



ANNA MARIE BUCHANAN CORKILL, PHD

annamarie@corkill.us | 256-694-8686 | Birmingham, AL 35209 | www.annamarie-corkill.com

Summary

Dedicated, responsible, and energetic integrative researcher specializing in neuroscience and analytical chemistry. I believe that collaboration across fields is vital for solving complex problems. Key strengths include written and verbal communication, strong work ethic, creative problem solving, and strong leadership skills. Expertise include:

- Electroanalytical Techniques
- Animal Handling and Behavior
- Stereotaxic Neurosurgery
- Communication Skills

Education

2021 – May 2024	Postdoctoral Trainee	University of Alabama at Birmingham
2016 – 2021	Ph.D. in Biomedical Science (concentration in Neuroscience)	University of South Carolina
2011 – 2016	B.S. in Chemistry	Auburn University

Skills Overview

Animal Surgery and Care Skilled in survival and non-survival mouse stereotaxic neurosurgery (brain regions including the striatum, NAc, Hipp, SNc, PH, and lateral septum) • viral injections • animal husbandry • rodent behavior (including open field test, tail suspension test, forced swim test, elevated zero maze, conditioned place preference)

Analytical Skills Skilled in fast-scan cyclic voltammetry • fast-scan controlled adsorption voltammetry • amperometry • flow injection analysis • microelectrode fabrication and surface modifications

Cell and Molecular Skills Cell and tissue culture • western analysis • flow cytometry

Research Experience

University of Alabama at Birmingham | *Postdoctoral Scholar with Dr. Aurelio Galli*

- Study into the effect of the GLPr agonist semaglutide and GIP on dopamine neurochemistry in the lateral septum following cocaine administration.
- Investigation of alterations in the gut microbiome and neuronal activity of a mouse model with autism spectrum disorder associated DAT mutations (T356M).
- Investigation into the dopamine transporter (DAT) and tyrosine hydroxylase (TH) expression present on immune populations in the spleen in response to high fat, high fructose diet.

University of South Carolina | *Graduate Research Assistant with Dr. Parastoo Hashemi*

- Characterization of *in vivo* serotonin dynamics after antidepressant administration in healthy animals.
- Optimization of fast-scan cyclic voltammetric serotonin detection *in vivo* to improve electrode sensitivity.
- Investigation of the neurochemistry underlying the non-motor symptoms of Parkinson's Disease
- Detected and analyzed Cu(II) ion neurotransmission *in vivo* using fast-scan cyclic voltammetry.

Auburn University | Undergraduate Research Assistant with Dr. Rajesh Amin

- Investigated the role of potential transcriptional targets that selective PPAR-gamma agonism regulates to improve memory deficits and pathology in a 3xTG-Ad mouse model.

Fellowships

2022 – May 2024 Postdoctoral Fellowship in Obesity Research (NIH T32DK062710)

Teaching Experience

2019	CHEM112	General Chemistry II, Recitation, University of South Carolina Instructor: Dr. Parastoo Hashemi
2018	CHEM321	Quantitative Analysis, Lab/Recitation, University of South Carolina Instructor: Dr. Amy Taylor-Perry
2017	CHEM112	General Chemistry II, Laboratory, University of South Carolina Instructor: Dr. Amy Taylor-Perry
2016	CHEM102	Fundamental Chemistry II, Lab, University of South Carolina Instructor: Dr. Daniel Freeman

Honors and Awards

2018	USC Graduate School Travel Award (For travel to Monitoring Molecules in Neuroscience 2018)
2018	USC School of Medicine Biomedical Program Travel Award (For travel to Monitoring Molecules in Neuroscience 2018)
2011 - 2015	Auburn University Founders Scholarship

Activities and Professional Affiliations

2018- 2021	Society for Electroanalytical Chemistry, member
2018- 2021	American Chemical Society, member
2018 - 2020	Duke TIPP teaching instructor (bi-annual class on neuroscience)

Publications

- Buchanan, A.M.**, Mena, S., Choukari, I., Vasa, A., Crawford, J., Fadel, J., Maxwell, N., Reagan, L., Cruikshank, A., Best, J., Nijhout, F., Reed, M., Hashemi, P. (2023). Serotonin as a Biomarker of Toxin-Induced Parkinsonism. *Mol. Med.* *Accepted*
- Zanella, D., Smith, N.K., Hardaway, J.A., **Buchanan, A.M.**, Mullins, C.H., Galli, A., and Carter, A.M. (2023). Bile acids modulate reinstatement of cocaine conditioned place preference and accumbal dopamine dynamics without compromising appetitive learning. *Sci Rep* *13*, 13359. [10.1038/s41598-023-40456-3](https://doi.org/10.1038/s41598-023-40456-3)
- Witt, C.E., Mena, S., Holmes, J., Hersey, M., Buchanan, A.M., Parke, B., Saylor, R., Honan, L.E., Berger, S.N., Lumberras, S., et al. (2023). Serotonin is a common thread linking different classes of antidepressants. *Cell Chem Biol* *30*, 1557-1570.e1556. [10.1016/j.chembiol.2023.10.009](https://doi.org/10.1016/j.chembiol.2023.10.009)
- Gopinath, A., Mackie, P., Hashimi, B., **Buchanan, A.M.**, Smith, A.R., Bouchard, R., Shaw, G., Badov, M., Saadatpour, L., Gittis, A., et al. (2022). DAT and TH expression marks human Parkinson's disease in peripheral immune cells. *npj Parkinson's Disease* *8*, 72. [10.1038/s41531-022-00333-8](https://doi.org/10.1038/s41531-022-00333-8).

5. Hersey, M., Reneaux, M., Berger, S.N., Mena, S., **Buchanan, A.M.**, Ou, Y., Tavakoli, N., Reagan, L.P., Clopath, C., and Hashemi, P. (2022). A tale of two transmitters: serotonin and histamine as in vivo biomarkers of chronic stress in mice. *Journal of Neuroinflammation* 19, 167. 10.1186/s12974-022-02508-9.
6. **Buchanan, A.M.**, Parke, B., and Hashemi, P. (2021). Experimental Methods for Investigating Uptake 2 Processes In Vivo. *Handb Exp Pharmacol* 266, 101-117. 10.1007/164_2021_452.
7. Best, J., **Buchanan, A.M.**, Nijhout, H.F., Hashemi, P., and Reed, M.C. (2021). Mathematical Models of Serotonin, Histamine, and Depression. In *Serotonin and the CNS*, O. Berend, ed. (IntechOpen), pp. Ch. 1. 10.5772/intechopen.96990.
8. Holmes, J., Witt, C.E., Keen, D., **Buchanan, A.M.**, Batey, L., Hersey, M., and Hashemi, P. (2021). Glutamate Electropolymerization on Carbon Increases Analytical Sensitivity to Dopamine and Serotonin: An Auspicious In Vivo Phenomenon in Mice? *Analytical Chemistry* 93, 10762-10771. 10.1021/acs.analchem.0c04316.
9. Ou, Y., **Buchanan, A.M.**, Witt, C.E., and Hashemi, P. (2019). Frontiers in Electrochemical Sensors for Neurotransmitter Detection: Towards Measuring Neurotransmitters as Chemical Diagnostics for Brain Disorders. *Anal Methods* 11, 2738-2755. 10.1039/c9ay00055k.
10. Saylor, R.A., Hersey, M., West, A., **Buchanan, A.M.**, Berger, S.N., Nijhout, H.F., Reed, M.C., Best, J., and Hashemi, P. (2019). In vivo Hippocampal Serotonin Dynamics in Male and Female Mice: Determining Effects of Acute Escitalopram Using Fast Scan Cyclic Voltammetry. *Front Neurosci* 13, 362. 10.3389/fnins.2019.00362.

Conference Presentations

Poster Presentations

- 2018 **Buchanan, A.M.**; Hashemi P. "In Vivo Fast-Scan Cyclic Voltammetry Analysis of Serotonergic Dysfunction in a Model of Parkinson's Disease," Monitoring Molecules in Neuroscience, Oxford, UK
- 2018 **Buchanan, A.M.**; Hashemi, P. "In Vivo Fast-Scan Cyclic Voltammetry Analysis of Serotonin in a Neurodegenerative Disease Model," Pittsburgh Conference and Expo, Orlando, FL
- 2018 **Buchanan, A.M.**; Hashemi, P. "In Vivo Fast-Scan Cyclic Voltammetry Analysis of Serotonin in a Neurodegenerative Disease Model," Discover USC, University of South Carolina, SC
- 2019 **Buchanan, A.M.**; Hashemi P. "In Vivo Voltammetric Analysis of Copper (II)," Discover USC, University of South Carolina, SC

Oral Presentations

- 2021 **Buchanan, A.M.**; Hashemi P. "Monoaminergic Dynamics in a Toxin-induced Model of Parkinson's Disease in Mice" Pittsburgh Conference and Expo, New Orleans, LA (virtual)
- 2020 **Buchanan, A.M.**; Hashemi P. "In Vivo Fast-scan Cyclic Voltammetry Analysis of Serotonin in a Neurodegeneration Model" Pittsburgh Conference and Expo, Chicago, IL
- 2019 **Buchanan, A.M.**; Hashemi P. "Voltammetric Detection of Copper In Vivo," Pittsburgh Conference and Expo, Philadelphia, PA

References

References available upon request.