Harvard Medical School/Harvard School of Dental Medicine
Format for the Curriculum Vitae

Date Prepared: February 27, 2019

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Place of Birth: Czestochowa, Poland

Education

09/88-06/90	B.S.	Biochemistry	Medical Academy of Lodz
09/90-06/94	M.D.	Medicine	Medical Academy of Lodz
09/94-03/99	Ph.D.	MR Physics/Medicine (Advisor Dr. Bozena Goraj)	Medical Academy of Lodz

Postdoctoral Training

09/94-08/95	Internship	General Medicine	Polish Mothers' Memorial Hospital, Research Institute, Lodz
09/95-08/99	Residency Training	Radiology	Polish Mothers' Memorial Hospital, Research Institute, Lodz
05/97-06/97	Fellowship	MR Neuroimaging	Erasme Hospital, Brussels, Belgium
08/97-10/97	Fellowship	MR Spectroscopy	Cleveland Clinic, Fort Lauderdale, USA
05/98-07/98	Fellowship	fMRI	Dr. Cynthia Wible, Surgical Planning Laboratory, Brigham and Women's Hospital, Harvard Medical School, Boston, USA
08/99-09/00	Fellowship	Research Fellow	Drs. Robert McCarley and Martha Shenton, Department of Psychiatry, VA Boston Healthcare System, Brockton Division, Harvard Medical School

Faculty Academic Appointments

09/95-08/99	Teaching Assistant	Diagnostic Imaging	Institute of Radiology, Polish Mothers' Memorial Hospital, Lodz
04/97-03/01	Assistant Professor	Radiology	Institute of Radiology, Polish Mothers' Memorial Hospital, Lodz
09/01-08/04	Instructor	Psychiatry	Harvard Medical School
09/05-05/10	Assistant Professor	Psychiatry	Harvard Medical School
06/10-	Associate Professor	Psychiatry	Harvard Medical School
06/10-	Associate Professor	Radiology	Harvard Medical School
04/18-	Professor	Psychiatry	Harvard Medical School

Appointments at Hospitals/Affiliated Institutions

09/01-08/04	Instructor	Psychiatry	VA Boston Healthcare System, Brockton Division, Harvard Medical School
09/04-08/05	Assistant Professor	Psychiatry	VA Boston Healthcare System, Brockton Division, Harvard Medical School
09/05-05/10	Assistant Professor	Psychiatry	Brigham and Women's Hospital, Harvard Medical School
06/10-	Associate Professor	Psychiatry	Brigham and Women's Hospital, Harvard Medical School
06/10-	Associate Professor	Radiology	Brigham and Women's Hospital, Harvard Medical School
09/14-	Research Scientist	Psychiatry	Massachusetts General Hospital, Harvard Medical School

Major Administrative Leadership Positions

Local

01/09-	Associate Director	Psychiatry Neuroimaging Laboratory, Department of Psychiatry, Brigham and Women's Hospital, Harvard Medical School
09/14-	Co-Director	Center for Morphometric Analysis, Department of Psychiatry, Massachusetts General Hospital, Harvard Medical School
09/17-	Co-Director	Stuart T. Hauser Research Training Program in Biological and Social Psychiatry, Harvard Medical School.

Committee Service

Local

2014-	Steering Committee for Psychiatric Research (member)	Massachusetts General Hospital
2014-	Department of Psychiatry Research Committee (member)	Massachusetts General Hospital
2015-	Lurie Center for Autism Scientific Advisory	Harvard Medical School

	Board (member)	
2016-	HMS Psychiatry Research Committee (member)	Harvard Medical School
2017-	BWH Department of Psychiatry Residency Research Search Committee (member)	Brigham and Women's Hospital

National and International

2014-	Program Committee (member)	International Congress of Schizophrenia Research, Colorado Springs, Colorado

Professional Societies

1995-2000	*Polish Radiological Society*	Member and President of Young Radiologists Society, 1999
2004-	*New York Academy of Sciences*	Member, lecturer and co-author of book chapter in NYAS proceedings
2005-	*World Federation of Societies of Biological Psychiatry*	Member, reviewer for the WFSBP journal
2005-	*Society of Biological Psychiatry*	Member
2007-	*Schizophrenia International Research Society*	Member, reviewer for the Young Investigator Award applications (2007, 2009) Reviewer for the abstracts (2014)
2007-	*Human Brain Mapping*	Member, and Reviewer for Conference Abstracts
2008	*MICCAI (Medical Image Computing and Computer Assisted Intervention Society)*	Reviewer for Conference Abstracts
2014	*American College of Neuropsychopharmacology*	Member and Mentor (2017)

Grant Review Activities

2008, 2009	*Welcome Trust*	Ad-hoc grant reviewer
2009, 2012	*Innovational Research Incentives Consortium*	Ad-hoc grant reviewer
2011, 2012	*National Medical Research Council*	Ad-hoc grant reviewer
2013-	*ITVA NIMH Study Section*	Committee Member
2014, 2015	*Brain Canada Platform Grants*	Review Committee Member
2014	*Berlin Institute of Health*	Invited Reviewer
2015-	*Charles A. King Trust Postdoctoral Fellowship Program*	Committee Member
2015, 2016	*ZRG1 BDCN-W (03) Special Emphasis Panel NINDS Study Section*	Ad-hoc grant reviewer
2016, 2018	*ZMH1 ERB D-03 Special Emphasis Panel NIMH-NIA Study Section*	Ad-hoc grant reviewer
2018, 2019	*CNBT Study Section*	Ad-hoc grant reviewer

Editorial Activities

Ad Hoc Reviewer:
Psychiatry Research: Neuroimaging
American Journal of Psychiatry
Archives of General Psychiatry
Cerebral Cortex
Brain
Human Brain Mapping

Schizophrenia Bulletin
Schizophrenia Research
Biological Psychiatry
Neuroscience Letters
Neuroimage
Lancet
Journal of Magnetic Resonance Imaging
European Archives of Psychiatry and Clinical Neuroscience
Harvard Review of Psychiatry
Neurobiology of Disease
Medical Science Monitor
IEEE Transactions on Medical Imaging
National Medical Research Council
The Engineering in Medicine and Biology Conference
American Journal of Medical Genetics
Brain Imaging and Behavior
Neuropsychobiology
Neuropsychologia
The International Journal of Neuropsychopharmacology
Journal of Neuroscience
Cortex
Molecular Psychiatry
JAMA Psychiatry
Neuropsychopharmacology

Other Editorial Roles

2008-	Editorial Board Member	*Psychiatry Research: Neuroimaging*
2008-	Associate Editor	*BMC Psychiatry*
2011, 2013	Guest Editor	*Schizophrenia Research and Treatment*
2014, 2015	Guest Editor	*Schizophrenia Research*
2014-	Editorial Board Member	*Brain Imaging and Behavior*
2015-	Editorial Board Member	*Journal of Neuroimaging*
2015-	Founding Editorial Board Member	*Journal of Neuroimaging, Psychiatry and Neurology (JNPN)*

Honors and Prizes

1997	Travel Award	Batory Foundation	
1998	Young Radiologist Award	The European Seminars in Diagnostic and Interventional Radiology	
1999-2000	Research Award	The Kosciuszko/Fulbright Foundation	
2000	Mysell Award	Consolidated Department of Psychiatry, Harvard Medical School	The best poster presentation
2001	Young Scientist Award	11th Biennial Winter Workshop on Schizophrenia	
2001	Grable Investigator Award	Grable Foundation	
2003	Wodercroft Investigator Award	Wodercroft Foundation	
2004	Travel Award	American College of Neuropsychopharmacology	
2013-14	Award to Sustain Research	Biomedical Research Institute	

	Excellence	
2014	American College of Neuropsychopharmacology	Member

Report of Funded and Unfunded Projects

Funding Information

Past

1994-2004 Investigator- *Computerized Image Analyses of MR Scans in Schizophrenia*
NIH/NIMH 2R01 MH 50740-06 (PI- Martha E. Shenton)
The goals of this grant are to define and to localize further brain abnormalities in the temporal lobe in patients afflicted with schizophrenia.

1993-2003 Investigator- *Neurophysiological Studies of Schizophrenia*
NIH/NIMH RO1 MH40799-09 (PI- Robert W. McCarley)
The goal of this study is to understand the neurophysiological basis of schizophrenia.

2001-2003 Principal Investigator ($60,000 total direct costs)- *A magnetic Resonance Diffusion Tensor Study of the Cingulate Fasciculus in Schizophrenia*
NARSAD
The goal of this study is to use DTI to evaluate, in vivo, the cingulate fasciculus in patients diagnosed with schizophrenia.

2003-2006 Principal Investigator ($60,000 total direct costs)- *Understanding the Nature of White Matter Abnormalities in Cingulate Fasciculus in Schizophrenia*
NARSAD
The goal of this study is to use DTI and MTR to better understand abnormalities detected previously within the cingulate fasciculus in patients diagnosed with schizophrenia.

2003-2006 Principal Investigator ($100,000 total direct costs) - *White Matter Myelin Abnormalities in Schizophrenia*
NIMH R03 MH068464-01
The goal of this study is to use various MRI *in vivo* techniques to better understand white matter myelin abnormalities in patients diagnosed with schizophrenia.

2006-2007 Principal Investigator ($20,000 total direct costs) - *Fronto-Temporal Connectivity in Schizophrenia*
William F. Milton Fund Award, Harvard Medical School
The goal of this study is to use Diffusion Tensor MRI and various post processing techniques to differentiate and measure Inferior Occipito-Frontal and Uncinate Fasciculi, fibers connecting frontal and temporal lobes, and the relationship between their integrity and clinical and cognitive abnormalities observed in chronic schizophrenia.

1994-2009 Investigator- *Computerized Image Analyses of MR Scans in Schizophrenia*
NIH/NIMH 2R01 MH 50740-06 (PI- Martha E. Shenton)
The goals of this grant are to define and to localize further brain abnormalities in the temporal lobe in patients afflicted with schizophrenia.

1994-2009 Investigator- *Computerized Image Analyses of MR Scans in Schizophrenia*
NIH/NIMH 2R01 MH 50740-06 (PI- Martha E. Shenton)
The goals of this grant are to define and to localize further brain abnormalities in the temporal lobe in patients afflicted with schizophrenia.

2007-2010 Core Principal Investigator ($820,000 total direct costs)- *Velocardiofacial Syndrome as a Genetic Model of Schizophrenia*
National Alliance for Medical Imaging Computing (NA-MIC), U54 GM072977-01, NIGHS/NIH

(PI: Ron Kikinis) The goal of this large study is to develop software and methodology for clinical studies. The goal of Dr. Kubicki's Core is to develop software that would be later used to study anatomical brain connectivity in VCFS and schizophrenia patients.

1994-2010 Investigator- *Biological Basis of Schizotypal Personality Disorder*
NIH/NIMH2R01 MH52807-14 (Co-PIs- Robert W. McCarley, Martha E. Shenton)
The major focus of this project is ERP and MRI studies of schizotypal personality disorder subjects.

2009-2013 Investigator- *Neuroimaging Leadership*
Department of Defense: The Harvard Clinical Defense Consortium (HCDC): PTSD/TBI Clinical Consortium (PIs- Martha E. Shenton, Ron Kikinis, Bruce Rosen)
The main goal is to establish imaging sequences at each of the consortium sites.

2011-2013 Investigator- Modification of the neuroimaging leadership core to perform post processing MRI
W81XWH-07-CC-CS-DoD (PIs- Martha E. Shenton, Ron Kikinis, Bruce Rosen)
The main goal of this subaward is to perform the post processing of images to provide dependent measure of interest based on hypotheses determined by the larger clinical consortium.

2011-2013 Investigator- A randomized clinical trial of Glyburide for TBI
W81XWH-07-CC-CS-DoD (PI- Howard Eisenberg)
The main goal of this subaward is develop algorithms for the imaging component of this study.

2012-2013 Investigator- Neurochemical and Multimodal Biomarkers for CTE
CIMIT (PI- Alexander P. Lin)
The goal of this project is to examine the clinical presentation and biomarkers that accompany chronic traumatic encephalopathy (CTE; also known as dementia pugilistica), a preventable cause of dementia. CTE is caused by repetitive head trauma, including both concussive and sub-concussive blows to the head, such as those experienced by the millions of youth, high school, college, and professional athletes involved in contact sports.

2007-2014 Investigator- *Vulnerability to Progression in Schizophrenia*
1P50MH080272-01 (PI- Robert W. McCarley)
This CIDAR application proposes four projects and four cores to test the hypothesis that schizophrenia is characterized by progressive decline in brain neurocognitive and executive functions.

2009-2013 Investigator- *Neuroimaging Leadership*
Department of Defense: The Harvard Clinical Defense Consortium (HCDC): PTSD/TBI Clinical Consortium (PIs- Martha E. Shenton, Ron Kikinis, Bruce Rosen)
The main goal is to establish imaging sequences at each of the consortium sites.

2009-2014 Investigator- *MR Brain Diffusion Tensor Imaging in Schizophrenia*
Veterans Administration Merit Review (PI- Martha E. Shenton)
The major goal of this project is to develop DTI technology and to understand schizophrenia.

2011-2016 Investigator- *Fetal Hormonal Programming of Sex Differences in Aging of the Memory Circuitry*
NIH 3R01MH090291-01 (PI- Jill Goldstein)
The main goal is to evaluate in humans the impact of fetal risk factors known to affect aging, on sex-specific adult memory deficits related to loss of estrogenic support.

2013-2016 Co-Investigator- *Free-Water as a Novel Imaging Biomarker for the Investigation of Inflammation and Degeneration Dynamics in Schizophrenia*
National Alliance for Schizophrenia and Depression Young Investigator Award
(PI: Dr. Ofer Pasternak; Co-Mentors: Drs. Martha E. Shenton and Marek Kubicki

Current

2013-2018 Principal Investigator ($1,250,000 total direct costs) - *Neural substrates of diffusion imaging in cognitively aging rhesus monkeys*
1R01 AG04252 (PIs: Kubicki-contact, Nikos Makris, Douglas Rosene)
The objective of this project is to develop and to validate on animal model imaging diffusion biomarkers of brain maturation, degeneration and aging.

2014-2019 Principal Investigator ($1,490,000 total direct costs)- *Diffusion Imaging Biomarkers for Risk, Onset & Outcome in Schizophrenia*

R01 MH102377
The main goal of this proposal is to establish imaging biomarkers that would characterize schizophrenia risk, be specific to onset of psychosis, and predict outcome of disease.

2016-2018 Co-Principal Investigator ($275,000 total direct costs)- *Effects of Curcumin on Frontal Circuitry in Aging Monkeys using MRI Connectome*
R21 AT008865 (PIs: Nikos Makris-contact, Marek Kubicki)
The main goal of this proposal is to evaluate the antioxidative and anti-inflammatory role of curcumin treatment in animal model of aging.

2007-2022 Investigator- *Novel DT-MRI Analyses if White Matter in Schizophrenia*
NIH R01 M074794 (PI- Carl-FredrikWestin)
The objective of this project is to develop and apply novel Diffusion Tensor Magnetic Resonance Imaging (DT-MRI) group analysis methods, in order to detect and localize white matter brain abnormalities in schizophrenia.

2016-2018 Investigator- *Imaging White Matter Maturations and Genetic High Risk for Schizophrenia*
NIH R03 M074794 (PI- Amanda Lyall)
This application aims to understand the neurodevelopmental timeline of structural aberrations in white matter tracts that may be related to specific neurocognitive deficits in individuals at genetic high risk for schizophrenia. The PI and investigators of this proposal will apply cutting-edge image analysis methodologies to already collected diffusion weighted images and relate it to neurocognitive data from three unique cohorts of genetic high-risk for schizophrenia individuals and matched healthy controls with ages which span the course of early development: Infancy, Childhood, Early Adulthood.

2017-2022 Principal Investigator ($874,715 total direct costs)- *Mentoring and Neuroimaging Research on White Matter pathology in Schizophrenia*
NIH K24 MH110807 (PI- Marek Kubicki)
The grant will support mentoring and training of both the PI and the talented junior clinical scientists in translational research aimed at understanding biological mechanisms of brain pathology affecting white matter connectivity in schizophrenia.

2018-2023 Co-Principal Investigator ($2,231,000 total direct costs)- High Resolution, Comprehensive Atlases of the Human Brain Morphology
NIH R01 MH112748-01 (PIs- Sylvain Bouix-contact, Marek Kubicki, Nikolaos Makris)
The aim of this grant is to develop and disseminate state-of-the-art, high-resolution full brain anatomical atlases, based on the manual parcellation of MRI images provided by the Human Connectome Project. This atlas will be made compatible with anatomical nomenclature, easily portable to the majority of neuroscience tools and software platforms, and editable, so other experts can contribute their anatomical knowledge to the tool. The availability of such an atlas will greatly advance research in brain morphometry, function and connectivity.

Report of Local Teaching and Training

Teaching of Students in Courses

2005-2013, 2014-	Clinical Applications of Diffusion MRI Seminars. 10-15 students and fellows	Psychiatry Neuroimaging Laboratory, HMS. 2 hours a week

Formal Teaching of Residents, Clinical Fellows and Research Fellows (post-docs)

2006	Uncinate Fasciculus and its abnormalities in schizophrenia, *presentation for 1st and 2nd year Psychiatry Residents*,	*Brigham and Women's Hospital, HMS*, Boston, MA, 4 hours
2008	Invited speaker, "Diffusion Tensor Imaging in Schizophrenia," *Summer School course in Neuroscience*.	*Harvard University*, 4 hours
2012, 2013,	Imaging Methods, class for PG-II Harvard	VA Brockton, 2 hours

2014	Psychiatry Residents	
2013, 2014, 2012-	MRI and Schizophrenia, Harvard Psychiatry Clinical Research Training Program Preceptor	HMS, 2 hours

Clinical Supervisory and Training Responsibilities

2012-	Clinical Research Training Program- Psychiatry, HMS- Preceptor	Supervising Trainees- 4-5 hours a week
2017-	Clinical Research Training Program- Psychiatry, HMS- Co-Director	Running weekly seminars, overseeing training of the mentees- 4 hours a week

Laboratory and Other Research Supervisory and Training Responsibilities

2005-	Supervision and training of students, research assistants, postdocs and fellows	16 hours a week. Currently supervising 8 visiting scholars/professors, 2 HMS instructors, 3 HMS assistant professors and 2 HMS postdocs. I also supervise 1-2 PhD thesis a year (BU Neuroscience Program, MIT Artificial Intelligence Program, Texas Tech Neuroscience Program)

Formally Supervised Trainees

2001-2004	Hae-Jeong Park- postdoc at BWH. He has written several publications under my direct supervision. Currently he is Professor in the Department of Nuclear Medicine, Department of Radiology and Psychiatry, Biomedical Science & Engineering, Yonsei University College of Medicine, South Korea.
2001-2004	Noriomi Kuroki - BWH postdoc. He has written two first author papers under my supervision. Currently he is Associate Professor in Japan.
2002-2007	Motoaki Nakamura- BWH postdoc. He has written 5 publications under my supervision. Currently he is Assistant Professor in Japan.
2006-2007	Gudrun Rosenberger- BWH Visiting Professor. She has written two publications under my direct supervision. Currently she is Professor and Director of a research laboratory at the University in Innsbruck, Austria.
2006-2007	Marc Niethammer- BWH postdoc. He has written several publications where I assisted in supervision. He is currently Assistant Professor in the Computer Science Department at the University of North Carolina and he remains an active collaborator of PNL.
2006-	Jennifer Fitzsimmons- BWH postdoc. She has written several publications under my direct supervision. She is currently an Instructor in the Department of Psychiatry at Harvard Medical School.
2006-2007	BumSeok Jeong- BWH postdoc. He has written several publications, including one of the first papers showing anticorrelations in functional MRI. He is currently Associate Professor at KAIST in Korea, and remains an active collaborator.
2007	Aristotle Voineskos- BWH postdoc. He tested and validated a new analytic protocol, and published the results of this study under my supervision. He is currently Associate Professor in the Department of Psychiatry at University of Toronto. He remains an active collaborator.
2008-2011	Thomas Whitford- BWH postdoc. He has written several publications where I have been involved as a supervisor; see my list of publications. He received the prestigious NARSAD award for young investigator. He is currently Assistant Professor of Psychology in the Psychology Department at

	Melbourne University, Australia.
2008-2012	Jason Schneiderman- CRTP fellow, BWH postdoc. He has been involved in a large project grant on schizophrenia, working under my supervision. Currently he is an investigator at NASA.
2009-	Ofer Pasternak- Fulbright scholar, Harvard postdoc. He has written several publications, including the first paper to demonstrate inflammatory processes in schizophrenia in vivo. He received a prestigious NARSAD award for young investigator. Currently he is Assistant Professor in Psychiatry and Radiology at Harvard Medical School and Visiting Professor at TelAviv University.
2012-2013	Jessica Zhu- honors thesis student at Harvard, Class of 2013. She conducted research for her thesis under my supervision, and this paper has been published. Currently she is a medical student at Yale University.
2014-	Amanda Lyall- CRTP fellow, Harvard postdoc. She is working on the longitudinal analysis of several schizophrenia imaging datasets. While under my direct supervision, she received a Harvard Livingston Award and an NIMH R03, as well as published 3 first author papers. Currently she is Instructor in Psychiatry at Harvard Medical School.
2014-2015	Johanna Seitz- University of Munich medical student (Class of 2018). She has published 5 papers under my supervision.
2014-2015	Yingying Tang- Shanghai Mental Health Medical Center postdoc. She is working on imaging project related to clinical risk for schizophrenia. Currently she is Associate Professor at Shanghai Medical University.
2014-2017	JungSun Lee- BWH Visiting Professor. He is working on subject specific diffusion data analysis in schizophrenia, has published 2 papers under my supervision.
2015-2017	Carissa Tuozo, Masters Thesis student from Emanuel College, working on bipolar disorder project. Working as Research Assistant at MGH.
2015-	Madhura Baxi, PhD Student from Boston University, working on neuroimaging data from rhesus monkeys.
2016-2017	Ana-Maria Rivas- BWH and MGH postdoc. Has written and submitted 3 papers under my supervision. Currently Psychiatry resident at Baylor School of Medicine.
2016-	Suheyla Cetin- BWH postdoc. She joined our laboratory in October 2016, and is involved in the data harmonization on my R01 grant.
2017-	Natalia Chunga- BWH postdoc. She joined our laboratory in May, and is working on a large collaborative project with me in conjunction with the department of Endocrinology at MGH.

Formal Teaching of Peers. No presentations below were sponsored by outside entities.

2008	Invited Speaker, "Advances in MRI and DTI Findings in Schizophrenia," *VA Boston Healthcare System/Harvard Grand Rounds*.	1, Brockton, MA.
2008	Invited Speaker, "MRI and DTI Findings in Schizophrenia," *Harvard Longwood Psychiatry Grand Rounds Conference*.	1, Harvard Medical School Department of Psychiatry.
2014	Symposium (Speaker and Chair), "Diffusion Tensor Imaging, theory and clinical applications," given to research fellows at *McLean Hospital.*	1, McLean Hospital, Boston, MA
2014	Invited Speaker, "Diffusion Tensor Imaging, theory and clinical applications," given to research fellows at *McLean Hospital*.	1, McLean Hospital, Boston, MA
2016	Invited Speaker, "Diffusion Biomarkers of White Matter Pathology in First Episode and Chronic Schizophrenia," given to research fellows at MGH.	1, MGH Hospital, Boston, MA
2018	Invited Speaker, "Imaging Biomarkers of White Matter Pathology in Schizophrenia," given to research fellows at BWH.	1, BWH Hospital, Boston, MA

Local Invited Presentations. No presentations below were sponsored by outside entities.

2000 Invited Speaker: "Magnetization Transfer Contrast-MRI technique and applications." *Brigham and Women's Hospital*, HMS, Boston, MA.

2005 Invited Speaker: "A Functional Imaging Study of Semantic Encoding in Schizophrenia," *Surgical Planning Laboratory Journal Club, Department of Radiology Brigham and Women's Hospital, Harvard Medical School*, Boston, MA.

2006 Invited Speaker: "Diffusion Tensor Imaging and DT Tractography in Psychiatric Research," *Neuroscience Seminar Series, Mass General Hospital, Charlestown*, Boston, MA.

2007 Invited speaker: "Neuroimaging Applications to Psychiatric Disorders," *Brigham and Women's Hospital, Biomedical Research Institute, Imaging Program Seminar Series*. Boston, MA.

2007 Presentation for students and postdocs: "Anatomical Disconnection in Schizophrenia, Evidence from DTI," *Psychiatry Neuroimaging Laboratory, Department of Psychiatry, HMS*, Boston, MA.

2008 Invited speaker, "Diffusion Tensor Imaging Findings in Schizophrenia," *Massachusetts Mental Health Center Research Grand Rounds, Department of Psychiatry*, Harvard Medical School.

2010 Invited Speaker, "White Matter Findings in Schizophrenia and Related Disorders." Psychiatry Genetics and Translational Research Seminar, Department of Psychiatry, Massachusetts General Hospital, Boston, MA.

2014 Invited Speaker, "White Matter Pathology in Schizophrenia Revealed by Diffusion Tensor Imaging- Methods and Findings." Early Psychosis Initiative, McLean Hospital, Boston, MA.

2015 Invited Speaker, "Diffusion Tensor Imaging, and neuroinflammation in schizophrenia," given to staff of psychiatric ward at *Beth Israel Deaconess Center*.

2016 Invited Speaker, "Diffusion Biomarkers of Acute and Chronic Schizophrenia," given at the *MGH Neuroinflammation think-tank*.

2016 Invited Speaker, "Diffusion MRI in Acute and Chronic Schizophrenia- Evidence for Neuroinflammation?," given to the Schizophrenia Research group at *MGH*.

Report of Regional, National and International Invited Teaching and Presentations

Invited Presentations and Courses. No presentations below were sponsored by outside entities.

Regional

2003 Invited Speaker: "White Matter Abnormalities in Schizophrenia," *Department of Psychology, UMass Boston*, MA.

2008 Invited speaker, "MRI Findings in Schizophrenia," *Program in Biomedical Neuroscience, Department of Pharmacology and Experimental Therapeutics, Boston University School of Medicine*, Boston, MA.

2009 Invited Speaker, "DTI Findings in Schizophrenia," School of Pharmacology, University of Rhode Island, Kingston, RI.

2011 Invited Speaker, "Diagnostic and Prognostic Indicators of Traumatic Brain Injury." Exploring Diagnostic, Therapeutic, and Rehabilitative Strategies in NeuroHealth, TBI, and PTSD. Center for Integration of Medicine and Innovative Technology (CIMIT), Boston, MA.

2013 Invited Speaker, "Advanced Imaging in Mild TBI" at the 93rd New England Roentgen Ray Society, Boston, MA.

2015 Invited Speaker, "Diffusion Tensor Imaging, and Risk for schizophrenia," given to psychology students at Tufts University.

National

2004 Invited Speaker: "DTI findings in schizophrenia." DTI Workshop, *New York Academy of Sciences*, New York, NY (talk published as a book chapter).

2005 Invited Speaker: "From Acquisition to Analysis, Potential and Limitations of Diffusion tensor Imaging," *European College of Neuropsychopharmacology* Symposium, Chicago, IL.

2006 Invited Speaker: "Anatomical Disconnection in Schizophrenia, Evidence from DTI," *Nathan Kline Psychiatry Research Institute*, Orangeburg, NY.

2007 Discussant for "DTI Update", all hands meeting of the *National Alliance for Medical Imaging and Computing*, Salt Lake City, Utah.

2007 Invited Speaker, "Longitudinal diffusion tensor imaging (DTI) of white matter changes in schizophrenia," *International Congress of Schizophrenia Research*, Colorado Springs, CO.

2007 Discussant for "DTI Update," all hands meeting of the *National Alliance for Medical Imaging and Computing*, Salt Lake City, Utah.

2009 Oral Presentation, "Anterior cingulate and paracingulate abnormalities in schizophrenia." Society for Neuroscience Meeting, Chicago, IL.

2011 Oral presentation, "Diagnosis of Diffuse Axonal Injury with Diffusion Tensor Imaging," 3rd Federal Interagency Conference on TBI, Washington DC.

2011 Oral presentation, "Diffusion Imaging Reveals Two Spatially Separable Mechanisms In Mild TBI." 3rd Federal Interagency Conference on TBI, Washington, DC.

2011 Invited Speaker, "White Matter Changes in First Episode Schizophrenia." Presented as part of a symposium on findings from the CIDAR first episode study of schizophrenia, entitled, "Vulnerability to Progression in Schizophrenia." International Congress of Schizophrenia Research, Colorado Springs, CO.

2011 Chair, Symposium on Multi-Modal Findings in Schizophrenia. International Congress of Schizophrenia Research (ICOSR), Colorado Springs, CO.

2014 Invited Speaker, "Callosal Tract Geometry in Non-psychotic Familial High-risk Subjects- DTI Study." ACNP Annual Meeting, Phoenix, Arizona.

2015 Symposium Chair and Invited Speaker, "White matter and Schizophrenia," ICOSR, Colorado Springs, Colorado.

2015 Symposium Chair, "Neuroimaging in schizophrenia," ICOSR, Colorado Springs, Colorado.

2017 Invited Speaker, Panel: "Structural and Functional Correlates of Diffusion Tensor Imaging. Are We Close to Quantifying In-Vivo Brain connectivity?" 50th Meeting of Winter Conference on Brain Research, Big Sky, Montana.

International

2005 Invited Speaker: "Anatomical Disconnection in Schizophrenia, Evidence from DTI," *World Congress of Biological Psychiatry (WCBP)*, Vienna, Austria.

2005 Invited Speaker: "Executive Attentional Network- Functional Activation and Anatomical Integrity in Schizophrenia," *Human Brain Mapping* Conference, Florence, Italy.

2005 Paper Presented: *International Postgraduate Programme in Life and Health Sciences on Imaging in Neuropsychiatric Research, University of Minho*, Braga, Portugal, "Diffusion Tensor Imaging Applied to Schizophrenia: A New Technique for Exploring White Matter Abnormalities," Braga, Portugal.

2005 Paper Presented: *International Postgraduate Programme in Life and Health Sciences on Imaging in Neuropsychiatric Research, University of Minho*, Braga, Portugal, "ERP, MRI, DTI, and Cognitive Abnormalities in Schizotypal Personality Disorder."

2007 Invited Speaker: "DTI findings in schizophrenia," *Department of Psychiatry, University of Toronto School of Medicine*, Toronto, Canada.

2008 Invited Speaker: "Cingulum Bundle and Uncinate Fasciculus and their Involvement in the Neuropathology of Schizophrenia: Evidence from Diffusion Tensor Imaging." *International Schizophrenia Conference*, Venice, Italy.

2008 Paper Presented: "Uncinate Fasciculus and Cingulum bundle findings in First Episode Schizophrenia and First Episode Bipolar Disorder: A Diffusion Tensor Imaging Study." *16th European Congress of Psychiatry*, Nice, France.

2008 Plenary Talk*: XI Turku PET Symposium*: New Targets in Molecular Imaging, "Advances in White Matter Imaging," Turku, Finland.

2008 Paper Presented: "Advances in Diffusion Tensor Imaging in Schizophrenia," presented at the *Brain Imaging Symposium, New Concepts in Structural and Functional Imaging, IBILT Faculdade de Medicine, Amfiteatro, Center for Neuroscience and Cell Biology, University of Coimbra*, Coimbra, Portugal.

2008 Paper Presented: "DTI Applications to Schizophrenia," *Department of Psychology and Radiology, University of Minho*, Braga, Portugal.

2008 Invited speaker on "Advances in white matter imaging in schizophrenia." *21st European College of Neuropsychopharmacology Congress*, Barcelona, Spain.

2009 Invited Speaker, symposium chair, "Advances in DTI and Its Applications to Schizophrenia," presented at the *International Congress of World Psychiatric Association*, Florence, Italy.

2009 Symposium Speaker, "New Methods for Assessing Whole Brain DTI Abnormalities in Schizophrenia," presented at the *International Congress of World Psychiatric Association*, Florence, Italy.

2011 Co-Chair, Symposium entitled "A Multimodal Imaging Approach to Investigating the Structural Basis of Aberrant Brain Connectivity in Patients with Schizophrenia." 10th World Congress of the World Federation of Biological Psychiatry, Prague, Czech Republic.

2012 Invited Speaker, "Identification of Neuroinflammation in Mild Traumatic Brain Injury Using a Free Water Atlas," 9th World Congress on Brain Injury (IBIA), Edinburgh, Scotland.

2012 Paper presented, "Estimation of Extracellular Volume from Regularized Multi-Shell Diffusion MRI." MICCAI, Nice, France.

2013 Invited Speaker, "Beyond "white matter integrity"- new advances in DTI studies in schizophrenia," Kansai University, Osaka, Japan (sponsored by Osaka Pharmaceuticals).

2013 Chair, Symposium entitled: "New Developments in White Matter Imaging in Schizophrenia, Towards Understanding Underlying Pathology." WFSBP, Kyoto, Japan.

2014 Invited Speaker: "Novel DTI White Matter Methods and Measures and their applications to Schizophrenia," Shanghai Mental Health Medical Center, Shanghai, China.

2015 Co-Chair, Symposium entitled: "Neuroimaging Biomarkers of Risk for Schizophrenia." World Congress of the World Federation of Biological Psychiatry, Athens, Greece

2018 Invited Speaker, Symposium entitled: "Neurobiological and Cortical Network Disturbances Underlying Schizophrenia Onset". *International Schizophrenia Conference*, Venice, Italy

2018 Invited Plenary Speaker. *International Congress on Psychopharmacology*, Antalya, Turkey

Report of Scholarship

Publications

Peer reviewed publications in print or other media

Research Investigations

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Narrative Report

SUMMARY OF ACTIVITIES AND ACHIEVEMENTS: I am a trained Radiologist and MR physicist, and have dedicated my research career to understanding the neurobiology of white matter and changes in white matter associated with neuropsychiatric diseases, most particularly in schizophrenia. Over the last 17 years, since joining the Department of Psychiatry at Harvard Medical School, I have been instrumental in establishing a clinical neuroimaging program. One of my main contributions to the field of clinical neuroimaging has been to provide evidence for white matter changes in schizophrenia pathology, which has shed further light on microstructural and biological underpinnings of such abnormalities. Another contribution I have made is to extend the work in white matter to investigate brain connectivity disturbances in neuropsychiatric diseases. Currently, my research is funded by three R01 NIH grants (where I am a PI or co-PI), an R21 grant (where I am co-PI), as well as a K24 NIMH grant. Each of these grants provide training opportunities, and approximately 20% of my time is dedicated to teaching and mentoring undergraduate and graduate students, postdoctoral fellows, and visiting scholars from around the world. I am also co-directing two laboratories (the Psychiatry Neuroimaging Laboratory at BWH, and the Center for Morphometric Analysis at MGH). Of note, I was one of the founders of the Psychiatry Neuroimaging Laboratory. Administrative duties, including committee membership, and reviewing both grants and papers for journals take an additional 15-20% of my time.

AREA OF EXCELLENCE: My area of excellence is in investigation. I have been in the forefront of the field in schizophrenia in investigating the importance of white matter alterations in schizophrenia pathology. My recent studies have also shed light on microstructural and morphological changes that are likely associated with white matter abnormalities that are relevant to the time-course of schizophrenia. My collaborators and I have further suggested that the degree of myelin degeneration, as well as neuroinflammation, can be measured in vivo using MRI, and that both of these pathologies play an important role in the pathophysiology of schizophrenia. These studies have not only suggested possible biological mechanisms of psychosis, but also possible new targets for pharmacological treatment.

Since my arrival at Harvard in 1999, I have also been involved in functional MRI. Here I have studied attention and working memory, where I have investigated correlations and anti-correlations in the functional signal, as well as used sophisticated classification models for resting state fMRI. Recently, I have focused on the correspondence between functional and structural connectivity, or more broadly, the relationship between structure and function of the brain. This field is relatively new and unexplored, and my publications thus far are showing great promise in this area.

Besides clinical investigations, I, along with members of my research team, have been at the forefront of MR technology development. This work requires a deep understanding of what the field needs, as well as an understanding of each method, including their advantages and shortcomings. My technical background (i.e., training in radiology and a PhD in MR physics), has allowed me to lead the development of acquisition and analytic neuroimaging methods. For example, I led the first quantitative

comparison and validation of line-scan diffusion MRI, a method that makes possible high spatial resolution data collection without spatial distortions. I also led the development of several tractography algorithms (including Stochastic and Finsler tractography), which are being used to quantify anatomical connectivity in a more robust and more anatomically accurate manner than the more popular streamline tractography. These methods are now being used to improve the specificity and sensitivity of clinical studies into white matter, not only in schizophrenia, but also in other neuropsychiatric disorders.

I am thus one of the leading experts in applying neuroimaging to neuropsychiatric disorders. I am involved in the larger research community where I frequently review papers, conference abstracts and grants. I have also been invited to give talks about my research at both national and international meetings, and I have organized and chaired symposia for large neuroscience, psychiatric and neurobiological congresses. All of these activities provide evidence of recognition by my peers for my role as a productive researcher in neuroimaging studies of neuropsychiatric disorders. Additionally, I am on the editorial board of 6 major psychiatric and neuroimaging journals, and I am a member of numerous local, national, and international committees. With respect to the latter, I review NIH grants as part of the ITVA NIMH, and BDCN NINDS study sections. I also review grants for Brain Canada, and for the Charles A. King Trust Postdoctoral Fellowship Program review committee. Additionally, as noted previously, I am a Principal Investigator on three R01 NIH grants. The first is funded by NIMH, where I use novel imaging methodologies and a mega-data approach to study brain changes in several schizophrenia related populations. Our recent paper focusing on the ability of neuroimaging to predict clinical outcome after pharmacological treatment in first episode schizophrenia, has recently been published in *Molecular Psychiatry*, one of the highest impact factor journals in Psychiatry (IF 13.2). My second R01 is funded by NIA, where I study brain changes in imaging and histological samples of rhesus monkeys to understand further the role of such changes in development, maturation, and aging. Finally, recently funded third R01 is focusing on developing new generation of cortical human brain mapping. All these grants have technical, clinical, and translational elements. Further, because I work at the interface of computational and clinical neuroscience, I have been able to attract many collaborators from multiple disciplines and countries to work with me on these projects.

Over the course of my career, I have authored or co-authored 127 original research publications in peer-reviewed journals, 9 peer reviewed review articles, 4 book chapters, 5 invited opinion articles and 3 letters to the editor. I have also been editor of four special issues for journals. I have published in journals with highest impact factors in my field, including *Archives of General Psychiatry* (now *JAMA Psychiatry*, IF 15.3), the *American Journal of Psychiatry* (IF 13.5), *Biological Psychiatry* (IF 11.2), *Journal of Neuroscience* (IF 6.3), *Cerebral Cortex* (IF 8.3), *Human Brain Mapping* (IF 4.5) and *NeuroImag*e (IF 5.8). My publications have also been lead articles in *HBM* and *NeuroImage*, and my review article on DTI findings in schizophrenia has been in the top 1% of the most cited papers in neuroscience in 2007.

TEACHING AND EDUCATION: Much of the work described above was conducted with my mentees taking the lead. I have an enduring and longstanding commitment to teaching and mentorship. I have played a lead mentoring role in the imaging and clinical cores of fBIRN, NAMIC, and CIDAR projects, as well as in teaching, supervising, and mentoring students, interns, residents, visiting fellows and junior faculty. In my laboratories (Psychiatry Neuroimaging Laboratory at BWH and Center for Morphometric Analysis at MGH), I am running weekly seminars, and I teach residents, clinical fellows, and research fellows (at VA Brockton, Brigham and Women's Hospital, and Harvard Medical School). Since 2012, I have been a preceptor in the T32 training program, the Stuart T. Hauser Clinical Research Training Program in Biological and Social Psychiatry at Harvard Medical School. This year 2017, I have been asked to act as a co-director of this program, after one of its directors, Robert McCarley, passed away. I am currently also supervising 8 visiting scholars, 2 HMS instructors, 3 HMS assistant professors, and 2 HMS postdocs. I also supervise 1-2 PhD theses per year. In fact, I recently received a NIMH K24 award, which is intended to support "outstanding mentors with national reputation in the patient oriented research." This award will allow me to focus more on mentoring the next generation of clinical scientists.

My research is intensely collaborative, requiring expertise from a number of disciplines. Consequently, mentorship is often a team effort. My mentees greatly enrich my work and extend it in new directions, often serving as a bridge between my laboratory and those of my collaborators with more technical (e.g., Drs. Westin, Kikinis, Golland), more clinical (e.g., Dr. Nestor), or even more basic neuroscience expertise (e.g., Dr. Rosene). Such a diversity with respect to scientific approaches makes it possible to incorporate new methods and to bring to bear new knowledge in addressing clinically relevant questions.

SUMMARY: My technical background (expertise in radiology, anatomy, MR physics) has allowed me to build an independent, well-funded translational research program that seeks to investigate brain abnormalities in neuropsychiatric disorders using state-of-the-art neuroimaging techniques. The application of such techniques to neuropsychiatric disorders will lead to a better understanding of their biological underpinnings as well as make them more tractable to treatment and prevention. Over the last two decades, I have built a network of collaborators, with a wide range of expertise to focus on important clinical questions that will hopefully yield answers to some of the most important neuroscientific questions. My work is internationally recognized, and I participate in scientific, administrative, and training activities at Harvard as well as at the national and international level. I also have a track record of federal and private funding.