

Rachel C. Besing
Department of Psychology
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Education

PhD Candidate (Expected Graduation Spring 2015)
Behavioral Neuroscience
University of Alabama at Birmingham
Birmingham, Alabama

BS Psychology, Biology Minor (May 2009)
University of Southern Indiana
Evansville, Indiana

Honors and Awards

- SRBR Trainee Award (Summer 2014)
- 1st Place Poster Presentation at UAB Psychiatry Symposium (Spring 2013)
- UAB Department of Psychology Graduate Student Travel Fund (March 2010, October 2012)
- Honors Student Symposium (Spring 2008)
- Member of National Society of Collegiate Scholars (Spring 2007-Present)
- USI Alumni Association Scholarship (Fall 2008-Spring 2009)
- Honors List at University of Southern Indiana (Fall 2005, Fall 2006, Spring 2007, Fall 2007, Spring 2008, Fall 2008)
- USI Departmental Scholarship (Fall 2005- Spring 2009)

Previous Research

- Investigation of circadian rhythm modulation of learning, memory, and synaptic plasticity processes in the hippocampus. (Fall 2011- Present)
 - Electrophysiology- Field recordings in hippocampus
 - Western blot analysis
 - Organotypic tissue culture preparation
 - Learning and memory behavioral paradigms
 - Immunohistochemistry

- Sleep study, coordinated by Dr. Joseph Palladino, and Lynda Sharrett (Summer 2008-Spring 2009)
 - Literature reviews
- Investigating the relative contributions of genetic preparation, Gestalt principles, and feature pop-out on attentional search, coordinated by Dr. Christopher Bloom and Dr. Kenneth Carter (Fall 2007-Spring 2009)
 - Second author of paper
 - Responsible for running participants
 - Designing setup of experiment
 - Data organization in Excel
 - Assistance in analysis of data using SPSS
- The relationship between OCD and superstition, coordinated by Dr. Christopher Bloom, currently submitted for publication (Fall 2006-Spring 2009)
 - Responsible for running participants in the lab
 - Assistance in designing setup of experiment

Teaching and Research Experience

- Teaching Assistant to Dr. Walter Makous for Capstone Psychology (Spring 2014)
- Full Lecturer for PY 217-41 Elem Stats Methods/Design Lab (Fall 2013)
- Teaching Assistant to Dr. David Knight for Brain, Mind, and Behavior (Spring 2013)
- Teaching Assistant to Dr. John Gampher for Introduction to Psychology (Fall 2012)
- Graduate Student Assistant in Dr. Karen Gamble's lab (Spring 2010-Present)
- fMRI and EEG research experience in Dr. Kristina Visscher's lab (Fall 2009)
- Internship with Office of Institutional Research and Assessment at the University of Southern Indiana (Spring 2009)
 - Assisting in the systematic collection and reporting of standard institutional, regional, environmental and student-centered information for institutional planning and assessment.
 - Input of data using SPSS, Excel and the collection and synthesis of online survey data.
- Research Assistant to Dr. Joseph Palladino (Fall 2008-May 2009)
- Research Assistant to Dr. Kenneth Carter (Fall 2007-May 2009)
- Research Assistant to Dr. Christopher Bloom (Fall 2006-May 2009)
- Psychology 201, Dr. Christopher Bloom, Teaching Assistantship (Spring 2008)
 - Graded tests
 - Assisted students with class material during office hours
 - Wrote test questions
 - Helped proctor tests

Poster Presentations

Besing, R.C., Paul, J.R., Hablitz L.M., Johnson, R.L., Rogers, C.O., Osburn, L.B., McMahon L.L.,

Gamble, K.L. (2014) Rhythmic glycogen synthase kinase 3-beta (GSK3 β) inactivation regulates long-term potentiation and the molecular circadian clock period in the hippocampus. Society for Research on Biological Rhythms, Big Sky, Montana.

Besing, R.C., Paul J.R., Hablitz L.M., Johnson R.L., Gamble, K.L. (2013) Chronic glycogen synthase kinase 3-beta (GSK3 β) activation or inhibition in the hippocampus and suprachiasmatic nucleus regulates the molecular circadian clock amplitude and period. Society for Neuroscience, San Diego, CA.

Besing, R.C., Paul J.R., Hablitz L.M., Johnson R.L., Gamble, K.L. (2012) Modulation of glycogen synthase kinase 3-beta (GSK3 β) alters circadian oscillation of core clock genes in the hippocampal formation and suprachiasmatic nucleus. Society for Neuroscience, New Orleans, LA.

Besing, R.C., Paul J.R., Hablitz L.M., Johnson R.L., Gamble, K.L. (2012) Glycogen Synthase Kinase 3-Beta (GSK3 β) Inactivation Is Highest During Late Day and Chronic Inactivation Shortens the Period of the Molecular Circadian Clock in the Hippocampus. Society for Research on Biological Rhythms, Sandestin, FL.

Besing, R.C., Hablitz, L.M., Paul, J.R., Gamble, K.L. (2011). Neuropeptide Y induces long-term suppression of PER2 and action potential frequency in the suprachiasmatic nucleus during the subjective day. Society for Neuroscience, Washington D.C., DC.

Besing, R.C., Hablitz, L.M., Paul, J.R., R.L. Johnson, Gamble, K.L. (2011). Neuropeptide Y induces long-term suppression of PER2 and neuronal excitability in a phase-specific manner. Rhythms in the South Eastern Region (RISER), Nashville, TN.

Gamble, K.L., **Besing, R.C.**, Lindbergh, K.H., Garner, R.Y., Avis, K.T., May, R.S., Fargason, R.E. (2010). Circadian and sleep parameters differentially predict hyperactive-impulsive and inattentive symptoms in adult ADHD patients with insomnia. Society for Research on Biological Rhythms, Sandestin, FL.

Slevin, R.C. (2008). Threat takes shape. Talk presented at the annual meeting of the Mid-America Undergraduate Psychology Research Conference, Thomas More College, Crestview Hills, Kentucky.

Oral Presentations

Besing, R.C., Paul J.R., Hablitz L.M., Johnson R.L., Gamble, K.L. (2013) Modulation of glycogen synthase kinase 3-beta (GSK3 β) alters circadian oscillation of core clock genes in the hippocampal formation and suprachiasmatic nucleus. Rhythms in the South Eastern Region (RISER), Birmingham, AL

Publications

Besing, R.C., Paul J.R., Hablitz, L.M., Johnson, R.L., and Gamble, K.L. (2014) Molecular clock gene regulation by glycogen synthase kinase 3-beta (GSK3 β) in the suprachiasmatic nucleus. *Submitted for publication to Journal of Biological Rhythms.*

Karen Gamble, Roberta May, **Rachel Besing**, Amelia, Tankersly, Rachel Faragason. (2013) Delayed Sleep Timing and Symptoms in Adults with Attention-Deficit/Hyperactivity Disorder: A Controlled Actigraphy Study. Chronobiology International. Accepted for Publication.

Rachel C. Besing, Lauren M. Hablitz, Jodi R. Paul, Russell L. Johnson, Rebecca A. Prosser & Karen L. Gamble. (2011). Induced Phase Shifts of PER2::LUC Rhythms are Mediated by Long-Term Suppression of Neuronal Excitability in a Phase-Specific Manner. Chronobiology International. 2012 Mar; 29(2): 91-102

Rachel E. Fargason, M.D., Karen Gamble, Ph.D., Kristen T. Avis, Ph.D., **Rachel C. Besing**, Cherry Jackson Pharm D., Marshall Cates, Pharm D., Roberta May, M.A. (2011) Ramelteon for Insomnia due to ADHD;A Crossover, Placebo-Controlled, Actigraphy Study of a Potent Melatonin-Agonist: Are Chronobiological Agents the Future? Pharmacology Bulletin. 2011 Nov 1; 44(2)

Oscar Castanon-Cervantes, Mingwei Wu, J. Christopher Ehlen, Ketema Paul1, Karen L. Gamble, Russell L. Johnson, **Rachel C. Besing**, Michael Menaker, Andrew T. Gewirtz, and Alec J. Davidson. (2010). Disregulation of Inflammatory Responses by Chronic Circadian Disruption. Journal of Immunology, 2010 Nov 15;185(10):5796-805. Epub 2010 Oct 13.

References

Dr. Karen Gamble, Assistant Professor, Department of Psychiatry and Behavioral Neurobiology, klgamble@uab.edu

Dr. Lori McMahon, Professor, Cell, Developmental, and Integrative Biology, mcmahon@uab.edu

Dr. Christopher Bloom, Assistant Professor, Providence College, cbloom@providence.edu