GEORGE E. MARZLOFF II

CURRICULUM VITAE

EDUCATION

2010-2014 M.D. Ross University School of Medicine, Portsmouth, Dominica

2003-2007 B.S. Department of Brain and Cognitive Sciences
Massachusetts Institute of Technology, Cambridge, MA

POSTDOCTORAL TRAINING

2018-2019 Fellowship, Spinal Cord Injury Medicine
Department of Physical Medicine and Rehabilitation
Case Western Reserve University School of Medicine, Cleveland, OH

2015-2018 Residency, Department of Rehabilitation Medicine
Icahn School of Medicine at Mount Sinai, New York, NY

2014-2015 Internship, Department of Internal Medicine
Pinnacle Health, Harrisburg, PA

MEDICAL LICENSURE

2020-present Colorado State License DR.0063898, expires 04/30/2025
2019-2021 Wisconsin State License 70676-20
2018-2020 Ohio State License 57.030369

BOARD CERTIFICATIONS

2019 ABPM&R Board Certified, Physical Medicine and Rehabilitation
2019 ABPM&R Board Certified, Spinal Cord Injury Medicine

ACADEMIC APPOINTMENTS

2019-present Assistant Professor, University of Colorado School of Medicine
Department of Physical Medicine and Rehabilitation

2018-2019 Clinical Instructor, Case Western Reserve University School of Medicine
Department of Physical Medicine and Rehabilitation

AWARDS AND HONORS

2020 MIT COVID-19 Challenge Hackathon team winner. Project: COVID-19 Assisted-Patient Triage offers a rapidly scalable voice-driven phone and text-based assistant that uses natural language processing to appraise patients' answers for at-home triage. $500 cash + $250 Amazon Web Services credits awarded to team.

2017 Association of Academic Physiatrists Innovation Award, for innovative use of technology to promote the ideals of academic physiatry.

2016 SinaiMedMaker hackathon 3rd place team winner, Icahn School of Medicine at Mount Sinai. Project: bioLumen, a biofeedback system for chronic low back pain using surface electromyography to control the lighting, sound, and data interactions within a patient's environment. $1500 awarded to team.

PUBLICATIONS

Thornton WA, Marzloff G, Ryder S et al. The presence or absence of midsagittal tissue bridges and walking: a retrospective cohort study in spinal cord injury. Spinal Cord (2023).

Staley V and Marzloff, G. Neurophysiology of the Spinal Cord. Spinal Cord Injury Board Review, edited by Blessen Eapen, David Cifu, Elsevier, 2022

Marzloff G, Ryder S, Hutton J, Ott K, Becker M, Schubert S. Emerging Technologies in the Wound Management Field. *Phys Med Rehabil Clin N Am*. 2022 Nov;33(4):901-914.

Schubert S, Marzloff G, Ryder S, Ott K, Hutton J, Becker M. Establishing a Comprehensive Wound Care Team and Program. Phys Med Rehabil Clin N Am. 2022 Nov;33(4):805-810.

Whitford M, Mitchell SJ, Marzloff GE, Zindle JK, Richmond MA, Bogle KM, Henzel MK (2020). Wheelchair Mobility-Related Injuries Due to Inadvertent Lower Extremity Displacement on Footplates: Analysis of the FDA MAUDE database from 2014 to 2018. *Journal of Patient Safety* online publication March 2020.

Cansev M, Marzloff G, Sakamoto T, Ulus IH, Wurtman RJ (2009). Giving Uridine Plus Docosahexaenoic Acid Orally To Rat Dams During Gestation and Nursing Increases Synaptic Elements in Brains of Weanling Pups. *Dev Neurosci*, 2009 Jan 15.

Wurtman RJ, Ulus IH, Cansev C, Watkins CJ, Wang L, Marzloff G (2006). Synaptic Proteins and Phospholipids are Increased in Gerbil Brain by Administering Uridine Plus Docosahexaenoic Acid Orally. *Brain Research* 1088(1):83-92.

I am a named study investigator for the following publications

Landau SM, Horng A, Fero A, Jagust WJ; Alzheimer's Disease Neuroimaging Initiative (2016). Amyloid negativity in patients with clinically diagnosed Alzheimer disease and MCI. (collaborator). *Neurology*. Apr 12;86(15):1377-85.

Palmqvist S, Zetterberg H, Mattsson N, Johansson P; Alzheimer's Disease Neuroimaging Initiative, Minthon L, Blennow K, Olsson M; Swedish BioFINDER study group, Hansson O (2015). Detailed comparison of amyloid PET and CSF biomarkers for identifying early Alzheimer disease. (collaborator). *Neurology.* Oct 6;85(14):1240-9.

Schreiber S, Landau SM, Fero A, Schreiber F, Jagust WJ; Alzheimer's Disease Neuroimaging Initiative (2015). Comparison of Visual and Quantitative Florbetapir F 18 Positron Emission Tomography Analysis in Predicting Mild Cognitive Impairment Outcomes. (collaborator). *JAMA Neurol.* Oct;72(10):1183-90.

Apostolova LG, Hwang KS, Avila D, Elashoff D, Kohannim O, Teng E, Sokolow S, Jack CR, Jagust WJ, Shaw L, Trojanowski JQ, Weiner MW, Thompson PM, Alzheimer's Disease Neuroimaging Initiative (2015). Brain amyloidosis ascertainment from cognitive, imaging, and peripheral blood protein measures. (collaborator). *Neurology*. 84(7):729-37.

Caroli A, Prestia A, Galluzzi S, Ferrari C, van der Flier WM, Ossenkoppele R, Van Berckel B, Barkhof F, Teunissen C, Wall AE, Carter SF, Schöll M, Choo IH, Grimmer T, Redolfi A, Nordberg A, Scheltens P, Drzezga A, Frisoni GB; Alzheimer's Disease Neuroimaging Initiative. Mild cognitive impairment with suspected nonamyloid pathology (SNAP): Prediction of progression. (collaborator). *Neurology* 2015 Feb 3;84(5):508-15

Salloway S, Sperling R, Fox N, Blennow K, Klink W, Raskind M, Sabbagh M, honig L, Porsteinsson AP, Ferris S, Reichert M, Ketter N, Nejadnik B, Guenzler V, Miloslavsky M, Wang D, Lu Y, Lull J, Tudor JC, Liu E, Grundman M, Yuen E, Black R, Brashear HR, Bapineuzumab 301 and 302 Clinical Trial Investigators (2014). Two phase 3 trials of bapineuzumab in mild-to-moderate Alzheimer's disease. (collaborator). *New England Journal of Medicine* 370(4):322-333.

Lo RY, Jagust WJ; Alzheimer's Disease Neuroimaging Initiative (2012). Predicting missing biomarker data in a longitudinal study of Alzheimer disease. (collaborator). Neurology 78(18):1376-82.

Heister D, Brewer JB, Magda S, Biennow K, McEvoy LK, Alzheimer's Disease Neuroimaging Initiative (2011). Predicting MCI outcome with clinically available MRI and CSF biomarkers. (collaborator). *Neurology* 77(17):1619-28.

Kim S, Swaminathan S, Shen L, Risacher SL, Nho K, Foroud T, Shaw LM, Trojanowski JQ, Potkin SG, Huentelman MJ, Craig DW, DeChairo BM, Aisen PS, Petersen RC, Weiner MW, Saykin AJ; Alzheimer's Disease Neuroimaging Initiative (2011). Genome-wide association study of CSF biomarkers Abeta1-42, t-tau, and p-tau181p in the ADNI cohort. (collaborator). *Neurology* 76(1):69-79.

Lo RY, Hubbard AE, Shaw LM, Trojanowski JQ, Petersen RC, Aisen PS, Weiner MW, Jagust WJ; Alzheimer's Disease Neuroimaging Initiative (2011). Longitudinal change of biomarkers in cognitive decline. (collaborator). *Arch Neurol.* 68(10):1257-66.

Shen L, Kim S, Risacher SL, Nho K, Swaminathan S, West JD, Foroud T, Pankratz N, Moore JH, Sloan CD, Huentelman MJ, Craig DW, Dechairo BM, Potkin SG, Jack CR Jr, Weiner MW, Saykin AJ; Alzheimer's Disease Neuroimaging Initiative (2010). Whole genome association study of brain-wide imaging phenotypes for identifying quantitative trait loci in MCI and AD: A study of the ADNI cohort. (collaborator). *Neuroimage* 53(3):1051-63.

Stein JL, Hua X, Lee S, Ho AJ, Leow AD, Toga AW, Saykin AJ, Shen L, Foroud T, Pankratz N, Huentelman MJ, Craig DW, Gerber JD, Allen AN, Corneveaux JJ, Dechairo BM, Potkin SG, Weiner MW, Thompson P; Alzheimer's Disease Neuroimaging Initiative (2010). Voxelwise genome-wide association study (vGWAS). (collaborator). *Neuroimage* 53(3):1160-74.

Keihaninejad S, Heckemann RA, Fagiolo G, Symms MR, Hajnal JV, Hammers A; Alzheimer's Disease Neuroimaging Initiative (2010). A robust method to estimate the intracranial volume across MRI field strengths (1.5T and 3T). (collaborator). *Neuroimage* 50(4):1427-37.

Schott JM, Bartlett JW, Barnes J, Leung KK, Ourselin S, Fox NC; Alzheimer's Disease Neuroimaging Initiative investigators (2010). Reduced sample sizes for atrophy outcomes in Alzheimer's disease trials: baseline adjustment. (collaborator). *Neurobiol Aging* 31(8):1452-62, 1462.e1-2.

Vounou M, Nichols TE, Montana G; Alzheimer's Disease Neuroimaging Initiative (2010). Discovering genetic associations with high-dimensional neuroimaging phenotypes: A sparse reduced-rank regression approach. (collaborator). *Neuroimage* 53(3):1147-59.

Walhovd KB, Fjell AM, Dale AM, McEvoy LK, Brewer J, Karow DS, Salmon DP, Fennema-Notestine C, Alzheimer's Disease Neuroimaging Initiative (2010). Multi-modal imaging predicts memory performance in normal aging and cognitive decline. (collaborator). *Neurobiol Aging* 31(7):1107-21.

Xu C, Wang Z, Fan M, Liu B, Song M, Zhen X, Jiang T; Alzheimer's Disease Neuroimaging Initiative (2010). Effects of BDNF Val66Met polymorphism on brain metabolism in Alzheimer's disease. (collaborator). *Neuroreport* 21(12):802-7.

Holland D, Brewer JB, Hagler DJ, Fennema-Notestine C, Dale AM; Alzheimer's Disease Neuroimaging Initiative. Subregional neuroanatomical change as a biomarker for Alzheimer's disease. (collaborator). *Proc Natl Acad Sci* U S A. 2009 Dec 8;106(49):20954-9.

Aisen P, Schneider L, Sano M, Diaz-Arrastia R, van Dyck C, Weiner M, Bottiglieri T, Jin S, Stokes K, Thomas R, Thal L, Alzheimer Disease Cooperative Study (2008). High-dose B vitamin supplementation and cognitive decline in Alzheimer disease: a randomized controlled trial. (collaborator). *JAMA* 300(15):1774-83.

INVITED TALKS

George Marzloff. Managing pain in patients with spinal cord injury. Presented to residents of the University of Texas San Antonio Department of Physical Medicine and Rehabilitation, San Antonio, TX, December 3, 2020.

George Marzloff. Enhancing adaptive sports with functional electrical stimulation. Grand Rounds, Icahn School of Medicine at Mount Sinai, New York, NY, May 22, 2018.

George Marzloff. bioLumen: An EMG-controlled biofeedback system for chronic low back pain. Presented at *Sinai Innovations*, Icahn School of Medicine at Mount Sinai, New York, NY. October 25, 2016.

ORAL PRESENTATIONS

Henzel MK, Marzloff G. Toward active safety for power wheelchair users with SCI: Why we need to detect foot mispositioning from wheelchair footplates. Oral session presented at the Academy of Spinal Cord Injury Professionals 2020 Virtual Conference, September 2020.

Marzloff G, Wilson JR, Henzel MK. Intrathecal baclofen pump refill monitoring: a quality improvement project for patient safety. Oral and poster sessions presented at the American Spinal Injury Association 2019 Annual Meeting, Honolulu, HI, April 2019.

Marzloff G, Wilson JR, Henzel MK. Is anorgasmia a side effect of pregabalin? A case series. Oral and poster sessions presented at the American Spinal Injury Association 2019 Annual Meeting, Honolulu, HI, April 2019.

POSTER PRESENTATIONS

Bogard A, Hemmerl M, Marzloff G, Ryder S, Smith A, Tan A.Q. Acute intermittent hypoxia mediates the reduction of net metabolic power during motor learning and motor savings. Poster session presented at the University of Colorado Boulder Department of Physical Medicine and Rehabiltation. Boulder, CO, November 2023.

Marzloff G, Delgado A, Mekki M, Di Rosario G, Chun A, Escalon M, Tsai C. The reliability of modified posturography to test dynamic sitting balance in patients with spinal cord injury. Poster session presented at the *AAPM&R Annual Assembly.* Orlando, FL, October 2018.

Marzloff G, Abdou A, Mehta A, Escalon MX, Bryce TN. Open-source rehabilitation reference mobile web application: A novel approach to creating collaborative resources for physiatrists in training. Poster session presented at the *Icahn School of Medicine at Mount Sinai Consortium Research Day.* New York, NY, June 2017.

Marzloff G, Zakhary M, Adamov E, Nori S. Sensory ataxia, weakness and hyperreflexia in a patient with neurofibromatosis type 1: a case report. Poster session presented at *AAP Annual Meeting.* Las Vegas, NV, February 2017.

Patel PB, Marzloff G, Shetreat-Klein A. Zika Virus associated Guillain-Barré Syndrome: a case report. Poster session presented at the *AAP Annual Meeting*. Las Vegas, NV, February 2017.

Marzloff G, Yang A, Ambrose AF. Nonsystemic vasculitic neuropathy misdiagnosed as acute motor and sensory axonal neuropathy: a case report. Poster session presented at the *AAP Annual Meeting.* Sacramento, CA, February 2016.

Patel A, Marzloff G, Weiss L. Laser treatment of trismus after gunshot wound to face: a case report. Poster session presented at the *AAPM&R Annual Assembly.* San Diego, CA, November 2014.

Grossman H, Marzloff G, Luo X, LeRoith D, Sano M, Pasinetti G. NIC5-15 as a treatment for Alzheimer's: Safety, pharmacokinetics, and clinical variables. Poster session presented at the *International Conference for Alzheimer's Disease.* Vienna, Austria, July 2009

Marzloff G, Cansev M, Wurtman RJ. Uridine plus docosahexaenoic acid increase phospholipids and synaptic proteins in brains of developing rat pups. Poster session presented at *Neuroscience 2006*. Atlanta, GA, October 2006.

Cansev M, Wurtman RJ, Ulus IH, Watkins CJ, Wang L, Marzloff G, Sakamoto T. Characterization of polyunsaturated fatty acids that affect synaptic proteins and phospholipids in gerbil brain. Poster session presented at *Neuroscience 2006*. Atlanta, GA, October 2006.

Wurtman R, Ulus IH, Cansev M, Watkins CJ, Wang L, Marzloff G. Synaptic phospholipids and proteins are increased in gerbil brain by administering uridine plus docosahexaenoic acid orally. Poster session presented at *Experimental Biology 2006.* San Francisco, CA, April 2006.

Cansev M, Wurtman RJ, Ulus IH, Watkins CJ, Wang L, and Marzloff G. Oral uridine (UMP) plus docosahexaenoic acid increases phospholipids and synaptic proteins in gerbil brain. Poster session presented at *International Society for Neurochemistry*. Portland, OR, March 2006.

Marzloff G, Chin AB, Tenenbaum J. The role of theory of mind in making inferences about novel objects. Poster session presented at *MIT Brain & Cognitive Sciences Undergraduate Research.* Cambridge, MA, April 2004.

OTHER ACADEMIC WRITINGS

George Marzloff. Build a web app to test fine motor coordination with Leap Motion: Part 3 (Programming Tutorial). *Association of Academic Physiatrists News: Rehab Tech.* May 2, 2017. Available online at http://bit.ly/rehab-leap-motion-tutorial-3

George Marzloff. Build a web app to test fine motor coordination with Leap Motion: Part 2 (Programming Tutorial). *Association of Academic Physiatrists News: Rehab Tech.* May 2, 2017. Available online at http://bit.ly/rehab-leap-motion-tutorial-2

George Marzloff. Build a web app to test fine motor coordination with Leap Motion: Part 1 (Programming Tutorial). *Association of Academic Physiatrists News: Rehab Tech.* April 26, 2017. Available online at http://bit.ly/rehab-leap-motion-tutorial-1

George Marzloff. Using MyoWare: a low-cost surface electromyography sensor for developing rehabilitation devices (Tutorial). *Association of Academic Physiatrists News: Rehab Tech*. Nov 8, 2016. Available online at http://bit.ly/myoware-for-rehab-tutorial

Ajax Yang and George Marzloff. Getting started with prospective research studies during residency training: Q&A with resident and researcher Ajax Yang. *Association of Academic Physiatrists: Physiatry in Motion*. Oct 25, 2016. Available online at http://bit.ly/getting-started-with-research

George Marzloff. Using Consumer Biometric Sensors for Physiatric Research: An Introduction. *Association of Academic Physiatrists: Physiatry in Motion*. Sep 8, 2016. Available online at http://bit.ly/using-consumer-biometric-sensors

CURRENT RESEARCH PROJECTS

2021-present **Acute intermittent hypoxia in persons with spinal cord injury: studying corticospinal drive and motor adaptation.** Co-Investigator. University of Colorado AB Nexus Grant Award $50,000.

2021-present **Inertial Sensor Directed Functional Electrical Stimulation for Cycling in Patients with Spinal Cord Injuries:** Undergraduate Faculty Mentor to student Adrienne Ellett. University of Colorado Denver EUReCa! Fellowship Award ($2500) and Undergraduate Research Opportunity Award ($6000) .

2021-present **Inertial Sensor Directed Functional Electrical Stimulation for Cycling in Patients with Spinal Cord Injuries:** $1400 VA Employee Innovation Award

2021-present **Validation of a convolutional neural network to automatically detect spinal cord damage on MRI.** Co-Investigator. COMIRB Protocol #20-2669. Unfunded.

OTHER RESEARCH EXPERIENCE

2018-2020 **Advanced Platform Technology Center, Department of Veterans Affairs,** Cleveland, OH
Developed device firmware and iOS application for testing novel footplate sensors to reduce lower extremity injuries of wheelchair users

2018-2019 **Cleveland FES Center, Case Western Reserve University School of Medicine,** Cleveland, OH
Applied digital signal processing and analytic techniques to voltage recordings from implantable Networked Neuroprosthesis to develop algorithms for heart rate and blood pressure detection

2015-2018 **Icahn School of Medicine at Mount Sinai Dept. of Rehabilitation Medicine** New York, NY
Projects:

- Vibrational feedback system for exoskeleton training in patients with spinal cord injury
- Open-source rehabilitation reference mobile web applications: a novel approach to creating collaborative resources for physiatrists in training
- The effects of an exercise training program on truncal balance in patients with spinal cord injury
- A mobile application for home evaluation and durable medical equipment appropriateness for space: a pilot study

2007-2010 **Icahn School of Medicine at Mount Sinai Alzheimer's Disease Research Ctr,** New York, NY
Clinical Research Coordinator: Recruited patients for national clinical trials, administered cognitive testing and collected data, prepared IRB/NIH submissions, and maintained regulatory documents. Analyzed safety, tolerability, and pharmacokinetic data for nutraceutical study. Served as liaison between the research center and the national Alzheimer's Disease Cooperative Society.

2005-2007 **Richard Wurtman, MD Lab for Neuroendocrine Regulation,** Cambridge, MA
Research Assistant: Performed dietary experimentation in rats and gerbils to study neuroprotective benefits of chronic supplementation of uridine and docosahexaenoic acid.

2006 **Saoirse Corporation,** Cambridge, MA
Research Intern: Aided in research and development of nanoparticle-based delivery of neuropharmaceuticals.

2004 **Computational Cognitive Science Group,** Cambridge, MA
Research Assistant: Designed and programmed computer-based cognitive experiments, and analyzed data to construct computational models of thought processes.

TEACHING EXPERIENCE

2018-2019 **Clinical Instructor, Case Western Reserve University School of Medicine**
Department of Physical Medicine and Rehabilitation
supervised and taught residents and medical students daily

2015-2018 **Physical Medicine and Rehabilitation Resident**
taught and mentored medical students daily

2014-2015 **Internal Medicine Resident**
taught and mentored medical students daily

2009-2010 **Mount Sinai Alzheimer's Disease Research Center Volunteer Mentor**
Supervised and trained undergraduates in research operations, neuropsychiatric assessments and regulatory filing.

2006-2007 **MIT Pre-UROP Mentor**
Trained new undergraduate researchers in relevant material in neuroendocrinology and chemistry lab techniques.

ADMINISTRATIVE ROLES

2020-2023 **Rocky Mountain Regional VA** SCI/D Inpatient Operations Committee Co-chair

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2020-2023 **Rocky Mountain Regional VA** SCI/D Program Development Committee Member

LEADERSHIP ROLES AND SERVICE INVOLVEMENT

2017 **Mount Sinai Rehabilitation Medicine Residency Technology Chair**
advised department on website management and introduced new educational content for residents.

2016-2017 **Residents & Fellows Council Technology Representative, Association of Academic**

Physiatrists
Advisor for the national association's website, launched AAP News on the social publishing platform *Medium* to increase authorship and audience. Recruited authors for new content focused on rehabilitation technology.

2015-2017 **Rock 'n Roll Half Marathon Medical Team** (annually), New York, NY

2010-2014 **MarzloffMedia.com Flashcards**
Software Developer: Designed and programmed a web application of flashcards based on material specific to every basic science lecture. Ross students have used this application more than 100,000 times.

2010-2011 **Ross University Scuba Club**
President: Coordinated the first Dive Medicine Mini-Symposium with faculty speakers. Spearheaded the development of an underwater clinical research initiative with faculty. Planned tri-annual underwater reef cleanups.

Ross University Ambassadors & Mentors
Ambassador: Helped incoming students transition to the island via internet and in person.

Ross University Pediatric Student Association
Member: Examined patients in local health clinics and assisted in training meetings for clinic events.

CLINICAL COURSE CERTIFICATIONS

- InSTeP: International Standards
- ASTeP: Autonomic Anatomy and Function
- SkinSTeP Course Series
- WeeSTeP: Pediatric Considerations
- SpAsTeP: Spasticity Assessment

NEUROPSYCHOLOGICAL TESTING CERTIFICATIONS

- Mini Mental Status Examination
- ADAS-Cog
- Clinical Dementia Rating Scale
- Neuropsychiatric Inventory Q
- Logical Memory I & II
- Digit Span Test
- Boston Naming Test
- Auditory Verbal Learning Test
- Clock Drawing
- Geriatric Depression Scale
- Activities of Daily Living
- Functional Assessment Questionnaire
- NACC Uniform Data Set

LABORATORY-SPECIFIC SKILLS

- Basic laboratory technique
- Gavage technique for rat and gerbil
- Intravenous tail injection for mouse
- Sacrifice via telazol, isoflurane, CO_2
- Brain extraction and slice preparation
- High performance liquid chromatography
- Thin layer chromatography
- Western blot method
- Phospholipid Assay
- Fluorimetric DNA Assay
- Bicinchoninic Acid Protein Assay
- Digital Fluorescent Microscopy

AFFILIATED ASSOCIATIONS

- American Spinal Injury Association, member 2017-2020
- Academy of Spinal Cord Injury Professionals, member 2017-2019

- American Academy of Physical Medicine and Rehabilitation, member 2013-2018
- Association of Academic Physiatrists, member 2015-2018

OTHER SKILLS & CERTIFICATIONS

Rescue Certifications: Basic Life Support; Basic Trauma Life Support; Advanced Cardiac Life Support, PADI Rescue Diver

Computer Experience: HTML, CSS, Javascript, Objective-C, Swift, Python, Git, Arduino, Node.js, Sketch, RStudio, MATLAB, SPSS, Pro Tools, Max/MSP.