

David C. Zhu, Ph.D.
Professor of Radiology, Psychology and
(adjunct) Electrical & Computer Engineering
Cognitive Imaging Research Center
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EDUCATION

Ph.D., Biomedical Engineering, University of California, Davis, December 1999.
Dissertation: Magnetic Resonance Pulse Sequences and Analytical Techniques for Breast Cancer Detection and Cardiovascular Flow.
Advisor: Michael H. Buonocore, M.D., Ph.D.

M.S., Biomedical Engineering, California State University, Sacramento, August 1996.
Thesis: Odd-Number Hybrid Echo Planar Magnetic Resonance Imaging.
Advisor: Michael H. Buonocore, M.D., Ph.D.

B.S., Electrical and Electronic Engineering, California State University, Sacramento, May 1996.

B.A., Molecular & Cell Biology, emphasis: Biochemistry, University of California, Berkeley, May 1992.

EXPERIENCE

- 7/2016 – present **Professor of Radiology, Psychology and (adjunct) Electrical & Computer Engineering**, Michigan State University, East Lansing, Michigan
- 7/2013 – 7/2016 **Associate Professor of Radiology and Psychology**, Michigan State University, East Lansing, Michigan
- 4/2009 – 7/2013 **Associate Professor of Psychology and Radiology**, Michigan State University, East Lansing, Michigan
- 7/2011 – 7/2016 **Adjunct Associate Professor of Electrical & Computer Engineering**, Michigan State University, East Lansing, Michigan
- 2010 – present Faculty member of Neuroscience Program, Michigan State University, East Lansing, Michigan
- 2007 – present Faculty member of Cognitive Science Program, Michigan State University, East Lansing, Michigan
- 4/2005 – 4/2009 **Assistant Professor of Psychology and Radiology**, Michigan State University, East Lansing, Michigan
- 4/2005 – present

Additional roles/services during the above appointments:

- Lead of the Cognitive Imaging Research Center.
 - Develop and organize neuroimaging research seminars for the Cognitive Imaging Research Center.
 - An MRI physicist for the Cognitive Imaging Research Center, and Departments of Radiology and Psychology.
 - Collaborate and provide consultation on MR physics, fMRI protocol setup, experimental design and data analysis.
 - Oversee the data quality of the state-of-the-art 3T MR research scanner and work with GE field engineers to resolve issues.
 - Develop and support pulse sequences.
 - General fMRI equipment support.
 - Develop and support data analysis software.
- 8/2002 – 4/2005 **Research Associate (Assistant Professor) of Radiology**, Brain Research Imaging Center, Department of Radiology, University of Chicago, Chicago.
- MR methodology development for brain research, including functional MRI.
 - Maintained the state-of-the-art 3T MR research scanner.
 - MRI physics and MR system consultation to investigators.

- 1/2000 – 8/2002 **MR Applications Engineer**, GE Medical Systems, Waukesha, Wisconsin
- Pulse sequence development with an emphasis on Fast Spin Echo sequences.
 - Integration of the EXCITE data acquisition system.
 - Resolving MR system issues.
- 6/1995 – 11/1999 **Postgraduate Researcher**, Department of Radiology, University of California, Davis.
- MR pulse sequence development.
 - Developed linear regression, segmentation and pattern recognition algorithms for breast cancer detection.
 - Performed data analysis and data management for brain functional MRI studies.
- 6/1992 - 8/1993 **Production Assistant Chemist**, MDL Information Systems Inc., San Leandro, California.
- Production and quality control on chemical databases.

Current Research Focuses

- Apply neuroimaging techniques to understand the effect of hypertension on the brain (Primary collaborators: Dr. Rong Zhang and Dr. Wanpen Vongpatanasin at UT Southwestern Medical Center)
- MRI of normal aging, Alzheimer's disease (AD), and AD risk reduction (Primary collaborators: Dr. Rong Zhang at UT Southwestern Medical Center and Dr. Andrea Bozoki)
- MRI of mild traumatic brain injury/concussion (Primary collaborators: Drs. David Kaufman and Concussion Neuroimaging Consortium (<http://www.concussionimaging.org>))
- MR imaging technique development (Collaborators: Drs. Jie Huang, Tongtong Li and Selin Aviyente)
- Brain MRI: Speech production in normally fluent and stuttering speakers, especially children (Collaborator: Dr. Soo-Eun Chang)

CITIZENSHIP: U.S. citizen.

PATENT

David C. Zhu, J. Kevin DeMarco, Anthony T. Vu. Apparatus and method for detecting and classifying atherosclerotic plaque hemorrhage. US Patent # 7,705,593. Date of award: April 27, 2010.

PEER-REVIEWED JOURNAL PUBLICATIONS

1. Nasr SH, Kouyoumdjian H, Mallett C, Ramadan S, **Zhu DC**, Shapiro EM, Huang X. Detection of β -amyloid by sialic acid coated bovine serum albumin magnetic nanoparticles in a mouse model of Alzheimer's disease. *Small*. In Press.
2. Ding K, Tarumi T, **Zhu DC**, Tseng B, Thomas BP, Turner M, Repshas J, Kerwin DR, Womack KB, Lu H, Cullum CM, Zhang R. Cardiorespiratory fitness and white matter neuronal fiber integrity in mild cognitive impairment. *Journal of Alzheimer's Disease*. In Press.
3. Huang J, **Zhu DC**. Visually stressful striped patterns alter human visual cortical functional connectivity. *Human Brain Mapping*. In Press.
4. Semrud-Clikeman M, Fine JG, Bledsoe J, **Zhu DC**. Regional volumetric differences based on structural MRI in children with two subtypes of ADHD and controls. *J Atten Disord*. 2017 Oct;21(12):1040-1049.
5. Beach PA, Huck JT, **Zhu DC**, Bozoki AC. Altered behavioral and autonomic pain responses in Alzheimer's disease are associated with dysfunctional affective, self-reflective, and salience network resting-state connectivity. *Frontiers in Aging Neuroscience*. *Front. Aging Neurosci*. 2017 Sep;9:297.
6. Slobounov SM, Walter A, Breiter HC, **Zhu DC**, Bai X, Bream T, Seidenberg P, Mao X, Johnson B, Talavage TM. The effect of repetitive subconcussive collisions on brain integrity in collegiate football players over a single football season: A multi-modal neuroimaging study. *Neuroimage Clin*. 2017 Mar 21;14:708-718.

7. Khan MA, Liu J, Tarumi T, Lawley JS, Liu P, **Zhu DC**, Lu H, Zhang R. Measurement of cerebral blood flow using phase contrast magnetic resonance imaging and duplex ultrasonography. *J Cereb Blood Flow Metab.* 2017 Feb;37(2):541-549.
8. Bozoki AC, Zdanukiewicz M, **Zhu DC**; Alzheimer's Disease Neuroimaging Initiative. The effect of β -amyloid positivity on cerebral metabolism in cognitively normal seniors. *Alzheimers Dement.* 2016 Dec;12(12):1250-1258.
9. Caulfield MD, **Zhu DC**, McAuley JD, Servatius RJ. Cerebellar response to familiar and novel stimuli: an fMRI study. *Behav Neurosci.* 2016 Dec;130(6):585-592.
10. Wills KM, Liu J, Hakun J, **Zhu DC**, Hazeltine E, Ravizza SM. Neural Mechanisms for the Benefits of Stimulus-Driven Attention. *Cereb Cortex.* 2016 Oct 5:1-9.
11. Antonio-Santos AA, Eggenberger ER, **Zhu DC**. Functional MRI in feigned visual loss. *JNBS.* 2016; 3(2): 86-88.
12. Liu J, Balu N, Hippe DS, Ferguson MS, Martinez-Malo V, DeMarco JK, **Zhu DC**, Ota H, Sun J, Xu D, Kerwin WS, Hatsukami TS, Yuan C. Semi-automatic carotid intraplaque hemorrhage detection and quantification on magnetization-prepared rapid acquisition gradient-echo (MP-RAGE) with optimized threshold selection. *J Cardiovasc Magn Reson.* 2016 Jul 16;18(1):41.
13. Caulfield MD, **Zhu DC**, McAuley JD, Servatius RJ. Individual differences in resting-state functional connectivity with the executive network: Support for a cerebellar role in anxiety vulnerability. *Brain Struct Funct.* 2016 Jul;221(6):3081-93.
14. Wang Z, Alahmadi A, **Zhu DC**, Li T. Causality analysis of fMRI data based on the directed information theory framework. *IEEE Trans Biomed Eng.* 2016 May;63(5):1002-1015.
15. Gharahi H, Zambrano BA, **Zhu DC**, DeMarco JK, Baek S. Computational fluid dynamic simulation of human carotid artery bifurcation based on anatomy and volumetric blood flow rate measured with magnetic resonance imaging. *Int J Adv Eng Sci Appl Math.* 2016 January-March;8(1):46-60.
16. **Zhu DC**, Tarumi T, Khan MA, Zhang R. Vascular coupling in resting-state fMRI: evidence from multiple modalities. *J Cereb Blood Flow Metab.* 2015 Dec;35(12):1910-20. (**Featured on journal cover page**)
17. Huang J, **Zhu DC**. Exploring human brain neuronal currents with phase MRI. *International Journal of Imaging Systems and Technology.* *Int J Imaging Syst Technol*, 2015;25:172–178.
18. Tangen KM, Hsu Y, **Zhu DC**, Linninger AA. CNS wide simulation of flow resistance and drug transport due to spinal microanatomy. *J Biomech.* 2015 Jul 16;48(10):2144-54.
19. Bailes J, Bravo S, Breiter H, Kaufman D, Lu Z, Molfese D, Parrish T, Slobounov S, Talavage T, **Zhu D**. A call to arms: The need to create an inter-institutional concussion neuroimaging consortium to discover clinically relevant diagnostic biomarkers and develop evidence-based interventions to facilitate recovery. *Dev Neuropsychol.* 2015 Feb-Mar;40(2):59-62.
20. Tarumi T, de Jong DL, **Zhu DC**, Tseng BY, Liu J, Hill C, Riley J, Womack KB, Kerwin DR, Lu H, Munro Cullum C, Zhang R. Central artery stiffness, baroreflex sensitivity, and brain white matter neuronal fiber integrity in older adults. *Neuroimage.* 2015 Jan 24;110:162-170.
21. Chang SE, **Zhu DC**, Choo AL, Angstadt M. White matter neuroanatomical differences in young children who stutter. *Brain.* 2015 Mar;138(Pt 3):694-711. (**Featured on journal cover page**)
22. **Zhu DC**, Covassin T, Nogle S, Doyle S, Russell D, Pearson RL, Monroe J, Liszewski CM, DeMarco JK, Kaufman DI. A potential biomarker in sports-related concussion: brain functional connectivity alteration of the default-mode network measured with longitudinal resting-state fMRI over 30 days. *J Neurotrauma.* 2015 Mar 1;32(5):327-41.

23. Wang P, Kouyoumdjian H, **Zhu DC**, Huang X. Heparin nanoparticles for β amyloid binding and mitigation of β amyloid associated cytotoxicity. *Carbohydr Res.* 2015 Mar 20;405:110-4.
24. Langel J, Hakun J, **Zhu DC**, Ravizza SM. Functional specialization of the left ventral parietal cortex in working memory. *Front Hum Neurosci.* 2014 Jun 18;8:440.
25. El-Dakdouki MH, El-Boubbou K, Kamat M, Huang R, Abela GS, Kiupel M, **Zhu DC**, Huang X. CD44 targeting magnetic glyconanoparticles for atherosclerotic plaque imaging. *Pharmaceutical Research. Pharm Res.* 2014 Jun;31(6):1426-37.
26. **Zhu DC**, Majumdar S. Integration of resting-state fMRI and diffusion-weighted MRI connectivity analyses of the human brain: limitations and improvement. *Journal of Neuroimaging. J Neuroimaging.* 2014 Mar-Apr;24(2):176-86.
27. El-Dakdouki MH, Xia J, **Zhu DC**, Kavunja H, Grieshaber J, O'Reilly S, McCormick JJ, Huang X. Assessing the *in vivo* efficacy of doxorubicin loaded hyaluronan nanoparticles. *ACS Appl Mater Interfaces.* 2014 Jan 8;6(1):697-705.
28. Chang S-E, **Zhu DC**. Neural network connectivity differences in children who stutter. *Brain.* 2013 Dec;136(Pt 12):3709-26.
29. Semrud-Clikeman M, Fine JG, Bledsoe J, **Zhu DC**. Magnetic resonance imaging volumetric findings in children with Asperger syndrome, nonverbal learning disability, or healthy controls. *J Clin Exp Neuropsychol.* 2013;35(5):540-50.
30. Ota H, Reeves MJ, **Zhu DC**, Majid A, Collar A, Yuan C, DeMarco JK. Sex differences of high-risk carotid atherosclerotic plaque with less than 50% stenosis in asymptomatic patients: an *in vivo* 3T MRI study. *AJNR Am J Neuroradiol.* 2013 May;34(5):1049-55, S1.
31. Kouyoumdjian H, **Zhu DC**, El-Dakdouki MH, Lorenz K, Chen J, Li W, Huang X. Glyconanoparticle aided detection of β -amyloid by magnetic resonance imaging and attenuation of β -amyloid induced cytotoxicity. *ACS Chem Neurosci.* 2013 Apr 17;4(4):575-84.
32. **Zhu DC**, Majumdar S, Korolev IO, Berger KL, Bozoki AC. Alzheimer's disease and amnesic mild cognitive impairment weaken connections within the default-mode network: a multi-modal imaging study. *J Alzheimers Dis.* 2013 Jan 1;34(4):969-84.
33. Semrud-Clikeman M, Fine JG, Bledsoe J, **Zhu DC**. Gender differences in brain activation on a mental rotation task. *Int J Neurosci.* 2012;122:590-7.
34. Hsu Y, Hettiarachchi HDM, **Zhu DC**, Linninger AA. The frequency and magnitude of cerebrospinal fluid pulsations influence intrathecal drug distribution - key factors for interpatient variability. *Anesthesia & Analgesia.* 2012;115:386-394.
35. El-Dakdouki MH, **Zhu DC**, El-Boubbou K, Kamat M, Chen J, Li W, Huang X. Development of multifunctional hyaluronan-coated nanoparticles for imaging and drug delivery to cancer cells. *Biomacromolecules.* 2012;13:1144-1151.
36. Li H, El-Dakdouki MH, **Zhu DC**, Abela GS, Huang X. Synthesis of β -cyclodextrin conjugated superparamagnetic iron oxide nanoparticles for selective binding and detection of cholesterol crystals. *Chem Commun (Camb).* 2012;48:3385-7. (**Featured on journal cover page**)
37. El-Dakdouki MH, El-Boubbou K, **Zhu DC**, Huang X. A simple method for the synthesis of hyaluronic acid coated magnetic nanoparticles for highly efficient cell labelling and *in vivo* imaging. *RSC Advances.* 2011;1:1449-1452.
38. Husband EM, Kelly LA, **Zhu DC**. Using complement coercion to understand the neural basis of semantic composition: evidence from an fMRI study. *J Cogn Neurosci.* 2011;23:3254-66.

39. Henderson JM, **Zhu DC**, Larson CL. Functions of parahippocampal place area and retrosplenial cortex in real-world scene analysis: An fMRI study. *Visual Cognition*. 2011;19:910-927.
40. Majumdar S, **Zhu DC**, Udupa SS, Raguin LG. A diffusion gradient optimization framework for spinal cord diffusion tensor imaging. *Magn Reson Imaging*. 2011;29:789-804.
41. Liu T, Hospadaruk L, **Zhu DC**, Gardner JL. Feature-specific attentional priority signals in human cortex. *J Neurosci*. 2011;31:4484-95.
42. Semrud-Clikeman M, Fine JG, **Zhu DC**. The role of the right hemisphere for processing of social interactions in normal adults using functional magnetic resonance imaging. *Neuropsychobiology*. 2011;64:47-51.
43. Ravizza SM, Hazeltine E, Ruiz S, **Zhu DC**. Left TPJ activity in verbal working memory: Implications for storage- and sensory-specific models of short term memory. *Neuroimage*. 2011;55:1836-46.
44. Kamat M, El-Boubbou K, **Zhu DC**, Lansdell T, Lu X, Li W, Huang X. Hyaluronic acid immobilized magnetic nanoparticles for active targeting and imaging of macrophages. *Bioconjug Chem*. 2010;21:2128-2135.
45. Ota H, Reeves MJ, **Zhu DC**, Majid A, Collar A, Yuan C, DeMarco JK. Sex differences in patients with asymptomatic carotid atherosclerotic plaque: in vivo 3.0-T magnetic resonance study. *Stroke*. 2010;41:1630-5.
46. **Zhu DC**, Vu AT, Ota H, DeMarco JK. An optimized 3D spoiled gradient recalled echo pulse sequence for hemorrhage assessment using inversion recovery and multiple echoes (3D SHINE) for carotid plaque imaging. *Magn Reson Med*. 2010;64:1341-51.
47. DeMarco JK, Ota H, Underhill HR, **Zhu DC**, Reeves MJ, Potchen MJ, Majid A, Collar A, Talsma JA, Potru S, Oikawa M, Dong L, Zhao X, Yarnykh VL, Yuan C. MR carotid plaque imaging and contrast-enhanced MR angiography identifies lesions associated with recent ipsilateral thromboembolic symptoms: an in vivo study at 3T. *AJNR Am J Neuroradiol*. 2010;31:1395-402.
48. El-Boubbou K, **Zhu DC**, Vasileiou C, Borhan B, Prosperi D, Li W, Huang X. Magnetic glyco-nanoparticles: a tool to detect, differentiate, and unlock the glyco-codes of cancer via magnetic resonance imaging. *J Am Chem Soc*. 2010;132:4490-9.
49. **Zhu DC**, Zacks RT, Slade JM. Brain activation during interference resolution in young and older adults: an fMRI study. *Neuroimage*. 2010;50:810-817.
50. Ota H, Yarnykh VL, Ferguson MS, Underhill HR, DeMarco JK, **Zhu DC**, Oikawa M, Dong L, Zhao X, Collar A, Hatsukami TS, Yuan C. Carotid intraplaque hemorrhage imaging at 3.0-T MR imaging: comparison of the diagnostic performance of three T1-weighted sequences. *Radiology*. 2010;254:551-63.
51. Fine JG, Semrud-Clikeman M, **Zhu DC**. Gender differences in BOLD activation to face photographs and video vignettes. *Behav Brain Res*. 2009;201:137-146.
52. Larson CL, Aronoff J, Sarinopoulos IC, **Zhu DC**. Recognizing threat: a simple geometric shape activates neural circuitry for threat detection. *J Cogn Neurosci*. 2009;21:1523-35.
53. **Zhu DC**, Ferguson MS, DeMarco JK. An optimized 3D inversion recovery prepared fast spoiled gradient recalled sequence for carotid plaque hemorrhage imaging at 3.0 T. *Magnetic Resonance Imaging*. 2008;26:1360-1366.
54. Huang J, **Zhu DC**. Simultaneous magnetic resonance imaging of diffusion anisotropy and diffusion gradient. *Magn Reson Imaging*. 2008;26:337-346.
55. Henderson JM, Larson CL, **Zhu DC**. Full scenes produce more activation than close-up scenes and scene-diagnostic objects in parahippocampal and retrosplenial cortex: an fMRI study. *Brain Cogn*. 2008;66:40-49.

56. Henderson JM, Larson CL, **Zhu DC**. Cortical activation to indoor versus outdoor scenes: an fMRI study. *Exp Brain Res*. 2007;179:75-84.
57. Linninger AA, Xenos M, **Zhu DC**, Somayaji MR, Kondapalli S, Penn RD. Cerebrospinal fluid flow in the normal and hydrocephalic human brain. *IEEE Trans Biomed Eng*. 2007;54:291-302.
58. **Zhu DC**, Xenos M, Linninger AA and Penn RD. Dynamics of lateral ventricle and cerebrospinal fluid in normal and hydrocephalic brains. *J Magn Reson Imaging*. 2006;24:756-770.
59. Goldman MB, Heidinger L, Kulkarni K, **Zhu DC**, Chien A, McLaren DG, Shah J, Coffey CE Jr, Sharif S, Chen E, Uftring SJ, Small SL, Solodkin A, Pilla RS. Changes in the amplitude and timing of the hemodynamic response associated with prepulse inhibition of acoustic startle. *Neuroimage*. 2006;32:1375-1384.
60. **Zhu DC**, Penn RD. Full-brain T_1 mapping through inversion recovery fast spin echo imaging with time-efficient slice ordering. *Magn Reson Med*. 2005;54:725-731.
61. Linninger AA, Tsakiris C, **Zhu DC**, Xenos M, Roycewicz P, Danziger Z, Penn R. Pulsatile cerebrospinal fluid dynamics in the human brain. *IEEE Trans Biomed Eng*. 2005;52:557-565.
62. Norris CJ, Chen E, **Zhu DC**, Small SL, Cacioppo JT. The interaction of social and emotional processes in the brain. *J Cogn Neurosci*. 2004;16:1818-1829.
63. **Zhu DC**, Buonocore MH. Breast tissue differentiation using arterial spin tagging. *Magn Reson Med* 2003;50:966-975.
64. Buonocore MH, **Zhu DC**. Image-based ghost correction for interleaved EPI. *Magn Reson Med* 2001;45:96-108.
65. Buonocore MH, **Zhu DC**. High spatial resolution EPI using an odd-number of interleaves. *Magn Reson Med* 1999;41:1199-1205.

PEER-REVIEWED CONFERENCE FULL PAPERS

1. Ozdemir A, Villafañe-Delgado M, **Zhu DC**, Iwen MA, Aviyente S. Multi-scale higher order singular value decomposition (MS-HOSVD) for resting-state fMRI compression and analysis. 2017 IEEE International Conference on Acoustics, Speech and Signal Processing. March 5-9;2017:6299-6303. New Orleans.
2. Wang Z, Alahmadi A, **Zhu DC**, Li T. Brain functional connectivity analysis using mutual information. 2015 IEEE Global Conference on Signal and Information Processing (GlobalSIP). December 14-16;2015:542-546.
3. Villafane-Delgado M, **Zhu DC**, Aviyente S. Computation of resting state networks from fMRI through a measure of phase synchrony. *Conf Proc IEEE Eng Med Biol Soc*. 2014 Aug;2014:1456-9.

ABSTRACTS AND PRESENTATIONS IN CONFERENCES

1. **Zhu DC**, Seidenberg P, Bream T, Walter A, Bai X, Johnson B, Breiter H, Talavage TM and Slobounov S. Alterations in Brain Functional Connectivity and Global Cerebral Blood Flow in Collegiate Football Athletes over a Single Football Season. Oral presentation in International Society for Magnetic Resonance in Medicine, 25th Annual Meeting and Exhibition, April 22-27, 2017, Honolulu, USA.
2. Huang J, **Zhu DC**. Contrary Effect of Stressful vs. Non-stressful Striped Patterns on Human Visual Cortical Functional Connectivity. International Society for Magnetic Resonance in Medicine, 25th Annual Meeting and Exhibition, April 22-27, 2017, Honolulu, USA.
3. Huang J, **Zhu DC**. Visual stimulation altered human visual cortical functional connectivity. International Society for Magnetic Resonance in Medicine, 24th Annual Meeting and Exhibition, May 7-13, 2016, Singapore.
4. Wills K, Liu J, Hakun J, **Zhu D**, Hazeltine E, Ravizza S. Neural Mechanisms for the Benefits of Stimulus-Driven Attention. Poster to be presented at the Cognitive Neuroscience Society 2016, New York City, NY.

5. Bailes J, Bravo S, Breiter H, Kaufman D, Lu Z, Molfese D, Parrish T, Slobounov S, Talavage T, **Zhu D**. Concussion Neuroimaging Consortium vision and mission. Big 10/CIC-Ivy League Traumatic Brain Injury Summit, July 15-16, 2015, Chicago, IL.
6. **Zhu DC**, Nogle S, Doyle S, Russell D, Covassin T, Pearson RL, DeMarco JK, Kaufman DI. Identifying potentially vulnerable functional networks in sports concussion: a resting-state fMRI longitudinal study. Big 10/CIC-Ivy League Traumatic Brain Injury Summit, July 15-16, 2015, Chicago, IL.
7. **Zhu DC**, Nogle S, Doyle S, Russell D, Covassin T, Pearson RL, DeMarco JK, Kaufman DI. Identify potentially vulnerable functional networks to concussion in sports: a resting-state fMRI longitudinal study. International Society for Magnetic Resonance in Medicine, 23rd Annual Meeting and Exhibition, May 30-June 5, 2015, Toronto, Canada.
8. Chang S-E, Choo A, Angstadt M, **Zhu DC**. White matter differences in young children who stutter. Society for Neuroscience, November 15-19, 2014, Washington, DC.
9. Wieland EA, McAuley JD, **Zhu D**, Dilley LC, Chang SE. Brain activity differences during rhythm discrimination in adults who stutter. Society for Neuroscience, November 15-19, 2014, Washington, DC.
10. **Zhu DC**, Covassin T, Nogle S, Doyle S, Russell D, Pearson R, Monroe J, Liszewski C, DeMarco JK, Kaufman D. The Dynamically Changing Default-Mode Network after Concussion in Sports: a Resting-State fMRI and DTI Integration Study. Oral presentation in International Society for Magnetic Resonance in Medicine, 22nd Annual Meeting and Exhibition, May 10-16, 2014, Milan, Italy.
11. **Zhu DC**, Tarumi T, Khan MA, Zhang R. Understanding the Vascular Effect on Resting-State fMRI: a Multi-Modality Approach. International Society for Magnetic Resonance in Medicine, 22nd Annual Meeting and Exhibition, May 10-16, 2014, Milan, Italy.
12. Huang J, **Zhu DC**. Detection of Human Neuronal Currents with Phase MRI. International Society for Magnetic Resonance in Medicine, 22nd Annual Meeting and Exhibition, May 10-16, 2014, Milan, Italy.
13. Balu N, Sun J, Hippe D, **Zhu D**, Kim S-E, Roberts J, DeMarco K, Parker D, Yuan C, Hatsukami TS. Multiplatform reproducibility of 3D carotid vessel wall MRI. Oral presentation in International Society for Magnetic Resonance in Medicine, 22nd Annual Meeting and Exhibition, May 10-16, 2014, Milan, Italy.
14. Liu J, Balu N, Hippe DS, Ferguson MS, Martinez-Malo V, DeMarco JK, **Zhu DC**, Ota H, Sun J, Kerwin WS, Hatsukami TS, Yuan C. Optimized threshold selection for automatic carotid intraplaque hemorrhage detection in magnetization-prepared rapid acquisition gradient-echo (MP-RAGE) MRI with histology validation. International Society for Magnetic Resonance in Medicine, 22nd Annual Meeting and Exhibition, May 10-16, 2014, Milan, Italy.
15. **Zhu DC**, Covassin T, Nogle S, Doyle S, Russell D, Pearson R, Monroe J, Liszewski C, DeMarco JK, Kaufman D. A Potential Biomarker in Sports-Related Concussion: Brain Functional Connectivity Alteration of the Default-Mode Network Measured with Sequential Resting-State fMRI. American Academy of Neurology Annual Meeting, April 26-May 3, 2014, Philadelphia, USA.
16. Beach P, Huck J, Miranda M, Swanic K, Symonds L, **Zhu D**, Bozoki A. Effects of Alzheimer's disease progression on acute pain behaviors and resting-state functional connectivity among cerebral pain processing regions. Society for Neuroscience Annual Conference, November 9-13, 2013. San Diego, CA.
17. **Zhu DC**. Resting-state functional connectivity at different cognitive conditions. The 19th Annual Meeting of the Organization for Human Brain Mapping, June 16-20, 2013, Seattle, USA.
18. **Zhu DC**, Pearson R, Monroe J, Nogle S, Doyle S, Russell D, Liszewski C, Aniskiewicz A, Shingles M, Dietzel D, Andary M, DeMarco JK, Kaufman D. The dynamically changing default-mode network functional connectivity after concussion in sports. International Society for Magnetic Resonance in Medicine, 21st Annual Meeting and Exhibition, April 20-26, 2013, Salt Lake City, Utah, USA.

19. Majumdar S, **Zhu DC**. An integrated resting-state fMRI and DTI based connectivity analysis to understand brain alteration affected by Alzheimer's disease and amnesic mild cognitive impairment. International Society for Magnetic Resonance in Medicine, 21st Annual Meeting and Exhibition, April 20-26, 2013, Salt Lake City, Utah, USA.
20. DeMarco JK, Ota H, **Zhu D**, Kerwin W, Yuan C. 3D Inversion recovery fast spoiled gradient recall (IR-FSPGR) and TOF MRA with morphology enhanced probabilistic plaque segmentation (MEPPS) predicts the size of lipid-rich necrotic core (LRNC) of carotid plaque. International Society for Magnetic Resonance in Medicine, 21st Annual Meeting and Exhibition, April 20-26, 2013, Salt Lake City, Utah, USA.
21. Ota H, DeMarco JK, Wakayama M, **Zhu DC**, Takase K, Takahashi S. Comparison of carotid plaque characteristics between Japanese and Midwest American caucasian patients with coronary artery disease: a 3.0T MRI study. International Society for Magnetic Resonance in Medicine, 21st Annual Meeting and Exhibition, April 20-26, 2013, Salt Lake City, Utah, USA.
22. Khan MA, Liu J, Liu P, **Zhu D**, Lu H, Zhang R. Cerebral Blood Flow: Comparison Between Ultrasound and Phase Contrast MRI. International Society for Magnetic Resonance in Medicine, 21st Annual Meeting and Exhibition, April 20-26, 2013, Salt Lake City, Utah, USA.
23. Caulfield MD, McAuley JD, **Zhu DC**, Servatius RJ. Neural correlates of anxiety vulnerability: Cerebellar reactivity to novel faces & scenes and at rest. Poster presented at 20th Annual Cognitive Neuroscience Society Conference, April 13-16, 2013, San Francisco, CA.
24. Chang S-E, **Zhu D**. Neural bases of childhood developmental stuttering: Insights from DTI tractography and resting state fMRI. Society for Neuroscience Conference, Oct 13-17, 2012, New Orleans, Louisiana.
25. Beach P, Symonds L, **Zhu D**, Bozoki A. How are pain behaviors and pain processing altered in severe Alzheimer's disease? Society for Neuroscience Annual Conference, Oct 13-17, 2012, New Orleans, LA.
26. Chang S-E, **Zhu D**. Neural bases of childhood developmental stuttering. American Speech Language Hearing Association (ASHA) Convention, November 15-17, 2012, Atlanta, GA.
27. **Zhu DC**, Majumdar S, Korolev IO, Berger KL, Bozoki AC. Alzheimer's disease and mild cognitive impairment weaken connections within the default-mode network: a multi-modal study with resting-state fMRI, diffusion MRI and FDG-PET. The Alzheimer's Association International Conference (AAIC), July 14-19, 2012, Vancouver, Canada.
28. Caulfield MD, McAuley JD, **Zhu DC**, Servatius RJ. Neural correlates of anxiety vulnerability: an assessment of associative learning, temperament, and cerebellar reactivity to novel social stimuli. The 21st Annual Meeting of the International Behavioral Neuroscience Society, June 5-10, 2012, Kona, HI.
29. Majumdar S, **Zhu DC**. A wavelet-based approach to improve the reproducibility of resting-state fMRI analysis. International Society for Magnetic Resonance in Medicine, 20th Scientific Meeting and Exhibition, May 5-11, 2012, Melbourne, Australia.
30. Ravizza SM, Van Loon J, Hakun JG, **Zhu D**. The left TPJ in novelty detection and verbal working memory: Is stimulus-driven attention the common factor? Poster presented at Cognitive Neuroscience Society 2012, Chicago, IL.
31. Caulfield MD, McAuley JD, **Zhu DC**, Servatius RJ. Facilitated acquisition of eyeblink conditioning in those at risk for anxiety disorders: concordance among scales of inhibited temperament. The 41st Annual Meeting of the Society for Neuroscience, November 12-16, 2011, Washington, DC.
32. **Zhu DC**, Majumdar S, Berger KL, Korolev I, Kiel S, Nieuwsma H, Bozoki AC. Alzheimer's disease weakens the structural and functional connections in the default-mode network. The 17th Annual Meeting of the Organization for Human Brain Mapping, June 26-30, 2011, Quebec City, Canada.

33. Ota H, Reeves MJ, **Zhu DC**, Majid A, Collar A, Chauhan N, Yuan C, Demarco JK. Sex differences of high-risk carotid atherosclerotic plaque in asymptomatic patients with varying levels of stenosis - in vivo 3.0T MRI study. The 49th Annual Meeting of the American Society of Neuroradiology, June 4-9, 2011, Seattle, Washington.
34. **Zhu DC**, El-Boubbou K, Abela GS, Huang R, Kamat M, Huang X. Atherosclerotic MR molecular imaging strategy with superparamagnetic iron oxide on a human clinical scanner – rabbit model. International Society for Magnetic Resonance in Medicine, 19th Scientific Meeting and Exhibition, May 7-13, 2011, Montreal, Canada.
35. Korolev IO, Bozoki A, Majumdar S, Berger K, **Zhu D**. Alzheimer's disease reduces inter-hemispheric hippocampal functional connectivity. International Conference on Alzheimer's Disease. Alzheimer's Association, Jul 16-21, 2011, Paris, France.
36. Korolev IO, **Zhu D**, Berger K, Bozoki A. Detection of Alzheimer's Disease using Quantitative MRI-based Measures. International Conference on Alzheimer's Disease. Alzheimer's Association, Jul 16-21, 2011, Paris, France.
37. Van Loon J. Hakun JG, **Zhu D**, Ravizza SM. The left TPJ in novelty detection and verbal working memory: Is stimulus-driven attention the common factor? Poster presented at the Society for Neuroscience 2011, Washington, D.C.
38. Ota H, Reeves MJ, **Zhu DC**, Majid A, Collar A, Chauhan N, Yuan C, DeMarco J K. Sex Differences of high-risk carotid atherosclerotic plaque in asymptomatic patients with varying levels of stenosis -in vivo 3.0T MRI study. International Society for Magnetic Resonance in Medicine, 18th Scientific Meeting and Exhibition, May 1-7, 2010, Stockholm, Sweden.
39. Mudigonda M, Ramkumar P, **Zhu D**, Jin R, Stockman G. Processing effects on indoor versus outdoor scene processing: a MVPa case study. The 16th Annual Meeting of the Organization for Human Brain Mapping, June 6-10, 2010, Barcelona, Spain.
40. Fine JG, Semrud-Clikeman M, Bledsoe J, Vroman L, **Zhu D**, Pham A, Schlang K. Gender differences in functional neuroimaging in visual and verbal comparison tasks. American Psychological Association Annual Meeting, San Diego, August, 2010, CA.
41. Semrud-Clikeman M, Fine JG, Bledsoe J, Vronman L, **Zhu D**, Pham A, Schlang K. Functional neuroimaging differences in mental rotation in graduate students. American Psychological Association Annual Meeting, August, 2010, San Diego, CA.
42. Liu T, Hospadaruk L, **Zhu D**, Gardner JL. Decoding feature-based attentional priority signals in human cortex. Paper presented at the 9th annual meeting of the Vision Sciences Society, 2010, Naples, FL.
43. Ota H, **Zhu DC**, DeMarco JK. Carotid intraplaque hemorrhage is associated with enlargement of lipid-rich necrotic core and plaque volume over time: in vivo 3T MRI prospective study. Oral presentation at the Radiological Society of North America, 95th Scientific Assembly and Annual Meeting, 2009, November 29-December 4, Chicago, Illinois.
44. Ota H, Reeves MJ, **Zhu DC**, Yuan C, DeMarco JK. Sex differences of carotid atherosclerotic plaque: in vivo 3T MRI study. Oral presentation at the American Heart Association, Scientific Sessions, 2009, November 14-18, Orlando, Florida.
45. Ota H, **Zhu D**, DeMarco JK. Carotid intraplaque hemorrhage is associated with enlargement of lipid-rich necrotic core and plaque volume over time: in vivo 3T MRI prospective study, 21st Annual International Conference on MR Angiography, 2009, East Lansing, MI.
46. **Zhu DC**, Ota H, Ferguson MS, Vu AT, DeMarco JK. The 3D *SHINE* sequence optimizes the quantification of carotid intraplaque hemorrhage, 21st Annual International Conference on MR Angiography, 2009, East Lansing, MI.

47. Fine JG, Semrud-Clikeman M, Bledsoe J, **Zhu D**, Pham A. Bold response to social videos in AS, NVLD, and typically developing children. Presentations at the International Neuropsychology Society, July 29-August 1, 2009, Helsinki, Finland.
48. Semrud-Clikeman M, Fine JG, Bledsoe J, **Zhu D**, Vroman L. Face perception in children with Asperger's Syndrome, NVLD, and controls using fMRI. Presentations at the International Neuropsychology Society, July 29-August 1, 2009, Helsinki, Finland.
49. **Zhu DC**, Majumdar S. Integration and comparison of resting-state functional and structural connectivity analyses of human brain. Oral and poster presentations at Organization for Human Brain Mapping, 15th Annual Meeting, June 18 - 23, 2009, San Francisco, California.
50. Husband EM, **Zhu D**. Brain regions for sentence-level meanings: An fMRI study of complement coercion. Poster presentations at Organization for Human Brain Mapping, 15th Annual Meeting, June 18 - 23, 2009, San Francisco, California.
51. **Zhu DC**, Majumdar S. Integration and comparison of brain functional and structural connectivity maps. Oral presentation at the International Society for Magnetic Resonance in Medicine, 17th Scientific Meeting and Exhibition, April 18-24, 2009, Honolulu, Hawaii.
52. **Zhu DC**, Ota H, Vu AT, DeMarco JK. An optimized 3D Spoiled gradient for Hemorrhage assessment using *IN*version recovery and multiple *E*choes (3D *SHINE*) for carotid plaque imaging. Oral presentation at the International Society for Magnetic Resonance in Medicine, 17th Scientific Meeting and Exhibition, April 18-24, 2009, Honolulu, Hawaii.
53. Majumdar S, **Zhu DC**, Raguin G, Udpa SS. Optimization of diffusion encoding gradients in axisymmetric diffusion tensor imaging using *a priori* structure information. E-Poster presentation at the International Society for Magnetic Resonance in Medicine, 17th Scientific Meeting and Exhibition, April 18-24, 2009, Honolulu, Hawaii.
54. DeMarco J, Ota H, Underhill HR, **Zhu D**, Reeves M, Majid A, Collar A, Oikawa M, Dong L, Zhao X, Li F, Yarnykh VL, Yuan C. High-resolution 3T carotid MRI identifies the high-risk lesion in patients with moderate (<70%) carotid stenosis. Poster presentation at the International Society for Magnetic Resonance in Medicine, 17th Scientific Meeting and Exhibition, April 18-24, 2009, Honolulu, Hawaii.
55. Ota H, Yarnykh VL, Ferguson MS, Underhill HR, DeMarco JK, Oikawa M, Dong L, Zhao X, **Zhu DC**, Hatsukami TS, Yuan C. Comparison between three T₁-weighted sequences for detection and area measurement of intraplaque hemorrhage in carotid atherosclerotic plaque imaging at 3 Tesla. Oral presentation at the International Society for Magnetic Resonance in Medicine, 17th Scientific Meeting and Exhibition, April 18-24, 2009, Honolulu, Hawaii.
56. Husband EM, **Zhu D**. Neural correlates of silent meaning: An fMRI study of complement coercion. Poster presented at the 22nd Annual CUNY Conference on Human Sentence Processing, March 26-28, 2009, Davis, California.
57. **Zhu DC**, Zacks RT, Slade JM. Normal aging: an executive function fMRI study. Poster presented at the Organization for Human Brain Mapping, 14th Annual Meeting, June 15 - 19, 2008, Melbourne, Australia.
58. **Zhu DC**, Zacks RT, Slade JM. An fMRI study of age effects on frontal-striatal neural circuit functions. Oral presentation at the International Society for Magnetic Resonance in Medicine, 16th Scientific Meeting and Exhibition, May 3-9, 2008, Toronto, Canada.
59. **Zhu DC**, Zacks RT, Slade JM. Brain adaptations in normal aging evaluated with diffusion tensor imaging. Poster presentation at the International Society for Magnetic Resonance in Medicine, 16th Scientific Meeting and Exhibition, May 3-9, 2008, Toronto, Canada.
60. **Zhu DC**, DeMarco JK, Vu AT. An optimized 3D inversion recovery prepared fast spoiled gradient recalled sequence with multiple echoes (IR FSPGR ME) for carotid plaque imaging. E-Poster presentation at the

International Society for Magnetic Resonance in Medicine, 16th Scientific Meeting and Exhibition, May 3-9, 2008, Toronto, Canada.

61. DeMarco K, Ma X, Brooks J, **Zhu D**, Yarnykh V. Time dependence of necrotic core and fibrous cap quantitative measurements with gadobenate dimeglumine enhanced carotid plaque MRI at 3T. Poster presentation at the International Society for Magnetic Resonance in Medicine, 16th Scientific Meeting and Exhibition, May 3-9, 2008, Toronto, Canada.
62. Semrud-Clikeman M, Fine J, **Zhu D**, Bledsoe J. Right-left asymmetry in happy and sad videos using fMRI. Paper presented at the annual meeting of the International Neuropsychological Society, February 2008, Kona, Hawaii.
63. Semrud-Clikeman M, Fine J, **Zhu D**, Ogg J, Bledsoe J. Right-left asymmetry in happy and sad photos using fMRI. Paper presented at the annual meeting of the International Neuropsychological Society, February 2008, Kona, Hawaii.
64. Fine J, Semrud-Clikeman M, **Zhu D**, Bledsoe J. Gender effects to happy and sad videos using fMRI. Paper presented at the annual meeting of the International Neuropsychological Society, February 2008, Kona, Hawaii.
65. Fine J, Semrud-Clikeman M, **Zhu D**, Bledsoe J. Whole brain analysis of activation in happy and sad videos and photos using fMRI. Paper presented at the annual meeting of the International Neuropsychological Society, February 2008, Kona, Hawaii.
66. Fine J, Semrud-Clikeman M, **Zhu D**, Bledsoe J. Gender effects to happy and sad photos using fMRI. Paper presented at the annual meeting of the International Neuropsychological Society, February 2008, Kona, Hawaii.
67. **Zhu DC**, Larson CL, Henderson JM. Use a simple “sleep detector” to control fMRI data quality for studies on higher-level visual processing. Poster presented at the Organization for Human Brain Mapping, 13th Annual Meeting, June 10-14, 2007, Chicago, IL.
68. Larson CL, Aronoff J, **Zhu DC**. Recognizing threat: neural circuitry for detection of threat responds to simple geometric shapes. Poster presented at the Organization for Human Brain Mapping, 13th Annual Meeting June 10-14, 2007, Chicago, IL.
69. **Zhu DC**, DeMarco JK, Ferguson M. An optimized 3D inversion recovery prepared fast spoiled gradient recalled sequence for carotid plaque imaging. E-poster presented at the International Society for Magnetic Resonance in Medicine, 15th Scientific Meeting and Exhibition, May 19-25, 2007, Berlin, Germany.
70. DeMarco K, **Zhu D**, Underhill H, Ferguson M, Oikawa M, Yu W, Yuan C. Hemorrhage detection in the carotid atherosclerotic lesion – initial results at 3T. Poster presented at the International Society for Magnetic Resonance in Medicine, 15th Scientific Meeting and Exhibition, May 19-25, 2007, Berlin, Germany.
71. Larson CL, Aronoff J, **Zhu DC**. Neural circuitry for detection of threat responds to simple geometric shapes. Poster presented at the Cognitive Neuroscience Society, May 5-8, 2007, New York, New York.
72. Siebert JE, DeMarco JK, **Zhu DC**, Latourette MT, Vu AT. Quantitative MRI R_2^* mapping in atherosclerotic plaque characterization. 18th Annual International Conference on Magnetic Resonance Angiography 2006, #3.7, Basel, Switzerland.
73. DeMarco JK, **Zhu DC**, Ferguson M, Underhill H, Yuan C. Initial clinical experience of in vivo 3T carotid MRA and plaque imaging. 18th Annual International Conference on Magnetic Resonance Angiography 2006, #3.4, Basel, Switzerland.
74. DeMarco K, **Zhu D**, Hammond C, Henderson G, Kerwin W, Ross W, Yarnykh V, Yuan C. High-resolution carotid MRA and plaque MRI at 3T: Initial clinical experience and validation of semi-automated plaque characterization. Proceeding of the International Society for Magnetic Resonance in Medicine, 14th Scientific Meeting and Exhibition 2006, #2173, Seattle, WA.

75. Huang J, **Zhu DC**. Correction of eddy-current induced phase error in diffusion-weighted imaging. Proceeding of the International Society for Magnetic Resonance in Medicine, 14th Scientific Meeting and Exhibition 2006, #2377, Seattle, WA.
76. Linninger AA, Xenos M, Kondapalli S, Somayaji MBR, **Zhu DC** and Penn R. Mimics image reconstruction for computer-assisted brain analysis, Proc. Mimics Innovation Award 2005, pp1-12, Chicago, 2005.
77. Linninger AA, Xenos M, Kondapalli S, Somayaji MBR, **Zhu DC** and Penn R. Image reconstruction for computer-assisted brain analysis. Invited presentation on the Workshop for Computer on 3D Modeling, Chicago, IL, Nov 4-5, 2005.
78. **Zhu DC**, Heidinger L, Kulkarni K, McLaren DG, Goldman MB. Brain activation temporal characteristic mapping in event-related fMRI studies. The Organization for Human Brain Mapping, 11th Annual Meeting 2005, Toronto, #596.
79. **Zhu DC**, Xenos M, Linninger AA, Penn RD. Magnitude and temporal characteristics of lateral ventricle contraction and expansion. Proceeding of the International Society for Magnetic Resonance in Medicine, 13th Scientific Meeting and Exhibition 2005, #67, Miami, FL.
80. **Zhu DC**, Penn RD. A color-coding technique for quantitative cinematic visualization of the cerebrospinal fluid flow dynamics. Proceeding of the International Society for Magnetic Resonance in Medicine, 13th Scientific Meeting and Exhibition 2005, #64, Miami, FL.
81. **Zhu DC**, Linninger AA, Penn RD. Brain water content measurement and visualization with applications to hydrocephalus. Proceeding of the International Society for Magnetic Resonance in Medicine, 13th Scientific Meeting and Exhibition 2005, #1099, Miami, FL.
82. Heidinger L, Kulkarni K, Solodkin A, **Zhu DC**, McLaren DG, Small SL, Gibbons R, Goldman MB. Neural correlates of prepulse inhibition of acoustic startle. International Congress on Schizophrenia research, biannual meeting 2005, Schizophrenia Bulletin, 31:421, Savannah, GA.
83. Goldman MB, Heidinger L, Kulkarni K, **Zhu D**. Neural responses to acoustic startle modification. Poster presented at the 34th Annual Meeting of the Society for Neuroscience, 2004, #202.23, San Diego, CA.
84. Heidinger L, Kulkarni K, Solodkin A, **Zhu D**, Small S, Goldman MB. Neural responses to acoustic startle modification. Poster presented at the conference of the International Society of Neuroimaging in Psychiatry, 2004, Irvine, CA.
85. **Zhu DC**, Penn RD. Full-brain T_1 mapping through inversion recovery fast spin echo imaging with time-efficient slice ordering. Proceeding of the International Society for Magnetic Resonance in Medicine, 12th Scientific Meeting and Exhibition 2004, on CD-ROM, #2103.
86. **Zhu DC**. T_2 and T_2^* triple spiral acquisition for fMRI on 3T systems. Proceeding of the International Society for Magnetic Resonance in Medicine, 12th Scientific Meeting and Exhibition 2004, on CD-ROM, #1007.
87. Norris CJ, **Zhu DC**, Chen E, Small SL, Cacioppo JT. Imaging the orbitofrontal cortex. Poster presented at the annual meeting of the Society for Psychophysiological Research 2003, Chicago, IL.
88. Priatna A, **Zhu DC**. Double/Triple IR dual contrast FSE of the heart with ASSET. Proceeding of the International Society for Magnetic Resonance in Medicine, 11th Scientific Meeting and Exhibition 2003, on CD-ROM, # 1562.
89. **Zhu DC**, Norris CJ, Chen E, Cacioppo JT, Uftring SJ, Hlustik P, Noll DC, Small SL. Systematic evaluation of fMRI acquisition methods for orbitofrontal cortex on a 3T system. The Organization for Human Brain Mapping, 9th Annual Meeting 2003, New York, on CD-ROM, #723.
90. Norris C, Chen E, **Zhu D**, Nusbaum H, Solodkin A, Small S, Cacioppo J. Neural mechanisms activated by emotional pictures. The Organization for Human Brain Mapping, 9th Annual Meeting 2003, New York, on CD-ROM, #58.

91. **Zhu DC**. Systematic diagnosis of phase problems using a FSE sequence. Proceeding of the International Society for Magnetic Resonance in Medicine, 10th Scientific Meeting and Exhibition 2002, on CD-ROM, # 2321.
92. **Zhu DC**, Vu AT. Routine ultra high-resolution 3D time of flight imaging using 8-channel head array coil with EXCITE data acquisition technology. Proceeding of the International Society for Magnetic Resonance in Medicine, 10th Scientific Meeting and Exhibition 2002, on CD-ROM, # 1056.
93. Buonocore MH, **Zhu DC**. Image-based ghost correction for general interleaved EPI. Proceeding of the International Society for Magnetic Resonance in Medicine, 9th Scientific Meeting and Exhibition 2001, on CD-ROM, # 292.
94. Buonocore MH, **Zhu DC**. Magnetic resonance arterial spin tagging for non-invasive pharmacokinetic analysis of breast cancer. Proceedings of the Era of Hope, Dept. of Defense Breast Cancer Research Program Meeting, Vol. 1, Page 177, June 8-11, 2000, Atlanta, GA.
95. Buonocore MH, **Zhu DC**, Bronstein JM. Ghost artifact suppression for interleaved echo planar imaging using image-based phase correction. Proceedings of the International Society for Magnetic Resonance in Medicine, 7th Scientific Meeting and Exhibition 1999;3:1998.
96. Buonocore MH, **Zhu DC**, Zulim RA. Analysis software for breast imaging studies. Proceedings of the International Society for Magnetic Resonance in Medicine, 7th Scientific Meeting and Exhibition 1999;3:2172.
97. Buonocore MH, **Zhu DC**, Bronstein JA. Ghost artifact suppression for interleaved echo-planar imaging. Scientific paper abstract. Radiological Society of North America, Nov 29 - Dec 5, 1998, Chicago IL.
98. Buonocore MH, **Zhu DC**. Odd-number hybrid EPI. Proceeding of the International Society for Magnetic Resonance in Medicine, 6th Scientific Meeting and Exhibition 1998, on CD-ROM, Page 1967.
99. Buonocore MH, **Zhu DC**, Pellot-Barakat C, Zulim RA. Non-invasive measurement of breast tissue perfusion using arterial spin tagging. Radiology, November 1997, 205 (P): 162.
100. Buonocore MH, **Zhu DC**, Barakat-Pellot C, Zulim RA. Noninvasive measurement of blood flow through breast tumors. Poster presentation, 1997 Breast Cancer Research Symposium, September 16, 1997, Sacramento CA.
101. Buonocore MH, **Zhu DC**, Barakat-Pellot C. Measurement of breast tissue perfusion using arterial spin tagging. Proceedings of the International Society for Magnetic Resonance in Medicine, 5th Scientific Meeting and Exhibition 1997;1:311.
102. **Zhu DC**, Buonocore MH, Barakat-Pellot C. Breast tissue differentiation using arterial spin tagging. Proceedings of the UC Davis Biomedical Engineering Symposium, Page 35-36, April 25, 1997, Davis CA.
103. Maddock RJ, Buonocore MH, **Zhu D**. Cortical responses to threat-related words in normal subjects and patients with panic disorder: an fMRI study. Biological Psychiatry 1996;39:637.

RECENT INVITED TALKS AT FACULTY SEMINARS OR COLLOQUIUMS

- MSU Cognitive Imaging Research Center Neuroimaging Series, Fall 2014:
Introduction of cerebral blood flow measurement using arterial spin labeling technique.
- MSU Cognitive Imaging Research Center Neuroimaging Series, Spring 2014:
Resting-State fMRI and Some Update of its Application to Concussion Research.

RECENT INVITED TALKS OUTSIDE MSU

- University of Michigan Functional MRI Symposium, September 2015:
Neuroimaging of sports-related concussion

Advanced Imaging Research Center, UT Southwestern Medical Center, August 2015:
 Resting-State Functional Magnetic Resonance Imaging and Applications for Brain Research
 Institute for Exercise and Environmental Medicine, Texas Health Presbyterian Hospital Dallas, August 2015:
 Resting-State Functional Magnetic Resonance Imaging and Applications for Brain Research
 Big Ten/CIC-Ivy League Traumatic Brain Injury Research Collaboration Summit, July 2014:
 A Potential Biomarker in Sports-Related Concussion: Brain Functional Connectivity Alteration of the Default-
 Mode Network Measured with Longitudinal Resting-State fMRI over 30 Days.

PROFESSIONAL MEMBERSHIPS

1998-present International Society for Magnetic Resonance in Medicine.
 2003-present The Organization for Human Brain Mapping.
 2004-2016 American Association of Physicists in Medicine.

HONORS and AWARDS

Sigma Xi Scientific Research Society in 2006
 Mimics Innovation Award 2006: Mimics - an indispensable tool for patient-specific image analysis. By: Mauli Modi, Rajitha Mullapudi, MahadevaBharath R. Somayaji, Michalis Xenos, Andreas A. Linninger, David C. Zhu and Richard Penn
 Mimics Innovation Award 2005: Mimics image reconstruction for computer-assisted brain analysis. By: Andreas A. Linninger, Michalis Xenos, Srinivasa. Kondapalli, MahadevaBharath. R. Somayaji, David C. Zhu and Richard Penn.
 Paul C. Hodges Alumni Society Research Award in 2003
 GE Medical Systems Management Award in 2002
 Tau Beta Pi Engineering Honor Society in 1995
 U.C. Berkeley Honor Students' Society in 1990-1991
 Undergraduate Scholarship in 1990 at U.C. Berkeley
 Chemistry Annual Award of 1989 at Laney College

RESEARCH SUPPORT

Current

1R01AG057571-01 (PIs: Zhang, Vongpatanasin and Zhu) 09/15/2017 - 05/31/2022
 NIH \$3,442,132 (total cost)
 \$691,632 (MSU subcontract)

Hypertension, intracranial pulsatility and brain A β accumulation in older adults
 Conduct a mechanism-driven study to determine: (1) how and to what extent changes in central hemodynamic pulsatility affect intracranial pulsatility (IP) in older adults with hypertension; (2) whether changes in IP are associated with changes in brain A β and tau homeostasis as well as brain structural and functional connectivity.
 Role: One of the three PIs (20% annual effort)

1R01MH112644-01A1 (PI: Thakkar) \$1,542,887 total cost 09/01/2017 - 07/31/2021
 NIH

Uncovering pathophysiological mechanisms of psychosis using the oculomotor system
 The general aim of this proposal is to investigate behavioral and neural correlates of disturbed corollary discharge in schizophrenia using translational eye movement paradigms in combination with structural and functional neuroimaging.
 Role: Co-investigator and MRI physicist (5% annual effort)

Award # 1612867 (PI: Sakhanenko, Co-PI: Zhu) \$119,998 total cost 08/15/2016 - 07/31/2019
 National Science Foundation

Nonparametric estimation of integral curves and surfaces
 Motivated by diffusion-weighted magnetic resonance imaging (MRI) techniques such as Diffusion Tensor Imaging (DTI) and High Angular Resolution Diffusion Imaging, we plan to investigate a detailed list of issues pertinent to statistical integral curve estimation.
 Role: Co-PI (Year 1: 0.5 month effort. Years 2 and 3: 1 month effort per year.)

2R01DC011277 (PI: Chang, MSU subcontract PI: Zhu)
 NIH MSU amount: \$1,634,130 total cost 07/01/2016 - 06/30/2021
 A longitudinal study of neural network development in children who stutter
 The overall objective of this application is to find broader neural network based mechanisms that underlie persistent stuttering.
 Role: MSU site-PI, co-investigator and MRI physicist (4% annual effort)

1R01AG049749 (Overall Contact PI: Zhang, MSU site-PI: Zhu) (Multi-center Phase II trial)
 NIH/NIA MSU amount: \$502,698 total cost 01/15/2016 - 06/30/2021
 Exercise and Intensive Vascular Risk Reduction in Preventing Dementia
 This study aims to determine the independent and combined effects of intensive pharmacological reduction of vascular risk factors and aerobic exercise on neurocognitive function in older adults at high risk for Alzheimer's disease.
 Role: MSU site-PI, co-investigator and lead of the Imaging Core (20% annual effort)

1R01EY022727 (PI: Liu) \$1,732,014 total cost 07/01/2012 - 06/30/2018
 NIH/NEI
 Neural Mechanisms of Attentional Priority for Features and Objects
 The goal of this project is to characterize the neural substrates for controlling attention to non-spatial properties such as features and objects.
 Role: Co-investigator and MRI physicist (10% annual effort first 5 years, 5% annual effort final year (extension))

Grant in a role as a mentor/co-mentor:

K99HL133449 (K99/R00) (PI: Tarumi) 08/01/2016 - 07/31/2021
 NIH/ National Heart, Lung, and Blood Institute
 Midlife Brain Plasticity: Exercise and Vascular Function
 Role: Co-mentor.

Completed

1R01DC011277 (PI: Chang) \$1,841,679 total cost 09/29/2010 - 06/30/2016
 NIH ARRA/NIDCD
 Sexual Dimorphism of Neural Development Underlying Childhood Stuttering
 The overall objective of this project is to identify structural and functional neural markers of stuttering close to symptom onset and determine gender-specific brain developmental trajectory markers that serve to differentiate those children who do or do not recover from stuttering.
 Role: Subcontract PI (final year), co-investigator and MRI physicist (9-20% annual effort)

1R21HD078566 (PI: Pontifex) \$419,926 total cost 04/10/2014 - 03/31/2016
 NIH/NICHD
 Physical-activity Induced Transient Changes in Hemodynamics (PITCH)
 This proposal explores the validity of two hypothesized models of physical-activity induced transient changes in hemodynamics (PITCH) as potential neurocognitive mechanisms underlying improvements in cognition associated with acute exercise.
 Role: Co-investigator and MRI physicist (8.3% annual effort)

1R03DA033455 (PIs: Pleskac and Liu) \$225,400 total cost 04/01/2013 - 03/31/2014
 NIH/NIDA
 Neural mechanism of decision formation during perceptual and risky decisions.
 This proposal aims to isolate the neural mechanism of the deliberation process during risky decision making.
 Role: MRI physicist (5% annual effort)

MSU IRGP (PI: Zhu) \$39,999 total cost 12/15/2008 - 03/15/2011
 Apply Resting-state fMRI and FDG-PET to Understand the Neural Networks Affected by Alzheimer's Disease
 Role: PI (20% annual effort)

Broitman Foundation (PI: Semrud-Clikeman) \$269,000 total cost 09/07/2007 - 09/06/2010
 Research in Nonverbal Learning Disabilities

Use fMRI and volumetric MRI to study children with nonverbal learning disabilities, Asperger's Syndrome, and typically developing children. The goal of this study is compare these groups on measures of social understanding and perception both behaviorally and with neuroimaging.

Role: MRI physicist (5% annual effort)

American Heart Association (PI: DeMarco) \$143,000 total cost 07/01/2008 - 06/30/2010
Use of *in vivo* 3T MR to Characterize Plaque in Patients with Carotid Stenosis and Correlate MR Findings with Symptoms

Role: Collaborating Investigator

Subcontract of Dr. Xue-Qiao Zhao's NIH grant (RO1 HL088214-01A1) at the University of Washington, \$4,055 total, 11/1/08-1/31/09

Carotid Plaque Characteristics by MRI in AIM-HIGH

Role: MSU subcontract PI

GE Healthcare (PIs: DeMarco and Zhu) \$75,000 total cost 09/01/2006 - 08/30/2008
Evaluating the Presence and Type of Carotid Plaque Hemorrhage Using *in vivo* 3T MRI

Role: Co-PI.

University of Chicago Paul C. Hodges Alumni Society Research Award in 2003 (PI: David C. Zhu), 1/1/04 - 6/30/05
Triple Spiral Pulse Sequence and Analytical Technique for Functional MRI Study on 3T Systems

The goal of this research is to develop a novel triple spiral sequence and a multivariate analysis technique that can further reduce the image signal loss due to susceptibility artifacts, enhance the sensitivity of fMRI, and provide a high-level localization of neural activity for fMRI studies on 3T systems.

Role: PI

Grant in a role as a mentor/co-mentor:

AHA Postdoctoral Fellowship (14POST20140013) (PI: Tarumi) 2014 - 2016

American Heart Association

Title: Arterial Stiffness, Intracranial Hemodynamics and Leukoaraiosis in Isolated Systolic Hypertension

TEACHING

Classroom Teaching:

PSY 890 (1-3 unit): Weekly Cognitive Imaging Research Center fMRI seminar (Spring 2007)

PSY 992 (3 units): Introduction to Functional Magnetic Resonance Imaging (Fall 2007)

PSY 890 (1-3 units): Independent study on fMRI (Fall 2007)

PSY 890 (1-3 units): fMRI research experience (Spring 2008)

PSY 992 (3 units): Introduction to Functional Magnetic Resonance Imaging (Fall 2008)

PSY 890 (1-3 units): Independent study on fMRI (Fall 2008)

PSY 992 (3 units): Introduction to Functional Magnetic Resonance Imaging (Spring 2010)

PSY 890 (1-3 units): Independent study on fMRI (Spring 2010)

PSY 992 (3 units): Introduction to Functional Magnetic Resonance Imaging (Spring 2011)

PSY 491 (1 unit): Participant Psychological Project (Spring 2011)

PSY 992 (3 units): Current Methods in Cognitive Neuroscience (Fall 2011) (guest instructor)

PSL 429 (3 units): Biomedical Imaging Methods (Fall of 2012) (one of multiple instructors)

PSY 992 (3 units): Introduction to Functional Magnetic Resonance Imaging (Spring 2013)

PSY 490 (1 unit): Independent Study (Spring 2014)

PSL 429 (3 units): Biomedical Imaging Methods (Fall of 2014) (one of multiple instructors)

PSY 992 (3 units): Current Methods in Cognitive Neuroscience (Spring 2015) (guest instructor)

PHM/PSL/ZOL/NEU 827 (4 units): Physiology & Pharmacology of Excitable Cells (Fall 2015) (one of multiple instructors)

Research Seminar:

Taught and organized weekly Cognitive Imaging Research Center fMRI seminar series (Fall 2006)

Organized the campus-wide weekly MRI and fMRI research seminar series (Spring and Fall of 2008)

Organized the campus-wide bi-weekly neuroimaging research seminars (Fall 2011 - present)

Mentorship:Post-doctoral fellows currently collaborating with me on projects:

Dr. Takashi Tarumi (UT Southwestern Medical Center) on MRI of aging.

Post-doctoral fellows previously collaborating with me on projects:

Mohammad El-Dakdouki (Chemistry) on MR molecular imaging.

Shantanu Majumdar (Radiology) on MRI techniques.

Graduate/Medical students currently collaborating with me on projects:

Jesse Kinner (Student in College of Osteopathic Medicine) on neuroimaging of concussion.

Liangliang Zhang (Ph.D. student in Statistics and Probability) on integration of neuroimaging and clinical dataset.

Yingjie Li (Ph.D. student in Statistics and Probability) on integration of neuroimaging and clinical dataset.

Hamidreza Gharahi (Ph.D. student in Mechanical Engineering) on MR imaging.

Graduate student collaborators who have graduated:

Marisel Villafañe-Delgado (Ph.D. 2017 in Electrical and Computer Engineering. Dissertation Committee Member) on resting-state fMRI data analysis technique development.

Ashley Hannah (Ph.D. 2017 in Neuroscience Graduate Program. Dissertation Committee Member) on neuroimaging of Alzheimer's disease.

Zhe Wang (Ph.D. 2017 in Electrical and Computer Engineering. Dissertation co-advisor) on fMRI data analysis technique development.

Arash Mahyari (Ph.D. 2016 in Electrical and Computer Engineering. Dissertation Committee Member) on fMRI data analysis technique development.

Paul Beach (Ph.D. 2014 in Neuroscience Graduate Program. Dissertation Committee Member) on neuroimaging of Alzheimer's disease.

Hovig Kouyoumdjian (Ph.D. 2014 in Chemistry. Dissertation Committee Member) on molecular imaging of amyloid plaque.

Meghan Caulfield (Ph.D. 2014 in Neuroscience, visiting student from Rutgers University Biomedical and Health Sciences) on neuroimaging of anxiety.

Igor Korolev (Ph.D. 2013 in Neuroscience Graduate Program. Dissertation Committee Member) on neuroimaging of Alzheimer's disease.

Lan Yang (Ph.D. 2012 in Neuroscience Graduate Program. Dissertation Committee Member) on fMRI of pain processing.

Jesse Bledsoe (Ph.D. 2012 in Psychology. Dissertation Committee Member) on neuroimaging of ADHD.

Shantanu Majumdar (Ph.D. 2011 in Electrical and Computer Engineering. Dissertation co-advisor) on diffusion-weighted MR imaging methods.

Alena Patsenka (Ph.D. 2010 in Psychology. Dissertation Committee Member) on fMRI of decision making.

Matthew Husband (Ph.D. 2010 in Linguistic and the Cognitive Science Program.) on fMRI of language processing.

Kheireddine Elboubbou (Ph.D. 2010 in Chemistry) on MR molecular imaging.

Yiming Deng (Ph.D. 2009 in Electrical and Computer Engineering. Dissertation Committee Member) on PET and MRI methods.

Christopher D. Bolin (M.S. 2009 in Mechanical Engineering. Thesis Committee Member) on MRI blood flow quantification.

Jeremy Smith (Ph.D. 2008 in Neuroscience Graduate Program. Dissertation Committee Member) on fMRI of memory consolidation.

Undergraduate student currently mentored by me:

Mari Dowling (Neuroscience) and Maddie Bross (Neuroscience) on neuroimaging.

Undergraduate student mentored by me who has graduated:

Lisa Kelly (B.S. 2014 in Computer Science) on fMRI.

JOURNAL REVIEWERMagnetic Resonance in Medicine
Journal of Magnetic Resonance Imaging
NMR in Biomedicine

NeuroImage
Human Brain Mapping
Cerebral Cortex
Journal of Vision
International Journal of Biomedical Imaging
Dementia and Geriatric Cognitive Disorders
Journal of Alzheimer's Disease
Developmental Neuropsychology
Neurobiology of Aging
International Journal of Neuroscience
Brain Imaging and Behavior
Neurology

OTHER PROFESSIONAL SERVICE

Associate Editor of the Journal of Alzheimer's Disease (2013 – 2014)
MSU Steering Committee member for Brain-Mind Institute (2011 – 2013)