NICHOLAS M. SINGLETARY

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EDUCATION

Graduate School of Arts and Sciences, Columbia University, New York, New York
August 2016 –

- M.A. in Neurobiology and Behavior
- Ph.D. candidate in Neurobiology and Behavior
- National Science Foundation Graduate Research Fellow

Emory College of Arts and Sciences, Emory University, Atlanta, Georgia
August 2012 – May 2016

- B.S. in Neuroscience and Behavioral Biology with Highest Honors
- Minor in Music
- Norman C. and Henry J. Miller Dean's Achievement Scholar
- D. Abbot Turner Scholar
- Phi Beta Kappa

Hardaway High School, Columbus, Georgia
August 2008 – May 2012

- High school diploma
- International Baccalaureate Diploma

RESEARCH EXPERIENCE

Comparative mapping of the dorsomedial prefrontal cortex in the default mode network, Yerkes National Primate Research Center, Emory University, Atlanta, Georgia
October 2015 – April 2016

- Honors thesis collaboration with Dr. Todd Preuss
- Compared the definitive borders and connections of the human, chimpanzee, and macaque dorsomedial prefrontal cortex (dmPFC) via probabilistic tractography
- Found evidence for major organizational changes in dmPFC between humans, chimpanzees, and macaques

Molecular compartmentation of cerebral white matter revealed with Perls iron stain, Yerkes National Primate Research Center, Emory University, Atlanta, Georgia
October 2014 – October 2015

- Collaboration with Dr. Todd Preuss
- Primary goal: To determine the underpinnings of the patchy iron distribution in human cerebral white matter

- Stained tissue sections for iron by the Perls/DAB method
- Scanned slides into digital images and registered images using Fiji/ImageJ in order to elucidate the 3-D distribution of iron in cerebral white matter
- Presented at Society for Neuroscience 2015

A paradigm for the application of the bounded-evidence accumulation model to a memory retrieval task, Columbia University, New York, New York
May 2015 – July 2015

- Collaboration with Dr. Michael Shadlen
- Designed an experiment in Psychtoolbox, an extension of Matlab, to determine if memory retrieval can be modeled as a decision-making process
- Found correlations between characteristics of our stimuli and accuracy and reaction time, indicating that it may be possible to model memory retrieval as a decision-making process.
- Presented at Annual Biomedical Research Conference for Minority Students (ABRCMS)

Integration of spatial and temporal color contrast in perceived surface color, Northeastern University, Boston, Massachusetts
June 2014 – August 2014

- Collaboration with Dr. Ennio Mingolla through CELEST (Center of Excellence for Learning in Education, Science, and Technology), a National Science Foundation Science of Learning Center
- Designed a psychophysics experiment implemented in Psychtoolbox, to investigate perception of illusory colors

Iron and CA2 densitometry in humans, chimpanzees, and macaques, Yerkes National Primate Research Center, Emory University, Atlanta, Georgia
October 2013 – April 2014

- Collaboration with Dr. Todd Preuss
- Primary goal: Compared the distributions of staining for iron (via the Perls/DAB method) and carbonic anhydrase 2 (CA2) to determine whether the two molecules are expressed in the same or different tissue compartments in order to identify human specializations in white matter
- Segmented white matter from gray matter in images of tissue sections from frontal cortex in humans, chimps, and macaques, stained for iron or for CA2 with immunohistochemistry
- Compared staining density of iron and CA2 across species and across ages within species by comparing gray levels of pixels in the white matter

OTHER RELEVANT EXPERIENCE

Human Brain Bank: Laboratory assistant, Center for Neurodegenerative Disease, Emory University School of Medicine,

Atlanta, Georgia
September 2012 – April 2013

- Collaborated with Dr. Marla Gearing
- Experience with NanoDrop spectrophotometer
- Prepared tissue samples and slides of tissue samples for use by filing, labeling, and cover-slipping
- Prepared cryoprotectant and phosphate buffer solutions

NeighborWorks Columbus: Data Specialist, Columbus, Georgia
May 2012 – August 2012; May 2013 – August 2013

- Facilitated the implementation of the Neighborhood LIFT Program by maintaining the LIFT database, resulting in $6 million in down-payment assistance in the Atlanta area
- Developed interpersonal skills by assisting clients in pressing circumstances, including financial literacy and pre-purchase class students, and foreclosure prevention program clients, helping the foreclosure prevention counselor save 21 homes
- Provided statistical analysis necessary for neighborhood rehabilitation projects in "target areas" in Columbus

VOLUNTEER EXPERIENCE

Columbia University Neuroscience Organization, New York, New York
September 2016 –

- Regularly teach interactive neuroscience- and psychology-related lessons in New York-area K-12 schools ("single visits" program)

Citizen Schools, Urban Assembly Academy for Future Leaders, New York, New York
January 2017 – May 2017, August 2018 – December 2018

- Co-taught after-school neuroscience course at public middle school
- Developed and monitored interactive lessons, activities, and scientific experiments to teach scientific concepts
- Prepared students for community presentation of their new skills
- Revamped course to include neurology-related topics

Emory Center for Science Education, Atlanta, Georgia

- Spring 2013: Assisted in science lessons at after-school programs at a public elementary school in East Atlanta
- Fall 2013: Mentored students as part of the Hughes Undergraduates Excelling in Sciences (HUES) Program, an advisory program for first-year students from underprivileged and underrepresented backgrounds in the sciences at Emory
- Spring 2015: Advised Atlanta Public Schools high school students with presentations at the Atlanta Science Festival
- Fall 2015-Spring 2016: Campaigned against the closure of this organization, which has been instrumental at increasing participation of underrepresented minorities in the sciences

OTHER COMMUNITY INVOLVEMENT

- Society for Neuroscience Student Member
- Sigma Xi Associate Member
- Queer Urban Orchestra, New York, NY, September 2016 –
- Emory University Symphony Orchestra, August 2012—May 2016
- Nu Rho Psi (Neuroscience Honor Society)
- Publicity representative of Emory Pride, Fall 2013

ADDITIONAL SKILLS

- Matlab and Psychtoolbox
- Perls/DAB histochemistry
- FIJI/ImageJ
- Adobe Photoshop
- Java
- Python
- R