BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors in the order listed on Form Page 2.
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NAME	POSITION TITLE
Kerchner, Geoffrey Allen	Assistant Professor of Neurology and Neurological Sciences at Stanford University Medical Center
eRA COMMONS USER NAME (credential, e.g., agency login) kerchner.geoffrey	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	MM/YY	FIELD OF STUDY
Harvard College	AB (*summa*)	06/1994	Biochemical Sciences
Washington University, St. Louis	MD	05/2003	Medicine
"	PhD	05/2003	Neuroscience
University of California, San Francisco	Internship	06/2004	Medicine
"	Residency	06/2007	Neurology
"	Postdoctoral Fellowship	06/2008	Synaptic Physiology
"	Clinical Fellowship	10/2009	Behavioral Neurology
Amer. Board of Psychiatry & Neurology	Diplomate	06/2008	Neurology

A. Personal Statement

I study the use of neuroimaging technology for diagnosing and tracking Alzheimer's disease and other primary dementing disorders. During my graduate and postdoctoral training, I used patch-clamp electrophysiology to study synaptic plasticity in the hippocampus and other areas at the level of single synapses. During my clinical fellowship, I received training on ultra-high field 7-Tesla MRI and other imaging techniques and showed that atrophy of the synapse-rich hippocampal CA1 apical neuropil area distinguished patients with mild Alzheimer's disease from age-matched controls more sensitively than traditional macroscopic hippocampal volumetrics. Current projects aim to expand upon this knowledge, mapping hippocampal microstructural features that associate with disease and neuropsychological performance. As a scientist who himself has bridged disparate fields, I understand the critical importance of multidisciplinary collaboration to move science forward.

B. Positions and Honors

Positions and Employment

07/2006–06/2007 Chief Resident, Department of Neurology, UCSF
(Advisor: John Engstrom, MD)
07/2007–10/2009 Clinical Instructor, Department of Neurology, UCSF
(Chair: Stephen Hauser, MD)
07/2007–06/2008 Postdoctoral Fellow, Department of Cellular and Molecular Physiology, UCSF
(Advisor: Roger Nicoll, MD)
07/2008–10/2009 Clinical Fellow, Memory and Aging Center, Department of Neurology, UCSF
(Advisor: Bruce Miller, MD)
11/2009–now Assistant Professor of Neurology & Neurological Sciences at Stanford Univ. Medical Center
(Chair: Frank Longo, MD, PhD)

Honors

1990 First Place, Tennessee State Math Contest, Advanced Topics II
1990 Martin Marietta Foundation Scholarship
1990–1994 Harvard College Academic Prizes: Detur Prize; John Harvard Scholarship
1993 Phi Beta Kappa (early election, "Senior 24")
1994–1995 Scientist-in-Residence, Millfield School, England
1995–2003 Washington University Full-Tuition Distinguished Alumni Scholarship

1996–2002 Washington University Academic Prizes: Dr. Richard S. Brookings Medical School Prize; Robert Carter Medical School Prize; Spencer T. and Ann W. Olin Fellowship; Medical Center Alumni Scholarship Fund Prize
1996 Washington University School of Medicine Student Research Fellowship
1997–1998 Howard Hughes Medical Institute Medical Student Research Training Fellowship
2000 Graduate School Travel Awards: Society for Neuroscience Graduate Student Travel Award; American Neurological Association Travel Award
2003 American Academy of Neurology Medical Student Prize
2003 Alpha Omega Alpha
2006 American Academy of Neurology Resident Scholarship
2007–2009 Larry L. Hillblom Foundation Research Fellowship
2009 Honorable Mention, Alzheimer's Association Awards for Young Scientists
2009 McBean Family Foundation Fellowship
2010 Alzheimer's Imaging Consortium Travel Fellowship
2010 NIH Clinical Loan Repayment Program
2011 Alzheimer's Association New Investigator Research Grant

Professional Memberships

1998–now Member, Society for Neuroscience
2005–now Member, American Academy of Neurology
2009–now Member, Alzheimer's Association
2010–now Member, Organization for Human Brain Mapping

Professional Service

2010–now Reviewer, Alzheimer's Association International Grant Program
2012–now Associate Editor, *Journal of Alzheimer's Disease*

C. Selected Peer-Reviewed Publications (from 34 total)

Original research

1. Tang Y-P, Shimizu E, Dube G, Rampon C, **Kerchner GA**, Zhuo M, Liu G, and Tsien JZ. (1999). Genetic enhancement of learning and memory in mice. *Nature* 401: 63–69. PMID: 10485705
2. Li P, **Kerchner GA**, Sala C, Wei F, Huettner JE, Sheng M, and Zhuo M. (1999). AMPA receptor-PDZ interactions in facilitation of spinal sensory synapses. *Nature Neuroscience* 2: 972–977. PMID: 10526335
3. **Kerchner GA**, Canzoniero LMT, Yu SP, Ling, C, and Choi DW. (2000). Zn2+ current is mediated by voltage-gated Ca2+ channels and enhanced by extracellular acidity in mouse cortical neurons. *Journal of Physiology (London)* 528: 39–52. PMID: 11018104
4. Wei F*, Wang G-D*, **Kerchner GA***, Kim SJ, and Zhuo M. (2001). Genetic enhancement of inflammatory pain by forebrain NR2B overexpression. *Nature Neuroscience* 4: 164–169. PMID: 11175877 *Contributed equally.
5. **Kerchner GA**, Wilding TJ, Li P, Zhuo M, and Huettner JE. (2001). Presynaptic kainate receptors regulate spinal sensory transmission. *Journal of Neuroscience* 21: 59–66. PMID: 11150320
6. **Kerchner GA**, Wang G-D, Qiu C-S, Huettner JE, and Zhuo M. (2001). Direct presynaptic regulation of GABA/glycine release by kainate receptors in the dorsal horn: an ionotropic mechanism. *Neuron* 32: 477–488. PMID: 11709158
7. **Kerchner GA** and Zhuo M. (2002). Presynaptic suppression of dorsal horn inhibitory transmission by μ-opioid receptors. *Journal of Neurophysiology* 88: 520–522. PMID: 12091574
8. **Kerchner GA**, Wilding TJ, Huettner JE, and Zhuo M. (2002). Kainate receptor subunits underlying presynaptic regulation of transmitter release in the dorsal horn. *Journal of Neuroscience* 22: 8010–8017. PMID: 12223554
9. **Kerchner GA**, Smith WS, Lawton MT, and Singh V. (2006). Co-occurrence of a cavernous malformation and contralateral moyamoya. *Neurology* 66: 1601–1602. PMID: 16717235

10. Menuz K*, **Kerchner GA***, O'Brien JL, and Nicoll RA. (2009). Critical role for TARPs in early development despite broad functional redundancy. *Neuropharmacology* 56: 22–29. PMID: 18634809 *Contributed equally.
11. **Kerchner GA**, Hess CP, Hammond K, Xu D, Rabinovici GD, Kelley DAC, Vigneron DB, Nelson SJ, and Miller BL. (2010). Hippocampal neuropil atrophy visualized in mild Alzheimer's disease using 7-Tesla MRI. *Neurology* 75: 1381–1387. PMID: 20938031

Review articles (all peer-reviewed)

12. **Kerchner GA** and Nicoll RA. (2008). Silent synapses and the emergence of a postsynaptic mechanism for LTP. *Nature Reviews Neuroscience* 9: 813–825. PMID: 18854855
13. **Kerchner GA**. (2010). Bapineuzumab. *Expert Opinion on Biological Therapy* 10: 1121–1130. PMID: 20497044
14. **Kerchner GA**, Tartaglia CM, and Boxer AL. (2011). Abhorring the vacuum: use of Alzheimer's disease medications in frontotemporal dementia. *Expert Review of Neurotherapeutics* 11: 709–717. PMID: 21728274
15. **Kerchner GA**. (2011). Ultra-high field 7-Tesla MRI: a new tool for studying Alzheimer's disease. *Journal of Alzheimer's Disease* 22 Supp 3: 91–95. PMID: 21971453
16. **Kerchner GA**. (2011). Amyloid imaging for Alzheimer's disease. *Expert Opinion on Medical Diagnostics* 5: 527–538. [PMID in progress]

D. Research Support

Ongoing Research Support

Stanford Institute of Neuro-Innovation and Translational Neurosciences / Johnson & Johnson New Neuroscience Innovations Initiative

Title: Structural and Functional Correlates of Episodic Memory Impairment in Preclinical Alzheimer's Disease
Dates: 05/01/2011–04/30/2012
Goal: To study the features of hippocampal subfield anatomy that underlie memory dysfunction among patients with amnestic mild cognitive impairment, using high-resolution structural and functional MRI of the hippocampus
Role: Principal Investigator

Alzheimer's Association New Investigator Research Grant (NIRG-11-205493)

Title: Hippocampal Stratal Anatomy in Mild Cognitive Impairment: A 7T MRI Study
Dates: 10/01/2011–09/30/2013
Goal: To study the features of hippocampal subfield anatomy that underlie memory dysfunction among patients with amnestic mild cognitive impairment, using high-resolution structural MRI of the hippocampus, and correlating these findings with CSF biomarkers for Alzheimer's disease
Role: Principal Investigator

Center for Biomedical Imaging at Stanford Seed Grant

Title: Microstructural Correlates of Motor Deficits in Parkinson Disease with Ultra-High Field 7-Tesla MRI
Dates: 09/01/2011–08/31/2012
Goal: To study the features of midbrain nuclear anatomy that correlate with motor function in patients with Parkinson's disease
Role: Principal Investigator

Michael J. Fox Foundation Grant: Defining Cognitive Phenotypes of Parkinson's Disease

Title: Development of Multimodal Imaging Biomarkers for Cognitive Dysfunction in Parkinson's Disease
Dates: 01/01/2012–12/31/2013
Goal: To develop multimodal imaging biomarkers to distinguish the relative contributions of AD versus PD pathology to cognitive dysfunction among patients with Parkinson's disease and dementia.
Role: Co-Investigator (PI: Kathleen Poston, MD, MS)

Completed Research Support

Larry L. Hillblom Foundation, Fellowship Grant
Title: Hippocampal Degeneration in Dementia: High-Resolution MRI Imaging in Humans
Dates: 07/01/2007–10/31/2009
Goal: To study hippocampal microstructure using 7-Tesla MRI in patients with Alzheimer's disease
Role: Principal Investigator