Jonathan C. Erickson

Department of Physics and Engineering
Washington and Lee University
Lexington, VA 24450

(540) 458 8293
ericksonj@wlu.edu
https://erickson.academic.wlu.edu

CURRENT POSITION

Washington and Lee University, Lexington, VA

Associate Professor, Physics and Engineering Department	2015 –
Assistant Professor, Physics and Engineering Department	2009 – 2015
Primary Faculty, Neuroscience Program	2011 –

ACADEMIC TRAINING

Auckland Bioengineering Institute, Auckland, New Zealand 2016 – 2017
Visiting Research Fellow,
Gastrointestinal Electrical Mapping Technologies and Devices

Vanderbilt University, Nashville, TN 2007 – 2009
Postdoctoral Research Fellow, Departments of Physics and Surgery

California Institute of Technology, Pasadena, CA 2001 – 2008
Ph.D. Bioengineering

Harvey Mudd College, Claremont, CA 1997 – 2001
B.S. Physics, *cum laude*

TEACHING AND RELATED EXPERIENCE

Washington and Lee University 2009 –

Courses Instructed:

Applied Signal Processing (ENGN 395), Spring 2020. New project-based course I developed which studies a variety of signal processing methods applied to real world problems. Topics/projects covered include: Step Counter from accelerometer measurements (event detection; energy transforms, statistical thresholding); hunting gravity waves in the LIGO database (digital filtering; time-frequency analysis Fourier transforms; continuous wavelet transforms); compression of speech and audio signals (discrete wavelet transform compression and denoising); hunting gastrointestinal waves from multichannel electrical recordings (blind source separation, spatial intensity mapping).

Electrical Circuits with Lab (ENGN/PHYS 207), Fall 2009-2014, 2017-2020. Required core course for majors. Topics covered include DC and AC circuit analysis, op-amps, passive and active filters, and microcontrollers interfacing to analog and digital components. Emphasis on hands-on designing, building, testing practical circuits systems (vibration measurement for structural health monitoring; electromyography for prosthetics; LED light organ syncing music to laser light show). Community Based Learning (CBL) partnership with local elementary after school program starting Fall 2020: "Electric Mondays!"

Electronics (ENGN/PHYS 208), Winter 2011, 2012, 2015, 2019. Project-based elective course for majors with emphasis on design, construction, and testing of electronics systems for real world applications. Projects integrate microcontrollers, wireless devices, digital sensors (accelerometers, distance sensors, etc.). Past projects have included the SmartRock capsule for geological measurements, hi-fi transistor audio amplifiers, wireless communication "spy circuits", and biomedical equipment targeted for the visually impaired.

Bioengineering, and Bioinspired Design (ENGN/BIOL 267), Fall 2010, 2011, 2013, Winter 2015, 2016, 2018, 2020. Elective course I developed which studies animal systems from an integrated physics-engineering-biology perspective. Model systems covered include: mantis shrimp optics; neural interfacing for building insect biobots, kinematics of ocean swimmers (jellyfish, manta rays); bioinspired robotics. Emphasis is placed both on how key principles from biological systems can be integrated into the next generation of human-engineered designs.

Capstone Design (ENGN 379), Winter 2018-2020. Second-half of a year-long sequence. Senior majors work together in teams to design and implement engineering solutions to real-world problems. Project topics span and wide range, including: Hands-free, no-tie shoes for the elderly; SmartGate electronics module for home pets; W&L storm water runoff management; Lexington, VA. traffic study and traffic flow optimization.

Mathematical Methods for Physics and Engineering (ENGN/PHYS 225), Winter 2016, 2018. Required core course for majors. Topics covered include eigenvalue problems, complex plane analysis, vector calculus, Fourier transforms, ODEs and PDEs.

Mechanical Vibrations (ENGN 330), Winter 2010, 2011, 2014, 2016. Elective course for majors. Topics covered include single and multi-degree of freedom and continuous systems, damped-driven oscillations, stability, force isolation, normal modes, vibration measurement instrumentation, and earthquake engineering.

Introductory Physics Lab II (PHYS 114), Winter 2010. Required core course for majors. Instrumentation and analysis of experiments with electricity and magnetism, simple harmonic motion, geometrical optics, and modern physics.

Physics of Music (PHYS/MUS 102), Spring 2011, 2012, 2014, 2015, 2016, 2018. Course for non-majors and the musically-inclined. Topics include wave mechanics and modal analysis; design and operational principles of winds, strings, voice, etc.; perception of sound in the human auditory system. Primary mode of inquiry is hands-on investigation to connect scientific quantities to aesthetic qualities of music.

Supervised Research and Independent Study:

Summer Research Scholar Mentor

Summer 2020*: On the outside looking in: automated method for tracking propagating wavefronts in the colon.* (Emily Hassid '22, Lauren Shelby '23, Elen Stepanyan '22, and Jeremy Wharton '23)

Summer 2019*: Mapping cyclic contractions of the colon with high spatial density.* (Beth Reed, '22, Jack Robey '20, Riwaj Shrestha '22, Utkrist Thapa '21, and Jeremy Wharton '23)

Summer 2018*: Electrocolonograpy: body surface recordings detect underlying contractions of the colon in meal response study* (Laura Bruce'20, Andrew Taylor '20, Jack Richman '20, Connor Higgins '20, and Nicole Chin '22)

Summer 2017*: Quantifying and characterizing spike burst activity in ischemic small intestine.* (Alfred Rwagaju '18)

Summer 2016*: In vivo assessment and quantification of new electronics module for measuring gastrointestinal slow waves.* (Jamie Hayes '17)

Summer 2015*: Non-invasive, Low-Cost, Wireless Electronics for Detecting Gastrointestinal Slow Waves* (Jamie Hayes '17, Alfred Rwagaju '18, and Rajwol Joshi '18)

Summer 2014*: Effective Stimulus Parameters and Locomotion Control in Biobot Cockroach* (María Herrera '16 and Mauricio Bustamante '17); *Optimal Electrode Distance for Mapping Gastrointestinal Wavefront Dynamics* (Joy Putney '16)

Summer 2013*: Biobot Cockroaches: Neural-Electric Interface Control Paradigms.* (Aristide Shingiro '16 and Thomas Bowen '14)

Summer 2012*: Experimental and Computational Study of Connectivity in Chronically Stimulated in vitro Neural Networks* (Alvin Thomas '14 and Upol Ehsan '13)*; Cyborg Cockroach: Techniques and tools for reliable locomotion control (*Jeremy Adkins, '13)

Summer 2011*: Algorithm for Detection of Spikes in Small Bowel: Effects of Induced Ischemia (*Raisa Velasco-Castedo, '12*); Novel Strategies for Steering Directional Heading in Cyborg Grasshoppers (*Susie Giampalmo, '12 and Ryan Henner, '12*); Microcontroller and Wireless Control Modules for Cyborg Insects (*Upol Ehsan, '13*)*

Summer 2010: *Construction and Programming of Electrical Stimulus Generator Interfaced to Multi-electrode Array (Upol Ehsan, '13); Digital Image Processing Techniques for Identifying Neurons in Dissociated Cultures (Nay Lin, '11).*

Physics and Engineering Senior Honors Thesis Adviser

Laura Bruce '20. *Is Detection of Colon Motility Waves Possible?: An Investigation of Two Spatial Filtering Techniques with Electrocolonography (EcolG)*

Cort Hammond '15. *Low-cost techniques for assessing the quality of drinking water from biosand filters.*

Alvin Thomas '14. *Plasticity in Dissociated Neuronal Networks under Chronic Stimulation.*

Raisa Velasco-Castedo '12. *Algorithms for and Assesment of Small Intestine Spike Activity During Onset of Ischemia*

Danielle Rosenthal '16. *In Examination of Myelin Debris and Other Factors Involved in Optic Nerve Regeneration* (thesis committee member)

Engineering and Neuroscience Independent Study

Smartrock: Wireless electronics module for measuring pressure and kinematics of rock plucking in rivers (Stevan Kriss '20 and Laws Smith '20; in collaboration with Dr. David Harbor, W&L Geology Department)

Mapping slow waves and spikes in ischemic small intestine (Joy Putney '16, Jamie Hayes '17, and Alfred Rwagaju '18)

Wireless neural-electric stimulus and path-tracking for cockroach biobots (John Kirby '16 and Ann Catherine Bokinsky, '16)

Electronics in Music: Harmonic analysis and vacuum-tube amplifier for electric guitar (Jordan Kearns, '14)

Computer-automated method for removing artifacts from in-vitro intestinal recordings (Doug Hilbert '14 and Joy Putney '16)

Bioinspired packing material: SEM analysis of hickory-nut shell (Thomas Bowen '14)

Design and construction of a cost-effective prosthetic knee joint (Tucker Bourne '12, Dana Fredericks '12, Kat Lawson '12, and Alex Erwin '13)

*Designing a Low-cost Stimulus Board Interfaced to 60-electrode Multi-electrode Array (*Diana Cianciotta, '10 and Annaria Nardone, '10)

*Spike-timing Dependent Plasticity for Tuning Cultured Neural Network Information Processing (*Maggie Connolly, '11; Ashley Barnes, '13; Katie Strickland, '15*)*

HHMI Student Research Fellow Mentor
*Effects of Chronic Stimulation on Information Processing in Cultured Neural Networks (*Olivia Riffle, '12 and Brian Stirling, '12*)*

*Simulations of Network Connectivity Adaptation via Spike-Timing Dependent Plasticity Mechanisms (*Blaise Buma, '13*).*

Vanderbilt University
Instructor, Phys 250: Undergraduate Physics Seminar 2009

First Presbyterian School *(*Arcadia, CA*)*
Instructor, AP Physics B 2006 – 2007

California Institute of Technology
Teaching Assistant, Ph/Bi 103: Neuroscience for Physicists and Engineers 2005 – 2006
Teaching Assistant, ME 35: Statics and Dynamics 2004 – 2005
Summer Undergraduate Research Mentor 2003 – 2005

Marshall Fundamental School *(*Altadena, CA*)* 2005 – 2006
Caltech Classroom Connection Volunteer and occasional lecturer*: AP Calculus*

Say YES! Community Outreach *(*Pomona, CA*)* 2000 – 2001
Tutor and mentor for disadvantaged youth

RESEARCH INTERESTS and EXPERIENCE

Current Research Interests:

1. **Signal processing and electronics hardware for mapping the gastrointestinal function:** Developing automated methods and low-cost, open-source electronics to measure and classify gastrointestinal electrical activity propagation patterns for diagnosis and treatment of disease states.

2. **Neural-electrical interfacing for biobot insect applications:** Developing strategies, techniques, and instrumentation for controlling locomotion in hybrid insect-robots.

Postdoctoral Research: Developed semi-blind signal processing algorithms and pattern classification techniques for noninvasive identification of gastrointestinal (GI) electrical activity from biomagnetic (SQUID) recordings.

Ph.D. Thesis Research: Developed a MEMS neurochip that interfaces cultured neural networks to a computer for long-term investigation of developing connectivity and plasticity.

ACTIVE COLLABORATORS

Gastrointestinal Systems Group, Auckland Bioengineering Institute, New Zealand. *Developing signal processing tools and investing electrical activity in the gastrointestinal system*

Dr. Nikolas Perentos, Cognition and Neural Plasticity Lab Ludwig Maximillians-Universtat, Munich, Germany. *Open-source miniature hardware for brain studies in ambulatory animal model*

Dr. William Schreiber, Department of Psychology, Elon University, USA. *Automated image processing for quantifying adaptive stimulus-response behaviors in ants.*

PATENTS and BUSINESS CONCERNS

System and Method for Mapping Gastro-Intestinal Electrical Activity. (2012) New Zealand patent 579235 of O'Grady G, Du P, Erickson J, Cheng LK, Pullan AJ.

Research consultant for *Fleximap* (http://www.fleximap.co.nz/), start-up company for custom gastrointestinal analysis system lab systems

Science advisory board/research consultant for *Alimetry*, start-up company developing novel noninvasive gastrointestinal innovations for clinical care based in Auckland, NZ.

REFEREED JOURNAL PUBLICATIONS (* = Student Co-author)

Erickson J, Bruce L*, Taylor A*, Higgins C*, Richman J*, Wells C, and O'Grady G. (2019) Electrocolonography: Non-invasive detection of colonic cyclic motor activity from multielectrode body surface recordings, *IEEE Trans. Biomed. Engn.;* 67(6): 1628 -1637. [doi: 10.1109/TBME.2019.2941851]

O'Grady G, Angeli TR, Paskaranandavadivel N, **Erickson J**, Wells C, Gharibans AA, Cheng LK, and Du P. (2018) Methods for high-resolution electrical mapping in the gastrointestinal tract, *IEEE Rev. Biomed. Engn.*; 12: 287-302 [doi: 10.1109/RBME.2018.2867555]

Erickson J, Hayes J*, Bustamanate M*, Joshi R*, Rwagaju A*, Paskaranandavadivel N, and Angeli TR. (2018) Intsy: a low-cost, open-source, wirelessly multi-channel bioamplifier system, *Physiol. Meas.*; 39: 035008. [doi: 10.1088/1361-6579/aaad51]

Mayne T, Paskaranandavadivel N, **Erickson J**, O'Grady G, and Cheng LK. (2018) Improved visualization of gastrointestinal slow wave propagation using a novel wavefront-orientation interpolation technique, IEEE *Trans. Biomed Eng.*; 65(2):319-326. [doi: 10.1109/TBME.2017.2764945]

O'Grady G, Paskaranandavadivel N, Du P, Angeli T, **Erickson J**, Cheng LK. (2017) Correct techniques for extracellular recordings of electrical activity in gastrointestinal muscle, *Nature Reviews – Gastroenterology and Hepatology*; 14(6): 372. [doi: 10.1038/nrgastro.2017.15]

Wang T, Du P, Angeli TR, Paskaranandavadivel N, **Erickson J**, Abell T, Cheng LK, and O'Grady G. (2017) Relationships between gastric slow wave frequency, velocity, and extracellular amplitude studied by a joint experimental-theoretical approach, *Neurogastroenterology and Motility*; 30(1):e13152. [doi: 10.1111/nmo.13152]

Erickson J, Putney J*, Hilbert D*, O'Grady G, Cheng LK, and Angeli TR. (2016) Iterative Covariance-based Removal of Time-Synchronous Artifacts: Application to Gastrointestinal Electrical Recordings, IEEE *Trans. Biomed. Eng.* 63(11): 2262-2272. [doi: 10.1109/TBME.2016.2521764]

Bradshaw L, Cheng LK, Chung E, Obioha CB, **Erickson J**, Gorman BL, Somarajan S, and Richards WO. (2016) Diabetic gastroparesis alters the biomagnetic signature of the gastric slow wave. *Neurogastroenterology and Motility*; 28(6): 837-848. [doi: 10.1111/nmo.12780]

Erickson J, Bustamante M*, Herrera M*, Shingiro A*, and Bowen T*. (2015) Effective Stimulus Parameters for Directed Locomotion in Madagascar Hissing Cockroach Biobot. PLoS ONE 10(8): e0134348 [doi: 10.137/journal.pone.0134348]

Erickson J, Velasco-Castedo R*, Obioha CB, Angeli TA, Cheng LK, and O'Grady G. (2013) Automated Algorithm for GI Spike Burst Detection and Demonstration of Efficacy in Ischemic Small Intestine, *Ann. Biomed. Eng*; 41(10): 2215-2228. [doi: 10.1007/s10439-013-0812-8]

Erickson J, Paskaranandavadivel N, and Bull S. (2013) Quantitative Analysis of Electrical Activity in the Gastrointestinal Tract, in Cheng LK, ed., *New Advances in Gastromotility Research*, Springer Science. [doi: 10.1007/978-94-007-6561-0_5]

Obioha C, **Erickson J**, Suseela S, Hajri T, Chung E, Richards W, Bradshaw LA. (2013) Effect of Body Mass Index on the sensitivity of Magnetogastrogram and Electrogastrogram. *J. Gastroenterology and Hepatology Research*; 2(4): 512-518. [doi: 10.6051/j.issn.2224-3992.2013.02.244]

Angeli TR, O'Grady G, Paskaranandavadivel N, **Erickson J**, Du P, Pullan AJ, Bissett I, and Cheng LK. (2013) Experimental and Automated Techniques for High-Resolution Electrical Mapping of Small Intestine Slow Wave Activity. *J. Neurogastroenterology and Motility*, 19(2):179-191. [doi: 10.5056/jnm.2013.19.2.179]

Yassi R, O'Grady G, Paskaranandavadivel N, Du P, Angeli TR, Cheng LK, and **Erickson J** (2012) The Gastric Electrical Mapping Suite (GEMS): Software for analyzing and visualizing high-resolution (multi-electrode) recordings in spatiotemporal detail. *BMC Gastroenterology* 12(60). [doi: 10.1186/1471-230X-12-60]

Erickson J, O'Grady G, Du P, Egbuji, JE, Pullan AJ, and Cheng LK. (2011) Automated Gastric low wave cycle partitioning and visualization for high-resolution activation time maps. *Ann. Biomed. Eng.* 39(1): 469-483 [doi: 10.1007/s10439-010-0170-8]

Erickson J, O'Grady G, Du P, Obioha C, Qiao W, Richards WO, Bradshaw LA, Pullan AJ, and Cheng LK. (2010) Falling-Edge, Variable Threshold (FEVT) Method for the Automated Detection of Gastric Slow Wave Events in High-Resolution Serosal Electrode Recordings. *Ann. Biomed. Eng.* 38(4): 1511-1529 [doi: 10.1007/s10439-009-9870-3]

Erickson J, Obioha C, Bradshaw LA., Goodale A, and Richards WO. (2009) Detection of Small Bowel Slow-Wave Frequencies From Noninvasive Biomagnetic Measurements. IEEE *Trans. Biomed. Eng.* 56(9): 2181-9. [doi: 10.1109/TBME.2009.2024087]

Erickson J, Tooker A, Tai Y-C, and Pine J. (2008) The Neurochip: a parylene-based microdevice for non-invasive probing of cultured neural network connectivity at the single neuron level. *J. Neurosci. Meth.* 175(1): 1-16. [doi:10.1016/j.jneumeth.2008.07.023]

CONFERENCE PROCEEDINGS (* = Student Co-author)

Erickson J, Reed .*, Wharton J*, Thapa U*, Robey J*, Shrestha R*. (2020) Open-source 128-channel Bioamplifier Module for Ambulatory Monitoring of Gastrointestinal Electrical Activity, *Conf. Proc. IEEE-EMBS* 2020, July 20-24, Montreal, Canada.

Neely L*, Gaiennie J*, Noble N*, and **Erickson J.** (2016) Stingray-inspired robot with simply actuated intermediate motion. *Proc SPIE 9797, Bioinspiration, Biomimetics and Bioreplication*, 2016. [doi: 10.1117/12.2219494]

Putney J*, O'Grady G, Angeli TA, Paskaranandavadivel N, Cheng LK, **Erickson J**, Du P. (2015) Determining the efficient inter-electrode distance for high-resolution mapping using mathematical model of human gastric dysrhythmias. *Conf. Proc. IEEE-EMBS* 2015 [doi: 10.1109/EMBC.2015.7318642]

Paskaranandavadivel N, Du P, **Erickson J**, O'Grady G, Cheng LK. (2015) Extending the automated gastrointestinal analysis pipeline: Removal of invalid slow wave marks in gastric serosal recordings *Conf. Proc. IEEE-EMBS* 2015. [doi: 10.1109/EMBC.2015.7318763]

Erickson J, Engel E*, Strickland K*, Wasden WA*, and Overholtzer J. (2014) Microbiological and Economic Assessment of Ceramic Pot Filters Used Long-Term in Households in San Pedro La Laguna, Guatemala. *World Environmental and Water Resources Congress 2014*: 1617-1626 [doi: 10.1061/9780784413548.160]

Erickson J. (2012) New course in bioengineering and bioinspired design. *Biomed Sci Instrum.*, 48:96-103 [PMID: 22846270]

Giampalmo S*, Absher B*, Bourne WT*, Steves L*, Vodenski V*, O'Donnell P*, and **Erickson J.** (2011) Generation of Complex Motor Patterns in American Grasshopper Via Current-Controlled Thoracic Electrical Interfacing. *Conf. Proc. IEEE-EMBS* 2011, 1275 - 1278. [doi: 10.1109/IEMBS.2011.6090300]

Angeli TR, O'Grady G, **Erickson J**, Du P, Paskaranandavadivel N, Bissett IP, Cheng LK, and Pullan AJ. (2011) Mapping Small Intestine Bioelectric Activity Using High-Resolution Printed Circuit-Board Electrodes. *Conf. Proc. IEEE-EMBS* 2011, 4951 – 4954. [doi:10.1109/IEMBS.2011.6091227]

Erickson J. (2010) Volage-controlled stimulation pulses may be lethal. *Conf Proc 7th International Meeting on Substrate-Integrated Multi Electrode Arrays*, Reutlingen, Germany, July 2010, 214-215.

Erickson J, Tooker A, Tai Y-C, and Pine J. (2008) First Network Studies with the Caged-Neuron Multielectrode Array. *Conf Proc 6th International Meeting on Substrate-Integrated Multi Electrode Arrays*. Reutlingen, Germany, July 2008, 287-289.

Erickson J, Obioha C, Goodale A, Bradshaw LA, and Richards WO. (2008) Noninvasive Detection of Small Bowel Electrical Activity from SQUID Magnetometer Measurements using SOBI. *Proc. IEEE-EMBS* 2008, Vancouver, B.C., pp 1871-1874. [doi:10.1109/IEMBS.2008.4649550]

Tooker A., **Erickson J**., Chow G., Tai Y-C., and Pine J. (2006) Parylene neurocages for electrical stimulation on silicon and glass substrates. *Conf. Proc. IEEE Eng Med Biol Soc. 2006*. vol. 1: 4322-5. [doi:10.1109/IEMBS.2006.260472]

Erickson J, Tooker A, Tai Y-C, and Pine J. (2006) Progress on the Caged-Neuron MEA Project. *Conf Proc 5th International Meeting on Substrate-Integrated Multi Electrode Arrays*., Reutlingen, Germany, July 2006, pp. 192-193.

Tooker A, Meng E, **Erickson J**, Tai Y-C, and Pine J. (2005) Biocompatible parylene neurocages. Developing a robust method for live neural network studies. *IEEE Eng Med Biol Mag. 20053 Nov-Dec; 24(6)*: 30-33. [doi: 10.1109/MEMB.2005.1549727]

Tooker A, Meng E, **Erickson J**, Tai Y-C, and Pine J. (2004) Development of biocompatible parylene neurocages, Conf. Proc. IEEE-EMBS, San Francisco, September 2004, 4:2542-2545. [doi: 10.1109/IEMBS.2004.1403731]

Tooker A, **Erickson J**, Tai Y-C, and Pine J. (2004) Robust and biocompatible neurocages Proceedings, MicroTAS, Malmo, Sweden, September 2004.

Erickson J, Tooker A, and Pine, J. (2004) Caged neuron multielectrode array, Proceedings *Conf Proc 4th International Meeting on Substrate-Integrated Multi Electrode Arrays*., Reutlingen, Germany, July 2004, pp. 52-53.
Meng, E, Tai Y-C, **Erickson J**, and Pine J. (2003) Parylene Technology for Mechanically Robust Neuro-cages. Proceedings, MicroTAS, Squaw Valley, CA, October 2003.

CONFERENCE ABSTRACTS

Colavita M*, Witherell H*, **Erickson J**, and Schreiber W. (2019) Measurement of Discrete Behaviors in Ants Using Spatially Averaged Intensity Gradients. *Society for Integrate and Comparative Biology Annual Meeting*, Tampa, FL, Jan 2019.

Calder S, **Erickson J**, O'Grady G, Cheng LK, Du P. (2018) Wave front tracking and velocity profiling of EGG signatures. *Digestive Diseases Week – international Gastrointestinal Electrophysiology Society Meeting*, Washington, DC, June 2, 2018.

Putney J*, Hayes J*, **Erickson J**, and Angeli T. (2016) The Quantification of Slow Wave Behavior after Induction of Intestinal Ischemia in a Porcine Model. *Conf. Proc. IEEE-EMBS* 2016, Orlando, FL.

Erickson J, Thomas A*, Strickland K*, and Barnes A*. Iterative Gaussian mixture model splitting of multimodal PSTH for studying activity dependent changes in cultured network connectivity. *Society for Neuroscience*, San Diego CA, Nov 2013.

Erickson J. (2012). Electrical Circuits for Bioinspired Applications. *American Association of Physics Teachers: Beyond the First Year Laboratory Courses*, Philadelphia, PA, July 24-27, 2012.

Riffle O*, Stirling B*, **Erickson J.** (2011) Functional Consequences of Chronic Electrical Stimulation on Cultured Neural Networks. *Society for Neuroscience*, Washington DC, Nov 2011.

Yassi R, O'Grady G, Cheng LK, and **Erickson J**. (2011) The Gastric Electrical Mapping Suite (GEMS): Software for analyzing and visualizing gastrointestinal multi-electrode recordings. *Digestive Diseases Week* (1030948), Chicago, IL, May 7 – 10 (Invited oral presentation, top 10% of abstracts)

Erickson J, O'Grady G, Du P, Pullan AJ, and Cheng LK. (2010) "Automated Event Detection and Activation Mapping for High Resolution Gastric Slow Wave Recordings." *Digestive Diseases Week*, New Orleans, May 2010.

Goodale A, **Erickson J**, Obioha C., Irimia A, Williams B., Bradshaw LA, and Richards WO. (2008) Partial Mesenteric Ischemia Alters Biomagnetic Slow Wave. Conference Proceedings: *Digestive Diseases Week*, San Diego, 2008 (W1289).

Erickson J, Tooker A, Tai Y-C, and Pine J. (2007) Caged neuron multi-electrode array: a new tool for probing connectivity in cultured neural networks. *Society for Neuroscience*, San Diego, CA, Nov 2007.

Erickson J, Tooker A, Tai Y-C, and Pine J. (2005) Caged neuron multi-electrode array: a new generation of neurochip. *Society for Neuroscience*, Washington, DC, Nov 2007.

HONORS AND AWARDS

Research Award, American Gastroenterology Association, 2009.
Vanderbilt University Medical Center Outstanding Research Award, 2007 – 2008.
NIH Neuroscience Training Grant, 2003 – 2005.
3rd Place Student Paper Competition IEEE-EMBS, 24th International Conference, 2004
William F. Marlar Graduate Fellowship (Caltech), 2002

PROFESSIONAL ACTIVITIES

Engineering World Health/Engineering Community Development student club: Washington and Lee University, Faculty Adviser. Helped organize and lead local and international clean water projects in Belize, Mexico, Guatemala, and Bolivia. Project reports and photos at: https://wluecd.wixsite.com/wluecd

Peer reviewer: Annals of Biomedical Engineering; IEEE-Engineering in Medicine and Biology; Journal of the Royal Society Interface; PLoS ONE; Biomedical Signal Processing and Control; American Journal of Physiology: Gastroenterology & Hepatology; Journal of Online Visualized Experiments (JOVE); Soft Robotics; Journal of Insect Research; FWF (Der Wischenschaftfonds) Austrian Science Fund – Medical and Biological Sciences; Thesis Reader, University of Auckland