Curriculum Vitae
Jesse C. DeSimone, Ph.D.

Education:

08/2019 – 08/2020 **Postdoctoral Training, Radiology, UT Southwestern Medical Center**
Research: advanced neuroimaging, neurotrauma
Advisor: Joseph Maldjian, M.D.

08/2015 – 08/2019 **Ph.D., Kinesiology (Neuroscience), University of Florida**
Research: advanced neuroimaging, motor control, movement disorders
Advisor: David Vaillancourt, Ph.D.

08/2012 – 08/2014 **Ph.D., Kinesiology (Neuroscience), University of Western Ontario**
Research: sensorimotor control, psychophysics
Advisor: Matthew Heath, Ph.D.

08/2008 – 06/2012 **B.Kin., Kinesiology (Honours), Brock University**

Research positions:

08/2019 – 08/2020 **Postdoctoral Researcher**, Advanced Neuroscience Imaging Research Laboratory, University of Texas Southwestern Medical Center, Dept. of Radiology, Dallas, TX, USA

08/2015 – 08/2019 **Graduate Research Fellow**, Laboratory for Rehabilitation Neuroscience, University of Florida, Dept. of Applied Physiology & Kinesiology, Gainesville, FL, USA

08/2014 – 08/2015 **Visiting Research Scholar**, Laboratory for Rehabilitation Neuroscience, University of Florida, Dept. of Applied Physiology & Kinesiology, Gainesville, FL, USA

08/2012 – 08/2014 **Graduate Research Assistant**, NeuroBehavioural Lab, University of Western Ontario, School of Kinesiology, London, ON, Canada

01/2012 – 05/2012 **Undergraduate Research Assistant**, Motor Skills Acquisition Laboratory, Brock University, Dept. of Physical Education & Kinesiology, St. Catharines, ON, Canada

01/2011 – 05/2011 **Undergraduate Research Assistant**, Environmental Ergonomics Lab, Brock University, Dept. of Physical Education & Kinesiology, St. Catharines, ON, Canada

Professional development:

2014 – 2019 Trainee, NIH-funded T32 Training program in Movement Disorders & Neurorestoration, University of Florida

Peer-reviewed publications (12):

ORCID ID

Wilkes B. ‡, **DeSimone J.C.** ‡, Liu Y., Li Y., Vaillancourt D.E. Cell-specific effects of Dyt1 knock-out on sensory processing, network-level connectivity, and motor deficits. Exp Neurol 2021; 343:11783. doi: 10.1016/j.expneurol.2021.113783.

DeSimone J.C., Davenport E.M., Urban J., Xi Y., Holcomb J.M., Kelley M.E., Whitlow C.T., Powers A.K., Stitzel J.D., Maldjian J.A. Mapping default mode connectivity alterations following a single season of subconcussive impact exposure in youth football. Hum Brain Mapp 2021; 42(8):2529-2545. doi: 10.1002/hbm.25384.

Chu W., **DeSimone J.C.**, Riffe C.J., Liu H., Chakrabarty P., Giasson B.I., Vedam-Mai V., Vaillancourt D.E. Alpha-synuclein induces changes in brain microstructure and sensory-evoked brain function that precedes locomotor decline. J Neurosci 2020; 40(34):6649-6659. doi: 10.1523/JNEUROSCI.0189-20.2020.

DeSimone J.C., Archer D.B., Vaillancourt D.E., Shukla A.W. Reply: Thalamotomy for tremor normalizes aberrant pretherapeutic visual cortex functional connectivity**.** Brain 2019. 142(11):1-3. doi: 10.1093/brain/awz300.

DeSimone J.C., Archer D.B., Vaillancourt D.E., Shukla A.W. Network-level connectivity is a critical feature distinguishing dystonic tremor and essential tremor. Brain 2019; 142(6):1644-59. doi: 10.1093/brain/awz085. ***Editor's choice**

DeSimone J.C., Pappas S.S., Febo M., Burciu R.G., Shukla P., Colon-Perez L., Dauer, W.T., Vaillancourt D.E. Forebrain knock-out of torsinA reduces striatal free-water and impairs whole-brain functional connectivity in a symptomatic mouse model of DYT1 dystonia. Neurobiol Dis 2017; 106:124-32. doi: 10.1016/j.nbd.2017.06.015.

DeSimone J.C., Febo M., Shukla P., Ofori E., Colon-Perez L., Li Y., Vaillancourt D.E. In vivo imaging reveals impaired connectivity across cortical and subcortical networks in a mouse model of DYT1 dystonia. Neurobiol Dis 2016; 95:35-45. doi: 10.1016/j.nbd.2016.07.005.

Heath M., **DeSimone J.C.** The visual properties of proximal and remote distractors differentially influence reaching planning times: Evidence from pro- and antipointing tasks. Exp Brain Res 2016; 234(11):3259-68. doi: 10.1007/s00221-016-4723-4.

Kang N., Christou E.A., Burciu R.G., Chung J.W., **DeSimone J.C.**, Ofori E., Ashizawa T., Subramony S.H., Vaillancourt D.E. Cortical motor activity contributes to symptom severity in spinocerebellar ataxia 6. Brain Struct Funct 2016; 222(2):1039-52. doi: 10.1007/s00429-016-1263-4.

Planetta P.J., Ofori E., Pasternak O., Burciu R.G., Shukla, P., **DeSimone J.C.**, Okun M.S., McFarland N.R., Vaillancourt D.E. Free-water imaging in Parkinson's disease and atypical parkinsonism. Brain 2016; 139(Pt 2):495-508. doi: 10.1093/brain/awv361.

DeSimone J.C., Everling S., Heath M. The antisaccade task: Visual distractors elicit a location independent planning cost. PLoS One 2015; 10(4):e012234. doi: 10.1371/journal.pone.0122345.

DeSimone J.C., Weiler J., Aber G.S., Heath M. The unidirectional prosaccade switch-cost: Correct and error antisaccades differentially influence the planning times for subsequent prosaccades. Vision Res 2014; 96:17-24. doi: 10.1016/j.visres.2013.12.005.

Dissertation & Thesis:

DeSimone J.C. In vivo multi-modal neuroimaging in mouse models of DYT1 dystonia. University of Florida, 2019 (Publish date 2021-08-31). UF Thesis and Dissertation Repository, https://ufdc.ufl.edu/UFE0054577/00001.

DeSimone J.C. The antisaccade task: visual distractors elicit a location-independent planning 'cost'. University of Western Ontario, 2014. Electronic Thesis and Dissertation Repository, 2393 https://ir.lib.uwo.ca/etd/2393.

Conference proceedings:

Talks (3)

Mapping dysfunctional default mode connectivity following a single season of subconcussive impact exposure in youth football. UT Southwestern Medical Center, Dallas, TX, USA, 12 May 2020. Virtual Meeting.

Functional connectivity and free-water imaging in mouse models of DYT1 dystonia. College of Health and Human Performance Research Symposium, University of Florida, Gainesville, FL, USA, 4 Nov 2016.

Directionally correct antisaccades reduce the effectiveness and efficiency of stimulus-driven oculomotor networks. Southern Ontario Motor Behavior Symposium, University of Toronto, Toronto, ON, Canada, 8 May 2013.

Posters (15)

Holcomb J.H., Fisicaro R.A., **DeSimone J.C.**, Murugesan G., Shah B.R., Wagner B., Powers A., Whitlow C., Stitzel J., Maldjian J.A. White matter diffusion changes in the subacute phase of adolescent concussion. *American Society of Neuroradiology Annual Meeting*, Las Vegas, NV, USA, 30 May – 4 Jun 2020.

DeSimone J.C., Liu H., Liu Y., Li Y., Vaillancourt D.E. Loss of D2R-expressing torsinA impairs sensory-evoked brain activation and connectivity in a mouse model of dystonia. Annual Meeting for the Society of Neuroscience, Chicago, Il, USA, 19-23 Oct 2019.

Shukla A.W., **DeSimone J.C.**, Archer D.B., Vaillancourt D.E. Network-level Connectivity is a critical feature distinguishing dystonic tremor and essential tremor. *Annals of Neurology*, Hoboken, NJ, USA, 1 Oct 2019. Ann Neurol 86:S268-269.

Chu W., **DeSimone J.C.**, Liu H., Chakrabarty P., Giasson B., Vaillancourt D.E. Longitudinal magnetic resonance imaging of an alpha-synuclein pathology mouse model. *Annual Meeting for the Society of Neuroscience*, Chicago, Il, USA, 19-23 Oct 2019.

DeSimone J.C., Pappas S.S., Febo M., Burciu R.G., Shukla P., Colon-Perez L.M., Dauer W.T., Vaillancourt D.E. Forebrain knock-out of torsinA reduces striatal free-water and impairs whole-brain functional connectivity in a symptomatic mouse model of DYT1 dystonia. *Annual Meeting for the Society of Neuroscience*, Washington, DC, USA, 10-15 Nov 2017.

DeSimone J.C., Febo M., Shukla P., Ofori E., Colon-Perez L., Li Y., Vaillancourt D.E. In vivo imaging reveals impaired connectivity across cortical and subcortical networks in a mouse model of DYT1 dystonia. *Annual Meeting for the Society of Neuroscience*, San Diego, CA, USA, 11-17 Nov 2016.

Burciu R.G., Ofori E., Shukla P., Chung J.W., **DeSimone J.C.**, Hess C.W., McFarland N.R., Shukla A.W., Okun M.S., Vaillancourt, D.E. Motor-related brain changes associated with acute administration of trihexyphenidyl in patients with cervical dystonia. *The International Parkinson and Movement Disorder Society Congress*, Berlin, Germany, 19-23 Jun 2016. Mov Disord 31:S540

DeSimone J.C., Febo M, Shukla P, Ofori E, Colon-Perez L.M., Li Y., Vaillancourt D.E. In-vivo free-water imaging and functional connectivity in a knock-in mouse model of DYT1 dystonia. *The International Parkinson and Movement Disorder Society Congress*, Berlin, Germany, 19-23 Jun 2016. Mov Disord 31:S543

DeSimone J.C., Mitchell T., Weiler J., Heath M. The remote distractor effect for antipointing: The proximity of a distractor relative to movement-related goals influences response planning. *Canadian Society for Psychomotor Learning and Sport Psychology*, London, ON, Canada 16-18 Oct 2014. J Exercise, Movement, and Sport 46(1).

Davarpanah Jazi S., Gillen C., **DeSimone J.C.**, Heath M. Visual and haptic target/distractor interactions and spatial congruency effects in goal-directed grasping. *International Multisensory Research Forum*, Amsterdam, The Netherlands, 11-14 Jun 2014.

DeSimone J.C., Aber G.S., Heath M. The antisaccade task: Sensory- and motor-related costs to oculomotor planning. *Vision Sciences Society*, St. Pete Beach, FL, USA, 16-22 May 2014. J Vision 14(10):94.

DeSimone J.C., Aber G.S., Fu H., Heath M. The antisaccade task: Sensory- and motor-related costs to oculomotor planning. *Western University Faculty of Health Sciences Research Symposium*, London, ON, Canada, 25 Mar 2014.

DeSimone J.C., Heath M. The spatial location of remote distractors differentially influence the planning times of pro- and antisaccades. *Canadian Society for Psychomotor Learning and Sport Psychology*, Kelowna, BC, Canada, 17-20 Oct 2013. J Exercise, Movement, and Sport 45(1):12.

DeSimone J.C., Weiler J., Heath M. Directionally correct antisaccades reduce the effectiveness and efficiency of stimulus-driven oculomotor networks. *Progress in Motor Control*, Montreal, QC, Canada, 14-16 Jul 2013.

DeSimone J.C., Patterson J.T. Self-controlled knowledge of results: Does the impact of sport-related concussion matter? Canadian Society for Psychomotor Learning and Sport Psychology, Halifax, NS, Canada, 1-4 Nov 2012. J Exercise, Movement, and Sport 44(1).

Invited talks:

Free-water imaging and functional connectivity in mouse models of DYT1 dystonia. 5th Annual Motor Neuroscience and Biomechanics Research Summit, University of Florida, Gainesville, FL, USA, 8 Dec 2017.

Research funding:

2015 – 2019 **Graduate Fellowship**, College of Health and Human Performance Graduate Fellowship, University of Florida, Project title: In vivo multi-modal neuroimaging in mouse models of DYT1 dystonia, $80,000 (USD).

2012 – 2014 **Graduate Fellowship**, School of Kinesiology Graduate Research Award, University of Western Ontario, $20,000 (CAD)

Awards and scholarships:

2018	Dean Patrick J. Bird Dissertation Research Award, University of Florida
2018	C.A. Boyd Endowed Scholarship, University of Florida
2017	C.A. Boyd Endowed Scholarship, University of Florida
2016	Dr. Christian W. Zauner Endowed Scholarship, University of Florida
2013	Faculty of Health Sciences Conference Travel Award, University of Western Ontario
2013	School of Kinesiology Travel Award, University of Western Ontario
2012	Faculty of Health Sciences Conference Travel Award, University of Western Ontario
2012	Dean's Honours List, Brock University
2011	Dean's Honours List, Brock University
2008	Entrance Scholarship, Brock University

Reviewer *ad hoc*:

Movement Disorders

Teaching:

Teaching Assistant, University of Western Ontario, 2012 – 2014

- Movement Neuroscience (Instructor: Matthew Heath, Ph.D.)
- Human Factors (Instructor: Alan Salmoni, Ph.D.)

Technical research skills:

Computing environments/statistical software
Unix shell/bash/zsh, SQL, Python, MATLAB, R, SPSS, GraphPad Prism

Software platforms
AFNI, FSL, SPM, ITK-Snap, Mango, CONN Toolbox, Group ICA Toolbox, Brain Connectivity Toolbox, BRAPH Toolbox

Neuroimaging skills
Whole-brain and cerebellar segmentation, BOLD activation and percent signal change, seed-based functional connectivity, independent component analysis, graph-based connectivity, diffusion tensor imaging, free-water imaging, neurite orientation dispersion and density imaging, volumetric analysis

Data collection techniques/technical operation
High-field MRI (4.7T, 11.1 T) acquisition, clinical and research MRI (1.5T, 3T) acquisition

Professional memberships:

2015 –	Society for Neuroscience
2017	Society for the Neural Control of Movement
2012 – 2014	Canadian Society for Psychomotor Learning and Sport Psychology

Activities:

Supervisory

James Holcomb, B.S. Clinical Data Specialist, Dept. of Radiology, University of Texas Southwestern Medical Center. Provided technical training for pre-processing and analysis of functional and diffusion MRI data.

Han Liu, B.S., M.S. Ph.D. student in Dept. of Biomedical Engineering, University of Florida. Provided technical training and oversight for high-field MRI acquisition in pre-clinical animal models, training in pre-processing and analysis of functional and diffusion MRI data.

Winston Chu, B.S. Ph.D. student in Dept. of Biomedical Engineering, University of Florida. Provided technical training and oversight for high-field MRI acquisition in pre-clinical animal models, training in pre-processing and analysis of functional and diffusion MRI data

Other activities

Consultant *pro bono*, Office of Technology Development, UT Southwestern Medical Center. Evaluated intellectual property disclosures and patents for university-borne innovations in support of commercialization and licensing efforts

Consultant *pro bono*, Mitogen Consulting Group, UT Southwestern Medical Center. Supported product development efforts for a pre-revenue medical device startup client