

Education

Graduate Education

2011—2017: Emory University, Atlanta, Georgia.
Degree (5/2017): Ph.D., Neuroscience
Neuroscience doctoral training program
GPA: 3.94

Undergraduate Education

2007—2010: University of Maine, Orono, Maine.
Degree (12/2010): B.A., Psychology, concentration in biological and cognitive psychology
Minors: Neuroscience, Spanish
Research-intensive track in Psychology
GPA: 3.95, *summa cum laude*

Research

June 2017—present: Postdoctoral associate, The Jackson Laboratory

Research advisor: Dr. Catherine C. Kaczorowski, in collaboration with Dr. Kristen M.S. O'Connell
Identifying genetic modifiers of diet in Alzheimer's disease pathogenesis and investigating mechanisms of cognitive resilience in aging

June 2012—May 2017: Predoctoral researcher, Neuroscience training program, Emory University

Research advisor: Dr. Gary W. Miller, Department of Environmental Health and Center for Neurodegenerative Disease
Investigating the role of synaptic vesicular glycoprotein 2C (SV2C) in mediating dopamine synaptic vesicle function and neuronal vulnerability to toxicity

February 2012—May 2012: Graduate student researcher (Laboratory rotation), Neuroscience training program, Emory University

Research Advisor: Dr. Ranjita Betarbet, in collaboration with Dr. Nicholas Seyfried, Center for Neurodegenerative Disease
Identifying proteomic alterations in postmortem Alzheimer's disease and mild cognitive impairment cases and modeling disease-related changes in vitro

October 2011-January 2012: Graduate student researcher (Laboratory rotation), Neuroscience training program, Emory University

Research advisor: Dr. Lary C. Walker, Department of Neurology and Center for Neurodegenerative Disease
Examining cerebral amyloid angiopathy (CAA) in aged nonhuman primates via histological and magnetic resonance imaging

May 2010 – August 2010: Undergraduate research fellow, Department of Neuroscience, Bowdoin College

Research advisor: Dr. Richmond R. Thompson, Department of Neuroscience
Behavioral and molecular experiments studying the role of a membrane-bound estrogen receptor in the visually-motivated social approach behavior of goldfish

September 2008 – May 2011: Undergraduate research assistant, Department of Psychology, University of Maine

Research advisor: Dr. Michael A. Robbins, Department of Psychology
Clinical-based research studying the relationship between cardiovascular disease risk factors, quality of life, and cognitive functioning in the Maine-Syracuse Longitudinal Study

Research support

September 2018—September 2021: JAX Scholars Program research fellowship (\$10,000)
10/2020

February 2018—February 2022: Alzheimer's Association Research Fellowship (Postdoctoral research fellowship) AARF-18-565506. "Mechanisms of an interaction between genetics and diet in AD" (\$174,973)

April 2015—September 2017: Kirschstein National Research Service Award predoctoral fellowship, NIH-NINDS F31NS089242. "The synaptic vesicle glycoprotein 2C as a novel mediator of transmitter release and neuroprotection in dopamine cells" (\$116,718)

Emory University Department of Toxicology Training Grant, NIH T32ES012870-11, appointee, July 2013—March 2015.

Maine INBRE Undergraduate research fellowship, 2010. (\$5,000)

Awards and honors

STAT Wunderkind Award, 2019

JAX Scholar Award, 2018-2021 (\$10,000)

Outstanding Postdoctoral Travel Award (Annual Genes, Brain & Behaviour Meeting), 2018. (\$400)

International Behavioural and Neural Genetics Society membership award, 2018.

Alfond Leaders Program award, 2017.

Dopamine 2016 International Meeting travel award, 2016. (€500.00)

Richard M. Ryckman Scholarship for Psychology, University of Maine, 2010.

Presidential Achievement Award, University of Maine, 2008.

Presidential Distinguished Scholar Award, University of Maine, 2007. (\$10,000)

Publications (15)

Vecchio, L.M., Bermejo, M.K., **Dunn, A.R.**, Milenkovic, M., Urs, N., Ramsey, A., Miller, G.W., Salahpour, A. Increased activity of tyrosine hydroxylase leads to elevated amphetamine response and markers of oxidative stress in transgenic mice. *Under review at PNAS*. Preprint available at BioRxiv, doi: <https://doi.org/10.1101/188318>

Dunn, A.R., Hadad, N., Neuner, S.M., Zhang, J-G., Philip, V., Dumitrescu, L., Hohman, T.J., Herskowitz, J.H., O'Connell, K.M.S., Kaczorowski, C.C. 2020. Identifying mechanisms of normal cognitive aging using a novel mouse genetic reference panel. *Frontiers in Cell and Developmental Biology*, 8: 562662. doi: <https://doi.org/10.3389/fcell.2020.562662>

Dunn, A.R., Kaczorowski, C.C. 2019. Regulation of intrinsic excitability: Roles for learning and memory, aging and Alzheimer's disease, and genetic diversity. *Neurobiology of Learning and Memory*, 164: 107069, doi: 10.1016/j.nlm.2019.107069

Stout, K.A., **Dunn, A.R.**, Hoffman, C.A., Miller, G.W. 2019. The synaptic vesicle glycoprotein 2: Structure, function, and disease relevance. In press, *ACS Chemical Neuroscience*, doi: 10.1021/acscemneuro.9b00351

O'Connell, K.M.S., Ouellette, A.R., Neuner, S.M., **Dunn, A.R.**, Kaczorowski, C.C. 2019. Genetic background modifies CNS-mediated sensorimotor decline in the AD-BXD mouse model of genetic diversity in Alzheimer's disease. *Genes, Brain, and Behaviour*, e12603, doi: 10.1111/gbb.12603.

Dunn, A.R., O'Connell, K.M.S., Kaczorowski, C.C. 2019. Gene-environment interactions in Alzheimer's disease and Parkinson's disease. *Neuroscience & Biobehavioral Reviews*, 103: 73-80. Doi: 10.1016/j.neubiorev.2019.06.018

Dunn, A.R.*, Neuner, S.M.*, Ding, S., Hope, K.A., Wilmott, L.A., O'Connell, K.M.S., Kaczorowski, C.C. 2018. Cell-type specific changes in the subiculum following learning and novel context exposure. *eNeuro*. 0484-18.2018, doi: <https://doi.org/10.1523/ENEURO.0484-18.2018>

Bhattacharya, S., Ma, Y., **Dunn, A.R.**, Bradner, J.M., Scimemi, A., Miller, G.W., Traynelis, S., Wichmann, T. 2018. NMDA receptor blockade ameliorates abnormalities of spike firing of subthalamic nucleus neurons in a Parkinsonian non-human primate. *Journal of Neuroscience Research*, 96(7): 1324-1335. doi: 10.1002/jnr.24230

Dunn, A.R., Hoffman, C.A., Ozawa, M., Stout, K.A., Dhamsania, R.K., Miller, G.W. 2019. Immunochemical analysis of the synaptic vesicle glycoprotein 2C (SV2C) in mouse, macaque and human basal ganglia. *Brain Research*, 1702:85-95. doi: 10.1016/j.brainres.2017.12.029

Dunn, A.R., Stout, K.A., Ozawa, M., Lohr, K.M., Bernstein, A.I., Li, Y., Wang, M., Sgobio, C., Sastry, N., Cai, H., Caudle, W.M., Miller, G.W. 2017. The synaptic vesicle glycoprotein 2C (SV2C) mediates dopamine release and is disrupted in Parkinson's disease. *Proceedings of the National Academy of Sciences*. 114(11): E2253-62. doi: <http://dx.doi.org/10.1101/077586>
Selected as an NIEHS Extramural Paper of the Year, 2017

Cliburn, R.A., **Dunn, A.R.**, Stout, K.A., Hoffman, C.A., Lohr, K.M., Bernstein, A.I., Winokur, E.J., Wang, M., Miller, G.W. 2016. Vesicular monoamine transporter 2: Immunochemical characterization and localization in brain. *Journal of Chemical Neuroanatomy*. 83-84: 82-90. doi: 10.1016/j.jchemneu.2016.11.003.

Stout, K.A., **Dunn, A.R.**, Lohr, K.M., Ozawa, M., Alter, S.P., Guillot, T.S., Miller, G.W. 2016. Selective enhancement of dopamine release in the ventral pallidum of methamphetamine-sensitized mice. *ACS Chemical Neuroscience*, 7(10): 1364-1373. 10.1021/acschemneuro.6b00131

Lohr, K.M., Chen, M., Hoffman, C., McDaniel, M., Stout, K.A., **Dunn, A.R.**, Wang, M., Miller, G.W. 2016. Vesicular monoamine transporter 2 (VMAT2) level determines MPTP vulnerability and clearance of excess dopamine in mouse striatal terminals. *Toxicological Sciences*, 153(1): 79-88. doi: 10.1093/toxsci/kfw106

Lohr, K.M., Stout, K.A., **Dunn, A.R.**, Wang, M., Salahpour, A., Guillot, T.S., Miller, G.W. 2015. Increased vesicular monoamine transporter 2 (VMAT2; *Slc18a2*) protects against methamphetamine toxicity. *ACS Chemical Neuroscience*, 6(5):790-9. doi: 10.1021/acschemneuro.5b00010

Lohr, K.M., Bernstein, A.I., Stout, K.A., **Dunn, A.R.**, Lazo, C.R., Alter, S.P., Wang, M., Li, Y., Fan, X., Hess, E.J., Yi, H., Vecchio, L.M., Goldstein, D.S., Guillot, T.S., Salahpour, A., Miller, G.W. 2014. Increased vesicular monoamine transporter enhances dopamine release and opposes Parkinson's disease-related neurodegeneration *in vivo*. *Proceedings of the National Academy of Sciences*, 111(27): 9977-82. doi: 10.1073/pnas.1402134111

Abstracts

Presentations:

"Gene-environment-sex interactions modify symptoms of Alzheimer's disease". Alzheimer Afternoons seminar series. 2020, May. Virtual.

"Identifying genetic regulators of cognitive effects of a high-fat/high-sugar diet in Alzheimer's disease". Invited talk at the Annual Genes, Brain & Behaviour Meeting of the International Behavioural and Neural Genetics Society. 2019, May. Edinburgh, Scotland, UK.

"Gene-by-diet interactions modify symptoms of Alzheimer's disease". The Maine Chapter of the Society for Neuroscience annual meeting. 2018, October. Portland, ME, USA.

"Gene x Diet Interactions Modify Symptoms of Alzheimer's Disease". The Annual Genes, Brain & Behavior Meeting of the International Behavioural and Neural Genetics Society. 2018, May. Rochester, MN, USA.

"Gene-by-diet interactions modify symptoms of Alzheimer's disease". JAX Annual Scientific Symposium. 2018, May. Farmington, CT, USA.

"Diet, genetics and cognitive function". Dementia Education Conference of the Alzheimer's Association Connecticut Chapter. 2018, April. Uncasville, CT, USA.

"A role of SV2C in dopamine homeostasis and Parkinson's disease". Emory Neuroscience Candidates' Ongoing Research (ENCORE) seminar. October, 2016. Atlanta, GA, USA.

"SV2C and Parkinson's disease". Emory Center for Neurodegenerative Disease seminar. January, 2016. Atlanta, GA, USA.

"2C or not 2C: Characterizing the role of the synaptic vesicle glycoprotein 2C in Parkinson's disease". Emory Neuroscience Candidates' Ongoing Research (ENCORE) seminar. December, 2014. Atlanta, GA, USA.

Posters:

Dunn, A.R., O'Connell, K.M.S., Kaczorowski, C.C. Genetics, diet, and sex interact to modulate cognitive decline in Alzheimer's disease. Abstract submitted for a poster presentation at the annual Alzheimer's Association International Conference; 2020, July; virtual.

Dunn, A.R., Ouellette, A.R., Neuner, S.M., Jigang Zhang, Vivek Philip, O'Connell, K.M.S., Kaczorowski, C.C. Gene-by-environment regulation of Alzheimer's disease symptoms. Abstract submitted for a poster presentation at the annual Alzheimer's Association International Conference; 2019 July; Los Angeles, CA, USA.

Dunn, A.R., Ouellette, A.R., Neuner, S.M., Jigang Zhang, Vivek Philip, O'Connell, K.M.S., Kaczorowski, C.C. Gene-by-diet interactions modify symptoms of Alzheimer's disease. Abstract submitted for a poster presentation at the annual Society for Neuroscience meeting; 2018 November; San Diego, CA, USA.

Dunn, A.R., Ouellette, A.R., Neuner, S.M., O'Connell, K.M.S., Kaczorowski, C.C. Gene-by-diet interactions modify symptoms of Alzheimer's disease. Abstract submitted for a poster presentation at the annual Alzheimer's Association International Conference; 2018 July; Chicago, IL, USA.

Dunn, A.R., Ouellette, A.R., Neuner, S.M., O'Connell, K.M.S., Kaczorowski, C.C. Effects of diet and genetic background on Alzheimer's-related cognitive decline and metabolic dysfunction. Abstract submitted for a poster presentation at the Maine Chapter of the Society for Neuroscience annual meeting; 2017 November; Biddeford, ME, USA.

Dunn, A.R., Stout, K.A., Bernstein, A.I., Wang, M., Li, Y., Caudle, W.M., Miller, G.W. (2016, September). Disruption of the synaptic vesicle glycoprotein 2C (SV2C) in Parkinson's disease. Abstract submitted for a poster at the Dopamine 2016 meeting, Vienna, Austria.

Dunn, A.R., Stout, K.A., Wang, M., Li, Y., Cai, H., Caudle, W.M., Miller, G.W. (2015, October). Disruption of the synaptic vesicle glycoprotein 2C (SV2C) in Parkinson's disease. Abstract submitted for a poster at the annual meeting for the Society of Neuroscience, Chicago, IL, USA.

Dunn, A.R., Stout, K.A., Ozawa, M., Wang, M., Caudle, W.M., Miller, G.W. (2015, August). The synaptic vesicle glycoprotein 2C (SV2C) is disrupted in Parkinson's disease. Abstract submitted for a poster at the Catecholamines Gordon Research Conference & Seminar, Sunday River, ME, USA.

Dunn, A.R., Stout, K.A., Ozawa, M., Wang, M., Li, Y., Caudle, W.M., Miller, G.W. (2015, March). The role of synaptic vesicle glycoprotein 2C (SV2C) in Parkinson's disease. Abstract submitted for a poster at the annual meeting for the American Society of Neurochemistry, Atlanta, GA, USA.

Dunn, A.R., Stout, K.A., Ozawa, M., Wang, M., Li, Y., Guillot, T.S., Miller, G.W. (2014, November). Effects of genetic deletion of the synaptic vesicle glycoprotein 2C (SV2C). Abstract submitted for a poster at the annual meeting for the Society of Neuroscience, Washington, D.C, USA.

Luce, A.R., Lohr, K.M., Stout, K.A., Bernstein, A.I., Guillot, T.S., Wang, M-Z., Li, Y., Salahpour, A., Miller, G.W. (2013, November). Genetic manipulation of vesicular transport machinery mediates dopamine neurochemistry and release dynamics. Abstract submitted for a poster at the Annual Meeting for the Society for Neuroscience, San Diego, CA, USA.

Dunn, A.R., Stout, K.A., Lohr, K.M., Bernstein, A.I., Guillot, T.S., Yi, H., Wang, M-Z., Li, Y., Salahpour, A., Miller, G.W. (2013, October). Genetic manipulation of vesicle function as a potential mediator of neurotoxicant vulnerability. Abstract submitted for a poster at the Annual Meeting for the Southeast Chapter of the Society for Toxicology, Atlanta, GA, USA.

Luce, A.R., Thompson, R.R. (2010, July). Neuroendocrine influences on social behavior. Abstract submitted for the poster session at the annual Student Poster Symposium, Mount Desert Island Biological Laboratory, Salisbury Cove, ME, USA.

Luce, A.R., Dore, G.A. Robbins, M.A., Elias, M.F. (2010, April). Cholesterol and cognitive functioning: The Maine-Syracuse study. Abstract submitted for a poster at the annual Maine Biomedical Sciences Symposium, Salisbury Cove, ME, USA.

Luce, A.R., Robbins, M.A., Elias, M.F. (2009, Nov). Anxiety, depression and cognitive performance: The Maine-Syracuse study. Abstract submitted for a poster presented at the annual meeting of the Maine Psychological Association, Augusta, ME, USA.

Other training

September 2015—May 2017 Atlanta BEST (Broadening Experiences in Scientific Training) program trainee. NIH-funded program in career development and exploration for biomedical careers
Completed an internship in the Atlanta Clinical & Translational Science Institute (ACTSI): *Coordinating research design consultations for Atlanta-based scientists*

Fall 2014—May 2015: Undergraduate mentoring workshop and certificate, Emory University
Didactic and discussion-based training in mentorship in academic science led by Dr. Leah Roesch

Teaching and mentoring

2013 – present: daily mentor for undergraduate and post-baccalaureate research assistants

Mentees:

January 2013—May 2015: Minagi Ozawa, Emory University Neuroscience and Behavioral Biology undergraduate student (Class of 2015). Current position: Neuroscience Postdoctoral Fellow, Tufts University.

Recipient of travel grant to present at SfN (2014); recipient of an Emory summer research (SURE) fellowship (2013)

September 2014—September 2015: Emily Winokur, Emory University Neuroscience and Behavioral Biology undergraduate student (Class of 2017). Current position: Cognitive Science PhD student, University of California, San Diego

Recipient of summer research fellowship at University of California, San Diego (2015); Recipient of a Scholarly Inquiry and Research at Emory (SIRE) research grant (2015)

September 2015—May 2017: Rohan Dhamsania, Emory University Neuroscience and Behavioral Biology undergraduate student (Class of 2019). Current position: Medical student, Philadelphia College of Medicine

Recipient of a SURE fellowship, 2017; NIH IMSD Undergraduate research scholar (2016—2019)

May 2018—August 2018: Erin Merchant, Research Intern, University of Maine undergraduate student (Class of 2020).

September 2018—May 2020: Patty Doyle, Research Intern, The Jackson Laboratory. Current position: PhD student, University of Kentucky

May 2019—August 2019: Andrea Mirow, JAX Summer Student Program intern, Amherst College undergraduate student (Class of 2022).

March 2014—2017, annually: Poster judge for undergraduate Scholarly Inquiry and Research at Emory (SIRE) symposium. Evaluating undergraduate students' ability to effectively communicate their research, present data, and answer scientific questions related to their projects

- Summer 2015: Facilitator for Getting a Leg Up at Emory 2015 (GLUE2015)
Instructor and resource for Emory University first-year STEM majors to their transition into the University
- October 2014—October 2015: Student mentor for junior graduate students taking oral qualifying exams
Advising 3rd year graduate students in developing an NIH short-format style project proposal and administering mock oral proposal defenses
- August 2012 – December 2012: Teaching assistant for Introductory Neurobiology
Developing and leading weekly discussion sections and review for 10-20 undergraduate students; developing exam questions and grading exams
- 2009—2010: Tutor for introductory biology, chemistry, and psychology courses, UMaine Tutor Program and Residence Life Student Tutor Program
Developing weekly review materials and lessons for small groups of undergraduate students

Science outreach

- 2019: Downeast Public Health Council and Maine Centers for Disease Control
Presented on ongoing research efforts in aging and Alzheimer's disease at the Jackson Laboratory to establish a working relationship with the Downeast Public Health Council for the CDC's Healthy Brain Initiative
- 2019: Alzheimer's Awareness Fundraiser, Ellsworth, ME
Keynote speaker: Presented ongoing research to a public audience attending an Alzheimer's Awareness fundraiser organized by Cahoon Care Associates
- 2019: Dementia Educational Symposium, Bar Harbor, ME
Outreach presenter: Presented a scientific talk to a lay audience attending the Dementia Educational Symposium sponsored by the Birch Bay Retirement Village and the LeadingAge Aging advocacy group.
- 2018: Dementia Education Conference, Uncasville, CT
Outreach presenter: Presented a scientific talk to a lay audience attending the Dementia Education Conference sponsored by the Alzheimer's Association Connecticut Chapter.
- 2018: DNA Day volunteer, Southwest Harbor, ME
Outreach presenter: Leading educational presentations and activities to educate local middle school students about genetics, genomics, and inheritance
- 2018—present, annually: Maine State Science Fair judge
Evaluating high school students' science fair projects, ability to effectively communicate their background knowledge, research, interpretation of results, and answer questions and speculate about future directions related to their projects.
2019, 2020: Lead judge for the Social and Behavioral Sciences section
- 2013—2015, annually: Atlanta Chapter for the Society of Neuroscience (ACSFN) BrainBee, Atlanta, GA
2013-14, *Logistics Coordinator:* planning and execution of the annual BrainBee, a neuroscience competition for local high school students supported by ACSfN.
- 2012—2016, annually: Atlanta Chapter for the Society of Neuroscience (ACSFN) Brain Awareness Month, Atlanta, GA
Outreach presenter: Developing lessons and conducting educational presentations and activities to educate local elementary and middle school students about neuroscience
- June 2013: Udall Center Community Event for Parkinson's disease patients, Atlanta, GA
Volunteer: Participated in patient-researcher conversations; assistance with event coordination
- November 2013: Alzheimer's Disease Research Center (ADRC) fundraising event, Atlanta, GA
Volunteer: Assisted with day-of logistics for an event that facilitates patient-researcher as well as donor-researcher dialogues

Service and leadership

2020: Review Editor for *Neurodegeneration*, specialty section of *Frontiers in Neuroscience*, *Frontiers in Neurology* and *Frontiers in Psychiatry*

2020: Membership committee for the International Behavioural and Neural Genetics Society

2020: Reviewer for *eNeuro Journal*

2019—present: Reviewer for *Nutritional Neuroscience Journal*

2019—present: Reviewer for *Behavioral Brain Research Journal*

2019: Reviewer for *Behavioral and Brain Functions Journal*

2019: Program committee for the annual Genes, Brain and Behaviour meeting (Edinburgh, Scotland)

2019—present: Application reviewer for the highly selective JAX Summer Student Program

2018: Reviewer for *Journal of Neuroscience Research Journal*

2018: Reviewer for *Genes, Brain and Behaviour Journal*

2015—2017: Student representative for Emory Neuroscience Executive Committee

2014: Coordinator of mock qualifying exams, Emory Neuroscience Program

2014—2015: Emory Neuroscience Candidates' Ongoing Research (ENCORE) seminar Coordinator

Professional memberships and other activities

2019: Organized and chaired a session at the annual Genes, Brain and Behaviour meeting (Edinburgh, Scotland)

“Gene-by-environment interactions in brain function and behavior”

2018—present: International Behavioral and Neural Genetics Society

2011—present: Phi Beta Kappa honors society

2010—present: Society for Neuroscience

2010—present: Psi Chi honors society in Psychology (2010: Vice-President of Research for the University of Maine chapter)