

Chris Bresee

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OBJECTIVE: I am currently working towards a PhD degree, which will pave the way to becoming a principal investigator and professor. The research question that I would like to spend my career answering is this: how does sensory input give rise to perception, and how plastic is this process? The somatosensory system is my chosen model modality, because of the unique spatial problems that this system has to overcome before generating a consistent spatial representation. Unlike the other modalities, the receptors of the somatosensory system do not have an invariant spatial relationship to each other; instead, they move around in the world as we move our limbs. Basic research in these areas contributes to such topics as sensory substitution, telepresence, robotics, sensory prostheses, and sensory augmentation.

PUBLICATIONS:

Scleraxis is required for differentiation of the stapedius and tensor tympani tendons of the middle ear.

Wang L, Bresee CS, Jiang H, He W, Ren T, Schweitzer R, Brigande JV.

J Assoc Res Otolaryngol. 2011 Aug;12(4):407-21.

Probing the functional equivalence of otoferlin and synaptotagmin 1 in exocytosis.

Reisinger E, Bresee C, Neef J, Nair R, Reuter K, Bulankina A, Nouvian R, Koch M, Bückers J, Kastrup L, Roux I, Petit C, Hell SW, Brose N, Rhee JS, Kügler S, Brigande JV, Moser T.

J Neurosci. 2011 Mar 30;31(13):4886-95.

Electroporation-Mediated Gene Transfer to the Developing Mouse Inner Ear.

J. Brigande, S. Gubbels, D. Woessner, J. Jungwirth, and C. Bresee. B., Sokolowski (ed.),

Aud. & Vest. Res. Vol. 493, 2009

Acquired Magnetosensation: Demonstration of the Phenomenon in Rats.

C. Bresee, S. StJohn, E. Canseco-Gonzalez.

A thesis presented to Reed College as part of completion of the degree of Bachelor of Arts, Dec. 2007

AWARDS:

2011-present: Recipient of the MOTO-IGERT training fellowship, and participated in the associated training program in neuromechanics and motor control.

PROFESSIONAL EXPERIENCE:

Graduate School work (Northwestern University):

2011 - present: Graduate student researcher in Dr. Mitra Hartmann's Sensory and Neural Systems Engineering lab. I investigate the neural and physiological basis of the sense of touch using the rat whisker system as a model. In this lab I have contributed to behavioral, modeling, and systems electrophysiology projects, established a number of histological and microscopy techniques, designed and carried out behavioral, electrophysiological, and anatomical experiments, and collected and analyzed data, some of which has been presented in Poster form at the 2010 Society for Neuroscience meeting.

2011 Fall: Teaching assistant for an Introductory Neuroscience course. In this position I collaboratively wrote and graded exams, generated study materials and handouts, gave review lectures, held one-on-one tutoring sessions during office hours, and gave an original lecture covering the topic of

neural coding strategies.

2011 Spring: Rotation student in Dr. Satoru Suzuki's Visual Perception, Neuroscience, and Cognition lab. I assisted in many experiments involving eye tracking, reaction time, and EEG monitoring, and I designed, built, and carried out a pilot experiment to assess the effect of virtual manipulation of novel 3-d objects on memory.

2010 Winter: Rotation student in Dr. Indira Raman's electrophysiology of the cerebellum lab. I contributed preliminary data that aided in winning a major grant by characterizing a novel electrophysiological phenotype using cerebellar slices from a mouse mutant.

2010 Fall: Rotation student in Dr. Mitra Hartmann's Sensory and Neural Systems Engineering lab. I behaviorally characterized and quantified a novel whisking phenotype in mice, and presented my findings as a poster at the Northwestern University Interdepartmental Neuroscience program Winter poster session.

Post-Bacalaureate work (Oregon Health and Science University):

2007- 2010: Research assistant, and then as lab manager for Dr. Brigande's developmental neuroscience of the inner ear lab, in the Oregon Hearing Research Center at OHSU. The Brigande Lab investigates the developmental basis of hearing, using molecular biology techniques to investigate the development of the inner ear. In this lab I greatly expanded my lab skills. My duties were diverse, involving administrating weekly lab meetings, general lab maintenance, and a suite of behavioral, surgical, developmental, and molecular biology lab techniques. I was in charge of mouse husbandry for breeding colonies of up to seven mouse strains, including generating timed pregnant females for experimental embryology. I contributed intellectually to many projects, including doing statistical analyses and generating data and images for a number of figures, including the Gubbels et al. Nature paper "Functional auditory hair cells produced in the mammalian cochlea by in utero gene transfer".

Undergraduate work (Reed College):

2006 (Fall): Teacher's Assistant for Dr. Jennifer Loftis's teaching lab. I prepared lab materials and assisted students in carrying out the lab procedures.

2006 (Summer and Fall): Lab manager in Dr. Jennifer Loftis' teaching lab. My duties included cleaning, organizing, and cataloguing every item in the lab, as well as updating the MSDSs, in order to facilitate the transition of the lab from Dr. Steven St John to Dr. Jennifer Loftis.

2005 (Summer): Lab Assistant in Dr. Steven St. John's Taste lab. I carried out lab protocols arranged by Dr. St. John. This included conditioning taste aversions in rats and mice, administering experimental stimuli, and collecting data via a Davis rig.

2005 (Spring): Teacher's Assistant for Dr. Allan Neuringer's teaching lab. I assisted students in the Learning lab. This included socializing rats, and helping students condition rats to lever press in operant chambers under various reward contingencies.

2005-2006: Assistant in the Psychology Department Animal Colony, Reed College. My duties included feeding, cleaning, socializing, breeding, and euthanizing animals, as well as coordinating the animals' deprivation schedules, animal-animal interactions, and light/dark cycles to best serve the needs of experimenters. Animals included rats, mice, voles, and pigeons.

2005 (Fall): Teacher's Assistant for Dr. Steven St. John's teaching lab. I assisted in preparing lab

materials and carrying out lab exercises for the psychobiology portion of Introductory Psychology. These largely consisted of taste preference experiments using rats and demonstrations of these techniques for students.

Other work experience:

2001-2003: Childrens Martial Arts instructor in Sensei Alessandro Ashanti's Jujitsu dojo.

2001-2002 (Fall and Spring): Assistant restorationist for the Frederick Olmstead murals in the Science Hall of CCSF. I helped restore a damaged tempera on plaster mural.

1998 (Summer): Mural painting assistant and daycamp volunteer at the Field Museum of Natural History. I supervised campers while they attended camp classes, and helped produce 3 murals depicting various specimens and exhibits in the museum and their associated areas of science.

EDUCATION:

Schools attended:

2010-present: PhD candidate at Northwestern University, in the Interdepartmental Neuroscience program.

2004- 2006: graduate of Reed college, Portland, OR. Psychology major, biology/philosophy concentration.

2003- 2004: attended Portland Community College, Portland, OR. Psychology Major.

2001- 2003: attended City College of San Francisco, CA. Liberal Arts major.

1996-2000: graduate of School of the Arts High School, San Francisco, CA, Visual Arts major.

Honors:

2004-2006: Commendations for Academic Excellence at Reed College.

2003-2004: President's Honor list at Portland City College.

2002-2003: Dean's Honor list at City College of San Francisco.

MENTORING:

2011: Partnered with Project Exploration to teach hands-on science workshops in underprivileged Chicago Public Schools. Project Exploration staff provided training for scientist volunteers in how to generate, carry out, and revise original age-appropriate hands-on science workshops.

2009 (Summer and Fall): Mentor with the Science, Technology, Engineering, and Mathematics (STEM) mentor project through the Regional Research Institute for Human Services at Portland State University. The STEM mentor project is a NSF funded study that aims to determine whether mentoring by people in STEM careers can increase the number of disabled high school students who go on to study STEM fields in college.

2007-2009 (Summers): Co-mentor with John V. Brigande for the Apprenticeships in Science and Engineering (ASE) program for 3 high school students. Students spent the summer working in the Brigande lab on a personal project that contributed to the overarching goals of the lab, followed by a presentation and poster session at the ASE symposium.

2007- 2009 (Summers): Co-mentor with John V. Brigande for the Partnership for Scientific Inquiry (PSI) program for 2 high school students. Students spent the summer working in the Brigande lab on a personal project that contributed to the overarching goals of the lab.