

CURRICULUM VITAE

Elizabeth M. Davenport, PhD

PERSONAL INFORMATION

Name: Elizabeth M. Davenport, PhD
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EDUCATION

<u>Year</u>	<u>Degree</u>	<u>Field of Study</u>	<u>Institution</u>
2011	BS	Biomedical Engineering	North Carolina State University, Raleigh, NC
2015	PhD	Biomedical Engineering	Virginia Tech – Wake Forest University School of Biomedical Engineering and Sciences, Blacksburg, VA

POSTDOCTORAL TRAINING

<u>Year(s)</u>	<u>Titles</u>	<u>Specialty/Discipline</u>	<u>Institution</u>
2016-2018	Additional	Postdoctoral Training	University of Texas Southwestern Medical Center, Dallas, TX

FACULTY ACADEMIC APPOINTMENTS

<u>Year(s)</u>	<u>Academic Title</u>	<u>Academic Department</u>	<u>Academic Institution</u>
2018-now	Assistant Professor	Radiology	University of Texas Southwestern Medical School, Dallas, TX
2018-now	Assistant Professor	Advanced Imaging Research Center (AIRC)	University of Texas Southwestern Medical School, Dallas, TX

HONORS AND AWARDS

<u>Year</u>	<u>Name of Honor/Award</u>	<u>Awarding Organization</u>
2011	Research Fellowship	Virginia Tech-Wake Forest University
2011	Outstanding Woman of the Year	North Carolina State University
2011	Magna Cum Laude	North Carolina State University
2012	Graduate Research Fellowship	National Science Foundation (NSF)
2013	Poster Day Runner-Up	Wake Forest University
2014	Outstanding Presentation Trainee Award	American Society of Neuroradiology (ASNR)
2017	Outstanding Trainee Travel Award	NIH - MEG

MAJOR ADMINISTRATIVE AND LEADERSHIP POSITIONS

<u>Year(s)</u>	<u>Position Title</u>	<u>Institution</u>	<u>Scope</u>
2020-now	Technical Director - MEG Center for Excellence	UT Southwestern Medical Center, Dallas, TX	Institutional

COMMITTEE SERVICE

National

<u>Years</u>	<u>Position Title</u>	<u>Name Of Committee</u>	<u>Institution or Organization</u>
2018-now	Member	Data Sharing Committee	NIH MEG

2019-now	Member	MEG Committee	American Society of Functional Neuroradiology (ASFNR)
2021-now	Member	Research Committee	American Society of Neuroradiology

PROFESSIONAL SOCIETIES

<u>Year(s)</u>	<u>Society Name</u>	<u>Society Role</u>
2012-2015	Engineering in Medicine and Biology Society	Vice President
2012-now	Institute of Electrical and Electronics Engineers	Member
2016-now	American Society of Neuroradiology	Member
2019-now	Texas MEG Society	Co-Founder and Co- President
2019-now	American Society of Functional Neuroradiology	Member
2019-now	Radiology Society of North America	Member

GRANT REVIEW ACTIVITIES

<u>Year(s)</u>	<u>Name of Committee</u>	<u>Organization</u>
2020	CoNDA Center Pilot Grant Peer Review Panel	University of Nebraska Medical Center

EDITORIAL ACTIVITY

Reviewer (All Types)

<u>Year(s)</u>	<u>Journal Name</u>	<u>Editorial Role</u>
2018-Now	Human Brain Mapping	Ad Hoc Reviewer
2019-Now	Brain Imaging and Behavior	Ad Hoc Reviewer
2019-Now	Cerebral Cortex	Ad Hoc Reviewer
2020-Now	Annals of Biomedical Engineering	Ad Hoc Reviewer
2020-Now	Neuroscience Letters	Ad Hoc Reviewer
2020-Now	Frontiers in Human Neuroscience	Ad Hoc Reviewer
2021-Now	American Journal of Neuroradiology	Ad Hoc Reviewer

INVITED LECTURES, TEACHING AND PRESENTATIONS

National

<u>Year(s)</u>	<u>Presentation Title or Course Name</u>
2014	The Impact of Head Impacts: Combining Biomechanics, Neuroimaging, and Neurocognitive Testing to Better Understand the Cumulative Effects of Head Impacts from Football. Florida Atlantic University.
2018	Better, Stronger, Faster? - Connectivity in MEG. Roanoke, VA.
2020	The Impact of Head Impacts: MEG Measured Changes over a Season of Football. Texas Pediatric Neuroscience Network Conference. Austin, TX. March 2020 (Lecturer)

Regional

<u>Year(s)</u>	<u>Presentation Title or Course Name</u>
2019	Future Trends in Concussion Management. UT Southwestern Medical Center.
2021	The Impact of Head Impacts: Detecting Subconcussive Impacts in Pediatric Football Players Through Advanced Imaging. Roanoke, VA.

Local

<u>Year(s)</u>	<u>Presentation Title or Course Name</u>
2018	The Impact of Head Impacts: Using Medical Imaging to Study Subconcussive Impacts in Youth Football. Southern Methodist University, Dallas, TX.
2019	Utilizing Magnetoencephalography to Study Memory and Cognition. UT Southwestern Medical Center.
2019	Utilizing Magnetoencephalography in Psychology. UT Southwestern Medical Center.
2019	Magnetoencephalography in Traumatic Brain Injury, Frontiers in Medicine (yearly course for medical students). UT Southwestern Medical Center.
2020	An Introduction to MEG: The Physics and Clinical Applications. UT Southwestern Neurology Grand Rounds, Dallas, TX.
2020	Magnetoencephalography. UT Southwestern AIRC Seminar Series.

REPORT OF TECHNOLOGICAL AND OTHER SCIENTIFIC INNOVATIONS

<u>Year(s)</u>	<u>Innovation/Patent Title</u>	<u>Role</u>	<u>Status</u>
2014	Developed a system allowing for rapid intraosseous delivery of fluids from a fluid reservoir via an intraosseous port having a tip disposed within the bone marrow of a patient	Inventor	Patented

SERVICE TO THE COMMUNITY AND PATIENT EDUCATION

<u>Years</u>	<u>Role/Description</u>	<u>Organization or Institution</u>
2012-Now	Volunteer for STEM education outreach programs	Public Schools

BIBLIOGRAPHY OF SCHOLARLY PUBLICATIONS

Original Research Article

- 1 Natarajan S, Saha B, Joshi S, Edwards A, Khot T, Davenport EM, Kersting K, Whitlow CT, Maldjian JA. Relational learning helps in three-way classification of Alzheimer patients from structural magnetic resonance images of the brain. *International Journal of Machine Learning and Cybernetics* 2013;5(5):659-669.
- 2 Maldjian JA, Whitlow CT, Saha BN, Kota G, Vandergriff C, Davenport EM, Divers J, Freedman BI, Bowden DW. Automated White Matter Total Lesion Volume Segmentation in Diabetes. *AJNR Am J Neuroradiol* 2013 Dec;34(12):2265-70. doi: 10.3174/ajnr.A3590. PMID: 23868156
- 3 Urban JE, Davenport EM, Golman AJ, Maldjian JA, Whitlow CT, Powers AK, Stitzel JD. Head Impact Exposure in Youth Football: High School Ages 14 to 18 Years and Cumulative Impact Analysis. *Ann Biomed Eng* 2013 Dec;41(12):2474-87. Epub 2013 Jul 18. PMID: 23864337
- 4 Cobb BR, Urban JE, Davenport EM, Rowson S, Duma SM, Maldjian JA, Whitlow CT, Powers AK, Stitzel JD. Head Impact Exposure in Youth Football: Elementary School Ages 9-12 Years and the Effect of Practice Structure. *Ann Biomed Eng* 2013 Dec;41(12):2463-73. doi: 10.1007/s10439-013-0867-6. PMID: 23881111
- 5 Maldjian JA, Davenport EM, Whitlow CT. Graph theoretical analysis of resting-state MEG data: identifying interhemispheric connectivity and the default mode. *NeuroImage* 2014 Aug 1;96:88-94. doi: 10.1016/j.neuroimage.2014.03.065. PMID: 24699016
- 6 Davenport EM, Whitlow CT, Urban JE, Espeland MA, Jung Y, Powers AK, Stitzel JD, Maldjian JA. Abnormal white matter integrity related to head impact exposure in a season of high school varsity football. *Journal of Neurotrauma* 2014 Oct 1;31(19):1617-24. doi: 10.1089/neu.2013.3233. PMID: 24786802
- 7 Davenport EM, Apkarian K, Whitlow CT, Urban JE, Jensen JH, Szuch E, Espeland MA, Jung Y, Rosenbaum DA, Gioia GA, Powers AK, Stitzel JD, Maldjian JA. Abnormalities in Diffusional Kurtosis Metrics Related to Head Impact Exposure in a Season of High School Varsity Football. *Journal of Neurotrauma*; 2016 Dec 1;33(23):2133-2146. PMID: 27042763
- 8 Bahrami, N., Sharma, D., Rosenthal, S., Davenport, E.M., Urban, J.E., Wagner, B., Jung, Y., Vaughan, C.G., Gioia, G.A., Stitzel, J.D., Whitlow, C.T. and Maldjian, J.A. Subconcussive Head Impact Exposure and White Matter Tract Changes over a Single Season of Youth Football. *Radiology*. 2016 Dec;281(3):919-926. doi: 10.1148/radiol.2016160564. Epub 2016 Oct 24. PMID: 27775478

- 9 Kelley ME, Urban JE, Miller LE, Jones DA, Espeland MA, Davenport EM, Whitlow CT, Maldjian JA, Stitzel JD. Head impact exposure in youth football: Comparing age- and weight-based levels of plan. *J Neurotrauma* 2017 Jun 1;34(11):1939-1947. doi: 10.1089/neu.2016.4812. Epub 2017 Apr 7. PMID: 28274184
- 10 Ercan E, Varma G, Mädler B, Dimitrov IE, Pinho MC, Xi Y, Wagner BC, Davenport EM, Maldjian JA, Alsop DC, Lenkinski RE, Vinogradov E. Microstructural correlates of 3D steady-state inhomogeneous magnetization transfer (ihMT) in the human brain white matter assessed by myelin water imaging and diffusion tensor imaging. *Magnetic Resonance in Medicine* 2018 April 29; 80(6):2402-2414. PMID: 29707813
- 11 Urban JE, Kelley ME, Espeland MA, Davenport EM, Whitlow CT, Powers AK, Maldjian JA, Stitzel JD. In-Season Variations in Head Impact Exposure among Youth Football Players. *J Neurotrauma*. 2019 Jan 15;36(2):275-281. doi: 10.1089/neu.2018.5699. Epub 2018 Aug 15. PMID: 29921164
- 12 Urban JE, Flood WC, Zimmerman BJ, Kelley ME, Espeland MA, McNamara L, Davenport EM, Powers AK, Whitlow CT, Maldjian JA, Stitzel JD. Evaluation of Head Impact Exposure Measured from Youth Football Game Plays, *Journal of Neurosurgery: Pediatrics*. 2019 May; doi: 10.3171/2019.2.PEDS18558. PMID: 31075762.
- 13 Shah BR, Holcomb JM, Davenport EM, Lack CM, McDaniel JM, Imphean DM, Xi Y, Rosenbaum DA, Urban JE, Wagner BC, Powers AK, Whitlow CT, Stitzel JD, Maldjian JA. Prevalence and Incidence of Microhemorrhages in Adolescent Football Players. *AJNR Am J Neuroradiol*. 2020 Jul;41(7):1263-1268. doi: 10.3174/ajnr.A6618. PMID: 32661051 PMCID: PMC7357633
- 14 Murugesan GK, Ganesh C, Nalawafe S, Davenport EM, Wagner B, Hwa KW, Maldjian JA. BrainNET: Inference of Brain Network Topology Using Machine Learning. *Brain Connect*. 2020 Oct;10(8):422-435. doi: 10.1089/brain.2020.0745. Epub 2020 Oct 8. PMID: 33030350
- 15 Dash D, Wisler A, Ferrari P, Davenport EM, Maldjian J and Wang J. MEG Sensor Selection for Neural Speech Decoding, *IEEE Access*, 2020;8:182320-182337. doi: 10.1109/access.2020.3028831. Epub 2020 Oct 6. PMID: 33204579
- 16 Miller LE, Urban JE, Davenport EM, Powers AK, Whitlow CT, Maldjian JA, Stitzel JD. Brain Strain: Computational Model-Based Metrics for Head Impact Exposure and Injury Correlation. *Ann Biomed Eng*. 2020 Nov 30;. Doi: 10.1007/s10439-020-02685-9. [Epub ahead of print] PMID: 3325808
- 17 DiSimone JC, Davenport EM, Urban J, Xi Y, Holcomb JM, Kelley ME, Whitlow CT, Powers AK, Stitzel JD, Maldjian JA. Mapping default mode connectivity alterations following a single season of subconcussive impact exposure in youth football. *Hum Brain Mapp*. 2021 Jun 1;42(8):2529-2545. doi: 10.1002/hbm.25384. Epub 2021 Mar 18. PMID: 33734521
- 18 Kelley ME, Urban JE, Jones DA, Davenport EM, Miller LE, Snively BM, Whitlow CT, Powers AK, Maldjian JA, Stitzel JD. Longitudinal head impact exposure and white matter integrity analysis among returning youth football players. *J Neurosurgery: Pediatrics*. In Press
- 19 Reddy D, Davenport EM, Yu F, Wagner B, Urban JE, Whitlow CT, Stitzel JD, Maldjian JA. Alterations in MEG default mode effective connectivity following concussion. *AJNR Am J Neuroradiol*. In Press

Review, Chapter, Monograph or Editorial

- 1 Davenport EM, Urban JE, Mokhtari F, Lowther EL, Van Horn JD, Vaughan C, Gioia GA, Whitlow CT, Stitzel JD, Maldjian JA. Subconcussive Impacts and Imaging Findings Over a Season of Contact Sports. *Concussion*. 2016 Aug 16;1(4):CNC19. doi: 10.2217/cnc-2016-0003. eCollection 2016 Dec. PMID: 30202561
- 2 O'Neill TJ, Davenport EM, Murugesan G, Montillo A, Maldjian JA. Applications of Resting State Functional MR Imaging to Traumatic Brain Injury. *Neuroimaging Clin N Am*. 2017 Nov;27(4):685-696. doi: 10.1016/j.nic.2017.06.006. Epub 2017 Aug 18. PMID: 28985937
- 3 Proskovec AL, Shah BR, Yu FF, Achilleos M, Maldjian JA, Davenport EM. Magnetoencephalography (MEG) and Mild Traumatic Brain Injury (mTBI). *Advances in Clinical Radiology*. Doi:10.1016/j.yacr.2020.05.004. Epub ahead of print.

NON-PEER REVIEWED PUBLICATIONS

Proceedings of a Meeting

- 1 Moody EA, Rhyne A, Rucker LC, Witman D, Eller A "Rapid Fluid Delivery Device to Aid in Intraosseous Infusion" North Carolina State University/University of Chapel Hill Biomedical Research Design Symposium, Research Triangle Park, NC, May 2011.
- 2 Moody EA, Whitlow CT, Bowden DW, Maldjian JA. "Disease-Specific Gray-Matter Changes in Patients with Diabetes Mellitus Revealed by Graph Theoretical Analysis of Structural MRI Data." American Society of Functional Neuroradiology (ASFNR) 6th Annual Conference, Orlando, FL, March 2012

- 3 Moody EA, Whitlow CT, Bowden DW, Maldjian JA. "Graph Theoretical Analysis Applied to Structural MRI Data Reveals Disease-Specific Gray-Matter Changes in Patients with Diabetes Mellitus." American Society of Neuroradiology (ASNR) 50th Annual Conference, New York, NY, April 2012
- 4 Davenport EM, Whitlow CT, Maldjian JA. "Age-Specific Gray-Matter Changes in Pediatric Subjects is Revealed by Graph Theoretical Analysis Applied to Structural MRI Data." Biomedical Engineering Society 2012 Annual Meeting, Atlanta, GA, October 2012
- 5 Saha BN, Whitlow CT, Kota G, Moody E, Natarajan S, Bowden D, Divers J, Freedman BI Maldjian JA. Hierarchical level set with boosting for white matter lesion segmentation in diabetes. Radiological Society of North America's 98th Scientific Assembly and Annual Meeting, 2012, Chicago, Illinois.
- 6 Natarajan S, Joshi S, Saha B, Edwards A, Khot T, Moody E, Kersting K, Whitlow CT, Maldjian JA. A machine learning pipeline for three-way classification of Alzheimer patients from structural magnetic resonance images of the brain. IEEE 11th International Conference on Machine Learning and Applications (ICMLA), 2012, Boca Raton, Florida.
- 7 Davenport EM, Urban JE, Whitlow CT, Powers A, Thompson MM, Rawley J, McGowin I, Alberto G, Bungo T, Godwin D, Stitzel JD, Maldjian JA. Delta wave detection in MEG data of high school football players. American Society of Neuroradiology 51st Annual Meeting, 2013, San Diego, California.
- 8 Davenport EM, Whitlow CT, Powers A, Rawley J, McGowin I, Alberto G, Bungo T, Godwin D, Thompson MM, Urban JE, Stitzel JD, Maldjian JA. Investigation of pediatric MEG networks using meta-ICA. American Society of Neuroradiology 51st Annual Meeting, 2013, San Diego, California.
- 9 Davenport EM, Whitlow CT, Powers A, Rawley J, McGowin I, Alberto G, Bungo T, Godwin D, Thompson MM, Urban J, Stitzel J, Maldjian JA. Investigation of Pediatric MEG Networks using ICA. Presented at the Graduate Student and Fellow Postdoctoral Day Wake Forest University Conference, Winston-Salem, NC, 2013.
- 10 Maldjian JA, Davenport E, Whitlow CT, Rawley J, McGowin I, Alberto G, Bungo T, Godwin D, Thompson MM, Urban J, Powers A, Stitzel J. Stationarity of MEG and fMRI resting-state signal. American Society of Functional Neuroradiology 6th Annual Meeting, 2013, Charleston, South Carolina.
- 11 Davenport EM, Urban JE, Whitlow CT, Powers AK, Thompson MM, Rawley JB, McGowin IV, Alberto G, Bungo T, Godwin DW, Stitzel JD, Maldjian JA. "Delta Wave Detection in MEG Data of High School Football Players." American Society of Functional Neuroradiology (ASFNR) 7th Annual Conference, Charleston, SC, March 2013
- 12 Maldjian JA, Davenport E, Whitlow CT, Rawley J, McGowin I, Alberto G, Bungo T, Godwin D, Thompson MM, Urban J, Powers A, Stitzel J. Graph theoretic MEG resting-state networks. American Society of Functional Neuroradiology 6th Annual Meeting, 2013, Charleston, South Carolina.
- 13 Maldjian JA, Davenport E, Whitlow CT, Rawley J, McGowin I, Alberto G, Bungo T, Godwin D, Thompson MM, Urban J, Powers A, Stitzel J. An automated MEG resting-state analysis pipeline. American Society of Functional Neuroradiology 7th Annual Meeting, March 2013, Charleston, South Carolina.
- 14 Davenport EM, Whitlow CT, Powers AK, Rawley JB, McGowin IV, Alberto G, Bungo T, Godwin DW, Thompson MM, Urban JE, Stitzel JD, Maldjian JA. "Investigation of Pediatric MEG Networks using Meta-ICA." American Society of Functional Neuroradiology (ASFNR) 7th Annual Conference, Charleston, SC, March 2013
- 15 Davenport EM, Urban JE, Whitlow CT, Powers AK, Thompson MM, Rawley JB, McGowin IV, Alberto G, Bungo T, Godwin DW, Stitzel JD, Maldjian JA. "The Impact of Head Impacts: A Preliminary Study of MEG Delta Waves in High School Football Players." IEEE Section Meeting, Winston-Salem, NC, April 2013
- 16 Urban JE, Miller LE, Davenport EM, Maldjian JA, Whitlow CT, Powers AK, Stitzel JD. Impact Location Relates to Areas of Increased Delta Wave Power in MEG Data of High School Football Players. American Society of Functional Neuroradiology (ASFNR) 8th Annual Conference, Miami Beach, FL, February 2014
- 17 Maldjian JA, Davenport EM, Whitlow CT. Graph Theoretic Connectivity Analysis of MEG Data. American Society of Functional Neuroradiology (ASFNR) 8th Annual Conference, Miami Beach, FL, February 2014
- 18 Davenport EM, Whitlow CT, Urban JE, Espeland MA, Jung Y, Rosenbaum DA, Gioia GA, Powers AK, Stitzel JD, Maldjian JA. Abnormal White Matter Integrity Related to Head Impact Exposure in a Season of High School Varsity Football. American Society of Functional Neuroradiology (ASFNR) 8th Annual Conference, Miami Beach, FL, February 2014
- 19 Mokhtari F, Davenport EM, Urban JE, Bahrami N, Whitlow CT, Powers AK, Stitzel JD, Maldjian JA. Interhemispheric Connectivity Changes Associated with a Season of High School Football. American Society of Functional Neuroradiology (ASFNR) 8th Annual Conference, Miami Beach, FL, February 2014
- 20 Mokhtari F, Davenport EM, Urban JE, Bahrami N, Whitlow CT, Powers AK, Stitzel JD, Maldjian JA. Interhemispheric Connectivity Changes Associated with a Season of High School Football. American Society of Neuroradiology 52nd Annual Meeting, May 2014, Montreal, Canada.

- 21 Urban JE, Miller LE, Davenport EM, Maldjian JA, Whitlow CT, Powers AK, Stitzel JD. Impact Location Relates to Areas of Increased Delta Wave Power in MEG Data of High School Football Players. American Society of Neuroradiology 52nd Annual Meeting, May 2014, Montreal, Canada.
- 22 Davenport EM, Whitlow CT, Urban JE, Espeland MA, Jung Y, Rosenbaum DA, Gioia GA, Powers AK, Stitzel JD, Maldjian JA. Abnormal White Matter Integrity Related to Head Impact Exposure in a Season of High School Varsity Football. American Society of Neuroradiology 52nd Annual Meeting, May 2014, Montreal, Canada.
- 23 Mokhtari F, Davenport EM, Urban JE, Bahrami N, Whitlow CT, Powers AK, Stitzel JD, Maldjian JA. Frontal lobe interhemispheric connectivity changes associated with a season of high school football. ISMRM Annual Meeting. Milan, Italy. May 2014.
- 24 Maldjian JA, Davenport EM, Whitlow CT. Graph Theoretic Connectivity Analysis of MEG Data. American Society of Neuroradiology 52nd Annual Meeting, May 2014, Montreal, Canada.
- 25 Stitzel JD, Urban JE, Davenport EM, Maldjian JA, Whitlow CT, Powers AK, Gioia G, Duma S, Rowson S. "Development of a Risk Weighted Cumulative Exposure Metric for the Analysis of Head Impact Data." Presented at the Hit Count Symposium, Washington, D.C., July 2014.
- 26 Urban JE, Davenport EM, Maldjian JA, Whitlow CT, Powers AK, Stitzel JD. "A Risk Weighted Cumulative Exposure Metric for the Analysis of Head Impact Data." Presented at the American Academy of Neurology Sports Concussion Conference Poster Session, Chicago, IL, July 2014.
- 27 Mokhtari F, Davenport EM, Urban JE, Whitlow CT, Stitzel J, Maldjian JA. SVM-RFE for distinguishing fMRI interhemispheric networks between big and little hitters in a single football season. Presented at the Biomedical Engineering Society Conference, San Antonio, TX, October 2014
- 28 Aprakarian K, Davenport E, Urban J, Espeland M, Whitlow C, Jung Y, Rosenbaum D, Powers A, Stitzel J, Maldjian J. "Axonal Water Fraction is Related to Head Impact Exposure in High School Varsity Football Players." Biomedical Engineering Society Fall Scientific Meeting Poster Session, San Antonio, TX October 2014.
- 29 Bahrami N, Davenport E, Whitlow C, Urban J, Jung Y, Espeland M, Rosenbaum D, Vaughan C, Gioia G, Powers A, Stitzel J, Maldjian J. "TBSS Analysis of White Matter Changes Related to Head Impacts in High School Football." Biomedical Engineering Society Fall Scientific Meeting, San Antonio, TX October 2014.
- 30 Mokhtari F, Davenport E, Urban J, Whitlow C, Natarajan S, Stitzel J, Maldjian J. "Classifying Head-Impact Related Changes in Brain Connectivity after a Single Season of High School Football: A Support Vector Machine Recursive Feature Elimination Approach." Biomedical Engineering Society Fall Scientific Meeting Poster Session, San Antonio, TX October 2014.
- 31 Bahrami N, Davenport EM, Whitlow CT, Urban JE, Mokhtari F, Espeland M, Jung Y, Rosenbaum DA, Gioia G, Powers AK, Stitzel J, Maldjian JA. Head Impacts and White Matter Changes in High School Football: A TBSS Analysis. Presented at the Radiological Society of North America Annual Conference, Chicago, IL, Nov 2014.
- 32 Davenport EM, Urban JE, Whitlow CT, Espeland MA, Jung Y, Rosenbaum DA, Gioia GA, Powers AK, Stitzel JD, Maldjian JA. Season of Youth Football Increases MEG Low Frequency Brain Waves. American Society of Functional Neuroradiology 9th Annual Meeting, Tucson, AZ, March 2015.
- 33 Libove E, Davenport EM, Espeland MA, Urban JE, Stitzel JD, Whitlow CT, Whole-Brain MEG-Recorded Delta Activity Decreases During Normal Pediatric Brain Maturation, American Society of Neuroradiology (ASNR), Chicago, IL, April 2015.
- 34 Davenport EM, Urban JE, Whitlow CT, Espeland MA, Jung Y, Rosenbaum DA, Gioia GA, Powers AK, Stitzel JD, Maldjian JA. Head Impact Exposure in a Season of Youth Football Increases MEG Low Frequency Brain Waves. American Society of Neuroradiology 53rd Annual Meeting, Chicago, IL, April 2015.
- 35 Bahrami N, Sharma H, Davenport EM, Stitzel JD, Powers AK, Whitlow CT, Maldjian JA. Brain Structural Network Changes Related to Head Impact in Youth Football. American Society of Neuroradiology (ASNR), Chicago, IL, April 2015.
- 36 Bahrami N, Sharma H, Davenport EM, Stitzel JD, Powers AK, Whitlow CT, Jung Y, Maldjian JA, Brain Structural Network Changes Related to Head Impact in Youth Football, American Society of Neuroradiology (ASNR), Chicago, IL, April 2015.
- 37 DellaGrotta LM, Davenport EM, Urban JE, Espeland MA, Jung Y, Gioia GA, Powers AK, Stitzel JD, Maldjian JA, Whitlow CT. Non-Concussive Cumulative Head Impact-Associated Abnormalities in Brain Gray Matter after a Single Season of Varsity High School Football: Practices versus Games. American Society of Neuroradiology 53rd Annual Meeting, Chicago, IL, April 2015.
- 38 Szuch ET, Davenport EM, Urban JE, Espeland MA, Jung Y, Gioia GA, Powers AK, Stitzel JD, Maldjian JA, Whitlow CT. Diffusional Kurtosis Imaging Reveals Head-Impact Associated Changes in Brain White Matter after a Single Season of Varsity High School Football. American Society of Neuroradiology 53rd Annual Meeting, Chicago, IL, April 2015.
- 39 Bahrami N, Sharma H, Davenport EM, Stitzel JD, Powers AK, Whitlow CT, Maldjian JA. Brain Structural Network Changes Related to Head Impact in Youth Football. American Society of Neuroradiology (ASNR), Chicago, IL, April 2015.

- 40 Bahrami N, Sharma H, Davenport EM, Urban JE, Stitzel JD, Powers AK, Whitlow CT, Maldjian JA. Effects of Linear and Rotational Head Impact on White matter Changes in High School Football Players. International Society for Magnetic Resonance in Medicine (ISMRM), Toronto , Canada, May-June 2015.
- 41 Bahrami N, Sharma H, Davenport EM , Stitzel JD, Powers AK, Whitlow CT, Jung Y, Maldjian JA, Effect of Head impacts on White Matter Fiber Tracts in Youth Football, Biomedical Engineering Society (BMES), Tampa, FL, Oct 2015.
- 42 Mokhtari F, Davenport EM, Urban JE, Lack CM, Whitlow CT, Stitzel JD, Maldjian JA. Machine Learning Classification of Low and High Head Impact Exposure in Youth Football Using DTI. BMES Annual Meeting. Tampa, FL. October 2015.
- 43 Urban JE, Kelley ME, Davenport EM, Maldjian JA, Whitlow CT, Stitzel JD. "Cumulative Head Impact Exposure in Youth Football Players." Keystone Symposium on Traumatic Brain Injury: Clinical, Pathological, and Translational Mechanisms of TBI, Santa Fe, NM, January 2016.
- 44 Rosenthal SL, Bahrami N, Davenport EM, Vaughan C, Gioia GA, Urban JE, Stitzel JD, Maldjian JA, Whitlow CT. Subconcussive Related Changes in High School Football Player Reaction Time. International Neuropsychological Society Conference (NS), Boston, MA, February 2016.
- 45 Stitzel JD, Urban JE, Miller LE, Kelley ME, Jones DA, Davenport EM, Whitlow CT, Powers AK, Maldjian JA, "Subconcussive Impact Exposure and Computational Modeling of the Brain Using an Atlas-Based Biomechanical Finite Element Model." International Brain Injury Association Annual Meeting, Hague Netherlands, March 2016.
- 46 Davenport EM, Urban JE, Santago P, Moran R, Wagner B, Espeland MA, Whitlow CT, Stitzel JD, Maldjian JA. MEG Low-Frequency Brain Waves Increase After a Season of High School Football. American Society of Functional Neuroradiology 10th Annual Meeting, Austin, TX, March 2016.
- 47 Davenport EM, Brown P, East L, Urban JE, Wagner B, Espeland MA, Moran R, Santago P, Whitlow CT, Stitzel JD, Maldjian JA. 3D Printed MEG Phantom Design and Construction for Validation of MEG Source Localization. American Society of Functional Neuroradiology 10th Annual Meeting, Austin, TX, March 2016.
- 48 Bahrami N, Davenport EM, Urban JE, Jung Y, Gioia GA, Stitzel JD, Maldjian JA, Whitlow CT, Microstructural Changes in Corpus Callosum Associated with Subconcussive Head Impact Exposure in Youth Football, American Society of Functional Neuroradiology (ASFNR), Austin, TX, March 2016.
- 49 Bahrami N, Davenport EM, Urban JE, Jung Y, Gioia GA, Stitzel JD, Maldjian JA, Whitlow CT, Picture Memory Performance and Microstructural Changes in the Inferior Longitudinal Fasciculus Associated with Subconcussive Head Impacts in Youth Football, American Society of Functional Neuroradiology (ASFNR), Austin, TX, March 2016.
- 50 Libove E, Davenport EM, Espeland MA, Urban JE, Stitzel JD, Maldjian JA, Whitlow CT. Whole-Brain MEG-Recorded Delta Activity Decreases During Normal Pediatric Brain Maturation. American Society of Neuroradiology (ASNR), Washington, DC, May 2016
- 51 Bahrami N, Davenport EM, Urban JE, Jung Y, Gioia GA, Stitzel JD, Maldjian JA, Whitlow CT, Cumulative Subconcussive Head Impact Exposure in Youth Football Results in Microstructural Changes in Corpus Callosum, American Society of Neuroradiology (ASNR), Washington DC, May 2016.
- 52 Davenport EM, Urban JE, Santago P, Moran R, Wagner B, Espeland MA, Whitlow CT, Stitzel JD, Maldjian JA. Season of High School Football Increases MEG Low-Frequency Brain Waves. American Society of Neuroradiology (ASNR), Washington, DC, May 2016
- 53 Davenport EM, Brown P, East L, Urban JE, Wagner B, Espeland MA, Moran R, Santago P, Whitlow CT, Stitzel JD, Maldjian JA. Construction of a 3D Printed MEG Phantom for Validation of MEG Source Localization. American Society of Neuroradiology (ASNR), Washington, DC, May 2016
- 54 Davenport EM, Brown P, East L, Urban JE, Wagner B, Espeland MA, Moral R, Santago P, Whitlow CT, Stitzel JD, Maldjian JA, "MEG Phantom Design, 3D Print, and Construction for Validation of MEG Source Localization." NIH MEG-North America Workshop, Bethesda, MD, November 2016
- 55 Davenport EM, Urban JE, Wagner B, Espeland MA, Whitlow CT, Stitzel JD, Maldjian JA, "Relationship Between MEG and Diffusion Imaging Changes over a Season of High School Football." Radiology Society of North America (RSNA), Chicago, IL, November 2016.
- 56 Famili A, Krishnan G, Davenport E, Germi J, Wagner B, Lega B, Montillo A. Automatic Identification of Successful Memory Encoding in Stereo EEG of Refractory, Mesial Temporal Lobe Epilepsy. IEEE International Symposium on Biomedical Imaging, Melbourne, Australia, April 2017.
- 57 Davenport EM, Urban JE, Wagner B, Espeland MA, Powers A, Whitlow CT, Stitzel JD, Maldjian JA, "Subconcussive Impacts in High School Football Alter MEG Measured Default Mode Network." American Society of NeuroRadiology (ASNR) 55th Annual Meeting, Long Beach, CA, April 2017.

- 58 Ercan E, Varma G, Maedler B, Dimitrov IE, Pinho M, Wagner B, Davenport E, Maldjian J, Lenkinski RE, Vinogradov E. Comparison of Inhomogeneous Magnetization Transfer Imaging with myelin water Imaging (MWI) and Diffusion Tensor Imaging (DTI). Accepted for presentation at the International Society for Magnetic Resonance in Medicine Meeting, Honolulu, HI, April 2017
- 59 Garg P, Davenport E, Murugesan G, Wagner B, Whitlow C, Maldjian J, Montillo A. Automatic Multiple MEG Artifact Detection Using 1-D Convolutional Neural Networks Without Electrooculography or Electrocardiography. Presented at the Pattern Recognition in Neuroimaging Meeting, Vancouver, Canada, June 2017.
- 60 Murugesan G, Famili A, Davenport E, Wagner B, Urban J, Kelley M, Jones D, Whitlow C, Stitzel J, Maldjian J, Montillo A. Changes in Resting State MRI Networks from a Single Season of Football Distinguishes Control, Low and High Head Impact Exposure. IEEE International Symposium on Biomedical Imaging, Melbourne, Australia, April 2017.
- 61 Murugesan G, Famili A, Davenport E, Wagner B, Urban J, Kelley M, Jones D, Whitlow C, Stitzel J, Maldjian J, Montillo A. Changes in Resting State fMRI in One Season of Youth Football Distinguish Non-Impact Athletes, Low, and High Impact Exposure Players. Organization for Human Brain Mapping Meeting, Vancouver, Canada, June 2017.
- 62 Garg P, Davenport EM, Murugesan G, Whitlow C, Maldjian J, Montillo A. Using Convolutional Neural Networks to Automatically Detect Eye-Blink Artifacts in Magnetoencephalography. To be presented at the Medical Imaging Computing and Computer Assisted Intervention (MICCAI) meeting, Quebec, Canada, September 2017.
- 63 Davenport EM, Urban JE, Kelley ME, Jones DA, Wagner B, Espeland MA, Powers AK, Whitlow CT, Stitzel JD, Maldjian JA. Subconcussive impacts in youth football correlate with MEG mean default mode network. American Society of Functional Neuroradiology Meeting, Portland, OR, October 2017.
- 64 Fiscaro RA, Davenport EM, Urban JE, Wagner BC, Powers AK, Whitlow CT, Stitzel JD, Maldjian JA. Cerebral peduncle mean kurtosis increases related to head impact exposure after a season of high school football. American Society of Functional Neuroradiology Meeting, Portland, OR, October 2017.
- 65 Holcomb JM, Davenport EM, Fiscaro RA, Vaughan CG, Urban JE, Wagner BC, Powers AK, Whitlow CT, Stitzel JD, Maldjian JA. "Diffusion Tensor Imaging Metric Abnormalities Related to Head Impact Exposure in a Season of Youth Football" UT Southwestern Research Day, Dallas, TX, May 2018.
- 66 Holcomb JM, Ganesh BY C, Fiscaro RA, Davenport EM, Urban JE, Wagner BC, Espeland MA, Powers AK, Whitlow CT, Stitzel JD, Maldjian JA. "NODDI by Nature: Neurite Orientation and Density Changes as a Response to Football Head Impact Exposure" UT Southwestern Research Day, Dallas, TX, May 2018.
- 67 Holcomb JM, Murugesan G, Fiscaro RA, Davenport EM, Urban JE, Wagner BC, Espeland MA, Powers AK, Whitlow CT, Stitzel JD, Maldjian JA, "Impact Exposure Threshold Changes in Gray Matter and Cerebrospinal Fluid Volumes in the Absence of Concussion" American Society of Neurological 56th Annual Meeting, Vancouver, BC, Canada, June 2018.
- 68 Davenport EM, Urban JE, Wagner BC, Espeland MA, Powers AK, Whitlow CT, Stitzel JD, Maldjian JA, "MEG Measured Delta Waves Increase After Concussion" American Society of Neuroradiology 56th Annual Meeting, Vancouver, BC, Canada, June 2018.
- 69 Fiscaro RA, Davenport EM, Holcomb JM, Urban JE, Wagner BC, Powers AK, Whitlow CT, Stitzel JD, Maldjian JA, "Cerebral Peduncle White Matter Modeling Abnormalities Related to Head Impact Exposure After a Season of High School Football" American Society of Neuroradiology 56th Annual Meeting, Vancouver, BC, Canada, June 2018.
- 70 Fiscaro RA, Davenport EM, Holcomb JM, Ganesh BY C, Urban JE, Wagner BC, Powers AK, Whitlow CT, Stitzel JD, Maldjian JA. "Cerebral Peduncle Intracellular Volume Increases Related to Subconcussive Head Impacts in High School Football" American Society of Functional Neuroradiology 12th Annual Meeting, San Diego, CA, October 2018.
- 71 Fiscaro RA, Davenport EM, Holcomb JM, Urban JE, Wagner BC, Powers AK, Whitlow CT, Stitzel JD, Maldjian JA. "Cerebral Peduncle Magnetoencephalographic Frequency Increases Related to Head Impact Exposure After a Season of High School Football" American Society of Functional Neuroradiology 12th Annual Meeting, San Diego, CA, October 2018.
- 72 Fiscaro RA, Davenport EM, Holcomb JM, Urban JE, Wagner BC, Powers AK, Whitlow CT, Stitzel JD, Maldjian JA. "Cerebellar Magnetoencephalographic Beta Power Increases Related to Head Impact Exposure in High School Football" American Society of Functional Neuroradiology 12th Annual Meeting, San Diego, CA, October 16, 2018.
- 73 Holcomb JM, Murugesan G, Fiscaro RA, Nalawade SS, Shah B, Fiscaro RA, Davenport EM, Urban JE, Wagner BC, Espeland MA, Snively BM, Powers AK, Whitlow CT, Stitzel JD, Maldjian JA. "Reduced Mean Diffusivity of the Choroid Plexus and CSF Interface in Response to Subconcussive Impacts" American Society of Functional Neuroradiology 12th Annual Meeting, San Diego, CA, October 2018.
- 74 Fiscaro RA, Holcomb JM, Davenport EM, Urban JE, Wagner BC, Powers AK, Whitlow CT, Stitzel JD, Maldjian JA, "Relationship Between Neck Muscle Volumes and Rotational Head Accelerations from Head Impacts in High School Football" American Society of Pediatric Neuroradiology 1st Annual Meeting, New Orleans, LA, January 2019.

- 75 Holcomb JM, Shah BR, Davenport EM, Fiscaro RA, Urban JE, Wagner BC, Powers AK, Whitlow CT, Stitzel JD, Maldjian JA, "Microstructural Changes in Multipotent Neural Stem Cell Niche Associated with Subconcussive Impacts in High School Football" American Society of Neuroradiology 57th Annual Meeting, Boston, MA, May 2019.
- 76 Holcomb JM, Shah BR, Davenport EM, McDaniel JM, Imphean DM, Urban JE, Wagner BC, Powers AK, Whitlow CT, Stitzel JD, Maldjian JA, "Biomechanical Accelerations Associated with Concussion and the Development of Microhemorrhage in High School Football" American Society of Neuroradiology 57th Annual Meeting, Boston, MA, May 2019.
- 77 Kelley ME, Urban JE, Jones DA, Davenport EM, Miller LE, Snively BM, Powers AK, Whitlow CT, Maldjian JA, Stitzel JD. "Longitudinal Head Impact Exposure and White Matter Integrity Analysis among Returning Youth Football Players" Summer Biomechanics, Bioengineering, and Biotransport Conference. Seven Springs, PA. June 2019
- 78 Holcomb JM, Murugesan G, Davenport EM, Ganesh BY C, Nalawade SS, Shah BR, Fiscaro RA, Urban JE, Wagner BC, Powers AK, Whitlow CT, Stitzel JD, Maldjian JA. "Predictive Factors of Abnormal White Matter FA Changes in Non-concussed, Youth Football Players: A Machine Learning Approach" American Society of Functional Neuroradiology 13th Annual Meeting, San Francisco, CA, November 2019.

TEACHING PORTFOLIO

Medical/Graduate School Courses, Teaching Didactic and Small Groups

UT SOUTHWESTERN MEDICAL CENTER

Year(s): 2020
Course Title: Frontier's in Medicine: Magnetoencephalography
Audience: Medical Students
Role: Instructor
Level of Effort: 2 hour

FORMAL TEACHING OF RESIDENTS, CLINICAL FELLOWS AND RESEARCH (POST DOCTORAL) FELLOWS

Year(s): 2020
Talk Title: Radiology's Role in MEG
Institution: University of Texas Southwestern Medical School, Dallas, TX
Audience: Radiology Residents
Effort: 1-hour lecture

FORMALLY SUPERVISED TRAINEES WHO CO-PUBLISHED OR CO-PRESENTED RESULTS OF EFFORT

Year(s): 2018-2020
Trainee Name / Degree: Catherine Munro
Trainee Current Position: Dissertation Committee Member
Accomplishments: UTSW Psychology Graduate Student

Year(s): 2018-now
Trainee Name / Degree: Amy Proskovec, PhD
Trainee Current Position: Post-doctoral Sr. Research Associate
Accomplishments: Primary mentor, MEG task-based research and study design for Dallas Heart Study (DHS), Alzheimer's Study, and Writers Dystonia study

Year(s): 2020-now
Trainee Name / Degree: Zabecca Brinson
Trainee Current Position: Committee Member
Accomplishments: UTSW Radiology Research Resident

Year(s): 2020-now
Trainee Name / Degree: Anum Effendi
Trainee Current Position: Green Fellow – Undergraduate researcher
Accomplishments: Primary mentor, MEG research and acquisition training

Year(s): 2021
Trainee Name / Degree: Surah Puvvada
Trainee Current Position: Masters Committee Member
Accomplishments: WFU Biomedical Engineering Graduate Student

Year(s): 2021
Trainee Name / Degree: Ruta Uttarkar
Trainee Current Position: Primary Mentor
Accomplishments: UTD Undergraduate Green Fellow

Year(s): 2021
Trainee Name / Degree: Natalie Bell
Trainee Current Position: Primary Mentor
Accomplishments: UTSW Biomedical Engineering Graduate Student

GRANT SUPPORT FUNDED AND UNFUNDED PROJECTS

Existing/Continued/Extended Grants

Grantor: American Society of Neuroradiology (ASNR)
Title of Project: MEG Spectral Analysis as a Biomarker in Alzheimer's Disease
Investigator Role: PI
Annual Amount: \$99,952.00 **Year(s):** 2017-2021
Total Award Amount: \$99,952.00

Expired Grant Awards

Grantor: National Science Foundation (NSF)
Title of Project: Graduate Research Fellowship Program
Investigator Role: PI
Annual Amount: \$46,000.00 **Year(s):** 2012-2015
Total Award Amount: \$138,000.00

Grantor: University of Texas Southwestern
Title of Project: Clinical Scholars Program (KL2 Program)
Investigator Role: PI
Annual Amount: **Year(s):** 2018-2020
Total Award Amount: