Ph.D., Medical Biophysics, University of Toronto)

2017-present Mohammad Kayvanrad (PhD Biomedical Engineering, Robarts Research Institute, The University of Western Ontario), with Jean Chen

**INVITED PRESENTATIONS, WORKSHOPS & CONFERENCES**

**University of Minnesota**

1. Radiology Research Seminar, “PET at the VA Medical Center,” 1991.
2. BioPhysical Sciences Seminar, “Brain PET,” 1992.
3. BioPhysical Sciences Seminar, “Comparison of Multimodality Registration Techniques in the Brain,” 1993.
4. Biomedical Engineering Seminar, “PET Imaging of Brain Function,” 1994.
5. BioPhysical Sciences Seminar, “Functional Models of the Brain from Positron Emission Tomography,” 1995.
6. NeuroScience Seminar, “Functional Models of the Brain: PET & fMRI,” 1995.
7. HealthInformatics Seminar, “Functional Models of the Brain from PET,” 1995.
8. Clinical NeuroSciences Seminar, “Temporal and Spatial Patterns of Functional Activation in the Brain,” 1996.
9. Minnesota Workshop on MRI of Brain Function: CMRR, “Exploring the Multivariate Structure of Whole-Brain EPI fMRI Data Sets,” 1997.
10. Biomedical Engineering Seminar, “Optimizing whole-brain experimental designs in PET and fMRI activation experiments,” 1999.
11. Minnesota Workshops on MRI of Brain Function: CMRR, “Statistical data processing in fMRI,” 1999.
12. BioPhysical Sciences Seminar, “The quantitative evaluation of functional neuroimaging experiments,” 2000.
13. Mathematics in Multimedia: Vison, Speech & Language: Brain Imaging. Institute for Mathematics and its Applications. “The quantitative evaluation of functional neuroimaging experiments: The NPAIRS data analysis framework,” 2000.
14. Vision Science Colloquium. “Quantitative Evaluation of Functional Neuroimaging Experiments,” 2001.
15. “The Pluralistic Analysis of MultiSubject fMRI Datasets.” Weekly Seminars, Brain Sciences Center, VA Medical Center, 2002
16. “The Pluralistic Analysis of MultiSubject fMRI Datasets.” Weekly Seminars, Center for Magnetic Resonance Research, 2003.
17. “Plurality, Quality Metrics and Consensus in the Analysis of fMRI Data Sets.” Graduate Seminar on fMRI and Human Vision, Center for Cognitive Science, 2003.

**University of Toronto and Ontario**

1. “Optimizing fMRI Processing Pipelines: A Group Study,” Rounds, September, Rotman Research Institute, 2004.
2. “Image processing in fMRI.” Med. Biophys. summer-student lecture series. July, Ontario Cancer Institute, 2005.
3. “Optimization of fMRI Processing Pipelines”, Vision Research Laboratory Seminar, Computer Science, University of Toronto, 2006.
4. “Predictive Modeling in fMRI Pipelines: Some Uses & Caveats”, Rounds, September, Rotman Research Institute, 2006.
5. "Optimizing fMRI Pipelines: What, How & Why Bother?" MRI Group Meeting, Medical Biophysics, Sunnybrook, 2007.
6. “Image processing in fMRI.” Med. Biophys. summer-student lecture series. July, Ontario Cancer Institute, 2007.
7. "Multivariate Assessment of Preprocessing Choices as a Function of Age and Task". Rounds, February, Rotman Research Institute, 2008.
8. "Morphological classifiers for MRI: Literature review." Quantitative MRI Study Group, May, Sunnybrook, 2008.
9. "Assessing fMRI Processing Choices as a Function of Age and Task." MRI Group Meeting, Medical Biophysics, Sunnybrook, 2008.
10. "How close to zero is zero in BOLD fMRI". Neuroscience Day, January, Sunnybrook, 2009.
11. "P-values, circular analysis and weak inference in functional neuroimaging." Neuroimaging Rounds, Toronto Western Hospital, June 2009.
12. "Better BOLD across the lifespan from children to the elderly." Rounds, Rotman Research Institute, November 2009.
13. "Neuroinformatics in the Strother Laboratory." Rounds, Rotman Research Institute, November 2010.
14. *Keynote Lecture*, "Connecting Brain Networks and Behaviour in BOLD fMRI of Individual Subjects", Brain Connectivity Day Symposium on Neural Networks of the Brain, Hospital for Sick Children, June, 2011.
15. "Connecting Brain Networks and Behaviour in BOLD fMRI of Individual-Subjects." Neuroimaging Rounds, Toronto Western Hospital, Feb., 2012.
16. “Brain Networks and Behaviour in Functional Magnetic Resonance Studies”, Medical Biophysics Summer Student Rounds, Ontario Cancer Institute, July 2012.
17. “The Ugly, the Bad and the Good of Predictive Modeling for Functional Brain Networks", Rotman Research Rounds, Rotman Research Institute, November 2012.
18. “The Impact of Different Multivariate Analysis Techniques on Resting State Network Detection”, Neuroimaging Rounds, Toronto Western Hospital, November 2012.
19. *Keynote Lecture*, “Neuroinformatics in BrainCODE for BOLD fMRI and Brain Networks”, Keynote address, 2nd Annual Biomedical Engineering and Sciences Technology Research Symposium, Ryerson University and St. Michael’s Hospital, Toronto, June 2013.
20. “Brain Networks and Behaviour in Functional Magnetic Resonance Studies”, Medical Biophysics Summer Student Rounds, Ontario Cancer Institute, July 2013.
21. “Tracking and Predicting Stroke Recovery with Neuroimaging Metrics of Brain Complexity”, Sunnybrook Rounds, Canadian Partnership for Stroke Recovery, November, 2013.
22. “Multivariate Statistical Analysis in Psychology and Neuroscience.” Rotman Conference Workshop, Co-taught with Herve Abdi, Rotman Research Institute, March, 2014.
23. “Brain Networks and Behaviour in Functional Magnetic Resonance Studies”, Medical Biophysics Summer Student Rounds, Ontario Cancer Institute, July 2014.
24. “Neuroinformatics Pipelines in the BrainCODE Neuroscience Data Centre”, ECE Workshop on Tools to Tackle Big Data, Electrical and Computer Engineering, July, 2014.
25. “What’s the Big Deal about Big Data”, 25th Anniversary of Rotman Research Institute, Public Brain Talk, Baycrest, July 2014.
26. “Big Data in Neuroscience”, Galbraith Society Meeting, Undergraduate Soc., Electrical and Computer Engineering, November, 2014.
27. “Databases, High Performance Computing and the Optimisation of fMRI Neuroimaging Workflows”, HPCVL, Queens University, Conference on Complex Data and Analytics in Medical Research, Toronto, Canada, October 2014.
28. “Neuroinformatics Pipelines in the BrainCODE Neuroscience Data Centre”, Neuroscience Association for Undergraduate Students (NAUS), University of Toronto, Toronto, November 2014.
29. “Developing Neuroinformatics Platforms”, Harnessing Neuroimaging Capability in Pediatric Stroke, IPSS/SILK Workshop, Hospital for Sick Children, June, 2015
30. “A Hierarchy of Cognitive Brain Networks Revealed by MVPA Performance Metrics”, Neuroimaging Rounds, Toronto Western Hospital, Feb., 2016
31. “Brain Networks and Behaviour in Functional Magnetic Resonance Studies”, Medical Biophysics Summer Student Rounds, Ontario Cancer Institute, July 2016.
32. “Multi-Centre Challenges in rsfMRI and Choosing an Effective Preprocessing Pipeline”, BrainHack 2017, Centre for Addiction and Mental health, Toronto, March 2017
33. “The Ontario Brain Institute and Brain-CODE: Multi-Site fMRI Challenges”, Canadian Partnership for Stroke Recovery Rounds, Sunnybrook Hospital, March 2017
34. “Introduction to Neuroimaging”, ad hoc lecture in Molecular Approaches to Mental Health and Addictions, Institute of Medical Sciences graduate course MSC1085H, March, 2018
35. *Keynote Lecture*, “Big Data Variety and Veracity in Brain-Code: 80% Quality Curation and 20% Analysis”, Machine Learning for Brain Health Symposium, McMaster University, September 2018

**National and International**

1. “Quantitation and data analysis in PET.” NIMH International Workshop on the Goals and Obstacles in Data Acquisition and Analysis from Emission Tomography, Washington, D.C., USA, 1985.
2. “An inter-center comparison of region of interest and resolution effects for normal 18F-fluorodeoxyglucose studies with PET.” 12th Biannual Meeting of the International Society of Cerebral Blood Flow and Metabolism, Ronneby, Sweden, 1985.
3. “Sensory deprivation vs nonspecific auditory stimulation as the resting state for PET measurements of cerebral glucose metabolism.”, 34th Annual Meeting of the American Academy of Neurology, New York, USA, 1987.
4. “Patterns of regional cerebral metabolism in stimulated, deprived and vegetative subjects.” 35th Annual Meeting of the Society of Nuclear Medicine, San Francisco, CA, USA, 1988.
5. Invited Participant in Round Table Presentations: “Structure, Function relationships in PET studies.” XIV International Symposium on Cerebral Blood Flow and Metabolism, Bologna, Italy, 1989.
6. The role of quantitative imaging in positron emission tomography studies of the brain.” Royal Prince Alfred Hospital, Sydney, Australia, 1989.
7. “Positron emission tomography studies of the brain at Memorial Sloan-Kettering Cancer Center.” Austin Hospital, Melbourne, Australia, 1989.
8. “The role of quantitative imaging in positron emission tomography studies of the brain.” 12th Annual Conference of the Australasian College of Physical Scientists & Engineers in Medicine, Hamilton, New Zealand, 1989
9. “Positron emission tomography studies of the brain at Memorial Sloan-Kettering Cancer Center.” 12th Annual Conf. of the Australasian College of Physical Scientists & Engineers in Medicine, Hamilton, New Zealand, 1989.
10. “PET Imaging.” 20th Annual Meeting of the Australasian Society of Nuclear Medicine, Christchurch, New Zealand, 1989
11. Invited Participant in Round Table Presentations. “The use of Noise Equivalent Counts.” IEEE Nuclear Science Symposium, Medical Imaging Conference, Arlington, VA, USA, 1990.
12. Invited Participant in Round Table Presentations. “If maximum likelihood reconstruction is so great, why isn't everybody using it? What will have to happen before everybody does?” IEEE Nuclear Science Symposium and Medical Imaging Conference, Santa Fe, NM, USA, 1991.
13. “Performance of maximum likelihood based iterative image reconstruction for quantitative imaging.” 13th Annual International Conference IEEE Engineering in Medicine and Biology Society, Orlando, FL, USA, 1991.
14. “Functional brain patterns in cross-sectional FDG/PET studies.” Franklin McLean Memorial Research Institute, University of Chicago, USA, 1992.
15. “Tomographic reconstruction for PET: Is filtered backprojection enough?” Technical seminar, Division of Nuclear Medicine and Biophysics, UCLA Medical Center, UCLA, USA, 1992.
16. “A disease-independent pattern of cerebral metabolic variation: The reticular activating system?” Keynote lecture in statistics. International Symposium on Quantification of Brain PET, Akita, Japan, 1993.
17. “Error bounds for five registration techniques based on high-resolution MRI.” 1st International Symposium on Quantification of Brain Function with PET, Akita, Japan, 1993.
18. “Quantification in Emission Tomography: An impossible dream?” Pre-congress Symposium on Emission Tomography. 6th World Congress of Nuclear Medicine & Biology; Cairns, Australia, 1994.
19. “Will iterative reconstruction algorithms ever be useful?” Pre-congress Symposium on Emission Tomography. 6th World Congress of Nuclear Medicine & Biology; Cairns, Australia, 1994.
20. “Improved resolution via 3D iterative reconstruction for PET volume imaging.” 41st Annual Meeting of the Society of Nuclear Medicine, Orlando, FL, USA, 1994.
21. “Positron Emission Tomography of the Brain.” Technical Seminar, Electronics Institute, Technical University of Denmark, Copenhagen, Denmark, 1995.
22. “Data Processing Summary.” 2rd Int. Conf. On Quantification of Brain Function with PET, Oxford, England, 1995.
23. “Functional image registration metrics based on orthogonal subspaces.” BrainMap'95, San Antonio, Texas, 1995.
24. “The MultiDimensional Signal Structure of O-15 Water PET and fMRI Activation Datasets.” Annual Spring Meeting of the Human Brain Project, NIH, Bethesda, USA, 1995.
25. “Functional Imaging of the Brain with Positron Emission Tomography.” Weekly Physics Seminar, Auckland University, New Zealand, 1996.
26. “Theoretical Issues in Data Analysis.” Workshop on Functional MRI at 2nd International Conference on Functional Mapping of the Human Brain, Boston, USA, 1996.
27. “Comparing Activation Patterns Across Groups, Models and Modalities.” BrainMap'96, San Antonio, Texas, 1996.
28. “Activation Pattern Reproducibility: Measuring the Effects of Group Size and Data Analysis Models.” Functional Imaging Group Meeting, Neurobiology Research Unit, Copenhagen University Hospital, Denmark, 1997.
29. “Measuring activation pattern reproducibility using resampling techniques.” 3rd International Symposium on Quantification of Brain Function with PET, Bethesda, USA, 1997.
30. “Measuring the Reproducibility of Functional Activation patterns.” Annual Spring Meeting of the Human Brain Project, NIH, Bethesda, USA, 1997.
31. “So Much Data, So Few Ways to Communicate.” Plenary Session of 4th Int. Conf. On Functional Mapping of the Human Brain. Montreal, Canada, 1998.
32. “Reproducibility of Activation Patterns in Patient/Control Populations: Measurement of Group and Subject Effects.” Functional Imaging Group, Neurobiology Research Unit, Copenhagen University Hospital, Denmark, 1998.
33. “The Functional consequences of Anatomical Warps: Does Function Always Follow Structure?” Annual Spring Meeting of the Human Brain Project, NIH, Bethesda, USA, 1998.
34. “Reliability of fMRI Activation Patterns.” Workshop on Analysis of Neural Data, Woods Hole, MA, USA, 1999.
35. “The reproducibility of activation patterns in patient/control populations: Measurement of group and subject effects.” 4th International Symposium on Quantification of Brain Function with PET, Copenhagen, Denmark, 1999.
36. “Quantitative evaluation of software tools in functional neuroimaging.” Annual Spring Meeting of the Human Brain Project, NIH, Bethesda, USA, 1999.
37. “Evaluating Functional Neuroimaging Experiments.” Functional Imaging Group Meeting, Neurobiology Research Unit, Copenhagen University Hospital, Denmark, 2000.
38. “The quantitative evaluation of functional neuroimaging experiments: The NPAIRS data analysis framework.” Workshop on the Analysis of Neural Data, Woods Hole, MA, USA, 2000.
39. “The quantitative evaluation of functional neuroimaging experiments: The NPAIRS data analysis framework.” Annual Spring Meeting of the Human Brain Project, NIH, Bethesda, USA, 2000.
40. “The quantitative evaluation of functional neuroimaging experiments: The NPAIRS data analysis framework.” Neurology Department, University of Iowa, IA, USA, 2000.
41. “The quantitative evaluation of functional neuroimaging experiments: The NPAIRS data analysis framework.” Workshop on Neuroinformatics, THOR Neuroinformatics Group, Technical University of Denmark, Bornholm, Denmark, 2001.
42. “Evaluating pre-processing choices in single-subject BOLD-fMRI studies using data-driven performance metrics.” Neurobiology Research Unit, Functional Imaging Group, Copenhagen University Hospital, Denmark, 2001.
43. “Multidimensional Signal Detection in PET and fMRI Functional Neuroimaging.” Howard Florey Institute, University of Melbourne, Melbourne, Australia, 2001.
44. “The quantitative evaluation of functional neuroimaging experiments: The NPAIRS data analysis framework” Neural Information Processing Systems Workshop, Whistler, Canada, 2001.
45. “Resampling Techniques in Signal Processing.” Copenhagen Signal and Image Processing Graduate School Workshop, Bornholm, Denmark, 2002.
46. “Living with plurality.” fMRI Course, OHBM Educational Program, fMHB’02, Sendai, Japan, 2002.
47. “Plurality, Quality Metrics and Consensus in the Analysis of fMRI Data Sets.” Neuroinformatics Summer Course, Marine Biological Laboratory, Woods Hole, MA, USA, 2002.
48. “Plurality, Quality Metrics and Consensus in the Analysis of fMRI Data Sets.” Nathan Kline Institute for Psychiatric Research, Orangeburg, NY, USA, 2002.
49. “The relative importance of physiological function and anatomical structure in group fMRI studies.”Annual Spring Meeting of the Human Brain Project, NIH, Bethesda, USA, 2002.
50. “Testing and Managing Heterogeneous Tools for Neuroimaging Experiments.” Neuroinformatics 2003 Symposium, April, University of Minnesota, 2003.
51. “How to Optimize a Multivariate Analysis of fMRI Data Sets: Linear Discriminants, Confusion Matrices and Reproducibility Metrics in the NPAIRS Resampling Framework.” The fMRI Data Center Informatics Summer Workshop, July, Dartmouth College, New Hampshire, 2003.
52. “Data-Driven Discovery in Functional Neuroimaging.” October, Rotman Research Institute, Toronto, Canada, 2003.
53. “Data-Driven Discovery in Functional Neuroimaging.” November, Data Processing Methods in Neuroscience Seminar, Princeton University, New Jersey, 2003.
54. “Data-Driven Discovery in Functional Neuroimaging.” RUMBA Seminar Series, March, Rutgers University, Newark, New Jersey, 2004.
55. “Dimensionality Reduction with RVMs and RJMCMC” Computational Neuroscience UC Workshop, April, University of Toronto, 2004.
56. “Replicability & Localization of Function in Neuroimaging” , Workshop on Cognitive Modularity, fMHB’04, Budapest, Hungary, 2004.
57. “Optimizing fMRI Processing Pipelines”, IPAM Graduate Summer School: Mathematics in Brain Imaging, July, UCLA, 2004.
58. “Optimizing fMRI Processing Pipelines: A Group Study”, October, University of Pittsburgh, 2004.
59. “Age and task interactions with choices in the fMRI processing pipeline” Neural Information Processing Systems’ Workshop, Whistler, Canada, December, 2005.
60. *Plenary Lecture,* “Managing and Optimising fMRI Pipelines,” Functional Bioinformatics Resource Network (fBIRN) spring meeting, University of California, Irvine, March, 2006.
61. “NIfTI-1 – An Example of Linking Informatics Tools,” Linking Informatics of Neuroscience Communities Workshop, March, NIH, Washington DC, April, 2006.
62. “Applications of Multivariate Analysis to Imaging in Drug Development,” Global Clinical Technologies Group, Pfizer, Groton, CT, October, 2006.
63. "FMRI Image Processing & Data Analysis Choices: Do They Matter?" Satellite Workshop on Analyses for the Cognitive and Clinical Neurosciences: Surveys and Critiques of fMRI, PET, and MEG/EEG Applications, Society for Neuroscience, Atlanta, October, 2006.
64. "Optimizing fMRI Preprocessing Pipelines Using Linear Discriminants with Agnostic Class Labels". Carnegie Mellon University, Pittsburgh, October, 2007.
65. "Choosing Optimal Data Analysis Models in fMRI Studies: Interactions with Age and Task." Intelligent Signal Processing Group, Danish Technical University, Denmark, April, 2008.
66. “Reproducibility Across Processing Pipelines”, IPAM Graduate Summer School: Mathematics in Brain Imaging, July, UCLA, 2008.
67. “NPAIRS Metrics and Processing Pipelines.” January, Data Processing Methods in Neuroscience Seminar, Princeton University, New Jersey, 2009.
68. "Optimal Processing Pipelines in BOLD fMRI: Where are they and do they matter?" April, New Horizons in Human Brain Imaging: A focus on the Pacific Rim, Waikaloa, Hawaii, 2009.
69. "Reproducible Pipelines, Statistical Parametric Maps and Strong Inference in fMRI Studies of Cognitive Aging." Workshop on Measuring and Improving Reliability and Reproducibility in fMRI, Annual Conf. OHBM, June, San Francisco, 2009.
70. "Better BOLD across the lifespan from children to the elderly." Seminar Series, Dept. Statistics, Columbia University, January, 2010.
71. "Better BOLD across the lifespan from children to the elderly." Seminar, Lifespan Psychology Group, Max Planck Institute for Human Development, Berlin, June, 2010.
72. "Multivariate Analysis of the CIMBI Altanserin 5-HT2A Binding Potential Values." Seminar Series, CIMBI Young Investigators Group, Copenhagen University, Denmark, August, 2010
73. "Olaf Paulson and the Predictive, Reproducible Brain." Anniversary Symposium in Honour of the 70th Birthday of Prof. Olaf B. Paulson, Rigshospitalet, Copenhagen University, Denmark, August 2010.
74. "The NPAIRS Computational Statistics Framework for Data Analysis in Neuroimaging." Brain Imaging Session, 19th Int. Conf. On Computational Statistics, Paris, France, August 2010.
75. "The Structure of Functional Brain Connectivity Revealed by "Mind Reading” Prediction and Reproducibilty Metrics in the NPAIRS framework." New Horizons in Human Brain Imaging: A focus on Brain Networks and Connectivity, Oahu, Hawaii, December 2010.
76. "Stability and reproducibility in fMRI analysis", Neural Information Processing Systems’ Workshop on Practical Application of Sparse Modeling: Open Issues and New Directions, Whistler, Canada, December, 2010.
77. *Invited Educational Course Lecture*, "Post processing: What are the current methods" Educational course, Functional and Anatomic Data Analysis: Principles and Practicalities, ISMRM, Montreal, Canada, May, 2011.
78. *Plenary Lecture*, "Prediction, and Activation-Pattern Sparsity and Stability in fMRI analysis", IEEE 2nd Int. Workshop on Pattern Recognition in NeuroImaging, Seoul, Korea, May, 2011.
79. *Invited Educational Course Lecture*, "Multi-Set Data Analysis", Workshop on Molecular and Functional Brain Imaging, XXV Int. Meeting og Cerebral Blood Flow & Metabolism and Brain-PET, Barcelona, Spain, May, 2011.
80. “Neuroinformatics at the Rotman Research Institute”, Neurology Laboratory, USC Irvine, USA, Feb., 2012.
81. *Invited Educational Course Lecture,* "Structural Equation Modeling" Functional Connectivity, ISMRM, Melbourne, Australia, May, 2012.
82. “The Stability of Behavioural PLS Results in Ill-Posed Neuroimaging Problems” Neuroimaging workshop, PLS-2012, Houston, USA, May, 2012
83. “SPReD: The Stroke Patient Recovery Research Database”, INCF Canadian Neuroinformatics Workshop, CAN Satellite, Vancouver, May 2012
84. “Mathematical Problems of Functional Imaging Pipelines and their Optimization”, MITACS Workshop on the Mathematics of Brain Imaging, Vancouver, July 2012.
85. “The Impact of Different Multivariate Analysis Techniques on Resting State Network Detection”, 3rd Biennial Resting State Meeting, Magdeburg, Germany, August 2012.
86. “The Ugly, the Bad and the Good of Predictive Modeling for Functional Brain Networks", University of Geneva, Switzerland, August 2012.
87. “Mathematical Problems of Functional Imaging Pipelines and their Optimization”, Ecole Polytechnique Federale de Lausanne, Switzerland, August 2012.
88. *Invited Educational Course Lecture,* “Multi-dataset analytics”, PhD Course, The Emotional Brain, Centre for Integrated and Molecular Brain Imaging, Copenhagen, Denmark, September 2012.
89. “Linking brain networks and behaviour with optimized processing pipelines in BOLD fMRI”, USP-UofT Neuroscience Conference, University of Sao Paulo, Sao Paulo, Brazil, December 2012.
90. “Linking Brain Networks to Behaviour with Subsampled Prediction and Stability Metrics”, Section on Statistical Computing, Joint Statistical Meeting, Montreal, Canada, August 2013
91. “Brain-network continua revealed with multivariate performance metrics”, 48th ASILOMAR Conf. on Signals, Systems and Computers, Pacific Grove, California, November 2014.
92. “Brain imaging in the age of big data.” University of Sao Paulo, Sao Paulo, Brazil, May 2015.
93. *Invited Educational Course Lecture*, “Pre-processing of fMRI data”, Educational course, Introduction to fMRI, ISMRM, Toronto, Canada, May, 2015.
94. *Invited Educational Course Lecture*, “The negative effects of common image processing and analysis pipeline choices”, Workshop on Reproducible Neuroimaging, Annual Conf. OHBM, June, Honolulu, 2015.
95. “Analysis of Multi-modal Neuroimaging Data in the Age of Big Data”, Final CIMBI meeting, Copenhagen, Sept., 2015
96. “Metrics for evaluating functional neuroimaging processing pipelines”, Mathematical and Statistical Challenges in Neuroimaging Data Analysis, Banff International Research Station, Feb., 2016
97. *Invited Educational Course Lecture*, “Pre-processing of fMRI data”, Educational course, Introduction to fMRI, ISMRM, Singapore, May, 2016
98. “Reproducibility and Data Sharing in Neuroimaging”, Neurobiological Research Unit, Copenhagen University, Copenhagen, Denmark, Sept., 2016
99. “Metrics for Evaluating Functional Neuroimaging Processing Pipelines”, BrainHack: Reliability and Reproducibility in Connectomics, Medical University of Vienna, Austria, Sept., 2016
100. “Optimizing Data Cleaning and Analysis Workflows for fMRI Data Analysis”, 31st Canadian High Performance Computing Symposium, Kingston, Ontario, June 2017.
101. “A Hierarchy of Cognitive Brain Networks Revealed by MVPA Performance Metrics”, JSM2017, Baltimore, July 2017.
102. “Report from the Neuroimaging Working Group”, Annual Meeting InTBIR, Washington DC, Nov., 2017
103. “Predictive Analysis of Neurodegenerative Disease based on VBM- or Anatomical Region-based Networks”, 2018 International Conference Promoting Healthy Brain Aging and Preventing Dementia: Research and Translation, Banff Centre for Arts and Creativity, Banff, Alberta, Canada, June 2018
104. "InTBIR 5 Years ON - Neuroimaging", Neurotrauma 2018, Toronto, Canada, August 2018
105. "Preprocessing Choices in Disease Discrimination for Resting State Studies", Sixth Biennial Conference on Resting State and Brain Connectivity, Montreal, Canada, Sept., 2018

**INTELLECTUAL PROPERTY:**

**1.** *Systems And Methods For Providing Visual Feedback Of Touch Panel Input During Magnetic Resonance Imaging.* US, CA, WO. Provisional. 2013-05-09. Role: Co-applicant with PA Dr. Simon Graham and Tom A. Schweizer, Fred Tam, Mahta Karimpoor. Patent Status: Granted, 2016-05-05

**2.** *Determining a brain condition using early time frame pet image analysis.* US, EA, WO. Provisional. 2015-09-16. Role: Co-applicant with PA Dawn Matthews, and Ana S. Lukic, Randolph D. Andrews, Miles N. Wernick. Patent Status: Granted, 2018-07-25

**Licenses:**

**1.** An Automatic, Adaptive Framework for Optimising Preprocessing Pipelines in fMRI. Role: Principal Applicant with Nathan Churchill. License Status: Trial license to ADMdx, Chicago, USA Filing Date: 2014-10-23

2. OPPNI (Optimization of Preprocessing Pipelines for NeuroImaging) for fMRI analysis.

 https://github.com/BIDS-Apps/oppni

 Role: Co-applicant.

 License Status: Open Source Apache License

 Filing Date: 2016-08-02

**BIBLIOGRAPHY:**

**Peer-Reviewed Journal Papers:**

1. Strother SC. Analysing dose limited radiation imaging systems. NZ Med Phys Biomed Eng J. 1981; 8:4-16
2. Kato A, Diksic M, Yamamoto YL, Strother SC, Feindel W. An improved approach for measurement of regional cerebral rate constants in the deoxyglucose method with positron emission tomography. J Cereb Blood Flow Metabol. 1984; 4:555-563
3. Strother SC, Perlmutter JS. Headholders for functional brain imaging. In: Mazziotta JC, Koslow SH, eds: Assessment of goals and obstacles in data acquisition and analysis from emission tomography: report of a series of international workshops. J Cereb Blood Flow Metabol. 1987; 7:S1-S31
4. Philips PC, Dhawan V, Strother SC, Sidtis JJ, Evans AC, Allen JC, Rottenberg DA. Reduced cerebral glucose metabolism and increased brain capillary permeability following high-dose methotrexate chemotherapy: a positron emission tomographic study. Ann Neurol. 1987; 21:59-63
5. Ginos JZ, Cooper AJL, Dhawan V, Lai JC, Strother SC, Alcock N, Rottenberg DA. [13N]cisplatin PET to assess pharmacokinetics of intra-arterial versus intravenous cisplatin chemotherapy for malignant brain tumors. J Nucl Med. 1987; 28:1844-1852
6. Rottenberg DA, Moeller JR, Strother SC, Sidtis JJ, Navia BA, Dhawan V, Ginos JZ, Price PW. The metabolic pathology of the AIDS dementia complex. Ann Neurol 1987; 22:700-706
7. Levy DE, Sidtis JJ, Rottenberg DA, Jarden JO, Strother SC, Dhawan V, Ginos JZ, Tramo MJ, Evans AC, Plum F. Differences in cerebral blood flow and glucose utilization in vegetative versus locked-in patients. Ann Neurol 1987; 22:673-682
8. Moeller JR, Strother SC, Sidtis JJ, Rottenberg DA. The scaled subprofile model: a statistical approach to the analysis of functional patterns in positron emission tomographic data. J Cereb Blood Flow Metab. 1987 7:649-658
9. Dhawan V, Jarden JO, Strother SC, Rottenberg, DA. Effect of blood curve smearing on the accuracy of parameter estimates obtained for 82Rb/PET studies of blood-brain-barrier permeability. Phys Med Biol. 1988; 33:61-74
10. Tyler JL, Strother SC, Zatorre RJ, Alivisatos B, Worsley KJ, Diskic M, Yamamoto YL. Stability of regional cerebral glucose metabolism in the normal brain measured by PET. J Nucl Med. 1988; 29:631-642
11. Anderson NE, Posner JB, Sidtis JJ, Moeller JR, Strother SC, Dhawan V, Rottenberg DA. The metabolic anatomy of paraneoplastic cerebellar degeneration. Ann Neurol. 1988; 23:533-540
12. Jarden JO, Dhawan V, Moeller JR, Strother SC, Rottenberg DA. The time course of steroid action on blood-to-brain and blood-to-tumor transport of 82Rb: a positron emission tomographic study. Ann Neurol. 1989; 25:239-245
13. Dhawan V, Moeller JR, Strother SC, Evans AC, Rottenberg DA. Effect of selecting a fixed dephosphorylation rate on the estimation of rate constants and rCMRGlu from dynamic [18F]fluorodeoxyglucose PET data. J Nucl Med, 1989; 30:1483-1488
14. Dhawan V, Poltorak A, Moeller JR, Jarden JO, Strother SC, Thaler H, Rottenberg DA. Positron emission tomographic measurement of blood-to-brain and blood-to-tumour transport of 82Rb. I:Error analysis and computer simulations. Phys Med Biol, 1989; 34:1773-1784
15. Dhawan V, Jarden JO, Moeller JR, Strother SC, Rottenberg DA. Positron emission tomographic measurement of blood-to-brain and blood-to-tumour transport of 82Rb. II:Clinical data and validation of technique. Phys Med Biol, 1989; 34:1785-1794
16. Strother SC, Casey ME, Hoffman EJ. Measuring PET Scanner Sensitivity: Relating countrates to image signal-to-noise ratios using noise equivalent counts. IEEE Trans Nuc Sci, 37:783-788, 1990.
17. Eidelberg D, Moeller JR, Dhawan V, Sidtis JJ, Ginos JZ, Strother SC, Cedarbaum J, Greene P, Fahn S, Rottenberg DA. The metabolic anatomy of Parkinson's disease: Complementary 18F-Fluorodeoxyglucose and 18F-Fluorodopa positron emission tomographic studies. Movement Disorders. 5:203-213, 1990.
18. Strother SC, Liow J-S, Moeller JR, Sidtis JJ, Dhawan V, Rottenberg DA. Absolute quantitation in neurological PET: Do we need it? J Cereb Blood Flow Metab. 11:A3-A16, 1991.
19. Moeller JR, Strother SC. A regional covariance approach to the analysis of functional patterns in positron emission tomographic data. J Cereb Blood Flow Metab. 11:A121-A135, 1991.
20. Rottenberg DA, Moeller JR, Strother SC, Sidtis JJ, Dhawan V. Effects of percent thresholding on the extraction of (18F)fluorodeoxyglucose positron emission tomographic region-of-interest data. J Cereb Blood Flow Metab. 11:A83-A88, 1991.
21. Phillips PC, Moeller JR, Sidtis JJ, Dhawan V, Steinherz PG, Strother SC, Ginos JZ, Rottenberg DA. Abnormal cerebral glucose metabolism in long-term survivors of childhood acute lymphocytic leukemia. Ann Neur. 29:263-271, 1991.
22. Worsley KJ, Evans AC, Strother SC, Tyler JL. A linear spatial correlation model, with applications to Positron Emission Tomography. J Am Stat Ass. 1991; 86:55-67.
23. Liow J-S, Strother SC. Practical tradeoffs between noise, resolution and quantitation, and number of iterations for maximum likelihood reconstructions. IEEE Trans Med Img. MI-10:563-571, 1991.
24. Eidelberg D, Dhawan V, Moeller JR, Sidtis JJ, Ginos JZ, Strother SC, Cedarbaum J, Greene P, Fahn S, Powers JM, Rottenberg DA. The metabolic landscape of cortical/basal ganglionic degeneration: regional asymmetries studied with positron emission tomography. J Neurol Neurosurg Psychiat. 54:856-862, 1991.
25. Liow, J-S Strother SC. The convergence of object dependent resolution in maximum likelihood based tomographic image reconstruction. Phys Med Biol. 38:55-70, 1993.
26. Bonar DC, Schaper KA, Anderson JR, Rottenberg DA, Strother SC. Graphical analysis of MR feature space for the measurement of CSF, gray-matter and white-matter volumes. J Comput Assist Tomogr, 17:461-470, 1993.
27. Xu X-L, Liow J-S, Strother SC. Iterative algebraic reconstruction algorithms for emission computed tomography: A unified framework and its application to positron emission tomography. Med Phys, 20:1675-1684, 1993.
28. Liow J-S, Strother SC. Noise and signal decoupling in maximum likelihood reconstructions and Metz filters for PET brain images. Phys Med Biol, 39:735-750, 1994.
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