

COREY G. DUKE

WWW.COREYGDUKE.COM

EDUCATION

- University of Alabama at Birmingham 2014-Current
- NIH Medical Scientist Training Program (M.D./Ph.D. Student)
 - Graduate Biomedical Sciences, Neuroscience Theme
 - Graduate GPA: 4.0
- Cold Spring Harbor Laboratory 2017
- Chromatin, Epigenetics, and Gene Expression Course
 - Helmsley Charitable Trust Scholar
- University of Montevallo 2009-2013
- Bachelor of Science in Psychology
 - Minors in Biology, Chemistry, and Philosophy
 - Superior Academic Achievement in the College of Arts and Sciences (4.0 GPA)
 - Summa cum Laude, President's List 2009-2013
- Auburn University 2007-2009

GRANTS AND FELLOWSHIPS

- NIH T32 Neurobiology of Cognition and Cognitive Disorders 2017-2019
- NIH R25 NINDS Roadmap Scholars Program 2017-2020
- NIH T35 MSSRP Training Fellowship 2015
- NSF Research Experiences for Undergraduates 2012
- Ronald E. McNair Postbaccalaureate Achievement Program 2011

RESEARCH EXPERIENCE

- National Institute of Health Medical Scientist Training (M.D/PhD.) Program 2016-Current
University of Alabama at Birmingham
McKnight Brain Institute; Laboratory of Jeremy Day, Ph.D.
- Currently working to characterize and manipulate the regulatory mechanisms guiding gene expression in neurons. This work extends into the functioning nervous system to examine, control, and better understand the dynamic nature of the gene expression changes inherent to memory formation.
- National Institute of Health Medical Student Summer Research Program 2015
University of Alabama at Birmingham
McKnight Brain Institute; Laboratory of Jeremy Day, Ph.D.
- Over 10 work intensive weeks, I helped lead a project examining the epigenome and transcriptome wide effects occurring in the hippocampus following memory formation. In addition to providing the first genome-wide maps of these alterations, our results shed new light on the dynamic nature of DNA methylation and demethylation in the adult nervous system. This work received multiple awards and is now published in *Learning and Memory*.
- Research Assistant 2013-2014
University of Alabama at Birmingham
Behavioral Neuroscience and Electrophysiology; Laboratory of Franklin Amthor, Ph.D.

- Assisted with multiple projects focused on directionally selective ganglion cells of the rabbit and mouse retina.
 - Responsibilities included writing programs in MatLab for data interpretation, creating and writing stimulus program scripts, and assisting with retina electrophysiology recordings.
- Primary project focused on the development of new technologies and techniques for recording neural activity using infrared and heat sensing devices.
Cell, Developmental, and Integrative Biology; Laboratory of Rosa Serra, Ph.D.
- Helped lead a project involving chondrocytic cilium orientation in the growth plate. Primary responsibilities included programming ImageJ and MatLab to calculate the 3D organization of cells from microscope images, and assisting with data analysis and interpretation. This work led to a publication in *Molecular Biology of the Cell*.

National Science Foundation Research Experience for Undergraduates 2012
 University of South Alabama; Laboratory of Sinéad M. Ní Chadhain, Ph.D.
Isolation and Screening of Soil Bacteria for Polycyclopropanated Fatty Acid Production Genes

- Completed a multidisciplinary research project on a potential biofuel working directly with a microbiologist, chemist, and chemical engineer over 10 work intensive weeks.
- Utilized genetic cloning, cell culturing, PCR, DNA extraction, electrophoresis, sequencing, cryopreservation, differential centrifugation, restriction enzyme digest, media preparation, and a variety of other techniques.

Ronald E. McNair Postbaccalaureate Achievement Program 2011
 University of Montevallo; Under Mentorship of Kristen Gilbert, Ph.D.
Empathy, the Highly Sensitive Person, and Environmental Moral Reasoning

- As lead investigator under two mentors, I devoted a year to intensive training in research design and methodology, designed and conducted my own study, and presented my findings at several conferences in addition to the program's report.

Laboratory Assistant 2011-2013

- Assisted with laboratory research, set up and preparatory work, and management in the chemistry and biology departments at the University of Montevallo. I also led several laboratories for undergraduate chemistry and biology courses.
- Particular labs include organic, general and introductory chemistry, and general and introductory biology.
- Techniques used include NMR, chromatography, organic synthesis, titration, reflux, UV-vis, mass spectroscopy, buffer and solution preparation, distillation, and various others.

Teaching Assistant 2011-2013

- Held office hours with students for tutoring in the biology and chemistry departments.
- Particular courses include organic, analytical, and general chemistry, genetics, physiology, and general biology.

Information Technology Consultant 2013
 Audiology of Tulsa, PLLC

- Instituted and maintained a variety of server and database technologies, as well as repaired and managed the company website and phone system.

AWARDS AND HONORS

Helmshley Charitable Trust Scholarship to attend CSHL Course (\$2,000)
 Gold Humanism Honor Society Inductee

American Society of Gene and Cell Therapy Travel Award (\$500)
 W. Hudson Turner Endowment Scholarship (\$120,000)
 SACNAS Annual Meeting Travel Award (Full)
 2016 MSRD Poster Presentation Award – 2nd Place
 Senior Elite in Psychology 2011-2012 at UM
 Superior Academic Achievement in the College of Arts and Sciences (4.0 GPA)
 National Science Foundation Research Experiences for Undergraduates
 Ronald E. McNair Postbaccalaureate Achievement Program
 National Science Foundation BIO REU Travel Scholarship (\$1000)
 UM Undergraduate Research Travel Award (\$500)
 UM Health Science Professional Award
 B. F. Skinner Successive Approximation Award
 Golden Key International Honors Society
 J.L. Bedsole Leadership Scholars Program (\$24,000)
 Hawkins Educational Foundation Scholars Program (\$16,000)
 Minnie S Mitchell Scholarship (\$1,600)
 Class of 1952 Memorial Scholarship (\$1,000)
 Alpha Delta Kappa Baldwin County Educators Scholarship (\$500)
 Psi Chi International Honor Society in Psychology
 Sigma Tau Delta National English Honors Society
 President's List 2009-2013
 Dean's List 2007-2008

LEADERSHIP AND EXTRA CURRICULAR

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| UAB SOM Class of 2018 President | 2014-2016 |
| Magic City Medcast (Medical Podcast) <i>Founder, Executive Producer</i> | 2015-2019 |
| UAB Griffin Society (Continuing Clinical Committee) <i>Member</i> | 2015-2019 |
| UAB MSTP Direction Committee <i>Student Representative</i> | 2015-2020 |
| American Physician Scientists Association <i>National Technology Committee Member</i> | 2015-2017 |
| American Physician Scientists Association <i>Research Director</i> | 2015-2018 |
| UAB SOM Academic Engagement Committee <i>Director of Innovation</i> | 2016-2018 |
| UAB SOM Medical Alumni Association Board <i>Student Representative</i> | 2014-2016 |
| UAB Sustainability Investment Fund <i>Professional School Representative</i> | 2014-2016 |
| Medical Student Services Academic Success <i>Tutor</i> | 2015-2019 |
| Student Interest Group in Neurology <i>Coordinator</i> | 2015-2016 |
| Introduction to Clinical Medicine <i>Course Representative</i> | 2014-2015 |
| UASOM Transcript Service <i>Committee Member, Webmaster</i> | 2014-2015 |
| Pre-Health Professionals Society <i>Founder, President</i> | 2012-2013 |
| Psychology Club <i>Co-founder, President</i> | 2010-2013 |
| Ballroom Dance Club <i>Co-founder, Vice President</i> | 2011-2013 |
| Biology Club <i>Vice President</i> | 2011-2012 |
| Performance Musician <i>Bluegrass Mandolin and Guitar</i> | 2003-2019 |

COMMUNITY INVOLVEMENT AND SERVICE

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| Letters to a Pre-Scientist | 2017-2020 |
| Skype a Scientist | 2017-2020 |
| Equal Access Birmingham | 2014-2017 |
| Civitan International | 2013-2015 |
| Habitat for Humanity | 2009-2013 |
| Homeless Coalition of the Gulf Coast Intern | 2010 |
| Angel Food Industries | 2008-2009 |

PROFESSIONAL SOCIETIES

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| Society for Neuroscience | 2016-2019 |
| American Society for Gene and Cell Therapy | 2019 |
| American Medical Association | 2014-2019 |
| American Neurological Association | 2015-2019 |
| Medical Association of the State of Alabama | 2014-2019 |
| Jefferson County Medical Society | 2014-2019 |

PEER-REVIEWED MANUSCRIPTS (*EQUAL CONTRIBUTION)

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- Savell, K.E.*, Tuscher, J.J.*, Zipperly, M.E.*, **Duke, C.G.***, Phillips, R.A.*, Bauman, A.J., Thukral, S., Sultan, F.A., Goska, N.A., Ianov, L., Day, J.J. A dopamine-induced gene expression signature regulates neuronal function and cocaine response. *Science Advances*. 2020. *In Press*
- Duke, C.G.**, Savell, K.E., Tuscher, J.T., Phillips, R.A., Day, J.J. Blue light-induced gene expression alterations in cultured neurons are the result of phototoxic interactions with neuronal culture media. *eNeuro*. 2010 December, 7 (1) ENEURO.0386-19.2019; doi: <https://doi.org/10.1523/ENEURO.0386-19.2019>
- Savell, K.E., Bach, S.V., Zipperly, M.E., Revanna, J.S., Goska, N.A., Tuscher, J., **Duke, C.G.**, Sultan, F.A., Burke, J.N., Williams, D.M., Ianov, L., Day, J.J. A neuron-optimized CRISPR/dCas9 activation system for robust and specific gene regulation. *eNeuro*. 2019 Feb 25; 6(1). doi: [10.1523/ENEURO.0495-18.2019](https://doi.org/10.1523/ENEURO.0495-18.2019)
- Duke, C.G.**, Kennedy, A.J., Gavin, C.F., Day, J.J., Sweatt, J.D. Experience-dependent epigenomic reorganization in the hippocampus. *Learning and Memory*. 2017 Jun 15; 24(7):278-288. doi: [10.1101/lm.045112.117](https://doi.org/10.1101/lm.045112.117). *This work was featured on the journal cover.*
- Killion, C.H., Mitchell, E.H., **Duke, C.G.**, Serra, R. Mechanical loading regulates organization of the actin cytoskeleton and column formation in the postnatal growth plate. *Molecular Biology of the Cell*. 2017 Jul 7; 28(14):1862-1870. doi: [10.1091/mbc.E17-02-0084](https://doi.org/10.1091/mbc.E17-02-0084).

IN PREP

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- Duke, C.G.**, Bach, S.V., Southern, N.T., Revanna, J.S., Davis, N., Phillips, R.A., Day, J.J. An improved CRISPR/dCas9 repression system for robust and specific gene suppression. *In prep.*

POSTER PRESENTATIONS (*EQUAL CONTRIBUTION)

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- Duke, C.G.**, Tuscher, J.J., Phillips, R.A., Zipperly, M.E., Savell, K.E., Sultan, F.A., Day, J.J. Dynamic gene expression in the nucleus accumbens following acute cocaine experience. *Molecular Cellular Cognition Society*. Chicago, IL 2019.
- Duke, C.G.**, Savell, K.E., Phillips, R.A., Day, J.J. Blue light-induced gene expression alterations in cultured neurons are the result of phototoxic interactions with neuronal culture media. *Society for Neuroscience*. Chicago, IL 2019.
- Duke, C.G.**, Tuscher, J.J., Phillips, R.A., Zipperly, M.E., Savell, K.E., Sultan, F.A., Day, J.J. Dynamic gene expression in the nucleus accumbens following acute cocaine experience. *McKnight Institute Poster Reception*. Chicago, IL 2019.
- Duke, C.G.**, Southern, N.T., Savell, K.E., Sultan, F.A., Day, J.J. A Novel Light-inducible CRISPR/dCas9 System for Controlling Gene Expression. *American Society for Gene and Cell Therapy*. Washington D.C. 2019.

- Duke, C.G.**, Southern, N.T., Savell, K.E., Sultan, F.A., Day, J.J. A Novel Light-inducible CRISPR/dCas9 System for Controlling Gene Expression. *Society for Advancement of Chicanos and Native Americans in Science (SACNAS) Annual Meeting*. San Antonio, TX 2018.
- Duke, C.G.**, Southern, N.T., Savell, K.E., Sultan, F.A., Day, J.J. A Novel Light-inducible CRISPR/dCas9 System for Controlling Gene Expression. *UAB Comprehensive Neuroscience Center Retreat*. Birmingham, AL 2018.
- Duke, C.G.**, Kennedy, A.J., Gavin, C.F., Day, J.J., Sweatt, J.D. Experience-Dependent Epigenomic Reorganization. *NEURAL Conference*. Birmingham, AL 2017.
- Duke, C.G.**, Kennedy, A.J., Day, J.J., Sweatt, J.D. Experience-Dependent Epigenomic Reorganization. *Society for Neuroscience Annual Meeting*. San Diego, CA 2016.
- Duke, C.G.**, Kennedy, A.J., Day, J.J., Sweatt, J.D. Experience-Dependent Epigenomic Reorganization. *Molecular and Cellular Cognition Society Meeting*. San Diego, CA 2016.
- Duke, C.G.**, Kennedy, A.J., Day, J.J., Sweatt, J.D. Experience-Dependent Epigenomic Reorganization. *Evelyn F. McKnight Brain Research Foundation Poster Reception*. San Diego, CA 2016.
- Duke, C.G.**, Kennedy, A.J., Day, J.J., Sweatt, J.D. Experience-Dependent Epigenomic Reorganization. *South Eastern Medical Scientist Symposium*. Birmingham, AL 2016. **Winner: Best Poster, 2nd Place**
- Duke, C.G.**, Kennedy, A.J., Day, J.J., Sweatt, J.D. Experience-Dependent Epigenomic Reorganization. *Medical Student Research Day*. Birmingham, AL 2016.
- Jones, C.*, Ray, C.*, **Duke, C.G.***, Ma, E.*, Hammock, J.*. A Novel Early Integrative Experience Based Curriculum in Undergraduate Medical Education. *Research in Medical Education Symposium*. Birmingham, AL 2016
- Duke, C.G.**, Kennedy, A.J., Day, J.J., Sweatt, J.D. Experience-Dependent Epigenomic Reorganization. *Molecular and Cellular Cognition Society Meeting*. Chicago, IL 2015.
- Duke, C.G.**, Kennedy, A.J., Day, J.J., Sweatt, J.D. Experience-Dependent Epigenomic Reorganization. *Evelyn F. McKnight Brain Research Foundation Poster Reception*. Chicago, IL 2015.
- Duke, C.G.**, Kennedy, A.J., Day, J.J., Sweatt, J.D. Experience-Dependent Epigenomic Reorganization. *South Eastern Medical Scientist Symposium*. Nashville, TN 2015.
- Duke, C.G.**, Kennedy, A.J., Day, J.J., Sweatt, J.D. Experience-Dependent Epigenomic Reorganization. *Medical Student Research Day*. Birmingham, AL 2015.

ORAL PRESENTATIONS

- Duke, C.G.**, Tuscher, J.J., Phillips, R.A., Zipperly, M.E., Savell, K.E., Sultan, F.A., Day, J.J. Dynamic gene expression in the nucleus accumbens following acute cocaine experience. *South Eastern Medical Scientist Symposium*. Birmingham, AL 2019.
- Duke, C.G.**, Southern, N.T., Savell, K.E., Sultan, F.A., Day, J.D. A Novel Light-inducible CRISPR/dCas9 System for Controlling Gene Expression. *Neuroscience Day*. Birmingham, AL 2019.
- Duke, C.G.**, Southern, N.T., Savell, K.E., Sultan, F.A., Day, J.D. A Novel Light-inducible CRISPR/dCas9 System for Controlling Gene Expression. *South Eastern Medical Scientist Symposium*. Nashville, TN 2018.
- Duke, C.G.**, Savell, K.E., Sultan, F.A., Day, J.J. Light-Activated Epigenetic Control of Gene Expression. *Medical Student Research Day*. Birmingham, AL 2018.
- Duke, C.G.**, Savell, K.E., Sultan, F.A., Day, J.J. Light-Activated Epigenetic Control of Gene Expression. *NEURAL Conference*. Birmingham, AL 2017.
- Duke, C.G.**, Savell, K.E., Sultan, F.A., Day, J.J. Light-Activated Epigenetic Control of Gene Expression. *South Eastern Medical Scientist Symposium*. Atlanta, GA 2017.

- Duke, C.G.,** Kennedy, A.J., Day, J.D., Sweatt, J.D. Experience Dependent Epigenomic Reorganization. *Society for Advancement of Chicanos and Native Americans in Science (SACNAS) Annual Meeting*. Long Beach, CA 2016.
- Duke, C.G.,** Ní Chadhain, S.M., West, K., Davis, J. The Hunt for Polycyclopropanated Fatty Acid Production Genes. *National Conference for Undergraduate Research*. La Crosse, WI 2013.
- Duke, C.G.,** Ní Chadhain, S.M., West, K., Davis, J. The Hunt for Polycyclopropanated Fatty Acid Production Genes. *COPLAC Southeast Regional Undergraduate Research Conference*. Wise, VA 2013.
- Duke, C.G.,** Ní Chadhain, S.M., West, K., Davis, J. The Hunt for Polycyclopropanated Fatty Acid Production Genes. *University of Montevallo Undergraduate Research Day*. Montevallo, AL 2013.
- Duke, C.G.,** Ní Chadhain, S.M., West, K., Davis, J. The Hunt for Polycyclopropanated Fatty Acid Production Genes. *USA National Science Foundation Research Symposium*. Mobile, AL 2012.
- Duke, C.G.,** Burling, J.W., Gilbert, K.D. Empathy, the Highly Sensitive Person, and Environmental Moral Reasoning. *University of Montevallo Undergraduate Research Day*. Montevallo, AL 2012.
- Duke, C.G.,** Burling, J.W., Gilbert, K.D. Empathy, the Highly Sensitive Person, and Environmental Moral Reasoning. *Southeastern Association of Educational Opportunity Program Personnel McNair Research Conference*. Atlanta, GA 2011
- Duke, C.G.,** Burling, J.W., Gilbert, K.D. Empathy, the Highly Sensitive Person, and Environmental Moral Reasoning. *McNair Scholars Program Summer Research Presentation Day*. Montevallo, AL 2011.

INVITED LECTURES/PANEL SESSIONS

- Duke, C.G. (Mediator).** Lorenz, R., Wesseman, D., Pepin, M., Geisler, W., Turbeville, H. Productivity and Time Management: The Keys to Success. *Southeastern Medical Scientist Symposium*. Birmingham, AL 2019.
- Duke, C.G.** The Neuroscience of Meditation. *Vulcan Yoga Teacher Training*. Birmingham, AL 2019.
- Duke, C.G.** Life as an MD/PhD Student. *Southeastern Medical Scientist Symposium*. Nashville, TN 2018.
- Duke, C.G.** Careers in the Health Professions. *Upward Bound Program guest panelist*. *University of Montevallo*. Montevallo, AL 2018.
- Duke, C.G.,** Zipperly, M.E. Why MD-PhD?. *Colloquium in Basic Cognitive and Clinical Neuroscience*. *University of Alabama at Birmingham*. Birmingham, AL 2017.
- Duke, C.G.** Introduction to Epigenetics. *Guest Lecturer for a Genetics course, a Biochemistry course, and a Biology Senior Seminar course*. *University of Montevallo*. Montevallo, AL 2017.
- Cavazos, J.E., **Duke, C.G.,** Haskins, C., Linares, A., Villa, G. MD-PhD: Is it right for me?. *SACNAS Annual Meeting Panelist*. Long Beach, CA 2016.
- Swecker, H., **Duke, C.G.,** Peabody, J. Mock Multiple Mini Interview Workshop. *South Eastern Medical Scientist Symposium Panelist*. Birmingham, AL 2016.

TEACHING EXPERIENCE

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| Peer Tutor | 2014-Current |
| <i>University of Alabama at Birmingham School of Medicine, Medical Student Services</i> | |
| Peer tutor in all preclinical courses within the medical school. | |
| Teaching Assistant | 2018 |
| <i>University of Alabama at Birmingham Department of Neurobiology</i> | |
| Mechanisms of Memory. Graduate level neuroscience course. | |

Teaching Assistant and Tutor

2011-2013

University of Montevallo Department of Biology, Chemistry, and Mathematics

Organic Chemistry, Analytical Chemistry, General Chemistry, Genetics, Physiology,
Introductory Biology. Undergraduate level courses.

MENTORING EXPERIENCE

Nicholas Southern, UAB Undergraduate Student

Science and Technology Honors student in Day Laboratory

Adou Kouame, UAB Undergraduate Student

Honors student in Day Laboratory

Jasmin Revanna, UAB Undergraduate Student, Amgen Scholar

Honors student in Day and Amthor Laboratories

Oge Otiji, Georgia Gwinnett College Undergraduate Student

Preparation for Graduate and Medical Education (PARAdiGM) Program student

Hunter Dean, UAB Undergraduate Student

Honors student in Day Laboratory

Andres Vega, University of Central Arkansas Undergraduate Student

Preparation for Graduate and Medical Education (PARAdiGM) Program student