Rachel Cliburn

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EDUCATION

Emory University, Atlanta, GA, USA **2013 – expected July 2018**

**Ph.D. in Neuroscience**

Emory Continuing Education Atlanta, GA, USA **2017**

**Big Data Analysis Certificate Program**

University of Maastricht, Maastricht, the Netherlands **2013**

**M.S. of Neuropsychology**

Baylor University, Waco, TX, USA **2012**

**B.S. of Neuroscience**

Minor: Statistics

AWARDS & Funding

Emory Woodruff Fellowship, *Emory University* **2013 – present**

Emory Training Grant, PI: Yoland Smith, *Emory University* **2014 – 2015**

Fulbright Fellowship to the Netherlands, *US Bureau of Education and Cultural Affairs* **2012 – 2013**

Senior Outstanding Student in Neuroscience, *Baylor University* **2012**

Behavioral Research Advancements in Neuroscience (PI: Kyle Franz), *Georgia State University* **2011**

National Merit Scholarship, *Emory University* **2008 – 2012**

Research

Data Science Projects

**Network analysis of serum metabolites in Parkinson’s patients,** *Emory University* **2018**

I analyzed 10,000+ metabolic features present in the blood serum of Parkinson’s patients and aged healthy adults. By comparing the metabolic networks of healthy versus Parkinson’s adults, I drew insight on how the disease affects peripheral blood markers. These results can be used for future biomarker research

**Optimized parameterization of dopamine dynamic data,** *Emory University* **2017**

In our laboratory, we use a technique that measures dopamine release from a group of neurons. This type of analysis has been difficult to parameterize, given the variety of physiological responses that can influence dopamine release, diffusion, and clearance. I compared multiple parameterization techniques using experimental data that I collected. My analysis has set the standard for how we analyze this type of data in our laboratory.

**Business intelligence recommendation based on brick-and-mortar sales data,** *Emory Continuing Education* **2017**

Capstone project for Big Data Analysis certificate program, in which I analyzed sales transactions from a brick-and-mortar store with locations across the United States. This analysis lead to suggesting three actionable items to increase store profitability.

**Analysis of world development indicators,** *Emory Continuing Education* **2017**

Used large dataset with many variables for each country over time to model changing rates of energy usage and carbonemissions.

**Relevant skills:** Proficient in R, SQL, RapidMiner, Excel. Familiar with Python, Tableau, SAS, C++, Splunk.

Papers

**R.C.Branco**, W. Ellsworth, M.M. Niedziecki, L.M. Butkovich, D. Walker, D.E. Huddleston, D.P. Jones, G.W. Miller. Levodopa and dopamine dynamics in Parkinson’s disease metabolomics. *PLoS One* [submitted]

D.F. Manvich\*, **R.C. Branco**\*, A.K. Petko\*, K.A. Stout, A.H. Newman, G.W. Miller, D. Weinshenker, C.A. Paladini. 2017. Dual presynaptic and postsynaptic mechanisms in the nucleus accumbens core contribute to the differential modulation of the effects of cocaine in mice following selective antagonism of dopamine D2 vs D3 receptors. *Neuropsychopharmacology*. [in preparation]

\*denotes authors contributed equally to this publication

**R.C. Branco**, J.P. Burkett, E.J. Winokur, W. Elsworth, J.S. Schroeder, D. Weinshenker, G.W. Miller. Underexpression of VMAT2 produces altered fear responsiveness and fear learning in mice. *Genes, Brain, and Behavior*. [in preparation]

**R. A. Cliburn**†, A.R. Dunn, K.A. Stout, C.A. Hoffman, K.M. Lohr, A.I. Bernstein, E.J. Winokur, J.P. Burkett, Y. Shmitz, W.M. Caudle, G.W. Miller (2016). Immunochemical localization of vesicular monoamine transporter 2 in mouse brain. *Journal of Chemical Neuroanatomy*.

K.A. Stout, A.R. Dunn, K.M. Lohr, S.P. Alter, **R.A. Cliburn**†, T.S. Guillot, G.W. Miller (2016). Selective enhancement of dopamine release in the ventral pallidum of methamphetamine-sensitized mice. *ACS Chemical Neuroscience*

† Note that R.A. Cliburn is the maiden name of R.C. Branco

TEACHING

Emory University, Atlanta, GA

Teaching Staff fall 2017

I was the instructor of a five credit course consisting of fifteen senior Emory undergraduate students.

This is a Neuroscience course teaching how to read, understand, and critique primary research.

Emory University Study Abroad, Paris, France

Teacher’s Assistant – “Neuroscience and Behavior” summer 2017

Five credit hour course focused on reading and writing science articles.

Assisted students, graded papers, taught one-fourth of course material

Osher Lifelong Learning Institute, Atlanta, GA, USA

Designed and taught course -- “Drugs and Society” 2016

I created was the sole instructor for this neuropharmacology course. Material covered basic

neuropharmacology with a focus on recreational drugs, the culture and history of drug use, and

societal approaches towards drug use and addiction.

Osher Lifelong Learning Institute, Atlanta, GA, USA

Designed and taught course – “Neuroscience and Literature” 2015

I created and was the sole instructor for this clinical neuroscience course. I used poems, short stories,

and exerpts from novels by authors with mental illness as a jumping off-point for understanding the

neurobiology underlying these disorders.

Emory University Study Abroad, Paris, France

Teacher’s Assistant – “Neuroscience and Behavior” summer 2015

Five credit hour course focused on reading and writing science articles.

Assisted students, graded papers, taught ¼ of course material

Emory University Study Abroad, Paris, France

Teacher’s Assistant – “Global Topics in Neuroscience” summer 2015

Assisted students, graded papers, prepared material for a three credit-hour course on sensory systems.

All Souls Fellowship, Decatur, GA, USA

Designed and taught course -- “Mental Health and the Community” 2015

I designed and facilitated this four-week discussion series on mental health issues.

Mentoring

Emory University, Atlanta, GA, USA

Mentor to five students in a laboratory setting 2014 – 2016

Over the course of two years, I have personally mentored five students in the lab of Dr. Gary Miller. These undergraduates have contributed to three manuscripts. The one undergraduate who graduated after working with me is now getting her PhD in Neuroscience at University of California San Diego.

Emory University, Atlanta, GA, USA

Partner to Master’s International Student 2014 – 2016

Met with a Master’s student from China to welcome her, improve her English competencies, review science reading and writing in English

Emory University, Atlanta, GA, USA

Graduate Student Mentor for Undergraduate Research Symposium 2014

Aided undergraduate students in symposium about reading, interpreting, and presenting research

Emory University, Atlanta, GA, USA

Neurobuddy to First-Year Neuroscience Student 2014 -- 2015

Mentor during first-year student’s initial year of graduate school

Leadership

Emory University, Atlanta, GA, USA

Coordinator for Emory Neuroscience Ongoing Research Lecture Series 2016

Emory University, Atlanta, GA, USA

President of Emory Graduates in Neuroscience 2014 -- 2016

Emory University, Atlanta, GA, USA

Graduate Student Representative for Office of Open Expression 2013 --2015