

Janak Gaire

Department of Neuroscience  
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### **Education**

Graduate Student, Department of Neuroscience  
University of Florida, Gainesville, FL 2014-Current

Graduate course work, Department of Biological Sciences  
Purdue University, West Lafayette, IN 2011-2014

B.S. Degree in Biology with a Minor in Chemistry  
University of North Texas, Denton, TX 2010

### **Research Experience**

Graduate Research Assistant, University of Florida 2014-Current

Graduate Research Assistant, Neuroprosthetics Research Laboratory, Purdue University 2012-2014

- Investigating biological mechanisms underlying device failure
- Developing ways to characterize tissue response towards brain implanted devices

Research Assistant, Center for Network Neuroscience, University of North Texas 2009-2011

- Fabricated microelectrode arrays (MEAs); MEAs are planar arrays that are used to grow neuronal cell cultures.
- Developed protocols to clean MEAs for repetitive usage.

### **Teaching Experience**

TA BIOL 436 – Cellular Neurobiology Fall '12, '13  
-Evaluated students' performance based on assignments/exams  
-Taught a class on Neural Stem Cells

TA BIOL 562 – Neural Systems Spring '13, '14  
-Assisted course director in organizing class materials, evaluating students' performance and grading exams  
-Invited guest speakers

### **Research Fellowships and Educational Awards**

Ross Fellowship 2011-2012

Charn Uswachoke Scholarship for International & Academic Achievement 2009-2010

Two year Texas Transfer Scholarship 2008-2010

President's list 2008-2010

Dean's List 2007-2008

### **Leadership and Mentorship**

Undergraduate Research Mentor	2012 - Present
Vice-President NEPSAP (Nepalese Society at Purdue)	2012-2014
Summer Undergraduate Research Fellowship Mentor (Mentee won best award)	2013, 2014
Executive member NEPSAP	2011-2012
Texas Academy of Mathematics and Science (TAMS) Students Mentor	2010
Mentored Organic Chemistry Students	2009

### **Research Skills**

- Animal handling, husbandry and various injection techniques
- Survival surgeries on rodents to investigate tissue response towards brain implanted devices
- Neural recording techniques
- Tissue extraction, processing and immunohistochemical techniques
- Cell culture work
- Confocal and two-photon microscopy
- Image analysis

### **Research Publications**

1. Salah Sommakia, Heui C Lee, **Janak Gaire**, Kevin J Otto (2014) Materials approaches for modulating neural tissue responses to implanted microelectrodes through mechanical and biochemical means. *Curr. Opin. Solid State Mater. Sci.* (2014), <http://dx.doi.org/10.1016/j.cossms.2014.07.005>
2. Sommakia S, **Gaire J**, Rickus JL and Otto KJ (2014) Resistive and reactive changes to the impedance of intracortical microelectrodes can be mitigated with polyethylene glycol under acute *in vitro* and *in vivo* settings. *Front. Neuroeng.* 7:33. doi: 10.3389/fneng.2014.00033
3. Woolley AJ, HA Desai, **J Gaire**, AL Ready, and KJ Otto. Intact histological characterization of brain-implanted microdevices and surrounding tissue. *Journal of Visualized Experiments*, (72). 2013 doi:10.3791/50126.2013. (<http://www.jove.com/video/50126/intact-histological-characterization-brain-implanted-microdevices>)

### **Conference proceedings**

1. Lee, Heui Chang; **Gaire, Janak**; McDowell, Sean P.; Otto, Kevin J., "The effect of site placement within silicon microelectrodes on the long-term electrophysiological recordings," *Engineering in Medicine and Biology Society (EMBC), 2014 36th Annual International Conference of the IEEE*, vol., no., pp.465,468, 26-30 Aug. 2014 doi: 10.1109/EMBC.2014.6943629
2. Woolley AJ, HA Desai, **J Gaire**, AL Ready, 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.

## **Poster Presentations**

Lee, H. C., **Gaire, J.**, McDermott, M. D., Zhang, J., & Otto, K. J. Improving the Performance of Intracortical Microelectrodes via Structural Modifications and Biochemical Intervention Strategies. BMES Annual Meeting. Oct 2014. San Antonio, TX.

**J Gaire**, MD McDermott, S Sommakia, AL, Ready, HC Lee, A Filley, and KJ, Otto. PEG and TMOS Coatings for Mitigation of the Foreign Body Response to Neural Interfaces. DARPA/MTO Sensorimotor Prosthetics Workshop and RE\_NET Program Review. 2014. Phoenix, AZ.

HC Lee, S McDowell, **J Gaire**, and KJ Otto. Chronic Neural Recording Performane of Silicon Microelectrode Arrays with Modified Site Placement. DARPA/MTO Sensorimotor Prosthetics Workshop and RE\_NET Program Review. 2014. Phoenix, AZ.

Woolley AJ, AL Ready, HA Desai, **J Gaire**, and KJ Otto. A Sytemic Triple Label Strategy of Fluorescence Microscopy of Inflammation in CNS and non-CNS Tissue. Microscopy and Analysis. 2013. Indianapolis, IN.

Woolley, AJ, HA Desai, TJ Richner, SK Brodnick, **J Gaire**, KW Eliceiri, JC Williams, KJ Otto. *In vivo* microscopy of neural tissue dynamics surrounding intracortical microelectrode arrays. Society for Neuroscience. 2012. New Orleans, LA.