

## Curriculum Vitae

*Kevin John Otto*

Professor  
J. Crayton Pruitt Family Department of Biomedical Engineering  
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### **Education**

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| 2003-2006 | Post-Doctoral Training, University of Michigan, Ann Arbor, MI.                              |
| 2000-2003 | Ph.D., Bioengineering, Arizona State University, Tempe, AZ.                                 |
| 1997-2000 | M.S., Bioengineering, Arizona State University, Tempe, AZ.                                  |
| 1993-1997 | B.S., Chemical Engineering, <i>cum laude</i> , Colorado State University, Fort Collins, CO. |

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### **Current Academic Faculty Positions**

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| 2018-Present | Professor, J. Crayton Pruitt Family Department of Biomedical Engineering, the University of Florida ( <i>with tenure</i> ) |
| 2017-Present | Affiliate Faculty, Department of Electrical & Computer Engineering, the University of Florida                              |
| 2017-Present | Affiliate Faculty, Department of Materials Science and Engineering, the University of Florida                              |
| 2016-Present | Affiliate Faculty, Department of Neurology, the University of Florida  |
| 2014-Present | Affiliate Faculty, Department of Neuroscience, the University of Florida   |

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### **Highlights**

#### **Research Highlights**

- I am the director of the Neural Prostheses Research Laboratory ([www.nprlab.org](http://www.nprlab.org)). Our research focus is on neural engineering, sensory repair and prostheses, brain-machine interfaces, sensation induced by activation of neural tissue, neural coding and plasticity, and autonomic neural engineering.
- Currently laboratory annual research expenditures ~\$1.3M.
- Secured more than \$10M in external funds to support my own laboratory:
  - Government funding agencies – National Institutes of Health (NIH), Defense Advanced Research Projects Agency (DARPA), Indiana Clinical & Translational Science Institute.

- Private funding agencies - Purdue Research Foundation, Showalter Trust.
- Experience working on large multidisciplinary, multi-investigator research projects:
  - DARPA Targeted Neuroplasticity Training Program Principal Investigator:
    - I currently lead a team of 6 investigators working on a \$4M program.
  - NIH Human BioMolecular Atlas Program (HuBMAP):
    - I participate on a team of 9 investigators working on a 4 year, \$500k annual program.
  - DARPA Hand Proprioception and Touch Interfaces (HAPTIX) Program:
    - I participated on a team of 6 investigators working on a \$6M program.
  - DARPA Reliable Neural Interface Technologies (RE-NET) Program:
    - I participated on a team of 6 investigators working on a \$5M program.
    - I led a team of 2 investigators as the principal investigator working on a \$1.7M program.
- Published 44 papers in peer-reviewed journals.
- h-index of 26 (Google Scholar).
- Supervised 8 doctoral students to graduation and currently supervising 10 ½ more.
- Supervised 5 post-doctoral scholars.
- Given more than 85 international, national, and local research presentations.

### **Service Highlights**

- Program co-chair, *27<sup>th</sup> Annual Meeting of the Biomedical Engineering Society*. 2017. Phoenix, AZ.
- Member of the Neural Interfaces Conference Steering Committee.
- ClevelandNEW Conference Executive Committee Member (2013-present).
- Editorial Board Member of 6 journals.
- NIH and VA Study Section Member for 16 different panels.
- Reviewer for 16 different scientific journals.

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### ***Honors and Awards***

#### **Personal**

- 2020 AIMBE Fellow
- 2019 University of Florida Term Professorship
- 2018 IEEE Senior Member
- 2018 J. Crayton Pruitt Family Department of Biomedical Engineering Faculty Service Excellence Award
- 2012 Faculty Service Award, Weldon School of Biomedical Engineering
- 2012 Purdue Research Foundation International Travel Grant
- 2011 Seed for Success, Purdue University
- 2009 Outstanding Faculty Award, Weldon School of Biomedical Engineering Graduate Student Association
- 2006 Selected 1 of 100 participants; 4th Annual National Academies Keck Futures Initiative Conference on “Smart Prosthetics: Exploring Assistive Devices for the Body and Mind”; Nov. ’06, Irvine, CA.
- 2006 International Workshop on Neural Interface Technologies and Applications Scholarship
- 2006 Purdue Research Foundation International Travel Grant

- 2005 Neural Interfaces Workshop Student Travel Assistance Program Recipient
- 2005 Individual Post-Doctoral Ruth L. Kirschstein National Research Service Award
- 2004 Kresge Hearing Research Institutional National Research Service Award Fellowship
- 2003 University of Michigan College of Engineering Research Mentor Award
- 2003 Kresge Hearing Research Institutional National Research Service Award Fellowship
- 2003 IEEE-EMBS Neural Engineering Conference Fellowship
- 2001 Graduate Academic Scholarship (Arizona State University)
- 2000 Neurosciences Institute Neural Engineering Traineeship
- 1999 First Place Graduate Student, ASU Biomedical Engineering Society Poster Competition
- 1997 Graduate Academic Scholarship (Arizona State University)
- 1997 Honors degree in Chemical Engineering, *cum laude*
- 1994 Arthur T. Corey Award Recipient
- 1993 University Distinguished Scholars Recipient (Colorado State University)
- 1993 BrushWellman Scholarship Recipient
- 1993 Danforth Award Recipient
- 1993 Robert C. Byrd Scholarship Recipient
- 1993 Runner-up, Mathematics, Sterling Scholars of Central Utah
- 1993 Tandy Technology Scholar Award; Outstanding Mathematics
- 1992 The American Legion Boys' State Fellow
- 1992 Congressional Scholar (Congressional Youth Leadership Council)
- 1991 Hugh O'Brian Youth Foundation Fellow
- 1990 Eagle Scout Award Recipient

### **Laboratory Members**

- 2019 William H. Sweet Award from the American Academy of Neurosurgeons for the top abstract in pain research by a neurosurgeon trainee or graduate of the last five years (awarded to Dr. Alex Dru, a neurosurgery resident performing a research rotation in Dr. Otto's lab)
- 2019 Outstanding Undergraduate Project Award, UF BME Undergraduate Research Day (primary author: A Brake)
- 2019 UF Neurosurgery Department Research Award (awarded to Dr. Alex Dru, a neurosurgery resident performing a research rotation in Dr. Otto's lab)
- 2019 Outstanding Undergraduate Poster Presentation, Institute for Neural Engineering, University of Miami (primary author: A Brake)
- 2019 Best Overall Poster, University of Florida Biomaterials Day (primary author: N Veit)
- 2017 Honorable Mention, Pruitt Day Poster Session, Undergraduate Division (primary author: N Hilborn)
- 2015 Second Place in J. Crayton Pruitt Family Department of Biomedical Engineering Photo Contest (primary author: A Woolley)
- 2013 Honorable Mention in Nikon's 2013 Small World Competition (primary author: A Woolley)
- 2013 College of Engineering Dean's Choice Award, Purdue University Undergraduate Poster Competition (primary author: M Youngs)
- 2013 College of Engineering Student's Choice Award, Purdue University Undergraduate Poster Competition (primary author: A Filley)
- 2012 College of Science Dean's Choice Award, Purdue University Undergraduate Poster Competition (primary author: A Filley)

- 2012 2<sup>nd</sup> Place Biological Sciences, Purdue University Undergraduate Poster Competition (primary author: J McGee)
- 2011 College of Science Dean's Choice Award, Purdue University Undergraduate Poster Competition (primary author: LM Lincoln)
- 2011 Engineering Council Choice Award, Purdue University Undergraduate Poster Competition (primary author: TJ Hinton)
- 2010 Student Excellence in Neural Interfacing Award, Neural Interfaces Conference (awarded to Seth Wilks)
- 2010 Intel Excellence in Computer Science Award, Indiana State Science Fair Competition (primary author: A Sankari)
- 2010 First Place in Excellence in Human Health, Biology or Life Sciences, Indiana State Science Fair Competition (primary author: A Sankari)
- 2010 First Place, College of Science, Purdue University Undergraduate Poster Competition (primary author: H Desai)
- 2010 Top Winner/International Fair Delegate, Science and Engineering Fair, Lafayette Regional Science & Engineering Fair (primary author: A Sankari)
- 2010 Honorable Mention, Purdue University Sigma Xi Graduate Poster Competition (primary author: A Koivuniemi)
- 2009 College of Science Peer Award, Purdue University Undergraduate Poster Competition (primary author: LM Lincoln)
- 2008 Second Place, College of Science, Purdue University Undergraduate Poster Competition (primary author: AL Pierce)
- 2007 First Place, College of Science, Purdue University Undergraduate Poster Competition (primary author: AL Pierce)
- 2007 Dean's Award, College of Engineering, Purdue University Undergraduate Poster Competition (primary author: AL Pierce)

### ***Sponsored Research Projects***

#### **Active**

Judy, J (PI), **Otto, KJ** (CO-I)

**Active**; NIH-1R01NS111518-01

“The Tissue-Engineered Electronic Nerve Interface (TEENI)”

04/2019-03/2023

\$771,105 (direct costs – faculty's portion)

Atkinson, M (PI), **Otto, KJ** (Investigator)

**Active**; NIH-U54A11427766-02

“A 3D tissue map of the human lymphatic system”

09/2018-06/2022

\$80,910 (direct costs – faculty's portion)

**Otto, KJ** (PI)

**Active**; DARPA # HR0011-17-2-0019

“Cognitive Augmentation through Neuroplasticity”

01/2017-12/2020

\$4,295,453 (total costs)

Fuller, D (PI), **Otto, KJ** (CO-I)

**Active**; NIH-R21NS109571

“Phrenic motoneuron activation using temporal interference”

08/2018-07/2020

\$73,892 (direct costs – faculty’s portion)

Fried, S (PI), **Otto, KJ** (CO-I)

**Active**; NIH-U01NS099700

“Micro-coil implants for cortical activation”

09/2016-06/2020

\$406,937 (direct costs – faculty’s portion)

### **Completed**

Judy, JW (PI), **Otto, KJ** (CO-PI)

**Completed**; DARPA # HR0011516376

“Tissue-Engineered Electronic Nerve Interfaces (TEENI)”

09/2015-03/2019

\$572,042 (direct costs – faculty’s portion)

Campbell-Thompson M (PI), **Otto, KJ** (CO-PI)

**Completed**; NIH-1OT2OD023861-01

“Neuromodulation-based treatment of diabetes: identifying anatomical and physiological pancreatic innervation targets”

09/2016-07/2018

\$9,566 (direct costs – faculty’s portion)

Bashirulla, R (PI), **Otto, KJ** (Subcontract PI)

**Completed**; DARPA # N66001-15-C-4018

“Implantable Multimodal Peripheral Recording and Stimulation System (IMPRESS)”

04/2015-04/2018

\$192,638 (direct costs – faculty’s portion)

Miyamoto, R (PI), **Otto, KJ** (Subcontract PI)

**Completed**; DARPA

“MELD Mind Electromagnetic Localization Device”

01/2017-03/2017

\$52,000 (direct costs – faculty’s portion)

Williams, JC (PI), **Otto, KJ** (CO-PI)

**Completed**; DARPA # N66001-12-C-4025

“Multiscale bidirectional neural interfaces for comprehensive central nervous system interface reliability improvement”

01/2012-02/2016

\$212,304 (direct costs – faculty’s portion)

**Otto, KJ** (PI)

**Completed**; Indiana Clinical & Translational Science Institute Core Pilot Award

“fMRI of cortical microstimulation for sensory restoration”  
01/2015-12/2015  
\$9,900 (direct costs)

Roysam, B (PI), **Otto, KJ** (CO-I)  
**Completed**; DARPA # N66001-11-1-4015  
“Multi-spectral 3-D histology & predictive statistical technologies for identifying the critical combination of factors impacting long-term performance of implanted neuroprosthetics”  
05/2012-01/2015  
\$135,928 (direct costs)

**Otto, KJ** (PI)  
**Completed**; DARPA # N66001-11-1-4013  
“Normal and accelerated failure assessment of new quantitative *in vitro* and *in vivo* neural interfaces”  
01/2011-01/2015  
\$1,729,865 (direct costs)

**Otto, KJ** (PI)  
**Completed**; Indiana Clinical & Translational Science Institute  
“The safe limits of intracortical microstimulation for sensory prostheses”  
07/2011-06/2012  
\$36,218 (direct costs)

Garner, J (PI), **Otto, KJ** (CO-PI)  
**Completed**; Showalter Trust # 10098191  
“A novel rat model of pre-diagnosis cognitive symptoms in Parkinson’s Disease”  
07/2010-06/2011  
\$62,500 (direct costs)

**Otto, KJ** (PI)  
**Completed**; NIH-R03DC009339-02 NIDCD Small Grant Program  
“Neural microstimulation parameters and interfacial quality effects”  
07/2009-06/2012  
\$300,000 (direct costs)

Rickus, JL (PI), **Otto, KJ** (CO-PI)  
**Completed**; Indiana Spinal Cord and Brain Injury Fund Research Grant Program #00015115  
“Bio-inorganic coatings to reduce tissue reaction in cortical neural prostheses”  
01/2009-12/2010  
\$102,564 (direct costs)

**Otto, KJ** (PI)  
**Completed**; Purdue Research Foundation XR Grant #203103  
“Novel peptide-presenting sol-gel coatings for improving biocompatibility of cortical implants”  
07/2008-06/2009  
\$16,375 (direct costs)

Rao, M (PI), **Otto, KJ** (CO-PI)

**Completed**; Showalter Trust # 00011659

“Development of advanced multifunctional brain-machine interface devices with enhanced reliability for chronic implantation applications”

07/2008-06/2009

\$62,493 (direct costs)

**Otto, KJ** (PI)

**Completed**; NIDCD F32 DC007826-01A1

“Cortical response dynamics to chronic cochlear implants”

10/2005-06/2006

\$34,000 (direct costs)

***Publications: refereed journals, refereed proceedings, and reviews***

**Key:**     *Underline* – senior or principal authors  
               *Bold* - self  
               *Superscript F* – Research Fellow  
               *Superscript P* – Postdoc Researcher  
               *Superscript G* – Graduate Student  
               *Superscript U* – Undergraduate Student  
               *Superscript R* – Medical Resident  
               *Superscript M* – Medical Student  
               *Superscript &* – Research Technician  
               *Superscript A* – Former student / alumni

**Refereed Journals:**

1. Kundu A, A Fahmy, R Madler, **K Otto**, E Patrick, J Principe, N Maghari, R Bashirullah. A Multi-Channel Peripheral Nerve Stimulator with Integrate-and-Fire Encoding. *Submitted*.
2. Wheeler J, J Williams, **K Otto**, J Williams, D Moran. Chronic Effects of Electrode Size and Material for Epidural Cortical Implants. *Submitted*.
3. Otto, KJ and CE Schmidt. Neuron-targeted electrical modulation. *Science*. 367 (6484): 1303-1304. 2020.
4. Esquibel, CR, KD Wendt, HC Lee<sup>GA</sup>, J Gaire<sup>GA</sup>, A Shoffstall, ME Urdaneta<sup>G</sup>, JV Chacko, SK Brodnick, **KJ Otto**, JR Capadona, JC Williams, KW Eliceiri. Second harmonic generation imaging of collagen in chronically implantable electrodes in brain tissue. *Frontiers in Neuroscience*. 14:95. 2020.
5. Olczak, KP, M McDermott, **KJ Otto**. Electrochemical Evaluation of Layer-by-Layer Drug Delivery Coating for Neural Interfaces. *ACS Applied Bio Materials*. 2 (12), 5597-5607. 2019.
6. Ereifej E, C Shell, J Schofield, H Charkhkar, I Cuberovic, A Dorval, E Graczyk, T Kozai, **K Otto**, D Tyler, C Welle, A Widge, J Zariffa, C Moritz, D Bourbeau, P Marasco. Neural engineering: the process, applications, and its role in the future of medicine. *Journal of Neural Engineering*. 16 (6), 063002. 2019.

7. Verplancke R, M Cauwe, D Schaubroeck, D Cuypers, B Vandecasteele, L Mader, C Vanhaverbeke, M Ballini, J O'Callaghan, E Goikoetxea, D Braeken, A Kundu, E Patrick, N Maghari, **KJ Otto**, R Bashirullah, M Op de Beeck. Development of an active high-density transverse intrafascicular micro-electrode (hd-TIME) probe. *Journal of Micromechanics and Microengineering*. 30 (1), 015010, 2019.
8. Snyder MP, S Lin, A Posgai, M Atkinson, A Regev, J Rood, O Rozenblatt-Rosen, L Gaffney, A Hupalowska, R Satija, N Gehlenborg, J Shendure, J Laskin, P Harbury, NA Nystrom, JC Silverstein, Z Bar-Joseph, K Zhang, K Börner, Y Lin, R Conroy, D Procaccini, AL Roy, A Pillai, M Brown, ZS Galis, L Cai, C Trapnell, D Jackson, G Nolan, WJ Greenleaf, S Plevritis, S Ahadi, SA Nevins, H Lee, C M Schuerch, S Black, VG Venkataramanan, E Esplin, A Horning, A Bahmani, X Sun, S Jain, J Hagood, G Pryhuber, P Kharchenko, B Bodenmiller, T Brusko, M Clare-Salzler, H Nick, **K Otto**, C Wasserfall, M Jorgensen, M Brusko, S Maffioletti, RM Caprioli, JM Spraggins, D Gutierrez, NH Patterson, EK Neumann, R Harris, M deCaestecker, AB Fogo, R van de Plas, K Lau, G-C Yuan, Q Zhu, R Dries, P Yin, SK Saka, JY Kishi, Y Wang, I Goldaracena, D Ye, KE Burnum-Johnson, PD Piehowski, C Ansong, Y Zhu, T Desai, J Mulye, P Chou, M Nagendran. The human body at cellular resolution: the NIH Human Biomolecular Atlas Program. *Nature*. 574 (7777), 187, 2019.
9. Tyler DJ, CJ Czura, J French, K Ludwig, **K Otto**, F Pape, and C Welle. Cleveland neural engineering workshop 2017: strategic evaluation of neural engineering. *Bioelectronic Medicine*. 5 (1), 2019.
10. Murbach JM<sup>G</sup>, S Currilin<sup>G</sup>, A Widener<sup>U</sup>, Y Tong, S Chhatre, V Subramanian, DC Martin, BN Johnson, and **KJ Otto**. In situ electrochemical polymerization of poly(3,4-ethylenedioxythiophene) (PEDOT) for peripheral nerve interfaces. *MRS Communications*. doi.org/10.1557/mrc.2018.138. 2018.
11. Gaire J<sup>GA</sup>, HC Lee, R Ward<sup>UA</sup>, S Currilin<sup>G</sup>, E Atkinson<sup>G</sup>, AJ Woolley, JE Coleman, **KJ Otto**. Characterization and application of a transgenic mouse model expressing fluorophores in four different brain cell types. *Scientific Reports*. 8:7182, DOI:10.1038/s41598-018-25208-y. 2018.
12. Butterworth E, W Dickerson, V Vijay, K Weitzel, J Cooper, EW Atkinson<sup>G</sup>, JE Coleman, **KJ Otto**, M Campbell-Thompson. High resolution 3D Imaging of the Human Pancreas Neuro-Insular Network. *Journal of Visualized Experiments*. 29 Jan, 2018(131). 2018.
13. Park D-W, JP Ness, SK Brodnick, C Esquibel, J Novello, F Atry, D-H Baek, H Kim, J Bong, KI Swanson, AJ Suminski, **KJ Otto**, R Pashaie, JC Williams, and Z Ma. Electrical neural stimulation and simultaneous in vivo monitoring with transparent graphene electrode arrays implanted in GCaMP6f mice. *ACS Nano*. 12 (1), 148-157. 2017.
14. Lee HC<sup>GA</sup>, J Gaire<sup>GA</sup>, SW Currilin<sup>G</sup>, MD McDermott<sup>GA</sup>, K Park, and **KJ Otto**. Foreign body response to intracortical microelectrodes is not altered with dip-coating of



- polyethylene glycol (PEG). *Frontiers in Neuroscience*, 11:513, doi: 10.3389/fnins.2017.00513. 2017.
15. Lee HC<sup>GA</sup>, J Gaire<sup>GA</sup>, B Roysam, and **KJ Otto**. Placing sites on the edge of planar silicon microelectrodes enhances chronic recording functionality. *IEEE Transactions on Biomedical Engineering*. DOI: 10.1109/TBME.2017.2715811. 2017.
  16. Lee HC<sup>GA</sup>, F Ejserholm, J Gaire<sup>GA</sup>, S Currilin<sup>G</sup>, J Schouenborg, L Wallman, M Bengtsson, K Park, and **KJ Otto**. Histological evaluation of flexible neural implants; flexibility limit for reducing the tissue response? *Journal of Neural Engineering*, 14:3, 2017. **\*\*Highlighted as one of the most popular and highly cited Journal of Neural Engineering articles.**
  17. Rossi PJ, A. Gunduz, J Judy, L Wilson, A Machado, J Giordano, WJ Elias, MA Rossi, CL Butson, MD Fox, CC McIntyre, N Pouratian, NC Swann, C de Hemptinne, R Gross, HJ Chizeck, M Tagliati, AM Lozano, W Goodman, J-P Langevin, RL Alterman, U Akbar, GA Gerhardt, M Hallett, T Herrington, J Herron, C van Horne, B Kopell, A Lang, C Lungu, D Martinez-Ramirez, AY Mogilner, R Molina, E Opri, **KJ Otto**, KG Oweiss, Y Pathak, A Shukla, J Shute, S Sheth, LC Shih, KG Steinke, AI Tröster, N Vanegas, KA Zaghoul, L Cendejas-Zaragoza, L Verhagen, KD Foote, **MS Okun**. Proceedings of the Third Annual Deep Brain Stimulation Think Tank: A Review of Emerging Issues and Technologies. *Frontiers in Neuroscience*, 10:34. 2016.
  18. Rajan AT, JL Boback, JF Dammann, FV Tenore, BA Webster, **KJ Otto**, RA Gaunt, and **SJ Bensmaia**. The effects of chronic intracortical microstimulation on neural tissue and fine motor behavior. *Journal of Neural Engineering*, 12 (6), 066018. 2015.
  19. Ward M, **K Otto**, K Qing, R Worth, S John, and **P Irazoqui**. A flexible platform for biofeedback-driven control and personalization of electrical nerve stimulation therapy. *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, PP(99):1-1. 2015.
  20. Wodicka JR<sup>UA</sup>, NI Onunkwo<sup>GA</sup>, AJ Woolley<sup>GA</sup>, A Panitch, and **KJ Otto**. A cell-penetrating peptide for inhibiting MAPKAP Kinase 2-mediated inflammatory cytokine release following glial cell activation. *World Journal of Neuroscience* 5 (02), 115. 2015.
  21. Sommakia S<sup>GA</sup>, JL Rickus, and **KJ Otto**. Glial cells, but not neurons, exhibit a controllable response to a localized inflammatory microenvironment in vitro. *Frontiers in Neuroengineering*. 14;7:41. doi: 10.3389/fneng.2014.00041. 2014.
  22. Koivuniemi AS<sup>GA</sup> and **KJ Otto**. When “Altering Brain Function” becomes “Mind Control”. *Frontiers in Systems Neuroscience*. 14;8:202. doi: 10.3389/fnsys.2014.00202. 2014.
  23. Sommakia S<sup>GA</sup>, J Gaire<sup>GA</sup>, JL Rickus, and **KJ Otto**. Resistive and reactive changes to the impedance of intracortical microelectrodes can be mitigated with polyethylene glycol under acute in vitro and in vivo settings. *Frontiers in Neuroengineering*, Aug 4;7:33. doi: 10.3389/fneng.2014.00033, 2014.

24. Chen KH, JF Dammann, JL Boback, FV Tenore, RA Gaunt, **KJ Otto**, and SJ Bensmaia. The effect of chronic intracortical microstimulation on impedance and voltage excursion across different regimes of stimulation. *Journal of Neural Engineering*. 11 026004. doi:10.1088/1741-2560/11/2/026004. 2014.
25. Ochoa M, Wei P, Woolley, AJ<sup>GA</sup>, **KJ Otto**, and B Ziaie. A hybrid PDMS-Parylene subdural multi-electrode array. *Biomedical Microdevices*, 15:437-443. DOI 10.1007/s10544-013-9743-2. 2013.
26. Woolley AJ<sup>GA</sup>, HA Desai, and **KJ Otto**. Chronic intracortical microelectrode arrays induce non-uniform, depth-related tissue responses. *Journal of Neural Engineering*, 10(2):026007. DOI: 10.1088/1741-2560/10/2/026007. 2013. **\*\* Highlighted as one of the most popular and highly cited Journal of Neural Engineering articles.**
27. Woolley AJ<sup>GA</sup>, HA Desai, J Gaire, AL Ready, and **KJ Otto**. Intact histological characterization of brain-implanted microdevices and surrounding tissue. *Journal of Visualized Experiments*, (72), e50126, doi:10.3791/50126. 2013.
28. Nunamaker EA, **KJ Otto**, JE Artwohl, and JD Fortman. Leaching of heavy metals from water bottle components into the drinking water of rodents. *Journal of the American Association for Laboratory Animal Science*, 52(1):22-27. 2013.
29. Wilks SJ<sup>GA</sup>, TJ Richner, JC Williams, and **KJ Otto**. Voltage Biasing, Cyclic Voltammetry, & Electrical Impedance Spectroscopy for Neural Interfaces. *Journal of Visualized Experiments*, (60), e3566, DOI: 10.3791/3566. 2012.
30. Sundararajan R, F Xiao, T Salameh, LM Reece, L Campana, IG Camarillo, JF Leary, and **KJ Otto**. Effective proliferation control of human cancer cells using electrical pulses. *IEEE Transactions on Dielectrics and Electrical Insulation*, 19(6):2225-2236. 2012.
31. Koivuniemi AS<sup>GA</sup> and **KJ Otto**. Optimized waveforms for electrical microstimulation of auditory cortex. *IEEE Transactions in Neural Systems and Rehabilitation*, 19(5):468-476. 2011.
32. Woolley AJ<sup>GA</sup>, H Desai<sup>UA</sup>, MA Steckbeck<sup>UA</sup>, N Patel<sup>UA</sup>, and **KJ Otto**. *In situ* characterization of the brain-microdevice interface using Device Capture Histology. *Journal of Neuroscience Methods*, 201:67-77. 2011.
33. Lempka S, MD Johnson, M Moffitt, **KJ Otto**, DR Kipke, and C McIntyre. Theoretical Analysis of Intracortical Microelectrode Recordings. *Journal of Neural Engineering*, 8 045006. 2011.
34. Koivuniemi AK<sup>GA</sup>, SJ Wilks<sup>GA</sup>, AJ Woolley<sup>GA</sup>, and **KJ Otto**. Multimodal, longitudinal assessment of intracortical microstimulation. *Progress in Brain Research*, 194:131-144. 2011.

35. McCarthy PT, MP Rao, and **KJ Otto**. Simultaneous recording of rat auditory cortex and thalamus via a titanium-based multi-channel, microelectrode device. *Journal of Neural Engineering*, 8 046007. DOI: 10.1088/1741-2560/8/4/046007. 2011.
36. McCarthy PT, **KJ Otto**, and MP Rao. Robust penetrating microelectrodes for neural interfaces realized by titanium micromachining. *Biomedical Microdevices*, 13:503-515. 2011.
37. Nunamaker EA, **KJ Otto**, and DR Kipke. Investigation of the material properties of alginate for the development of hydrogel repair of dura mater. *Journal of the Mechanical Behavior of Biomedical Materials*, 4(1):16-33. 2010.
38. Wilks SJ<sup>GA</sup>, SM Richardson-Burns, JL Hendricks, DC Martin, and **KJ Otto**. Poly(3,4-ethylene dioxythiophene) (PEDOT) as a micro-neural interface material for electrostimulation. *Frontiers in Neuroengineering*, 3:3. doi:10.3389/neuro.16.007.2009. 2009.
39. Pierce AP<sup>GA</sup>, SS Sommakia<sup>GA</sup>, JL Rickus, and **KJ Otto**. Thin-film silica sol-gel coatings for neural microelectrodes. *Journal of Neuroscience Methods*, 180:106-110. 2009.
40. **Otto KJ**, MD Johnson, and DR Kipke. Voltage pulses change neural interface properties and improve unit recordings with chronically implanted microelectrodes. *IEEE Transactions on Biomedical Engineering*, 53(2):333-40. 2006.
41. **Otto KJ**, PJ Rousche, and DR Kipke. Microstimulation in auditory cortex provides a substrate for detailed behaviors. *Hearing Research*, 210(1-2):112-117. 2005.
42. Johnson MD, **KJ Otto**, and DR Kipke. Repeated rejuvenation improves unit recordings by consistently reducing high tissue impedances, (Invited). *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 13(2):160-165. 2005.
43. **Otto KJ**, PJ Rousche, and DR Kipke. Cortical microstimulation in auditory cortex of rat elicits best-frequency dependent behaviors. *Journal of Neural Engineering*, 2:42-51. 2005.
44. Gage GJ, KA Ludwig, **KJ Otto**, EL Ionides, and DR Kipke. Naïve coadaptive cortical control, *Journal of Neural Engineering*, 2:35-41. 2005.
45. Rousche PJ, **KJ Otto**, and DR Kipke. Single electrode micro-stimulation of rat auditory cortex: an evaluation of behavioral performance. *Hearing Research*, 179(1-2): p. 62-71. 2003.
46. Witte RS, **KJ Otto**, JC Williams, and DR Kipke. Pursuing dynamic reorganization in auditory cortex using chronic multichannel unit recordings in awake, behaving cats. *Neurocomputing*, 26-27:593-600. 1999.

**Refereed Proceedings:**

1. Khorrami P, K Brady, M Hernandez, L Gjesteb, SN Burke, D Lamb, MA Melton, **K Otto**, and **L Brattain**. Deep Learning-Based Nuclei Segmentation of Cleared Brain Tissue. *Proceedings of the 2019 IEEE High Performance Extreme Computing Conference (HPEC)*, 2019.
2. Urdaneta ME<sup>G</sup>, N Kunigk<sup>U</sup>, F Delgado<sup>PA</sup>, and **KJ Otto**. Somatosensory Cortex Microstimulation: The effects of Phase Duration and Asymmetric Waveforms. *Proceedings of the 41<sup>st</sup> Annual IEEE EMBS International Conference*, 2019.
3. Dirr EW<sup>G</sup>, YA Patel, L Lester<sup>U</sup>, F Delgado<sup>PA</sup>, and **KJ Otto**. Targeted Vagus Nerve Stimulation in a Diabetic Model. *Proceedings of the 41<sup>st</sup> Annual IEEE EMBS International Conference*, 2019.
4. Patrick EE, S Currilin<sup>G</sup>, A Kundu, F Delgado<sup>PA</sup>, A Fahmy, R Madler, N Maghari, R Bashirullah, A Gunduz, and **KJ Otto**. Design and assessment of stimulation parameters for a novel peripheral nerve interface. *Proceedings of the 40<sup>th</sup> Annual IEEE EMBS International Conference*, 2018.
5. Delgado F<sup>PA</sup>, S Currilin<sup>G</sup>, A Kundu, EE Patrick, and **KJ Otto**. Effect of Asymmetric, Charge Balanced Stimuli on Elicited Compound Neural Action Potentials. *Proceedings of the 40<sup>th</sup> Annual IEEE EMBS International Conference*, 2018.
6. Urdaneta ME<sup>G</sup> and **KJ Otto**. The need for subcellular neural interfaces for neuromodulation and recording. *Proceedings of the 40<sup>th</sup> Annual IEEE EMBS International Conference*, 2018.
7. Dirr EW<sup>G</sup>, YA Patel, RD Johnson, ML Campbell-Thompson, and **KJ Otto**. Pancreatic Neuromodulation in a Diabetic Rat Model. *Proceedings of the 40<sup>th</sup> Annual IEEE EMBS International Conference*, 2018.
8. Spearman B, R Wachs, V Desai, C Shafor, J Graham<sup>PA</sup>, E Atkinson<sup>G</sup>, E Nunamaker, **KJ Otto**, C Schmidt, and **J Judy**. Development of mechanically-tunable hydrogel scaffold for a regenerative peripheral nerve interface. *Proceedings of the 8<sup>th</sup> International IEEE/EMBS Conference on Neural Engineering*, 2017.
9. Nunamaker EA, B Spearman, J Graham<sup>PA</sup>, E Atkinson<sup>G</sup>, V Desai, C Shafor, S Natt, R Wachs, C Schmidt, J Judy, and **KJ Otto**. Implantation methodology development for tissue-engineered electronic neural interface (TEENI) devices. *Proceedings of the 8<sup>th</sup> International IEEE/EMBS Conference on Neural Engineering*, 2017.
10. McDermott MD<sup>GA</sup>, K Olczak<sup>G</sup>, and **KJ Otto**. Electrical analysis of minocycline eluting layer-by-layer thin-films from functional micro-electrode arrays. *Proceedings of the 8<sup>th</sup> International IEEE/EMBS Conference on Neural Engineering*, 2017.
11. Lee HC<sup>GA</sup>, F Ejserholm, S Currilin<sup>G</sup>, J Gaire<sup>GA</sup>, J Schouenborg, L Wallman, M Bengtsson, and **KJ Otto**. Electrical analysis of minocycline eluting layer-by-layer thin-

- films from functional micro-electrode arrays. *Proceedings of the 8<sup>th</sup> International IEEE/EMBS Conference on Neural Engineering*, 2017.
12. Graham J<sup>PA</sup>, E Atkinson<sup>G</sup>, EA Nunamaker, B Spearman, V Desai, C Shafor, S Natt, R Wachs, C Schmidt, J Judy, and **KJ Otto**. Histological evaluation of chronically implanted tissue-engineered-electronic-neural-interface (TEENI) Devices. *Proceedings of the 8<sup>th</sup> International IEEE/EMBS Conference on Neural Engineering*, 2017.
  13. Desai V, B Spearman, C Shafor, S Natt, B Teem, J Graham<sup>PA</sup>, E Atkinson<sup>G</sup>, R Wachs, E Nunamaker, **KJ Otto**, C Schmidt, and J Judy. Design, fabrication, and characterization of a scalable tissue-engineered electronic nerve interface. *Proceedings of the 8<sup>th</sup> International IEEE/EMBS Conference on Neural Engineering*, 2017.
  14. McDermott MD<sup>GA</sup> and **KJ Otto**. The effect of multiple thin-film coatings of protein loaded sol-gel on total multi-electrode array thickness. *Proceedings of the 38<sup>th</sup> Annual IEEE EMBS International Conference*, 2016.
  15. McDermott MD<sup>GA</sup>, J Zhang<sup>GA</sup>, and **KJ Otto**. Improving the brain machine interface via multiple Tetramethyl Orthosilicate sol-gel coatings on microelectrode arrays. *Proceedings of the 7<sup>th</sup> International IEEE/EMBS Conference on Neural Engineering*, 2015.
  16. Vedam-Mai V, AT Yachnis, **KJ Otto**, A Gunduz, A Wagle Shukla, C Hess, and MS Okun. Histopathological observations from 50 human deep brain stimulation cases. *Movement Disorders*, 30;S292. 2015.
  17. Sommakia S<sup>GA</sup>, S Wyatt, **KJ Otto**, A Vadlamani, and AL Garner. Nanosecond pulsed electric field interactions with microglia and astrocytes. *Proceedings of the IEEE 2014 International Power Modulator and High Voltage Conference*. 2014.
  18. Lycke R<sup>GA</sup>, A Schendel, JC Williams, and **KJ Otto**. In vivo evaluation of a  $\mu$ ECoG array for chronic stimulation. *Proceedings of the 36<sup>th</sup> Annual IEEE EMBS International Conference*, 2014.
  19. Lee HC<sup>GA</sup>, J Gaire<sup>GA</sup>, S McDowell<sup>UA</sup>, and **KJ Otto**. The effect of site placement within silicon microelectrodes on the long-term electrophysiological recordings. *Proceedings of the 36<sup>th</sup> Annual IEEE EMBS International Conference*, 2014.
  20. Woolley AJ<sup>GA</sup>, HA Desai, J Gaire<sup>GA</sup>, AL Ready<sup>GA</sup>, and **KJ Otto**. A systemic triple label strategy for fluorescent microscopy of inflammation in CNS and non-CNS tissue. *Microscopy and Microanalysis*, 19(S2):196-197. 2013.
  21. Regele OB<sup>GA</sup>, AS Koivuniemi<sup>GA</sup>, and **KJ Otto**. Constant RMS versus constant peak modulation for the perceptual equivalence of sinusoidal amplitude modulated signals. *Proceedings of the 35<sup>th</sup> Annual IEEE EMBS International Conference*, 3115-3118. 2013.

22. Koivuniemi AS<sup>GA</sup> and **KJ Otto**. The depth, waveform, and pulse rate for electrical microstimulation of the auditory cortex. *Proceedings of the 34<sup>th</sup> Annual IEEE EMBS International Conference*, 2489-92. 2012.
23. Sundararajan R, F Xiao, **KJ Otto**, and IG Camarillo. The dielectric properties of electroporated human breast cancer cells. *2012 IEEE 10<sup>th</sup> International Conference on the Properties and Applications of Dielectric Materials (ICPADM)*, 1-5. 2012.
24. Woolley AJ<sup>GA</sup>, HA Desai, and **KJ Otto**. Imaging the tissue response around brain-implanted microdevices. *Microscopy and Microanalysis*, 17 146-147. 2011.
25. Koivuniemi AS<sup>GA</sup>, OB Regele<sup>UA</sup>, JH Brenner<sup>UA</sup>, and **KJ Otto**. Rat behavioral model for high-throughput parametric studies of intracortical microstimulation. *Proceedings of the 33<sup>rd</sup> Annual IEEE EMBS International Conference*, 7541-4. 2011.
26. Wilks SJ<sup>GA</sup>, AJ Woolley<sup>GA</sup>, L Ouyang, DC Martin, and **KJ Otto**. In vivo polymerization of poly(3,4-ethylenedioxythiophene) (PEDOT) in rodent cerebral cortex. *Proceedings of the 33<sup>rd</sup> Annual IEEE EMBS International Conference*, 5412-5. 2011.
27. Wilks SJ<sup>GA</sup>, AS Koivuniemi<sup>GA</sup>, S Thongpang, JC Williams, and **KJ Otto**. Evaluation of micro-electrocorticographic electrodes for electrostimulation. *Proceedings of the 31<sup>st</sup> Annual IEEE EMBS International Conference*, 5510-3. 2009.
28. Sommakia SS<sup>GA</sup>, Rickus, JL, and **KJ Otto**. Effects of adsorbed proteins and an antifouling agent on the impedance of silicon-based neural microelectrodes. *Proceedings of the 31<sup>st</sup> Annual IEEE EMBS International Conference*, 7139-42. 2009.
29. McCarthy PT, R Madangopal, **KJ Otto**, and MP Rao. Titanium-based multi-channel, micro-electrode arrays for brain machine interface devices. *Proceedings of the 31<sup>st</sup> Annual IEEE EMBS International Conference*, 2062-5. 2009.
30. Xiao F, **Otto, KJ**, Camarillo, I, and R Sundararajan. Impedance spectroscopy studies of electroporated breast cancer cells. *Proceedings of IEEE Conference on Electrical Insulation & Dielectrics*, 470-3. 2009.
31. Elman A<sup>UA</sup>, EL Bartlett, N Kong, and **KJ Otto**. Applying data mining techniques to studying complex sensory stimuli in the thalamocortical loop. *Proceedings of the 3<sup>rd</sup> INFORMS Workshop on Data Mining and Health Informatics*, DM-HI. 2008.
32. Sundararajan R, D Campbell, J Harper, F Xiao, R Ma, and **KJ Otto**. Characterization of fruit juices treated with electrical pulses. *Annual Report of the IEEE Conference on Electrical Insulation & Dielectric Phenomena*, 26-29 Oct., 1:536-539. 2008.
33. Lempka SF, MD Johnson, DW Barnett, MA Moffitt, **KJ Otto**, DR Kipke and CC McIntyre. Optimization of microelectrode design for cortical recording based on thermal noise considerations. *Proceedings of the 28<sup>th</sup> Annual IEEE EMBS International Conference*, August, 1:3361-3364. 2006.

34. Johnson MD, **KJ Otto**, JC Williams, and DR Kipke. Bias voltages at microelectrodes change neural interface properties in vivo. *Proceedings of the 26<sup>th</sup> Annual IEEE EMBS International Conference*. 6:4103-4106. 2004.
35. Ghovanloo M, **KJ Otto**, DR Kipke, and K Najafi. In vitro and in vivo testing of a wireless multichannel stimulating telemetry microsystem. *Proceedings of the 26<sup>th</sup> Annual IEEE EMBS International Conference*. 6:4294-4297. 2004.
36. Gage GJ, **KJ Otto**, KA Ludwig, and DR Kipke. Co-adaptive Kalman filtering in a naive rat cortical control task. *Proceedings of the 26<sup>th</sup> Annual IEEE EMBS International Conference*. 6:4367-4370. 2004.
37. **Otto KJ**, PJ Rousche, and DR Kipke. The benefits of modular brain-machine interface system design. *Proceedings of the 25<sup>th</sup> Annual IEEE EMBS International Conference*. 3: 2208-2211. 2003.
38. Vetter RJ, **KJ Otto**, TC Marzullo, and DR Kipke. Brain-machine interfaces in rat motor cortex: neuronal operant conditioning to perform a sensory detection task. *Proceedings of the 1<sup>st</sup> International IEEE EMBS Conference on Neural Engineering*. 1:637-640. 2003.
39. **Otto KJ**, RJ Vetter, TC Marzullo, and DR Kipke. Brain-machine interfaces in rat motor cortex: implication of adaptive decoding algorithms. *Proceedings of the 1<sup>st</sup> International IEEE EMBS Conference on Neural Engineering*. 1:100-103. 2003.

### Reviews

1. Urdaneta ME<sup>G</sup>, AS Koivuniemi, and **KJ Otto**. Towards whole-brain micro-neuromodulation. *Current Opinion in Biomedical Engineering*, 4:65-77. 2017.
2. Spearman BS, V Desai, S Mobini, MD McDermott<sup>GA</sup>, JB Graham<sup>PA</sup>, **KJ Otto**, J Judy, and C Schmidt. Tissue-engineered peripheral nerve interfaces. *Advanced Functional Materials*, 1701713. <https://doi.org/10.1002/adfm.201701713>, 2017.
3. Sommakia S<sup>GA</sup>, HC Lee<sup>GA</sup>, J Gaire<sup>GA</sup>, and **KJ Otto**. Materials approaches for modulating neural tissue responses to implanted microelectrodes through mechanical and biochemical means. *Current Opinion in Solid State & Materials Science*, 18 (6), 319-328. 2014.

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### **Abstracts**

1. Kuliasha C, E Atkinson<sup>G</sup>, B Spearman, I Singh, M Kasper, C Rinaldi, C Schmidt, **KJ Otto**, and J Judy. Design and In Vivo Assessment of Tissue-Engineered Electronic Neural Interfaces (TEENI). *11<sup>th</sup> World Biomaterials Congress*. Glasgow, Scotland. 2020.
2. Altidor LK-P, MM Bruner, JF Deslauriers, TS Garman, S Ramirez, DG Lamb, MM Bruner, AM Finner, EW Dirr<sup>G</sup>, KP Olczak<sup>G</sup>, AP Maurer, **KJ Otto**, SN Burke, B Setlow,

- and JL Bizon. Vagus nerve stimulation enhances prefrontal-cortical mediated cognitive flexibility. *Annual Biomedical Research Conference for Minority Students Abstracts*. Anaheim, CA. 2019.
3. Ash M, M Melton, KP Olczak<sup>G</sup>, EW Dirr<sup>G</sup>, KN Lubke, J Nick, B McLaurin, E Atkinson<sup>G</sup>, **KJ Otto**, AP Maurer, DG Lamb, B Setlow, JL Bizon, and SN Burke. Acute vagus nerve stimulation increases Arc expression in the dentate gyrus of the hippocampus. *Society of Neuroscience Abstracts*. Chicago, IL. 2019.
  4. Brake A<sup>U</sup>, E Atkinson<sup>G</sup>, C Simmons, M Maden, and **KJ Otto**. Electrophysiological and histological characterization of the foreign body response to implantable neural interfaces in the African spiny mouse brain. *Society of Neuroscience Abstracts*. Chicago, IL. 2019.
  5. Urdaneta M<sup>G</sup>, N Kunigk<sup>U</sup>, SW Currin<sup>G</sup>, JD Penaloza-Aponte<sup>G</sup>, F Delgado<sup>PA</sup> and **KJ Otto**. Long-term stability of recordings and microstimulation of intracortical microelectrodes is depth-dependent. *Society of Neuroscience Abstracts*. Chicago, IL. 2019.
  6. Sunshine MD, E Neufeld, AM Cassara, N Grossman, **KJ Otto**, ES Boyden, and DD Fuller. Temporal interference stimulation to activate respiratory motor pools. *Society of Neuroscience Abstracts*. Chicago, IL. 2019.
  7. Atkinson E<sup>G</sup>, EA Nunamaker, A Gormaley<sup>UA</sup>, A Brake<sup>U</sup>, M Yusufali<sup>GA</sup>, B Spearman, C Kuliasha, A Furniturewala, R Paritosh, S Mobini, C Schmidt, J Judy, and **KJ Otto**. Evaluation of chronically implanted tissue-engineered-electronic-neural-interface (TEENI) for next-generation prosthetics. *Society of Neuroscience Abstracts*. Chicago, IL. 2019.
  8. Kuliasha C, B Spearman, EW Atkinson<sup>G</sup>, **KJ Otto**, C Schmidt, and JW Judy. Tissue-engineered electronic nerve interfaces (TEENI): Improved design, fabrication, and packaging using aggressive in vitro reactive-accelerated-aging reliability testing. *Society of Neuroscience Abstracts*. Chicago, IL. 2019.
  9. Melton M, SN Burke, M Ash, DG Lamb, L Brattain, **KJ Otto**, B Setlow, JL Bizon, AP Maurer, KP Olczak<sup>G</sup>, and EW Dirr<sup>G</sup>. A methodology pipeline for CLARITY and Arc imaging following vagus nerve stimulation. *Society of Neuroscience Abstracts*. Chicago, IL. 2019.
  10. Lamb DG, M Melton, JL Bizon, M Ash, SN Burke, **KJ Otto**, B Setlow, AP Maurer, EW Dirr<sup>G</sup>, and L Brattain. Automated multichannel centroid detection and coincident analysis of cleared brain tissue following vagus nerve stimulation. *Society of Neuroscience Abstracts*. Chicago, IL. 2019.
  11. Bruner MM, JF Deslauriers, D Calderon, LK-P Altidor, CM Hernandez, JA McQuail, EW Dirr<sup>G</sup>, KP Olczak<sup>G</sup>, AP Maurer, **KJ Otto**, SN Burke, DG Lamb, B Setlow, and JL Bizon. Peripheral and central effects of repeated vagus nerve stimulation. *Society of Neuroscience Abstracts*. Chicago, IL. 2019.



12. Deslauriers JF, MM Bruner, LK-P Altidor, TS Garman, S Ramirez, EW Dirr<sup>G</sup>, KP Olczak<sup>G</sup>, AP Maurer, **KJ Otto**, SN Burke, DG Lamb, B Setlow, and JL Bizon. Vagus nerve stimulation attenuates impulsivity in a 5-choice serial reaction time task. *Society of Neuroscience Abstracts*. Chicago, IL. 2019.
13. Altidor LK-P, MM Bruner, JF Deslauriers, TS Garman, S Ramirez, DG Lamb, AM Finner, EW Dirr<sup>G</sup>, KP Olczak<sup>G</sup>, AP Maurer, **KJ Otto**, SN Burke, B Setlow, and JL Bizon. Vagus nerve stimulation enhances prefrontal-cortical mediated cognitive flexibility. *Society of Neuroscience Abstracts*. Chicago, IL. 2019.
14. Sedwick F<sup>G</sup>, A Czeiszperger<sup>U</sup>, E Atkinson<sup>G</sup>, B Spearman, C Kuliasha, A Furniturewalla, C Schmidt, J Judy, and **KJ Otto**. Analyzing Distal Sciatic Nerve Growth And Structure In An Implanted Peripheral Nerve Interface. *Biomedical Engineering Society Abstracts*. Philadelphia, PA. 2019.
15. Dewberry L<sup>G</sup>, A Dru, J Anderson, D Hoh, K Allen, and **KJ Otto**. Kilohertz Frequency Alternating Current Stimulation for Peripheral Neuropathy Treatment. *Biomedical Engineering Society Abstracts*. Philadelphia, PA. 2019.
16. Dirr E<sup>G</sup>, L Lester<sup>U</sup>, and **KJ Otto**. Chronic Diabetic Pancreatic Neuromodulation. *Biomedical Engineering Society Abstracts*. Philadelphia, PA. 2019.
17. Badamtchian B<sup>U</sup>, K Olczak<sup>G</sup>, and **KJ Otto**. Characterization of Dexamethasone-Loaded Silicone for Local Drug Delivery. *Biomedical Engineering Society Abstracts*. Philadelphia, PA. 2019.
18. Brake A<sup>U</sup>, E Atkinson<sup>G</sup>, C Simmons, M Maden, and **KJ Otto**. Impact of Glial Scarring on Implantable Neural Interfaces in a Novel Regenerative Mammal Model, the African Spiny Mouse. *Biomedical Engineering Society Abstracts*. Philadelphia, PA. 2019.
19. Urdaneta M<sup>G</sup>, N Kunigk<sup>U</sup>, and **KJ Otto**. Behavioral Effects of Synchronous Pulses on Multichannel Microstimulation Across Cortical Depth. *Biomedical Engineering Society Abstracts*. Philadelphia, PA. 2019.
20. Murbach J<sup>G</sup>, S Thourson<sup>P</sup>, P Sitarik, Q Baugh, D Martin, and **KJ Otto**. *In Situ* Electrodeposition of P(EDOT-acid) in Rat Sciatic Nerve for Selective Stimulation. *Biomedical Engineering Society Abstracts*. Philadelphia, PA. 2019.
21. Lester L<sup>U</sup>, **KJ Otto**, and E Dirr<sup>G</sup>. Subdiaphragmatic Neuromodulation and Heart Rate Variability. *Biomedical Engineering Society Abstracts*. Philadelphia, PA. 2019.
22. Massais A<sup>U</sup>, S Thourson<sup>P</sup>, and **KJ Otto**. Reducing PSS Molecular Weight Improves Conductivity in Electropolymerized PEDOT:PSS Microwires. *Biomedical Engineering Society Abstracts*. Philadelphia, PA. 2019.

23. Chang A<sup>U</sup>, S Thourson<sup>P</sup>, and **KJ Otto**. Larger PSS Molecular Weight Decreases Surface Impedance of PEDOT:PSS Films in Kilohertz Frequency Range. *Biomedical Engineering Society Abstracts*. Philadelphia, PA. 2019.
24. San Antonio E<sup>U</sup>, S Thourson<sup>P</sup>, and **KJ Otto**. Volumetric Charge Storage of PEDOT:PSS Microwires Towards Modeling Neural Electrode Stimulation. *Biomedical Engineering Society Abstracts*. Philadelphia, PA. 2019.
25. Kunigk N<sup>U</sup>, M Urdaneta<sup>G</sup>, F Delgado<sup>PA</sup>, and **KJ Otto**. Efficacy of Asymmetric Waveforms for Somatosensory Cortex Microstimulation: A Parameterization Study. *Biomedical Engineering Society Abstracts*. Philadelphia, PA. 2019.
26. Veit N<sup>U</sup>, M Urdaneta<sup>G</sup>, and **KJ Otto**. The Role Of Electrode Site Size In The Electrochemistry Of Intracortical Electrodes. *Biomedical Engineering Society Abstracts*. Philadelphia, PA. 2019.
27. Khorrami P, K Brady, M Hernandez, L Gjestebj, SN Burke, D Lamb, MA Melton, **KJ Otto**, and **LJ Brattain**. Deep Learning-Based Nuclei Segmentation of Cleared Brain Tissue. *Institute for Electronics and Electrical Engineers High Performance Extreme Computing Conference*. Waltham, MA, 2019.
28. Hoang-Minh LB, F Pohl-Guimarães, A Rivera-Rodriguez, SW Currin<sup>G</sup>, **KJ Otto**, Carlos Rinaldi, and **DA Mitchell**. Quantitative Biodistribution of Adoptively Transferred T Cells in Brain Tumor-Bearing Mice. *Society for Neuro-Oncology Annual Meeting*. New Orleans, LA. 2019.
29. Brake A<sup>U</sup>, E Atkinson<sup>G</sup>, C Simmons, M Maden, and **KJ Otto**. Implementation of the African Spiny Mouse model to investigate glial and neuronal responses to implantable neural interfaces. *University of Miami Neural Engineering Day*. Miami, FL. 2019.
30. Dewberry LS<sup>G</sup>, A Dru, J Anderson, D Hoh, **KJ Otto**, and **K Allen**. Kilohertz Electrical Stimulation For Treatment of Peripheral Neuropathy. *University of Miami Neural Engineering Day*. Miami, FL. 2019.
31. Altidor LK-P, TS Garman, S Ramirez, AM Crider, DG Lamb, MM Bruner, AM Finner, EW Dirr<sup>G</sup>, F Delgado<sup>PA</sup>, KP Olczak<sup>G</sup>, AP Maurer, **KJ Otto**, SN Burke, B Setlow, and **JL Bizon**. Targeting GABAergic mechanisms to improve prefrontal-cortical mediated cognitive flexibility in a novel touchscreen-based reversal learning task. *Society of Neuroscience Abstracts*. San Diego, CA. 2018.
32. Lamb DG, TS Garman, S Ramirez, A Crider, MM Bruner, EW Dirr<sup>G</sup>, F Delgado<sup>PA</sup>, KP Olczak<sup>G</sup>, AP Maurer, **KJ Otto**, SN Burke, B Setlow, and **JL Bizon**. Effects of vagus nerve stimulation on selective attention in Brown Norway rats. *Society of Neuroscience Abstracts*. San Diego, CA. 2018.
33. Burke SN, A Crider, K Olczak<sup>G</sup>, E Dirr<sup>G</sup>, K Lubke, J Nick, B McLaurin, E Atkinson, **KJ Otto**, AP Maurer, D Lamb, B Setlow, and **JL Bizon**. Acute vagus nerve stimulation

- attenuates novelty-induced Arc transcription in dorsal CA1. *Society of Neuroscience Abstracts*. San Diego, CA. 2018.
34. Brake A<sup>U</sup>, E Atkinson<sup>G</sup>, C Simmons, M Maden, and **KJ Otto**. Investigating changes in glial and neuronal responses to implantable neural interfaces: how the unique regenerative abilities of the African Spiny Mouse could impact current understanding of the foreign body response in the brain. *Society of Neuroscience Abstracts*. San Diego, CA. 2018.
  35. Gormaley AK<sup>UA</sup>, EW Atkinson<sup>G</sup>, J Graham, S Mobini, P Rustogi, BS Spearman, EA Nunamaker, CA Kuliasha, JW Judy, CE Schmidt, and **KJ Otto**. Foreign Body Response in the Peripheral Nervous System to Tissue-Engineered Electronic Nerve Interfaces (TEENIs). *Society of Neuroscience Abstracts*. San Diego, CA. 2018.
  36. Atkinson E<sup>G</sup>, EA Nunamaker, A Gormaley<sup>UA</sup>, A Brake<sup>U</sup>, M Yusufali<sup>GA</sup>, B Spearman, C Kuliasha, A Furniturewala, P Rustogi, S Mobini, C Schmidt, J Judy, and **KJ Otto**. Functional and histological evaluation of chronically implanted Tissue Engineered Electrical Nerve Interface (TEENI) for next-generation prosthetics. *Society of Neuroscience Abstracts*. San Diego, CA. 2018.
  37. Olczak KP<sup>G</sup>, E Dirr<sup>G</sup>, F Delgado<sup>PA</sup>, A Crider, B McLaurin, DG Lamb, AP Maurer, SN Burke, B Setlow, JL Bizon, and **KJ Otto**. Chronic Electrochemical Evaluation of Shape-Memory Polymer Nerve Cuff Electrodes. *Biomedical Engineering Society Abstracts*. Atlanta, GA. 2018.
  38. Spearman BS, EW Atkinson<sup>G</sup>, S Mobini, CA Kuliasha, EA Nunamaker, **KJ Otto**, C Rinaldi, JW Judy, and CE Schmidt. Templated Extracellular Matrix-Based Hydrogel for Peripheral Nerve Regeneration in a Tissue-Engineered Electronic Nerve Interface (TEENI). *Biomedical Engineering Society Abstracts*. Atlanta, GA. 2018.
  39. Widener AE<sup>UA</sup>, JM Murbach<sup>G</sup>, and **KJ Otto**. Effect of Dopant Concentration on In Situ Polymerization of Poly(3,4-ethylenedioxythiophene) (PEDOT) in Central Nervous System. *Biomedical Engineering Society Abstracts*. Atlanta, GA. 2018.
  40. Gormaley AK<sup>UA</sup>, EW Atkinson<sup>G</sup>, J Graham<sup>PA</sup>, S Mobini, P Rustogi, BS Spearman, EA Nunamaker, CA Kuliasha, JW Judy, CE Schmidt, and **KJ Otto**. Foreign Body Response in the Peripheral Nervous System to Tissue-Engineered Electronic Nerve Interfaces (TEENIs). *Biomedical Engineering Society Abstracts*. Atlanta, GA. 2018.
  41. Valimaki A<sup>UP</sup>, KP Olczak<sup>G</sup>, and **KJ Otto**. Effects of Protein Adsorption on Titanium Nitride Electrodes. *Biomedical Engineering Society Abstracts*. Atlanta, GA. 2018.
  42. Olczak KP<sup>G</sup>, E Dirr<sup>G</sup>, F Delgado<sup>PA</sup>, A Crider, B McLaurin, DG Lamb, AP Maurer, SN Burke, B Setlow, JL Bizon, and **KJ Otto**. Electrical Performance of Shape Memory Polymer Nerve Cuff Electrodes *in vivo*. *Neural Interfaces Conference Abstracts*. Minneapolis, MN. 2018.

43. Gaire J<sup>GA</sup>, HC Lee<sup>GA</sup>, N Hilborn<sup>UA</sup>, R Ward<sup>UA</sup>, M Regan<sup>UA</sup>, and **KJ Otto**. Towards Examining the Role of Inflammation on the Functionality of Intracortical Devices. *Neural Interfaces Conference Abstracts*. Minneapolis, MN. 2018.
44. Dirr E<sup>G</sup>, F Delgado<sup>PA</sup>, and **KJ Otto**. Chronic Pancreatic Neuromodulation Using Shape Memory Polymer Electrodes. *Neural Interfaces Conference Abstracts*. Minneapolis, MN. 2018.
45. Johnson BN, DC Martin, **KJ Otto**, J Murbach<sup>G</sup>, Y Tong, V Subramanian, and S Chhatre. Fiber Type Targeted *In Situ* Polymerized Electrodes for Peripheral Nerve Interface. *Materials Research Society Abstracts*. Phoenix, AZ. 2018.
46. Kundu A, EE Patrick, A Fahmy, RA Madler, F Delgado<sup>PA</sup>, S Currin<sup>G</sup>, J Principe, A Gunduz, N Maghari, M Op d Beeck, **KJ Otto**, D Braeken, and R Bashirulla. Design and assessment of stimulation parameters for a novel peripheral nerve interface. *Society for Neuroscience Abstracts*. Washington DC. 2017.
47. Graham JB<sup>PA</sup> and **KJ Otto**. Cortical implants disrupt perineuronal nets. *Society for Neuroscience Abstracts*. Washington DC. 2017.
48. Gaire J<sup>GA</sup>, HC Lee<sup>GA</sup>, E Atkinson<sup>G</sup>, S Currin<sup>G</sup>, R Ward<sup>UA</sup>, A Woolley<sup>GA</sup>, J Coleman, and **KJ Otto**. Characterization and application of a quadruple labelled mouse line. *Society of Neuroscience Abstracts*. Washington DC. 2017.
49. Gaire J<sup>GA</sup>, HC Lee<sup>GA</sup>, NL Hilborn<sup>UA</sup>, MK Regan<sup>UA</sup>, and **KJ Otto**. Investigating the Role of Inflammation in the Functionality of Intracortical Devices. *Biomedical Engineering Society Abstracts*. Phoenix, AZ. 2017.
50. Kundu A, EE Patrick, A Fahmy, F Delgado<sup>PA</sup>, S Currin<sup>G</sup>, RA Madler, **KJ Otto**, N Maghari, and R Bashirulla. In Vivo Validation of a flexible CMOS-compatible Neural Interface. *Biomedical Engineering Society Abstracts*. Phoenix, AZ. 2017.
51. McDermott M<sup>GA</sup> and **KJ Otto**. The Impact of Protein Loaded Thin-film Sol-Gel on Electrical Impedance Spectroscopy and Charge Carrying Capacity. *Biomedical Engineering Society Abstracts*. Phoenix, AZ. 2017.
52. Olczak K<sup>G</sup>, M McDermott<sup>GA</sup>, and **KJ Otto**. Electrical Evaluation Of Micro-Electrode Arrays Coated With Thin Films For Minocycline Release. *Biomedical Engineering Society Abstracts*. Phoenix, AZ. 2017.
53. Patrick E, **KJ Otto**, R Bashirulla, and A Gunduz. Understanding Fiber Recruitment of Peripheral Nerves During Intrafascicular Stimulation via Computational Modeling. *Biomedical Engineering Society Abstracts*. Phoenix, AZ. 2017.
54. **Otto KJ**. Quantification and Manipulation of the Microelectrode-Tissue Interface for Neural Prostheses. ECS Meeting, National Harbor, MD. 2017

55. Gaire J<sup>GA</sup>, HC Lee<sup>GA</sup>, S Currilin<sup>G</sup>, and **KJ Otto**. Characterization of a transgenic mouse expressing fluorophores in neurons, microglia, astrocytes, and oligodendrocytes. *Society for Neuroscience Abstracts*. San Diego, CA. 2016.
56. Gaire J<sup>GA</sup>, HC Lee<sup>GA</sup>, and **KJ Otto**. Quadruple labelled mouse to study tissue response to brain implanted devices. *Biomedical Engineering Society Abstracts*. Minneapolis, MI. 2016.
57. Lee HC<sup>GA</sup>, F Ejserholm, S Currilin<sup>G</sup>, J Gaire<sup>GA</sup>, J Schouenborg, L Wallman, M Bengtsson, and **KJ Otto**, Quantitative histological assessment of probe flexibility. *Proceedings of the 38<sup>th</sup> Annual IEEE EMBS International Conference*, Orlando, FL. 2016.
58. Graham J<sup>PA</sup>, EW Atkinson<sup>G</sup>, EA Nunamaker, BS Spearman, RA Wachs, VH Desai, CS Shafor, **KJ Otto**, CE Schmidt, and **JW Judy**. Histological evaluation of implanted tissue-engineered electronic neural interface (TEENI) devices. *Proceedings of the 38<sup>th</sup> Annual IEEE EMBS International Conference*, Orlando, FL. 2016.
59. Spearman B, RA Wachs, VH Desai, CS Shafor, JB Graham<sup>PA</sup>, EW Atkinson<sup>G</sup>, EA Nunamaker, **KJ Otto**, CE Schmidt, and **JW Judy**. Development of mechanically tunable hydrogel scaffold for a regenerative peripheral nerve interface. *Proceedings of the 38<sup>th</sup> Annual IEEE EMBS International Conference*, Orlando, FL. 2016.
60. Desai V, CS Shafor, BS Spearman, RA Wachs, JB Graham<sup>PA</sup>, EW Atkinson<sup>G</sup>, EA Nunamaker, **KJ Otto**, CE Schmidt, and **JW Judy**. Design and fabrication of a scalable tissue-engineered electronic nerve interface (TEENI). *Proceedings of the 38<sup>th</sup> Annual IEEE EMBS International Conference*, Orlando, FL. 2016.
61. Gaire J<sup>GA</sup> and **KJ Otto**. Evaluation of Systemic and Histological Changes Using Accelerated Failure Studies in Mice Implanted with Intracortical Device. *Society for Neuroscience Abstracts*. Chicago, IL. 2015.
62. Gaire J<sup>GA</sup> and **KJ Otto**. Systemic Assessment of Markers of Inflammation to Intracortical Microelectrodes. *Biomedical Engineering Society Abstracts*. Tampa, FL. 2015.
63. Lee HCL<sup>GA</sup>, J Gaire<sup>GA</sup>, and **KJ Otto**. Perspectives on Using Device Capture Histology (DCHist) for in situ Evaluation of Implantable Microelectrodes. *Biomedical Engineering Society Abstracts*. Tampa, FL. 2015.
64. McDermott M<sup>GA</sup> and **KJ Otto**. Adjusting Tetramethyl Orthosilicate Layer Composition and Loading Paradigm to Ameliorate the Acute Phase of Inflammation Associated with Microdevice Implantation. *Biomedical Engineering Society Abstracts*. Tampa, FL. 2015.
65. Vedam-Mai V, AT Yachnis, **KJ Otto**, A Gunduz, A Wagle Shukla, C Hess, and **MS Okun**. Histopathological observations from 50 human deep brain stimulation cases. *Movement Disorders Abstracts*. San Diego, CA. 2015.

66. Truong A<sup>GA</sup> and **KJ Otto**. Impairments in attentional set-shifting in a rat model of Parkinson's disease. *Society for Neuroscience Abstracts*. Washington, DC. 2014.
67. Lee HC<sup>GA</sup>, J Gaire<sup>GA</sup>, M McDermott<sup>GA</sup>, J Zhang<sup>GA</sup>, and **KJ Otto**. Improving the performance of intracortical microelectrodes via structural modifications and biochemical intervention strategies. *Biomedical Engineering Society Abstracts*. San Antonio, TX. 2014.
68. Dale J<sup>UA</sup>, J Gaire<sup>GA</sup>, and **KJ Otto**. Quantification of LPS Eluate from Coated Microelectrode Devices. *Summer Undergraduate Research Fellows Symposium Abstracts*. West Lafayette, IN. 2014.
69. Harden MA<sup>UA</sup>, MD McDermott<sup>GA</sup>, and **KJ Otto**. Thin-Film Sol-Gel as Controlled Delivery Platform for Neural Microelectrodes. *Summer Undergraduate Research Fellows Symposium Abstracts*. West Lafayette, IN. 2014.
70. Youngs M<sup>UA</sup>, R Verner<sup>GA</sup>, and **KJ Otto**. Exploring experimental methods to measure the efficacy of voltage biasing in the rat auditory cortex. *DiscoverU Poster Symposium*, Purdue University. West Lafayette, IN. 2014.
71. Filley A<sup>UA</sup>, N DiCola<sup>UA</sup>, M McDermott<sup>GA</sup>, and **KJ Otto**. Can controlled release minimize the foreign body response of neural tissue to electrode implantation? An exploration of multiple neat coats. *DiscoverU Poster Symposium*, Purdue University. West Lafayette, IN. 2014.
72. Schendel A, R Lycke<sup>GA</sup>, TJ Richner, SK Brodnick, **KJ Otto**, and **JC Williams**. Electrical stimulation via micro-ECoG devices for therapeutic and rejuvenation purposes. *Society for Neuroscience Abstracts*. San Diego, CA. 2013.
73. Truong A<sup>GA</sup> and **KJ Otto**. A novel rat model of pre-diagnosis cognitive symptoms in Parkinson's disease. *Society for Neuroscience Abstracts*. San Diego, CA. 2013.
74. Wheeler JJ, P Karande, **KJ Otto**, and **DW Moran**. An ECoG-based synchronous bi-directional brain-computer interface. *Society for Neuroscience Abstracts*. San Diego, CA. 2013.
75. Koivuniemi AS<sup>GA</sup>, O Regele<sup>GA</sup>, R Verner<sup>GA</sup>, R Lycke<sup>GA</sup>, M Youngs<sup>UA</sup>, and **KJ Otto**. Development of Cortical Sensory Prostheses. *Biomedical Engineering Society Abstracts*. Seattle, WA. 2013.
76. Woolley AJ<sup>PA</sup>, H Desai<sup>UA</sup>, J Gaire<sup>GA</sup>, A Ready<sup>GA</sup>, and **KJ Otto**. A Systemic Triple Label Strategy for Fluorescent Microscopy of Inflammation in CNS and Non-CNS Tissue. *Microscopy and Microanalysis*. Indianapolis, IN. 2013.
77. Youngs M<sup>UA</sup>, R Lycke<sup>GA</sup>, AS Koivuniemi<sup>GA</sup>, A Schendel, JC Williams, and **KJ Otto**. Developing micro-electrocorticographic stimulation of the rat auditory cortex.

- Undergraduate Research Poster Symposium*, Purdue University. West Lafayette, IN. 2013.
78. Zhang J<sup>UA</sup>, M McDermott<sup>GA</sup>, and **KJ Otto**. The Effect of Multiple TMOS Coatings upon Impedance and Charge Carrying Capacity. *Undergraduate Research Poster Symposium*, Purdue University. West Lafayette, IN. 2013.
  79. Filley A<sup>UA</sup>, M McDermott<sup>GA</sup>, and **KJ Otto**. Controlled Release to Attenuate Foreign Body Response of Neural Tissue to Electrode Implantation. *Undergraduate Research Poster Symposium*, Purdue University. West Lafayette, IN. 2013.
  80. Ward MP, G. Albers, **KJ Otto**, RM Worth, and **PP Irazoqui**. Vagal nerve activation control: a new approach to electrical stimulation-based therapy for treatment-resistant temporal lobe epilepsy. *American Epilepsy Society Abstracts*. Las Vegas, NV. 2012.
  81. Woolley AJ<sup>PA</sup>, HA Desai<sup>UA</sup>, TJ Richner, SK Brodnick, KW Eliceiri, JC Williams, and **KJ Otto**. *In vivo* microscopy of neural tissue dynamics surrounding intracortical microelectrode arrays. *Society for Neuroscience Abstracts*. New Orleans, LA. 2012.
  82. Sommakia S<sup>GA</sup>, JL Rickus, and **KJ Otto**. Quantitative evaluation of polyethylene glycol (PEG) as a therapeutic for the reactive response of brain cells in primary mixed cortical cultures. *Society for Neuroscience Abstracts*. New Orleans, LA. 2012.
  83. Woolley AJ<sup>PA</sup>, HA Desai<sup>UA</sup>, TJ Richner, SK Brodnick, KW Eliceiri, JC Williams, and **KJ Otto**. *In vivo* imaging of the intracortical microelectrode interface through a thinned-skull window. *Biomedical Engineering Society Abstracts*. Atlanta, GA. 2012.
  84. Koivuniemi AS<sup>GA</sup> and **KJ Otto**. Auditory cortical microstimulation's optimal electrode depth, waveform, and pulse rate. *Neural Interfaces Conference Abstracts*. Salt Lake City, UT. 2012.
  85. Woolley AJ<sup>PA</sup>, HA Desai<sup>UA</sup>, TJ Richner, SK Brodnick, KW Eliceiri, JC Williams, and **KJ Otto**. Imaging of the intracortical microelectrode interface through a thinned-skull window. *Neural Interfaces Conference Abstracts*. Salt Lake City, UT. 2012.
  86. Filley A<sup>UA</sup>, AJ Woolley<sup>PA</sup>, H Desai<sup>UA</sup>, A Shands<sup>UA</sup>, and **KJ Otto**. Clearing Solution Comparison to Improve Deep Tissue Imaging. *Undergraduate Research Poster Symposium*, Purdue University. West Lafayette, IN. 2012.
  87. Shands A<sup>UA</sup>, AJ Woolley<sup>PA</sup>, H Desai<sup>UA</sup>, A Filley<sup>UA</sup>, and **KJ Otto**. Minimizing Tissue Movement While Imaging With a Laser Confocal Microscope. *Undergraduate Research Poster Symposium*, Purdue University. West Lafayette, IN. 2012.
  88. Haley B<sup>UA</sup>, JE Huber, A Truong<sup>GA</sup>, and **KJ Otto**. An evaluation of a rat model of Parkinson's disease: Examining the effects on vocalizations. *Undergraduate Research Poster Symposium*, Purdue University. West Lafayette, IN. 2012.

89. McGee J<sup>UA</sup>, A Truong<sup>GA</sup>, and **KJ Otto**. Analysis of Injection of 6-Hydroxy Dopamine for Induced Parkinsonian Symptoms in Rats. *Undergraduate Research Poster Symposium*, Purdue University. West Lafayette, IN. 2012.
90. Slabaugh R<sup>UA</sup>, A Truong<sup>GA</sup>, H Desai<sup>UA</sup>, AJ Woolley<sup>PA</sup>, JE Huber, and **KJ Otto**. Assessing the Autonomic Nervous System in the 6-OHDA Rat Model of Parkinson's Disease. *Undergraduate Research Poster Symposium*, Purdue University. West Lafayette, IN. 2012.
91. Regele O<sup>UA</sup>, JH Brenner<sup>UA</sup>, AS Koivuniemi<sup>GA</sup>, and **KJ Otto**. The role of Pulse Rate and Stimulation Depth in Lowering Detection Thresholds for Auditory Cortex Prostheses. *Undergraduate Research Poster Symposium*, Purdue University. West Lafayette, IN. 2012.
92. Brenner J<sup>UA</sup>, AS Koivuniemi<sup>GA</sup>, and **KJ Otto**. The Role of Interphase Delay in Detection of Brain Microstimulation. *Undergraduate Research Poster Symposium*, Purdue University. West Lafayette, IN. 2012.
93. Desai H<sup>UA</sup>, AJ Woolley<sup>PA</sup>, MA Steckbeck<sup>UA</sup>, N Patel<sup>UA</sup>, and **KJ Otto**. Investigating the oligodendrocyte response to implanted microelectrode arrays. *Society for Neuroscience Abstracts*. Washington DC. 2011.
94. Woolley AJ<sup>PA</sup>, Desai H<sup>UA</sup>, and **KJ Otto**. *In vivo* assessment of tissue surrounding brain-implanted microelectrodes using a cranial window. *Society for Neuroscience Abstracts*. Washington DC. 2011.
95. Koivuniemi AS<sup>GA</sup> and **KJ Otto**. Effects of stimulus waveform and electrode depth on detection of cortical microstimulation. *Society for Neuroscience Abstracts*. Washington DC. 2011.
96. Regele OB<sup>GA</sup>, AS Koivuniemi<sup>GA</sup>, and **KJ Otto**. The role of pulse rate and waveform shape in lowering detection thresholds for auditory cortex prostheses. *Proceedings of the 22<sup>nd</sup> annual Biomedical Engineering Society*. Hartford, CT. 2011.
97. Woolley AJ<sup>PA</sup>, H Desai<sup>UA</sup>, and **KJ Otto**. Recent insights gathered through imaging the intact neural electrode-tissue interface. *Proceedings of the 22<sup>nd</sup> annual Biomedical Engineering Society*. Hartford, CT. 2011.
98. Woolley AJ<sup>GA</sup>, H Desai<sup>UA</sup>, and **KJ Otto**. Imaging the tissue response around brain-implanted microdevices. *Microscopy and Microanalysis*. Nashville, TN. 2011.
99. Koivuniemi AS<sup>GA</sup>, JH Brenner<sup>UA</sup>, OB Regele<sup>UA</sup>, and **KJ Otto**. Effects of stimulus waveform and electrode depth on detection of cortical microstimulation. *Joint meeting of the American Society for Clinical Investigators and Association of American Physicians*. Chicago, IL. 2011.



100. Brenner JH<sup>UA</sup>, AS Koivuniemi<sup>GA</sup>, and **KJ Otto**. The role of interphase delay in detection of brain microstimulation. *Undergraduate Research Poster Symposium*, Purdue University. West Lafayette, IN. 2011.
101. Clark JV<sup>UA</sup>, AS Koivuniemi<sup>GA</sup>, and **KJ Otto**. Modeling of cortical pyramidal cells for behavior prediction. *Undergraduate Research Poster Symposium*, Purdue University. West Lafayette, IN. 2011.
102. Desai HA<sup>UA</sup>, AJ Woolley<sup>GA</sup>, MA Steckbeck<sup>UA</sup>, NK Patel<sup>UA</sup>, and **KJ Otto**. Characterizing the brain tissue response to implanted microelectrodes using a novel technique. *Undergraduate Research Poster Symposium*, Purdue University. West Lafayette, IN. 2011.
103. Grey CA, A Truong<sup>GA</sup>, CM Rodda, AM Einterz, K Crosby, B Haley, JE Huber, JP Garner, and **KJ Otto**. Another test? A look at a rat model of pre-diagnosis cognitive symptoms of Parkinson's disease. *Undergraduate Research Poster Symposium*, Purdue University. West Lafayette, IN. 2011.
104. Lincoln LM<sup>UA</sup>, NI Onunkwo<sup>GA</sup>, and **KJ Otto**. Understanding the astrocyte response to electrical stimulation by implanted microelectrodes. *Undergraduate Research Poster Symposium*, Purdue University. West Lafayette, IN. 2011.
105. Steckbeck MA<sup>UA</sup>, AJ Woolley<sup>GA</sup>, S Sommakia<sup>GA</sup>, HA Desai<sup>UA</sup>, and **KJ Otto**. Evaluating microglia motility using *in vitro* time-lapse microscopy. *Undergraduate Research Poster Symposium*, Purdue University. West Lafayette, IN. 2011.
106. Hinton TJ<sup>UA</sup>, NK Patel<sup>UA</sup>, AJ Woolley<sup>GA</sup>, SJ Wilks<sup>GA</sup>, and **KJ Otto**. Modeling lubrication of intracortical microelectrodes. *Undergraduate Research Poster Symposium*, Purdue University. West Lafayette, IN. 2011.
107. Regele OB<sup>UA</sup>, AS Koivuniemi<sup>GA</sup>, and **KJ Otto**. The role of frequency in lowering detection thresholds for auditory cortex prostheses. *Undergraduate Research Poster Symposium*, Purdue University. West Lafayette, IN. 2011.
108. Xavier M<sup>UA</sup>, M McDermott<sup>GA</sup>, and **KJ Otto**. Method for releasing BSA as a model of drug release. *Undergraduate Research Poster Symposium*, Purdue University. West Lafayette, IN. 2011.
109. Koivuniemi AS<sup>GA</sup>, SJ Wilks<sup>GA</sup>, and **KJ Otto**. Evaluation of auditory cortical microstimulation in behaving rats. *Society for Neuroscience Abstracts*. San Diego, CA. 2010.
110. Sommakia S<sup>GA</sup>, AJ Woolley<sup>GA</sup>, JL Rickus, and **KJ Otto**. Cellular response of mixed cortical primary cultures to PEG, sol-gel silica coated microwire. *Society for Neuroscience Abstracts*. San Diego, CA. 2010.

111. Wilks SJ<sup>GA</sup>, AS Koivuniemi<sup>GA</sup>, and **KJ Otto**. *In vitro* stability and *in vivo* performance of PEDOT coatings for neural microstimulation. *Proceedings of the 21<sup>st</sup> annual Biomedical Engineering Society*. Austin, TX. 2010.
112. Woolley AJ<sup>GA</sup>, H Desai<sup>UA</sup>, MA Steckbeck<sup>UA</sup>, NI Onunkwo<sup>GA</sup>, N Patel<sup>UA</sup>, S Sommakia<sup>GA</sup>, and **KJ Otto**. Characterization of tissue at intracortical microelectrode interfaces using *in vitro*, *in situ* and *in vivo* imaging strategies. *Proceedings of the 21<sup>st</sup> annual Biomedical Engineering Society*. Austin, TX. 2010.
113. Vaidyanathan S<sup>UA</sup>, S Sommakia<sup>GA</sup>, JL Rickus, **KJ Otto**. Controlled release of biomolecules from silica sol-gel thin films. *Proceedings of the 21<sup>st</sup> annual Biomedical Engineering Society*. Austin, TX. 2010.
114. Wilks SJ<sup>GA</sup>, AS Koivuniemi<sup>GA</sup>, and **KJ Otto**. Microelectrode coating performance of PEDOT versus IrOx for chronic neural stimulation. *Neural Interfaces Conference*. Long Beach, CA. 2010.
115. Desai H<sup>UA</sup>, AJ Woolley<sup>GA</sup>, MA Steckbeck<sup>UA</sup>, N Patel<sup>UA</sup>, and **KJ Otto**. Investigating the glial cell response around microelectrodes in brain tissue. *Undergraduate Research Symposium, Butler University*. Indianapolis, IN. 2010.
116. Desai H<sup>UA</sup>, AJ Woolley<sup>GA</sup>, MA Steckbeck<sup>UA</sup>, N Patel<sup>UA</sup>, and **KJ Otto**. Investigating the glial cell response around microelectrodes in brain tissue. *Undergraduate Research Poster Symposium, Purdue University*. West Lafayette, IN. 2010.
117. Koivuniemi A<sup>GA</sup> and **KJ Otto**. Optimizing brain microstimulation with a conditioned avoidance task. *Sigma Xi Graduate Student Research Awards Competition*. West Lafayette, IN. 2010.
118. Woolley AJ<sup>GA</sup>, H Desai<sup>UA</sup>, MA Steckbeck<sup>UA</sup>, N Patel<sup>UA</sup>, and **KJ Otto**. Imaging tissue changes around implanted microelectrodes in rat cortex. *Sigma Xi Graduate Student Research Awards Competition*. West Lafayette, IN. 2010.
119. Sommakia SS<sup>GA</sup>, JL Rickus, and **KJ Otto**. Potential strategy for the modulation of protein adsorption onto neural microelectrodes. *Society for Neuroscience Abstracts*. Chicago, IL. 2009.
120. Onunkwo NI<sup>GA</sup>, A Panitch, and **KJ Otto**. New approaches to counteracting the reactive tissue response to intracortical microelectrodes. *Society for Neuroscience Abstracts*. Chicago, IL. 2009.
121. Woolley AJ<sup>GA</sup>, BL Garman<sup>UA</sup>, and **KJ Otto**. Imaging biological changes around implanted microelectrodes in intact rat cortex. *Society for Neuroscience Abstracts*. Chicago, IL. 2009.

122. Langhals NB, RM Miriani, Patel, PR, KJ Coulter, KL Smith, **KJ Otto**, W Shain, DR Kipke. Center for neural communication technology training course on neuroprosthetics: technologies & techniques. *Society for Neuroscience Abstracts*. Chicago, IL. 2009.
123. **Otto KJ**, RD Muir<sup>GA</sup>, and SS Sommakia<sup>GA</sup>. The application of bias potentials for manipulation of the neural electrode-tissue interface. *Proceedings of the 20<sup>th</sup> annual Biomedical Engineering Society*. Pittsburgh, PA. 2009.
124. Wilks SJ<sup>GA</sup>, AS Koivuniemi<sup>GA</sup>, S Thongpang, JC Williams, and **KJ Otto**. Micro-electrocorticographic electrodes for stimulation neuroprostheses. *Proceedings of the 20<sup>th</sup> annual Biomedical Engineering Society*. Pittsburgh, PA. 2009.
125. Langhals NB, KJ Coulter, KL Smith, **KJ Otto**, S Madewell, CS Bjornsson, W Shain, DR Kipke. CNCT training course on implantable neuroprosthetics. *Society for Neuroscience Abstracts*. Washington, DC. 2008.
126. Onunkwo NI<sup>GA</sup>, AJ Woolley<sup>GA</sup>, and **KJ Otto**. The use of DC electric fields to induce directional growth of cortical neurons *in vitro*. *Society for Neuroscience Abstracts*. Washington, DC. 2008.
127. Pierce AL<sup>GA</sup>, D Woehrle<sup>UA</sup>, S Vaidyanathan<sup>UA</sup>, SS Sommakia<sup>GA</sup>, JL Rickus, and **KJ Otto**. Sol-gel derived ultra-porous silica coatings for neural microelectrodes. *Society for Neuroscience Abstracts*. Washington, DC. 2008.
128. Wilks SJ<sup>GA</sup> and **KJ Otto**. Improving stability of activated iridium oxide stimulating microelectrodes for neural prostheses. *Proceedings of the 19<sup>th</sup> annual Biomedical Engineering Society*. St. Louis, MO. 2008.
129. Pierce AL<sup>GA</sup>, D Woehrle<sup>UA</sup>, S Vaidyanathan<sup>UA</sup>, SS Sommakia<sup>GA</sup>, JL Rickus, and **KJ Otto**. Thin film silica sol-gel coatings for chronically implanted neural recording microelectrodes. *Proceedings of the 19<sup>th</sup> annual Biomedical Engineering Society*. St. Louis, MO. 2008.
130. Sommakia SS<sup>GA</sup>, **KJ Otto**, JL Rickus, and SL Voytk-Harbin. An *in vitro* brain injury model for implantable neural prostheses. *Proceedings of the 19<sup>th</sup> annual Biomedical Engineering Society*. St. Louis, MO. 2008.
131. **Otto KJ**. Cortical prosthesis microelectrode-tissue interface estimation and manipulation. *Gordon Research Conference: Biointerface Science*. Aussios, France. 2008.
132. **Otto KJ**, RD Muir<sup>GA</sup>, NI Onunkwo<sup>GA</sup>, SJ Wilks<sup>GA</sup>, and JM Colby<sup>&A</sup>. Electrode-tissue interface estimation and manipulation for a cortical prosthesis. *Society for Neuroscience Abstracts*. San Diego, CA. 2007.
133. Woolley AJ<sup>GA</sup> and **KJ Otto**. Neural plasticity and auditory cortical prostheses. *Society for Neuroscience Abstracts*. San Diego, CA. 2007.

134. Muir RD<sup>GA</sup> and **KJ Otto**. An investigation of charge-balanced waveforms for manipulation of chronic neural implant interfaces. *Proceedings of the 18<sup>th</sup> annual Biomedical Engineering Society*. Los Angeles, CA. 2007.
135. Onunkwo NI<sup>GA</sup> and **KJ Otto**. The use of DC electric fields to improve long-term functionality of chronically implanted cortical microelectrodes. *Proceedings of the 18<sup>th</sup> annual Biomedical Engineering Society*. Los Angeles, CA. 2007.
136. Pierce AL<sup>GA</sup> and **KJ Otto**. Silica sol-gel coatings for chronically implanted neural electrodes. *Proceedings of the 18<sup>th</sup> annual Biomedical Engineering Society*. Los Angeles, CA. 2007.
137. Woolley AJ<sup>GA</sup> and **KJ Otto**. Cortical prostheses: exploring the role of neural plasticity. *Indiana Health Industry Forum Conference - Innovention 2007*. Indianapolis, IN. 2007.
138. Wilks SJ<sup>GA</sup> and **KJ Otto**. *In vitro* characterization of activation and deactivation of iridium oxide stimulating microelectrodes for cortical prostheses. *Indiana Health Industry Forum Conference - Innovention 2007*. Indianapolis, IN. 2007.
139. **Otto KJ**, AJ Woolley<sup>GA</sup>, NI Onunkwo<sup>GA</sup>, RD Muir<sup>GA</sup>, JM Colby<sup>&A</sup>. Research and development of an auditory cortical prosthesis. *National Academies Keck Futures Initiative Conference on Smart Prostheses*. Irvine, CA. 2006.
140. Lempka SF, MD Johnson, DW Barnett, MA Moffitt, **KJ Otto**, DR Kipke, and **CC McIntyre**. Theoretical optimization of silicon microelectrode contact surface area. *Neural Interfaces Workshop*. Washington, DC. 2006.
141. **Otto KJ**. The role of neural interface improvement via rejuvenation in bidirectional neural prostheses. *International Workshop on Neural Interface Technologies and Applications*. Kunming, China. 2006.
142. **Otto KJ**, **JC Middlebrooks**. Rejuvenation of chronically implanted microelectrodes in the primary auditory cortex of guinea pigs. *Neural Interfaces Workshop*. Washington D.C. 2005.
143. **Otto KJ**, MD Johnson, W Shain, and **DR Kipke**. Rejuvenation of chronically implanted neural probes. *Society for Neuroscience Abstracts*. San Diego, CA. 2004.
144. **Otto KJ**, and **DR Kipke**. A closed-loop brain machine interface in the rat utilizing cortical microstimulation and ensemble neuronal recordings. *Society for Neuroscience Abstracts*. New Orleans, LA. 2003.
145. Vetter RJ, **KJ Otto**, and **DR Kipke**. Brain machine interface systems utilizing local field potentials recorded on silicon microelectrodes at multiple depths in rat motor cortex. *Society for Neuroscience Abstracts*. New Orleans, LA. 2003.

146. **Otto KJ**, and **DR Kipke**. The perceptual effects of multi-electrode spatiotemporal micro-stimulation in rat auditory cortex. *Society for Neuroscience Abstracts*. Orlando, FL. 2002.
147. **Otto KJ**, PJ Rousche, and **DR Kipke**. Examination of perceptual generalizations elicited by intracortical microstimulation of adult rat auditory cortex. *Computational Neuroscience Annual Meeting Abstracts*. Chicago, IL. 2002.
148. **Otto KJ**, PJ Rousche, and **DR Kipke**. Intracortical microstimulation and perceptual generalization in rat auditory cortex. *Proceedings of the 12<sup>th</sup> annual Biomedical Engineering Society*. Raleigh-Durham, N.C. 2001.
149. Rousche PJ, **KJ Otto**, and **DR Kipke**. Cortical neuroprosthesis development: dynamic Range and threshold for intracortical microstimulation (ICMS) of auditory cortex. *Proceedings of the 12<sup>th</sup> annual Biomedical Engineering Society*. Raleigh-Durham, N.C. 2001.
150. **Otto KJ**, PJ Rousche, and **DR Kipke**. Intracortical microstimulation (ICMS) in rat auditory cortex: examination of relationship between perceptual generalization and stimulus location. *Society for Neuroscience Abstracts*. San Diego, CA. 2001.
151. Rousche PJ, **KJ Otto**, and **DR Kipke**. Intracortical microstimulation (ICMS) in rat auditory cortex: examination of relationship between pure tone and ICMS-evoked generalization gradient curves. *Society for Neuroscience Abstracts*. San Diego, CA. 2001.
152. **Otto KJ**, PJ Rousche, and **DR Kipke**. Investigating neural coding and plasticity in auditory cortex using real-time feedback from ensemble neural recordings. *Computational Neuroscience Annual Meeting Abstracts*. Pittsburg, PA. 1999.
153. **Otto KJ**, PJ Rousche, and **DR Kipke**. Aversive fear conditioning utilizing feedback control based on neural signals from auditory cortex: a novel method to study neuronal plasticity. *Association for Research in Otolaryngology Abstracts*. St. Petersburg, FL. 1999.
154. **Kipke DR**, PJ Rousche, JC Williams, RS Clement, RS Witte, **KJ Otto**, RL Rennaker, and DS Pellinen. Individual unit responses to simple stimuli can change within large neural ensembles in auditory cortex. Evidence for dynamic neural assemblies? *Beyond Neurons and Synchrony, Dynamical Neuroscience Satellite Symposium Abstracts*. Los Angeles, CA. 1998.
155. Witte RS, **KJ Otto**, JC Williams, and **DR Kipke**. Pursuing dynamic reorganization in auditory cortex using chronic, multichannel microelectrodes in awake, behaving animals. *Computational Neuroscience Annual Meeting Abstracts*. Santa Barbara, CA. 1998.

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**Publications: Ph.D. Dissertation (Daryl R. Kipke, advisor)**

1. Intracortical microstimulation for sensory inputs in brain-machine interfaces: Arizona State University Department of Bioengineering. 2003

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**Publications: books and chapters in books**

1. Koivuniemi AS<sup>GA</sup>, **KJ Otto**. (2017). Central nervous system stimulation. In K. Horch and D.R. Kipke (Eds.), *Neuroprosthetics: Theory and Practice* (pp. 348-376). ISBN: 978-9813207141. World Scientific Publishing Company; 2 edition, USA.
2. Camarillo IG, F Xiao, S Madhivanan, T Salameh, M Nichols, LM Resse, JF Leary, **K Otto**, A Natarajan, A Ramesh, and R Sundararajan. (2014). Low and high voltage electrochemotherapy for breast cancer: an *in vitro* model study. In R Sundararajan (Ed.), *Electroporation-based therapies for cancer: From basics to clinical applications* (pp. 55-99). ISBN: 978-1-907568-15-2. Woodhead Publishing, USA.
3. **Otto KJ**, KA Ludwig, and DR Kipke. (2011). Intracortical neural interfaces for BCI Systems In J Wolpaw and EW Wolpaw (Eds.), *Brain-Computer Interfaces: Principles and Practice* (pp. 81-105). ISBN-13: 978-0195388855. Oxford University Press, USA.

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**Publications: books reviews/editorials**

1. **Otto KJ** and JC Williams. Normal and accelerated failure assessment of novel in vitro and in vivo neural interfaces. *IEEE Pulse*, 3 (1), 27. 2012.
2. **Otto KJ** and CE Schmidt. Neuron-targeted electrical modulation. *Science*, 367 (6484), 1303-1304. 2020.

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**Technology Transfer**
**Provisional Patent Filing**

Peripheral Nerve Modulator and Methods Relating to Peripheral Nerve Modulation. A Dru, KD Allen, K Otto, LS Dewberry. 9/7/2018.

Stimulating Spinal Cord Motor Neurons Using Electrical Signals, DD Fuller, **KJ Otto**, MD Sunshine, 8/31/2017.

Tissue-Engineered Electronic Peripheral Nerve Interface, J Judy, CE Schmidt, **KJ Otto**, 8/14/2011.

MK2 Inhibitor Compositions and Methods to Enhance Neurite Outgrowth, Neuroprotection, and Nerve Regeneration, A Panitch, **KJ Otto**, AJ Woolley<sup>GA</sup>, N Onunkwo<sup>GA</sup>, 3/3/2011.

Titanium-Based Multi-Channel, Micro-Electrode Array for Recording Neural Signals, MP Rao, **KJ Otto**, PM McCarthy, R Madangopal 11/19/2009.

Directed Attraction and Wiring of Neurons to Implanted Electrodes by DSCAM-Silica Sol-Gel Coatings, **KJ Otto**, JL Rickus, J Clemens, 2/10/2009.

Reduction of Electrode-Tissue Impedance After Onset of Reactive Tissue Response Through Application of a Charge-Balanced Voltage Waveform, R Muir<sup>GA</sup>, **KJ Otto**, 9/26/2007.

### **Nonprovisional Patent Filing**

Titanium-Based Multi-Channel Microelectrode Array for Electrophysiological Recording and Stimulation of Neural Tissue, MP Rao, **KJ Otto**, and PM McCarthy, 9/2/2010.

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### ***Invited presentations – 88 total***

1. “Neuroprosthesis Development for Injuries, Diseases, and Bioelectronic Medicine.” Center for Respiratory Research and Rehabilitation, University of Florida, Gainesville, FL, 2020.
2. “The Design, Assessment, and Manipulation of Microscale Neuroprosthetic Devices.” Biomedical Engineering Seminar Series, University of Florida, Gainesville, FL, 2019.
3. “*In situ*” Electrodeposition of P(EDOT-acid) in Rat Sciatic Nerve for Selective Stimulation. Biomedical Engineering Society Annual Meeting. Philadelphia, PA. 2019. Presented by J Murbach<sup>G</sup>.
4. “Neuroprosthetic Interface Design, Assessment, and Manipulation.” Dept. of Physiology of Cognitive Processes Seminar Series, Max Planck Institute for Biological Cybernetics, 2019. Tuebingen, Germany.
5. “Targeted Vagus Nerve Stimulation Does Not Disrupt Cardiac Function in the Diabetic Rat.” 41st Annual IEEE EMBS International Conference, 2019. Berlin, Germany. Presented by E Dirr<sup>G</sup>.
6. “Somatosensory Cortex Microstimulation: Behavioral Effects of Phase Duration and Asymmetric Waveforms.” 41st Annual IEEE EMBS International Conference, 2019. Berlin, Germany. Presented by M Urdaneta<sup>G</sup>.
7. “Engineering an End to Type 1 Diabetes.” Herbert Wertheim College of Engineering Birthday Celebration. Gainesville, FL. 2019
8. “Novel Kilohertz Frequency Neuromodulation for Fiber Selective Blockade of Sciatic Pain in a Rat Model.” American Association of Neurological Surgeons Annual Meeting. San Diego, CA. 2019. Presented by A Dru.

9. “Explore the effect of Sharklet® and Channels Microtopographies to Control Cellular Responses on Peripheral Nerve Interface.” Tissue Engineering & Regenerative Medicine International Society. Rhodes, Greece, 2019. Presented by S Mobini.
10. “Neuroprosthetic Devices: Design, Assessment, and Manipulation.” NeuroNexus Research Presentation, Society for Neuroscience Annual Meeting, San Diego, CA. 2019
11. “Design, Assessment, and Manipulation of Neuroprosthetic Devices.” Translational Tissue Engineering and Regenerative Medicine Lecture Series. University of Pennsylvania, Philadelphia, PA. 2019.
12. “Chronic Pancreatic Neuromodulation for the Control of Blood Glucose.” Biomedical Engineering Society Annual Meeting. Atlanta, GA. 2018. Presented by E Dirr<sup>G</sup>.
13. “Design and assessment of stimulation parameters for a novel peripheral nerve interface.” 40th Annual IEEE EMBS International Conference, 2018. Honolulu, HI.
14. “Effect of Asymmetric, Charge Balanced Stimuli on Elicited Compound Neural Action Potentials.” 40th Annual IEEE EMBS International Conference, 2018. Honolulu, HI.
15. “The need for subcellular neural interfaces for neuromodulation and recording.” 40th Annual IEEE EMBS International Conference, 2018. Honolulu, HI.
16. “Pancreatic Neuromodulation in a Diabetic Rat Model.” 40th Annual IEEE EMBS International Conference, 2018. Honolulu, HI.
17. “Neuroprosthetic Devices: Design, Assessment, and Manipulation.” Biomedical Engineering Seminar Series. University of Miami, Miami, FL, 2018.
18. “Electrical Evaluation Of Micro-Electrode Arrays Coated With Thin Films For Minocycline Release.” Biomedical Engineering Society Annual Meeting. Phoenix, AZ. 2017. Presented by KP Olczak.
19. “Investigating the Role of Inflammation in the Functionality of Intracortical Devices.” Biomedical Engineering Society Annual Meeting. Phoenix, AZ. 2017. Presented by J Gaire<sup>GA</sup>.
20. “In Vivo Validation of a flexible CMOS-compatible Neural Interface.” Biomedical Engineering Society Annual Meeting. Phoenix, AZ. 2017. Presented by A Kundu.
21. “Understanding Fiber Recruitment of Peripheral Nerves During Intrafascicular Stimulation via Computational Modeling.” Biomedical Engineering Society Annual Meeting. Phoenix, AZ. 2017. Presented by E Patrick.
22. “Neural Engineering.” Student Science Training Program, University of Florida, Gainesville, FL, 2017.



23. “Neural Prostheses and You!” Engineering Week, University of Florida, Gainesville, FL. 2017.
24. “Quadruple labelled mouse to study tissue response to brain implanted devices.” Biomedical Engineering Society Annual Meeting, Minneapolis, MN. 2016. Presented by J Gaire<sup>GA</sup>.
25. “What’s Right and What’s Wrong with Micro-neural Interfaces?” School of Biological & Physical Sciences Seminar Series, Daytona State College, Daytona Beach, FL. 2016.
26. “Towards Reliable Neural-Interface Technology Using Penetrating Micro-devices.” 13<sup>th</sup> Annual World Congress of the Society for Brain Mapping & Therapeutics. Miami, FL. 2016.
27. “Neuroengineering the interface of micro-devices with the brain.” Invited Keynote Presentation, International Biomedical Engineering Conference. Gyeongju, Korea, 2015.
28. “Inflammation and Neural Implants.” Neurotech Dinners, University of Florida. Gainesville, FL, 2015.
29. “Systemic assessment of markers of inflammation to intracortical microelectrodes.” Biomedical Engineering Society Annual Meeting. Tampa, FL. 2015. Presented by J Gaire<sup>GA</sup>.
30. “The cellular role of cortical neuroprosthetic failure.” Department of Neuroscience Seminar Series, University of Florida. Gainesville, FL, 2014.
31. “NeuroProstheses in Biomedical Engineering and Regenerative Medicine.” First International Congress on Biomedical Engineering & Mathematical Modeling in Biosciences, Quito, Ecuador, 2014.
32. “*In Vitro* and *In Vivo* Evaluation of Neural Interfaces.” Tissue Response to Active Medical Devices Conference, Herndon, VA, 2014.
33. “Controlled Protein Release via Thin Film Tetramethyl Orthosilicate Sol-Gel for Mitigation of the Reactive Tissue Response to Chronically Implanted Central Nervous System Devices.” The 7<sup>th</sup> International Symposium on Intelligent Drug Delivery Systems, Seoul, South Korea, 2014.
34. “Micro-neural Interfaces.” Biomedical Engineering Seminar Series, University of Texas at Dallas, Richardson, TX, 2014.
35. “On the Performance Dependence of the Neural Microdevice-Tissue Interface” Center of Neural Engineering and Computation Research Seminar Series, Columbia University, New York City, NY, 2014.
36. “Neuroengineering the Interface of Micro-devices with the Brain.” Biomedical Engineering Seminar Series, University of Florida, Gainesville, FL, 2014.

37. “Normal and Accelerated Failure Assessment of New Quantitative *In Vitro* and *In Vivo* Neural Interfaces.” DARPA RE-NET PI Review Meeting, Phoenix, AZ 2014.
38. “Microstimulation of Sensory Cortices and Mitigation of Degradation in Neural-Tissue Interfacial Quality.” Affinity Research Collaborative Seminar Series, Beth Israel Deaconess Medical Center, Harvard Medical School, 2013.
39. “Chronic Microstimulation and Neural-Tissue Interfacial Quality.” JAX-Purdue Engineers Symposium, The Jackson Laboratory, Bar Harbor, Maine, 2013.
40. “Chronic Microstimulation and Neural-Tissue Interfacial Quality.” Biomedical Engineering Seminar Series, University of Delaware, 2013.
41. “On the Relationship of Chronic Microstimulation and Neural-Tissue Interfacial Quality.” Seminars in Hearing Research, Purdue University. West Lafayette, IN, 2013.
42. “Electrical Waveform Parameters for ICMS of the Brain.” Center for Sensorimotor Neural Engineering Technical Workshop: Microelectrode Technology. Seattle, WA, 2013.
43. “Multiscale bidirectional neural interfaces for comprehensive central nervous system interface reliability improvement.” DARPA RE-NET PI Review Meeting, New Orleans, LA, 2012.
44. “Normal and Accelerated Failure Assessment of New Quantitative *In Vitro* and *In Vivo* Neural Interfaces.” DARPA RE-NET PI Review Meeting, New Orleans, LA, 2012.
45. “Optimal Depth, Waveform, and Rate for Electrical Stimulation of Auditory Cortex.” The 23<sup>rd</sup> Annual Meeting of the Biomedical Engineering Society. Atlanta, GA, 2012.
46. “Towards Optimal Parametric Identification for Electrical Microstimulation of the Auditory Cortex.” The Annual Conference of the International Functional Electrical Stimulation Society. Banff, Canada, 2012.
47. “The Depth, Waveform and Pulse Rate for Electrical Microstimulation of the Auditory Cortex.” IEEE International Conference of the Engineering in Medicine & Biological Science. San Diego, CA, 2012.
48. “*In vivo* Imaging of Microelectrode Arrays Implanted in the Cortex: A Novel Preparation to Investigate Longitudinal Reliability.” IEEE International Conference of the Engineering in Medicine & Biological Science. San Diego, CA, 2012.
49. “Normal and Accelerated Failure Assessment of New Quantitative *In Vitro* and *In Vivo* Neural Interfaces.” 40<sup>th</sup> Neural Interfaces Conference. Salt Lake City, Utah, 2012.
50. “Parameters of Cortical Microstimulation for Brain-Machine Interface Feedback.” The 22<sup>nd</sup> Annual Conference of the Society for the Neural Control of Movement. Venice, Italy, 2012.

51. “Reliable Neural Interfacing with Micro-Devices.” The 6<sup>th</sup> International Symposium on Intelligent Drug Delivery Systems, Seoul, South Korea, 2012.
52. “Waveform and pulse rate affect behavioral detection threshold of intracortical microstimulation.” The 36<sup>th</sup> Annual Midwinter Meeting of the Association for Research in Otolaryngology, San Diego, CA, 2012. Presented by A Koivuniemi<sup>GA</sup>.
53. “Normal and Accelerated Failure Assessment of New Quantitative *In Vitro* and *In Vivo* Neural Interfaces.” DARPA RE-NET PI Review Meeting, Austin, TX, 2011.
54. “On the Reliability of Longitudinal Cortical Microstimulation.” The 22<sup>nd</sup> Annual Meeting of the Biomedical Engineering Society. Hartford, CT, 2011.
55. “Reliable Chronic Neural Interfacing Via Micro-Devices.” Biological Sciences Departmental Seminar Series, Purdue University, West Lafayette, IN, 2011.
56. “Normal and Accelerated Failure Assessment of New Quantitative *In Vitro* and *In Vivo* Neural Interfaces.” DARPA Neural Engineering, Science, and Technology Forum, San Diego, CA, 2010.
57. “Neural-Tissue Interfacial Quality Effects on the Efficacy of Chronic Microstimulation.” Biomedical Engineering Seminar Series, University of Wisconsin, 2010.
58. “The Effect of Interfacial Quality on Chronic Neural Microstimulation.” Biomedical Engineering Seminar Series, University of Iowa, 2010.
59. “Chronic Neural Microstimulation: the Effect of Interfacial Quality.” Chemical and Biological Engineering Seminar Series, Colorado State University, 2010.
60. “Reliable Chronic Neural Stimulation via Micro-devices.” Brain Machine Interfaces: Implications for Science, Clinical Practice and Society, Ystad Saltsjöbad, Sweden, 2010.
61. “Strategies for Improving Chronic Neural Microelectrode Interfaces.” The Weldon School of Biomedical Engineering Seminar Series, Purdue University, West Lafayette, IN, 2010.
62. “Micro-Electrocorticographic Electrodes for Stimulation Neuroprostheses.” The 20th Annual Meeting of the Biomedical Engineering Society. Pittsburgh, PA, 2009. Presented by S Wilks<sup>GA</sup>.
63. “The Application of Bias Potentials for Manipulation of the Neural Electrode-Tissue Interface.” The 20th Annual Meeting of the Biomedical Engineering Society. Pittsburgh, PA, 2009.

64. "Neural Microdevices." Alpha Eta Mu Beta Engineering Devices and Research Session, the 20th Annual Meeting of the Biomedical Engineering Society. Pittsburgh, PA, 2009.
65. "Strategies for Improving Chronic Neural Interfaces with Microelectrodes." The Bioengineering Department Seminar Series, University of Illinois at Chicago, Chicago, IL, 2009.
66. "Evaluation of Micro-Electrocorticographic Electrodes for Electrostimulation." The 31st Annual IEEE EMBS International Conference. Minneapolis, MN, 2009. Presented by S Wilks<sup>GA</sup>.
67. "*In Vitro* and *In Vivo* Investigations of AC Waveforms for Manipulation of Chronic Neural Interfaces." The 19<sup>th</sup> Annual Meeting of the Biomedical Engineering Society, St. Louis, MO, 2008.
68. "Measurement, Manipulation and Imaging of Chronic Neural Interfaces with Microelectrodes." Advanced Imaging Group Seminar Series, University of Wisconsin, 2008.
69. "Cortical Microstimulation for Neural Prostheses." Summer Undergraduate Research Seminar Series, Purdue University, 2008.
70. "Measurement and Manipulation of Chronic Neural Interfaces with Microelectrodes." Auditory Research Group Seminar Series, Southern Illinois University School of Medicine, 2008.
71. "Stimulating Sensory Neuroprostheses." Center for Neural Communication Technology Summit Meeting, University of Michigan, 2007.
72. "Microstimulation and the Reactive Tissue Response with Chronically Implanted Neuroprosthetic Devices." The Wadsworth Center, Albany, NY, 2007.
73. "Microstimulation and the Reactive Tissue Response." Workshop on Brain Machine Interfaces, International Joint Conference on Neural Networks, Orlando, FL, 2007.
74. "Electrode-Tissue Interface Estimation and Manipulation for a Cortical Prosthesis." Indiana University-Purdue University Indianapolis, 2007.
75. "Neuroprostheses: Helping People Hear." Local Biomedical Engineering Society Meeting, Purdue University, 2007.
76. "Intracortical Neuroprostheses: Playing Well With Others." PULSe Seminar Series, Purdue University, 2007.
77. "The Optimal Stimulation Depth for an Auditory Cortical Prosthesis." The 36<sup>th</sup> Annual Meeting of the Society for Neuroscience, Atlanta, GA, 2006.

78. "The Function of the Electrode-Tissue Interface for an Auditory Cortical Prosthesis." The 17<sup>th</sup> Annual Meeting of the Biomedical Engineering Society, Chicago, IL, 2006.
79. "Auditory Cortex Implants." Purdue Acoustics Research Community Workshop, Purdue University, 2006.
80. "Rejuvenation and Neural Interface Improvement in Bidirectional Neural Prostheses." NeuroengineeringNow Conference, University of Texas at Dallas, 2006.
81. "Toward an Auditory Cortical Prosthesis." The Department of Speech, Language and Hearing Sciences Brown Bag Lunch Seminar Series, Purdue University, West Lafayette, IN, 2006.
82. "Cortical Microstimulation and Brain-Machine Interfaces for Neuroprosthesis Applications." Department of Biological Sciences Invited Speaker, Purdue University, 2005.
83. "Auditory Prostheses." Special Lectures in Neuroscience Series, Purdue University, 2005.
84. "Microstimulation in Auditory Cortex Provides a Substrate for Detailed Behaviors." Hearing, Balance and Chemical Senses Seminar Series Invited Speaker, Kresge Hearing Research Institute, University of Michigan, 2004.
85. "Brain-Machine Interfaces in Rat Motor Cortex: Implications of Adaptive Decoding Algorithms." IEEE-EMBS 1<sup>st</sup> Annual Neural Engineering Conference, Capri, Italy, 2003.
86. "The Benefits of Modular Brain-Machine Interface System Design." The 25<sup>th</sup> Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Cancun, Mexico, 2003.
87. "Introduction to Brain-Machine Communication Strategies." Brain-Machine Interface Symposium, University of Michigan, 2002.
88. "Brain-Machine Interface Strategies and Implications." DARPA Bio:Info:Micro 2<sup>nd</sup> Annual Principal Investigator's Meeting Invited Talk, Washington DC, 2002.
89. "Cortical Control: History and Implications." Biomedical Instrumentation and Design Course, University of Michigan, 2004.
90. "Investigating Neural Coding and Plasticity in Auditory Cortex using Real-Time Feedback from Ensemble Neural Recordings." Computational Neuroscience Annual Meeting, Santa Barbara, CA, 1999.

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**Teaching**

**Teaching: Undergraduate Courses**

1. BME 4931 – Bioelectronic Medicine (University of Florida, Spring 2020)
2. BME 4931 – Neural Engineering (University of Florida, Spring 2017)
3. BME 4509 – Quantitative Physiology (University of Florida, Fall 2016, 2017, 2018, 2019, Spring 2019)
4. BME 4931/6938 – *Developed* – Neural Instrumentation (University of Florida, Spring 2016)
5. BME 4503/BME 550 – Biomedical Instrumentation (University of Florida, Fall 2015)
6. BME 1008 – Introduction to Biomedical Engineering (University of Florida, Spring 2015)
7. BME 595-006 – *Developed* – Quantitative Physiology Seminar (Purdue University, Fall 2008, 2009)
8. BIOL 455 – *Developed* – Quantitative Physiology (Purdue University, Spring 2007)

### **Teaching: Graduate Courses**

1. BME 6938 – Bioelectronic Medicine (University of Florida, Spring 2020)
2. BME 4931/6938 – *Developed* – Neural Instrumentation (University of Florida, Spring 2016)
3. BME 4503/5500 – Biomedical Instrumentation (University of Florida, Fall 2015)
4. BME 6936 – Biomedical Engineering Seminar (University of Florida, Spring 2015)
5. BME 528/ECE 528 – Measurement & Stimulation of the Nervous System (Purdue University Spring 2013, 2014)
6. BIOL 695/PSY 633 – Special Lectures in Neuroscience: “Neural Stimulation for Neural Engineering”, (Purdue University, Fall 2010)
7. BME 695 – *Developed* – Neural Prostheses (Purdue University, Spring 2009, Fall 2009, Fall 2012)
8. BIOL 599 – Quantitative Physiology (Purdue University, Spring 2009 – 2014)
9. BIOL 595I – *Developed* – Quantitative Physiology (Purdue University, Spring 2008)
10. BIOL 696N/BME 595 – *Developed* – Neural Engineering and Neuroprostheses (Purdue University, Fall 2006)
11. BiomedE 599 – *Co-Developed* – Neural Engineering (University of Michigan, Fall, 2006)

### **Teaching: Panel Participant**

1. BME 3012 – Clinically-Inspired Engineering Design (University of Florida, Spring 2020). As a panel of 5 clinicians and scientists we discussed a user friendly artificial pancreas. We talked about diabetes technology including what we used ourselves (3 of the 5 panelists were type 1 diabetics).

### **Teaching: Guest Lecturer**

1. “Creating and maintaining a system for managing an academic research laboratory.” NIH T32 Training Program in Neuromuscular Plasticity, University of Florida, 2020.
2. GMS 6029, Brain Journal Club, University of Florida, 2018.

3. GMS 7729, Neuroscience Seminar, University of Florida, 2018.
4. BME 1008, Introduction to Biomedical Engineering, University of Florida, 2015, 2016, 2018, 2019.
5. BME 5580, Microfluidics and BioMEMS, University of Florida, 2017
6. PHT 6935, Translational Approaches for Neurostimulation, University of Florida, 2015.

### ***Mentoring***

#### **Mentoring: Post-Doctoral Mentoring**

1. Scott Thourson, University of Florida – (2018 – present).
2. Frank Delgado, University of Florida – (2016 – 2018). Presently a Lead Reviewer and General Engineer at the Food and Drug Administration.
3. Hugh Lee, University of Florida – (2017 – 2017). Presently completing Medical Physics Residency at UT Southwestern.
4. James Graham, University of Florida – (2016 – 2017). Presently a faculty member at Vanguard High School, Ocala, FL.
5. Andrew Woolley, Purdue University – (2011 – 2012). Presently a Scientist at Abbvie, San Francisco, CA.

#### **Mentoring: Doctoral Research – Major Professor**

1. Alexander Lim, Biomedical Engineering, University of Florida (2019 – Present).
2. Hunter Hakimian, Biomedical Engineering, University of Florida (2018 – Present).
3. Lauren Dewberry, Biomedical Engineering, University of Florida (2017 – Present).
4. Ian Malone, Electrical & Computer Engineering, University of Florida (2017 – Present).
5. Morgan Urdaneta, Neuroscience, University of Florida (2016 – Present).
6. Elliott Dirr, Biomedical Engineering, University of Florida (2016 – Present).
7. Jamie Murbach, Materials Science & Engineering, University of Florida (2016 – Present).
8. Seth Currin, Neuroscience, University of Florida (2015 – Present).
9. Eric Atkinson, Neuroscience, University of Florida (2015 – Present).
10. Kaitlynn Olczak, Biomedical Engineering, University of Florida (2015 – Present).
11. Janak Gaire, Neuroscience, University of Florida (2012 – 08/2018). Presently a post-doctoral fellow at the University of Florida.
12. Matt McDermott, Biomedical Sciences Doctoral Track, Purdue University (2010 – 06/2017). Presently a Formulation Scientist at Dow AgroSciences, Indianapolis, IN.
13. Hugh Lee, Biomedical Engineering, Weldon School of Biomedical Engineering, Purdue University (2012 – 12/2016). Presently completing Medical Physics Residency at UT Southwestern, Dallas, TX.
14. Salah Sommakia, Weldon School of Biomedical Engineering, Purdue University (Co-Chairman with Jenna Rickus, 2007 – 12/2013). Presently a post-doctoral fellow at the University of Utah, Salt Lake City, UT.

15. Andrew Koivuniemi, Weldon School of Biomedical Engineering, Purdue University (2009 – 07/2013). Presently completing Neurosurgical Residency at Indiana University School of Medicine, Indianapolis, IN.
16. Seth Wilks, Weldon School of Biomedical Engineering, Purdue University (2007 – 05/2011). Presently a Principal Research Scientist at CVRx, Minneapolis, MN.
17. Andrew Woolley, Purdue University Life Sciences Program, Purdue University – (2006 – 05/2011). Presently a Scientist at Abbvie, San Francisco, CA.
18. Nnadozie Onunkwo, Weldon School of Biomedical Engineering, Purdue University – (2006 – 12/2010). Presently a Medical Scientific Manager at Allergan, Miami, FL.

#### **Mentoring: Doctoral Research – Co-Chair**

1. Carlos Cruz, Biomedical Engineering, University of Florida – (Kyle Allen, co-chair; 2019 – 2024).
2. David Hall, Biomedical Engineering, University of Florida – (Jon Dobson, co-chair; 2019 – 2024).

#### **Mentoring: Doctoral Research – Committee Member**

1. Samuel Jacobs, Chemical Engineering, University of Florida – (Mark Orazem, Charman; 2019 – 2022).
2. Taylor Yeater, Biomedical Engineering, University of Florida – (Kyle Allen, Chairman; 2018 – 2021).
3. Seyed Hashemi, Electrical and Computer Engineering, University of Florida – (Karim Oweiss, Chairman; 2017 – 2021).
4. Ming Gao, Chemical Engineering, University of Florida – (Mark Orazem, Chairman; 2017 – 2021).
5. Brandon Parks, Biomedical Engineering, University of Florida – (Karim Oweiss, Chairman; 2017 – 2021).
6. Benjamin Goolsby, Biomedical Engineering, University of Florida – (Karim Oweiss, Chairman; 2017 – 2021).
7. Michael Sunshine, Rehabilitation Sciences, University of Florida – (David Fuller, Chairman; 2017 – 2021).
8. Jackson Cagle, Biomedical Engineering, University of Florida – (Ayse Gunduz, Chairman; 2017 – 2021).
9. Jose Alcantara, Biomedical Engineering, University of Florida – (Ayse Gunduz, Chairman; 2017 – 2021).
10. Stephanie Cernera, Biomedical Engineering, University of Florida – (Ayse Gunduz, Chairman; 2017 – 2021).
11. May Mansy, Biomedical Engineering, University of Florida – (Karim Oweiss, Chairman; 2016 – 2019).
12. Enrico Opri, Biomedical Engineering, University of Florida – (Ayse Gunduz, Chairman; 2016 – 2020).
13. Jinzheng Cai, Biomedical Engineering, University of Florida – (Lin Yang, Chairman; 2015 – 2019).



14. Benjamin Spearman, Biomedical Engineering, University of Florida – (Christine Schmidt, Chairman; 2015 – 2019).
15. Rene Molina, Electrical and Computer Engineering, University of Florida – (Ayse Gunduz, Chairman; 2015 – 2018).
16. Manish Sapkota, Biomedical Engineering, University of Florida – (Lin Yang, Chairman; 2015 – 2018).
17. Jonathan Shute, Biomedical Engineering, University of Florida – (Ayse Gunduz, Chairman; 2015 – 2016).
18. Cynthia Overstreet, Bioengineering, Arizona State University – (Steve Helms-Tillery, Chairman; 2012 – 2014).
19. Melissa Tully, Biomedical Engineering, Purdue University – (Riyi Shi, Chairman; 2011 – 2014).
20. Henry Mei, Biomedical Engineering, Purdue University – (Pedro Irazoqui, Chairman; 2011 – 2014).
21. Jonghyuck Park, Biomedical Sciences, Purdue University – (Riyi Shi, Chairman; 2011 – 2014).
22. Paul Miller, Biomedical Engineering, Purdue University – (David Stocum, Chairman; 2010 – 2016).
23. Meghan Robinson, Biomedical Engineering, Purdue University – (Tom Talavage, Chairman; 2008 – 2012).
24. Jesse Wheeler, Biomedical Engineering, Washington University – (Dan Moran, Chairman; 2010 – 2018).
25. Matthew Ward, Biomedical Engineering, Purdue University – (Pedro Irazoqui, Chairman; 2008 – 2012).
26. Josephat Asiago, Medicinal Chemistry, Purdue University – (Chris Rochet, Chairman; 2009 – 2012).
27. Shaoyu Qiao, Biomedical Engineering, Purdue University – (Ken Yoshida, Chairman; 2009 – 2014).
28. Benjamin Richardson, Pharmacology, Southern Illinois University – (Don Caspary, Chairman; 2007 – 2012).
29. Aravindakshan Parthasarathy, Psychology, Purdue University – (Ed Bartlett, Chairman; 2008 – 2012).
30. Yamini Venkatamaran, Biomedical Engineering, Purdue University – (Ed Bartlett, Chairman; 2008 – 2012).
31. Pinghung Wei, Electrical and Computer Engineering, Purdue University – (Babak Ziaie, Chairman; 2008 – 2011).
32. Cal Rabang, Biomedical Engineering, Purdue University – (Ed Bartlett, Chairman; 2007 – 2011).
33. Patrick McCarthy, Mechanical Engineering, Purdue University – (Masa Rao, Chairman; 2007 – 2009).
34. Hananeh Esmailbeigi, Bioengineering, University of Illinois, Chicago – (Patrick Rousche, Chairman; 2008 – 2009).

**Mentoring: Master's Research – Major Professor**

1. Felicia Sedwick, Biomedical Engineering, University of Florida – (2019 – present).
2. Anastasia Valimaki, Biomedical Engineering, University of Florida – (2019 – present).
3. Adebayo Oluwatobi, Biomedical Engineering, University of Florida – (2018 – present).
4. Michael Brodsky, Biomedical Engineering, University of Florida – (2018 – 2019).
5. Abhijit Pattanshetti, Biomedical Engineering, University of Florida – (2018 – 2019).
6. Jesus Penaloza, Biomedical Engineering, University of Florida – (2017 – 2019).
7. Valdimir Talley III, Biomedical Engineering, University of Florida – (2017 – 2019).
8. Minhal Yusufali, Biomedical Engineering, University of Florida – (2017 – 2019).
9. Alec Simon, Biomedical Engineering, University of Florida – (2016 – 2018).
10. Elliott Dirr, Biomedical Engineering, University of Florida – (2015 – 2017).
11. Jake Rieke, Biomedical Engineering, University of Florida – (2015 – 2016).
12. Ishan Kulkarni, Biomedical Engineering, University of Florida – (2015 – 2016).
13. Karthick Nalladevan, Biomedical Engineering, University of Florida – (2015 – 2015).
14. Ishani Thakkar, Biomedical Engineering, University of Florida – (2015 – 2015).
15. Albert Sueiras, Biomedical Engineering, University of Florida – (2015 – 2015).
16. Ashley Eidsmore, Electrical Engineering, Purdue University – (2013 – 2015).
17. Andrew Ready, Biomedical Engineering, Purdue University – (2012 – 2014).
18. Oliver Regele, Biomedical Engineering, Purdue University – (2012 – 2013).
19. Andrew Pierce, Biomedical Engineering, Purdue University – (2008 – 2009).
20. Ryan Muir, Electrical Engineering & Technology, Purdue University – (2006 – 2008).

**Mentoring: Master's Research – Committee Member**

1. Kai Tianhua Fu, Biomedical Engineering, University of Florida – (2019 – present).
2. Nicole Bohmann, Biomedical Engineering, University of Florida – (2019 – present).
3. Joseph Canzano, Medical Sciences, University of Florida – (2018 – present).
4. Daniela Changkuon, Biomedical Engineering, Purdue University – (2013 – 2014).
5. Puja Tanwani, Biomedical Engineering, Purdue University – (2013 – 2014).
6. Stephen Chabot, Biomedical Engineering, Purdue University – (2011 – 2013).
7. Henry Zhang, Biomedical Engineering, Purdue University – (2011 – 2012).
8. Ian Dryg, Biomedical Engineering, Purdue University – (2011 – 2012).
9. Emily Cook, Biomedical Engineering, Purdue University – (2011 – 2012).
10. Arjun Jaitli, Biomedical Engineering, Purdue University – (2011 – 2012).
11. Sonal Sadaria, Biomedical Engineering, Purdue University – (2010 – 2011).
12. Jenna Sullivan, Biomedical Engineering, Purdue University – (Evan Morris, Co-Chairman; 2008 – 2009).
13. Patrick McCarthy, Mechanical Engineering, Purdue University – (2008 – 2009).
14. Mike Pargett, Biomedical Engineering, Purdue University – (2007 – 2009).
15. Nick Geirut, Biomedical Engineering, Purdue University – (2006 – 2008).

**Mentoring: Undergraduate Research**

I have mentored approximately 110 students who have later attended graduate school, medical school, entered the industrial sector, volunteered in the peace corps, and many other outstanding personal and professional engagements.

**Mentoring: Pre-collegiate Research**

1. Alexxi Spillers, Jefferson High School – (2013 – 2014).
2. Claire Cassa-Santa, Jefferson High School – (2011 – 2012).
3. Ashley Sankari, Jefferson High School – (2009 – 2010).
4. Fuhe Xu, Harrison High School – (2006).
5. Lynlee Ferguson, West Lafayette High School – (2009).
6. Elizabeth Villafuerte, Jefferson High School – (2008 – 2009).

**Engagement****Engagement: Appearances in media interviews and other coverage**

1. Levesque, B. Pioneering Research  
<https://post.health.ufl.edu/2018/12/03/pioneering-research/>  
<https://www.bme.ufl.edu/node/2347>  
*-Coverage of NIH 3D Map of the Human Lymphatic System*
2. Jiracek, L. Neural Implant Podcast  
<http://neuralimplantpodcast.com/dr-kevin-otto-talks-about-how-to-prevent-devices-from-failing-and-mapping-peripheral-neurons>  
*-Interviewed as an expert on neural interfaces.*
3. Reddit Ask Me Anything  
[https://www.reddit.com/r/science/comments/6ajjkh/science\\_ama\\_series\\_were\\_karim\\_ow\\_eiss\\_kevin\\_otto/](https://www.reddit.com/r/science/comments/6ajjkh/science_ama_series_were_karim_ow_eiss_kevin_otto/)  
*-Coverage of DARPA TNT program funding announcement.*
4. Swetlitz, I. Can zapping your neck help you quickly learn a foreign language?  
<https://www.statnews.com/2017/04/28/vagus-nerve-brain-learning-darpa/>  
*-Media coverage of DARPA TNT program funding announcement.*
5. Jaffee, M. UF Receives up to \$8.4 million from DoD to study brain training using electric stimulation. <https://ufhealth.org/news/2017/uf-receives-84-million-dod-study-brain-training-using-electric-stimulation>  
*-Media coverage of DARPA TNT program funding announcement.*
6. UF Herbert Wertheim College of Engineering, Engineering the Brain. Neuroscience at Gator Engineering. <https://www.eng.ufl.edu/research/strategic-priorities/health/#engineering-brain>  
*-Quoted as an expert in Engineering the Brain.*

7. Shen, H. Artificial arms get closer to the real thing. *Nature / News*, 10/8/2014.  
<http://www.nature.com/news/artificial-arms-get-closer-to-the-real-thing-1.16111>  
-Quoted as an expert on neuroprostheses.
8. Cossins, D. A Brain-to-Brain Interface for Rats. *The Scientist*, 02/28/2013.  
<http://www.the-scientist.com/?articles.view/articleNo/34547/title/A-Brain-to-Brain-Interface-for-Rats/>  
-Quoted as expert on brain-machine interfaces.
9. Leggett, H. The next hacking frontier: your brain? *Wired Science*, 07/9/2009.  
<http://www.wired.com/wiredscience/2009/07/neurosecurity/>.  
-Quoted as expert on brain-machine interfaces.
10. Green, RA. Brain-Twitter project offers hope to paralyzed patients. *CNN*, 04/23/2009.  
<http://edition.cnn.com/2009/HEALTH/04/22/twitter.locked.in/index.html>.  
-Quoted as expert on brain-machine interfaces.
11. Keim, B. Twitter telepathy: researchers turn thoughts into tweets. *Wired Science*, 04/20/2009. <http://blog.wired.com/wiredscience/2009/04/braintweet.html>.  
-Quoted as expert on brain-machine interfaces.
12. Boyd, D. Professor develops stretchable electrodes to help study cardiac cells. *The Exponent*, 02/02/2009.  
[http://www.purdueexponent.org/?module=article&story\\_id=14640](http://www.purdueexponent.org/?module=article&story_id=14640).  
-Quoted as expert on bio-electrode technologies.
13. Zielinska, E. Of cells and wires. *The Scientist*, 23(1):32-37. 2009.  
-Quoted as expert on implantable brain-machine interfaces.

#### **Engagement: Public lectures**

1. “Societal Benefits from Neural Engineering.” Science on Tap Series, Lafayette Brewing Company, Lafayette, IN, 2011.

#### **Engagement: Panel Participation**

1. Project ECHO panel of adults with type 1 diabetes providing a tele-clinic from the patient perspective about living with diabetes. Project ECHO is a tele-medicine program for primary care physicians to learn about diabetes care from specialists at the University of Florida. Each week primary care providers attend the tele-clinic to learn about different diabetes related topics.

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### ***Advocacy***

#### **Fostering a Diverse Research Group**

I work to engage a diverse research environment in the laboratory to foster a culture of inclusion. I try to diversify across rank: including post-doctoral fellows, graduate students,

undergraduate students, and interns from high schools and other higher education institutions. In addition to this diversity of rank, I aim to recruit laboratory members from diverse scientific programs, including: biomedical engineering, electrical engineering, materials science and engineering, computer engineering, electrical engineering technology, neuroscience, biological sciences, and chemistry. I encourage international diversity in my research group by actively recruiting international students. As such, our laboratory group has included graduate students from the following foreign countries: Nepal, Korea, Venezuela, and India. Our undergraduate population has included even more international diversity. I seek to include both female and male members in the research group. Of the approximately 150 research group members in the lab historically approximately 48% have been female and 52% have been male. I have also actively recruited under-represented minorities at all rank to do research in the laboratory, including the first student to receive the PhD under my mentorship, Dr. Nnadozie Onunkwo. My typical group size fluctuates between 20 and 25 individuals actively engaged in research projects.

### **Career Advocacy and Promotion**

I have provided a significant amount of career advising, outside of the classroom, for undergraduate students, graduate students, and post-doctoral fellows seeking professional advancement or education. For example, over the past 16 years, I have provided 1037 letters of reference (approximately 65 letters/yr) for undergraduate students, graduate students, post-doctoral fellows, and junior faculty whom I have had the opportunity to personally become acquainted with through teaching and research mentoring. These letters have helped obtain entry into medical schools, graduate schools, their first positions in industry or academia, obtain tenure or promotion, or obtain green cards for citizenship.

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### ***Professional affiliations***

Alpha Eta Mu Beta Bioengineering Honor Society  
American Diabetes Association  
American Association for the Advancement of Science  
Auditory Cognitive Neuroscience Society  
Biomedical Engineering Society  
Golden Key National Honor Society  
Institute of Electrical and Electronics Engineers  
Omega Chi Epsilon Chemical Engineering Honor Society  
Sigma Xi  
Society for Neuroscience  
Tau Beta Pi Engineering Honor Society

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### ***Service***

UF Opportunity Seed Fund Study Section Member (2019).

Craig H. Nielsen Foundation Ad Hoc Study Section Member (2019).

Session co-chair, *40<sup>th</sup> Annual IEEE EMBS International Conference*. 2018. Honolulu, HI.

Member of the Editorial Board of *AIMS Bioengineering*, (2018-present).

University of Florida McKnight Brain Institute Executive Committee Member (2018-present).

Session chair, *28<sup>th</sup> annual Biomedical Engineering Society*. 2018. Atlanta, GA.

Mini-symposium organizer and co-chair, *40<sup>th</sup> Annual IEEE EMBS International Conference*. 2018. Honolulu, HI.

University of Florida J. Crayton Pruitt Family Department of Biomedical Engineering Executive Committee Chair (2015-2018).

University of Florida McKnight Brain Research Outreach and Education Committee Member (2017-present).

43<sup>rd</sup> Neural Interfaces Conference Steering Committee (2017-present).

Member of the Editorial Board of *Techniques in Neurosurgery & Neurology*, (2017-present).

Review Editor for the Neuroprosthetics, a specialty of *Frontiers in Neuroscience* (2017-present).

IEEE EMBS Gainesville Chapter Treasurer (2017-2018).

Biomedical Engineering Society National Meetings Committee Member (2017-present).

Program co-chair, *27<sup>th</sup> annual Biomedical Engineering Society*. 2017. Phoenix, AZ

NIH ZNS1 BRAIN Study Section Reviewer (2017, 2018).

VA RRD5 Ad Hoc Study Section Member (2017, 2018, 2019).

NIH R13/U13 Ad Hoc Study Section Member (2017).

NIH BNVT Ad Hoc Study Section Member (2017, 2018, 2019).

Member of the Editorial Board of *Bioelectronics in Medicine*, (2016-present).

University of Florida College of Veterinary Medicine Preeminent Faculty Search Committee (2016-present).

University of Florida College of Medicine Graduate Program Admissions Committee Member, 2016.

42<sup>nd</sup> Neural Interfaces Conference Session Organizer (2016).

Member of the Editorial Board of the *International Journal of Computational & Neural Engineering*, (2016-present).

Scientific Committee Member, *Southeastern Biomedical Engineering Conference*, 2016. Shreveport, LA.

University of Florida College of Engineering Awards Committee Member (2016-Present).

Review Editor for Neural Technology, a specialty of *Frontiers in Neuroscience* (2015-present).

Neural Engineering Track Co-chair, *25<sup>th</sup> annual Biomedical Engineering Society*. 2014. San Antonio, TX.

University of Florida J. Crayton Pruitt Family Department of Biomedical Engineering Awards Committee Chair (2015-Present).

University of Florida J. Crayton Pruitt Family Department of Biomedical Engineering Faculty Search Committee Member (2015-Present).

University of Florida J. Crayton Pruitt Family Department of Biomedical Engineering Executive Committee Member (2015-2018).

University of Florida J. Crayton Pruitt Family Department of Biomedical Engineering Tenure & Promotion Committee Member (2014-Present).

University of Florida College of Engineering Safety Steering Committee Member (2014-2015).

University of Florida J. Crayton Pruitt Family Department of Biomedical Engineering Research Committee Member (2014-2015).

University of Florida J. Crayton Pruitt Family Department of Biomedical Engineering Awards Committee Member (2014-2015).

University of Florida J. Crayton Pruitt Family Department of Biomedical Engineering Graduate Program Committee Member (2014-2015).

NIH ZDC1 SRB-K(16) Study Section Reviewer (2014).

41<sup>st</sup> Neural Interfaces Conference Session Organizer (2014).

ClevelandNEW Conference Executive Committee Member (2013-present).

NIH ETTN Study Section Member (2013-2016).

IEEE-EMBS Contributed Paper Reviewer (2012-2014).

Session chair, *23<sup>rd</sup> annual Biomedical Engineering Society*. 2012. Atlanta, GA.

40<sup>th</sup> Neural Interfaces Conference Panel Discussion Moderator (2012).

Sigma Xi Purdue Chapter Vice-President (2012-2014).

Sigma Xi Purdue Chapter Distinguished Lecturer Committee Chair (2012-2014).

Sigma Xi Purdue Chapter Executive Committee (2012-2014).

Indiana Clinical and Translational Sciences Institute Pre-doctoral Traineeship Research Proposal Evaluator (2012-2014).

Purdue University College of Engineering Awards committee member (2011-2014).

Purdue University Weldon School of Biomedical Engineering Awards committee chair (2011-2014).

Purdue University Purdue Undergraduate Life Sciences Program Integrative Sciences Training Group Recruitment Committee Chair (2011-2014).

Presented as Part of the Purdue University Women in Engineering Recruiting Presentation for Seniors Exploring Engineering (2010).

Purdue University Biomedical Engineering Graduate Student Association Research Symposium Panel Member/Poster Judge (2010).

Purdue Society of Business Engineers/National Organization of Business Engineers advisor (2010-2013).

Purdue University Interdisciplinary Life Sciences Program Recruitment Committee (2010-2014).

Purdue University Weldon School of Biomedical Engineering Graduate Committee Member (2009-2011).

Purdue University Department of Biological Sciences Graduate Admissions Committee Member (2009-2014).

Session chair, *20<sup>th</sup> annual Biomedical Engineering Society*. 2009. Pittsburgh, PA.

Session chair, *31<sup>st</sup> Annual IEEE EMBS International Conference*. 2009. Minneapolis, MN.

Purdue University Weldon School of Biomedical Engineering CLA Subcommittee Member (2009).

Purdue University Integrative Neuroscience Program Retreat Chair (2009).



Session chair, *19<sup>th</sup> annual Biomedical Engineering Society*. 2008. St. Louis, MO.

Purdue University BMES Student Association advisor (2008-2012).

Purdue University Integrative Neuroscience Program Retreat Co-Chair (2008).

Purdue University Weldon School of Biomedical Engineering Intern Mentor (2008-2009).

Purdue University Undergraduate Research and Poster Symposium Judge (2007-2010).

Purdue University Biomedical Engineering Graduate Student Association advisor (2007-2014).

Center for Neural Communications Technology “Implantable Neuroprosthetics: Technologies and Techniques” Course Instructor (2007-2010).

Purdue University Department of Biological Sciences PRF Research Proposal Evaluator (2006).

Purdue University Weldon School of Biomedical Engineering Animal Care Committee Faculty Representative (2005-2011).

Purdue University Weldon School of Biomedical Engineering Graduate Admissions Committee Member (2005-2009).

Colorado State University Department of Chemical and Biological Engineering Professional Advisory Board Member (2005-Present).

Hearing, Balance and Chemical Senses Seminar Series Speaker-Student Luncheon Coordinator (Fall, 2004).

Mentor Volunteer, University of Michigan College of Engineering Mentorship Workshop. (April, 2004).

Hearing, Balance and Chemical Senses Training Program Admissions Committee Member for the Kresge Hearing Research Institute, University of Michigan (February, 2004).

Session Organizer, Satellite Session on Advanced Microelectrode Implant Technology, 2nd International Brain-Computer Interface Workshop, Rensselaerville Institute, Rensselaerville, New York (June, 2002).

Reviewer: ACS Applied Materials & Interfaces  
Advanced Functional Materials  
Biochemical Sciences  
Biomedical Microdevices  
Current Opinion in Solid State & Materials Science  
European Journal of Neuroscience  
IEEE Transactions on Biomedical Engineering

IEEE Transactions on Neural Systems and Rehabilitation Engineering  
 Journal of Neural Engineering  
 Journal of Neuroscience Methods  
 Neuroscience  
 PLOS One  
 Progress in Brain Research  
 Scientific Reports  
 Sensors and Actuators: B  
 Small

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### ***Additional Academic Affiliations***

|              |   |
|--------------|---|
| 2019-Present | Member, Fixel Institute for Neurological Diseases, the University of Florida              |
| 2018-Present | Member, Diabetes Institute, the University of Florida                                     |
| 2017-Present | Member, The Center for Respiratory Research and Rehabilitation, the University of Florida |
| 2014-Present | Member, Evelyn F. & William L. McKnight Brain Institute, the University of Florida        |
| 2014-Present | Member, Nanoscale Institute for Medical and Engineering Technology, University of Florida |

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### ***Previous Academic Positions***

|             |  |
|-------------|--|
| 2014-2018   | Associate Professor, J. Crayton Pruitt Family Department of Biomedical Engineering, the University of Florida ( <i>with tenure</i> )                 |
| 2014-2016   | Adjunct Professor, the Weldon School of Biomedical Engineering, Purdue University  |
| 2012-2014   | Associate Professor, the Department of Biological Sciences and the Weldon School of Biomedical Engineering, Purdue University ( <i>with tenure</i> ) |
| 2006-2012   | Assistant Professor, the Department of Biological Sciences and the Weldon School of Biomedical Engineering, Purdue University                        |
| 2003-2006   | Post-Doctoral Fellow, Program in Hearing, Balance and Chemical Senses, Kresge Hearing Research Institute, University of Michigan                     |
| 2001-2003   | Research Staff, Neural Engineering Laboratory, Biomedical Engineering Department, University of Michigan   |
| 1998-2001   | Research Assistant, Neural Computation Laboratory, Bioengineering Department, Arizona State University   |
| Spring 1998 | Teaching Assistant, Surgical Techniques, Arizona State University  |
| Spring 1998 | Teaching Assistant, Heat and Mass Transfer, Arizona State University   |
| Fall 1997   | Teaching Assistant, Introduction to Bioengineering, Arizona State University   |

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### ***Collaborators (selected)***

- Jen Bizon, Ph.D., University of Florida
- Sara Burke, Ph.D., University of Florida
- Martha Campbell-Thompson, Ph.D., D.V.M., University of Florida
- Shelley Fried, Ph.D., Massachusettes General Hospital
- Rick Johnson, Ph.D., University of Florida
- Jack Judy, Ph.D., University of Florida
- Damon Lamb, Ph.D., University of Florida
- Dave Martin, Ph.D., University of Delaware
- Andrew Maurer, Ph.D., University of Florida
- Christine Schmidt, Ph.D., University of Florida
- Jens Schouenborg, Ph.D., Lund University
- Barry Setlow, Ph.D., University of Florida
- Justin Williams, Ph.D., University of Wisconsin

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## References

### **Dr. Christine E. Schmidt**

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