CAITLIN ALAYNE MADISON

camadison@tamu.edu College Station, TX

EDUCATION

PhD	Texas A&M University	**4th year student**
MA	University of Houston-Clear Lake, Psych/Behavioral Neuroscience	**Dec. 2016**
	Thesis: *"The Effect of a Neuropeptide FF Receptor Subtype-Selective Compound on Morphine Tolerance"*	
BS	University of Houston-Clear Lake, Anthropology & Behavioral Science	**Dec. 2013**
AA	John C. Calhoun Community College, English	**Dec. 2009**

HONORS AND AWARDS

Love of Learning Award, Phi Kappa Phi Honor Society 2021
Merit-based award for continuing education & career advancement

Phi Kappa Phi Honor Society 2021
Merit-based honor society at the University level

Trainee Professional Development Award, Society for Neuroscience 2019
Merit-based grant for travel to the annual conference

Junior Scientist Fellowship, APAGS/Psi Chi 2019
Merit-based grant for first year project proposal

Saul Sells Research Excellence Award, Texas A&M 2019
Demonstrating excellence in research and commitment to scholarship

UHCL Alumni Scholarship, University of Houston-Clear Lake 2015 & 2016
Merit-based award for GPA and participation in extracurricular activities

Psi Chi Psychology Honor Society 2013
UHCL Chapter Treasurer ('14-'15)

Phi Theta Kappa Honor Society 2009
Merit-based honor society at the Community College level

RESEARCH EXPERIENCE

Texas A & M University, College Station, TX 2018-Present
Graduate Research Assistant
Advisor: Shoshana Eitan

- *Project 1*: Precipitating and worsening comorbid disorders with opioid use: Performing a battery of anxiety tests over a seventeen-week study using a mouse model aimed at understanding how opioid use can cause or worsen comorbid mental disorders. Molecular modulations in specific brain areas will be examined using qPCR
- *Project 2*: Developing bio-markers for objective diagnosis of OUD in humans. Employing non-invasive methodologies (such as metallic nanoparticles coupled with surface enhanced Raman scattering, SERS) for sensitive and longitudinal detection of disease-relevant biomolecules within the brain and the blood, and monitoring their modulation during the progression of disease development
- *Project 3*: Applying novel technologies for the packaging and administration of antagonist and partial agonists for managing opioid use disorder (OUD). Formulating nanoparticle (NP) packaging and testing the efficacy of ultra-long-lasting naloxone
- *Project 4*: Elucidating the role of the aryl hydrocarbon receptor (AhR) in depression, specifically focusing on the ability of selective AhR modulators to prevent and reverse depressive-like

behavior and the cellular/molecular mechanisms involved including immune regulation and altered tryptophan metabolism
- *Project 5*: Designing experiments to model the pharmacokinetics of gold-coated NPs to increase passage through blood-brain-barrier with future plans to utilize NP to deliver growth hormones for the treatment of Parkinsonian disease states
- *Mentorship*: Mentoring 4-8 undergraduate researchers per year, assisting with project development/experiment design and helping them to achieve their goals of entering careers in medicine, psychology, graduate school or research

Baylor College of Medicine, Houston, TX 2017-2018
Research Intern
- *Project*: Resting state functional connectivity in the habenula and striatum and detachment and negative affect as measured by the PID-5.
- I analyzed data from the MIND-MB project in coordination with the Menninger Clinic.

University of Houston-Clear Lake, Houston, TX 2013-2018
Research Assistant/Lab Manager
Advisors: David Malin & Christopher Ward
- *Projects*: See publications and poster presentations
- *Accomplishments*: Instituted and managed an animal handling habituation protocol which provided enrichment for the animals and experience for student assistants
- Assisted in designing and testing modules for XDA (Experimental Development Accelerator) under contract with Tietronix Software

Teaching Experience

Texas A&M University, College Station, TX Aug 2021-Present
Instructor, Psychological & Brain Sciences
- Courses taught: Sensation & Perception

Teaching Assistant
Advisors: Stephanie Payne & Jyotsna Vaid
- I redesigned and taught the lab portion of Research Methods for undergraduate juniors in which the students designed and carried out two studies and learned to write an APA-style paper to report their results

Advisor: Brandon Schmeichel
- I taught the lab portion of the statistics focused semester of Research Methods for undergraduate psychology majors

University of Houston-Clear Lake, Houston, TX May 2017-May 2018
Adjunct Professor, Psychology Dept.
- I taught Brain and Behavior, an online undergraduate course with 100 students, covering the following topics: neuroanatomy, neurophysiology, psychopharmacology, neurochemistry/physiology of mental health disorders, audition, olfaction/gustation, and vision; I developed and graded quizzes, exams, labs, and homework; revised syllabus to meet accreditation standards
- I taught Drugs and Behavior, an in person undergraduate course with 40 students, covering the following topics: pharmacokinetics/dynamics and behavioral effects of licit and illicit psychoactive substances, sociopolitical issues of drug use and abuse, efficacy of prevention and intervention programs

Teaching Assistant Aug 2016-Dec 2016
Advisor: Chris Ward
- I graded quizzes, labs, and exams for Brain and Behavior online course with 100 students

enrolled
- I conducted online and in-person study sessions with students

PUBLICATIONS

Eitan, S., **Madison, C.A.**, & Kuempel, J. (2021). The self-serving benefits of being a good host: A role for our micro-inhabitants in shaping opioids' function. *Neuroscience & Biobehavioral Reviews,* 127: 284-295.

Madison, C.A., Arora, M., Ravi Kumar, M.N.V., & Eitan, S. (2020). Novel oral nanoparticle formulation of sustained release naloxone with mild withdrawal symptoms in mice. *ACS Chemical Neuroscience, 11*(13): 1955-1964.

Madison, C.A., Wellman, P.J., Eitan, S. (2020). Response to opioids is dependent on sociability levels. *Behavioral Pharmacology, 31*: 293-307.

Madison, C.A., Wellman, P.J., & Eitan, S. (2020). Pre-exposure of adolescent mice to morphine results in stronger sensitization and reinstatement of conditioned place preference than pre-exposure to hydrocodone. *Journal of Psychopharmacology, 34*(7):771-777.

Madison, C. A., & Eitan, S. (2020). Buprenorphine: prospective novel therapy for depression and PTSD. *Psychological Medicine, 50*(6): 881-893. https://doi.org/10.1017/S0033291720000525

Malin, D.H., Henceroth, M., Elayoubi, J., Campbell, J.R., Anderson, A., Goyarzu, P., Izygon, J., **Madison, C.A.**, Ward, C.P., & Burstein, E.S. A subtype-specific neuropeptide FF receptor antagonist attenuates morphine and nicotine withdrawal syndrome in the rat. *Neuroscience Letters, 684*(2018), 98-103.

Malin, D. H, Henceroth, M., Izygon, J., Nghiem, D., Moon, W., Anderson, A. **Madison, C.**, Goyarzu, P., Ma, J., & Burstein, E. Reversal of morphine tolerance by a compound with NPFF receptor subtype-selective actions. *Neuroscience Letters, 584*(2015), 141-145.

Submitted:

Madison, C.A., Kuempel, J., Lee, G.A., Hillbrick, L., Jayaraman, A., Safe, S., Chapkin, R.S., & Eitan, S. 3,3'-Diindolylmethane and 1,4-dihydroxy-2-naphthoic acid prevent chronic mild stress induced depressive-like behaviors in female mice.

Chen, J., Yuan, M., **Madison, C.A.**, Eitan, S., Wang, & Y. Theoretical, numerical, and in vivo study of blood-brain barrier crossing of gold coated superparamagnetic iron oxide nanoparticles.

In preparation:

Madison, C.A., Vardeleon, N., Debler, R., Chapkin, R., & Eitan, S. The aryl hydrocarbon receptor, depression, and the gut-brain-immune axis (review).

GUEST LECTURES & INVITED TALKS

"Selective aryl hydrocarbon receptor modulators (SAhRMs) as a potential treatment for depression", Invited Talk, BRAIN Alliance Seminar, California State University, November 19, 2021

"Selective aryl hydrocarbon receptor modulators (SAhRMs) as a potential treatment for depression", Behavioral & Cellular Neuroscience Seminar, TAMU, November 2021

"Biopsychology", Invited Guest Lecture in *Introduction to Psychology*, TAMU, Fall 2021

"Learning Theories of Addiction", *Invited Guest Lecture in Learning*, TAMU, Spring 2021

"Structure of the Nervous System", Invited Guest Lecture in *Introduction to Behavioral & Cognitive Neuro*, TAMU Fall 2018, Fall 2019, Fall 2020, Spring 2021

POSTER PRESENTATIONS

Madison, C.A., Hillbrick, L., Garcia, C., Debler, R., Vardeleon, N., Lucio, A.D., Safe, S., Chapkin, R.S., & Eitan, S. Dietary AhR ligands as potential antidepressants. Poster presented at the 13th Annual Symposium TAMU-SfN 2021, December 9th, College Station, TX.

Madison, C.A., Hillbrick, L., Safe, S., Chapkin, R.S., & Eitan, S. Dietary AhR ligands as potential antidepressants. Poster presented at the 51st annual meeting of the Society for Neuroscience. 2021 Oct

8-11. Virtual online.

Madison, C.A., Chava, S.R., Wellman, P.J., Mabbott, S., & Eitan, S., Detecting individual differences in response to opioids using Raman spectroscopy. Poster presented at 1st annual Society for Neuroscience Global Connectome. 2021, January 11th, Virtual online.

Madison, C.A., Chava, S.R., Wellman, P.J., Mabbott, S., & Eitan, S., Detecting individual differences in response to opioids using Raman spectroscopy. Poster presented at 13th Annual Symposium TAMU-SfN 2020, December 3rd, College Station, TX.

Chava, S. R., **Madison, C.A.**, Wellman, P.J., Mabbott, S., & Eitan, S. Using Raman spectroscopy for the detection of opioid use disorders. Poster presented at the 2nd annual Texas A&M President's Excellence Fund Symposium 2020, September 28th, Virtual online.

Madison, C.A., Arora, M., Ravi Kumar, M. N. V., & Eitan, S. Ultra-long-lasting naloxone with mild withdrawal syndrome. Poster presented at the 29th annual meeting of the International Behavioral Neuroscience Society 2020, August 3rd, Virtual online.

Madison, C.A., Wellman, P.J., & Eitan, S. Role of sociability levels in the response to opioids. Poster presented at the 29th annual meeting of the International Behavioral Neuroscience Society 2020, August 3rd, Virtual online.

Madison, C.A., Wellman, P.J., & Eitan, S. Differential effects of various opioids and sociability levels on affect and anxiety-like states. Poster presented at the 12th Annual Symposium TAMU-SfN 2019, December 5th, College Station, TX.

Madison, C.A., Emery, M.A., Wellman, P.J., & Eitan, S. Differential effects of various opioids. Poster presented at the 50th annual meeting of the Society for Neuroscience. 2019 Oct 17-23.

Madison, C.A., Emery, M.A., Wellman, P.J., & Eitan, S. Differential effects of various opioids. Poster presented at the First Year Poster Presentation, Oct 2019; College Station, TX.

Madison, C.A., Emery, M.A., Wellman, P.J., & Eitan, S. Differential effects of various opioids. Poster presented at the 11th Annual Symposium TAMU-SfN 2019, April 5th, College Station, TX.

Malin, D. H., Elayoubi, J., Henceroth, M. M., Campbell, J. R., **Madison, C.**, & Ward, C.P. A subtype-selective neuropeptide FF receptor antagonist attenuates morphine withdrawal syndrome. Poster presented at the 47th annual meeting of the Society for Neuroscience. 2017 Nov 11-15; Washington, D.C.

Malin, D. H., Gadam, S., McGhiey, D. J., Aguilar, C. L., Campbell, J. R., Hughes, R. N., Castillo, L., Goyarzu, P., Burstein, E.S., & **Madison, C.A.** The 5HT2a antagonist Volinanserin attenuates spontaneous nicotine withdrawal syndrome in the rat. Poster presented at the 46th annual meeting of the Society for Neuroscience. 2016 Nov 12-16; San Diego, CA.

Henceroth, M., Campbell, J., Candelario, M., Aguilar, C., **Madison, C.**, Odom, E., Meriano, M., & Malin, D. Effect of gender and estrous cycle phase on nicotine withdrawal syndrome in the rat. Poster presented at the 45th annual meeting of the Society for Neuroscience. 2015 Oct 17-21; Chicago, IL.

Madison, C.A., McGhiey, D., Odom, E., Shahin, J., Singletary, C., & Ma, X. Professional vs. amateur pornography: Body appreciation and self-esteem. Poster presented at the 21st Student Conference for Research & Creative Arts. 2015 Apr 13-17; Houston, TX.

Bautista, J., Malin, D. H., Mathews, H., Nghiem, D., Izygon, J., Shahin, J., **Madison, C.**, McGhiey, D., & Ward, C.P. A minimally invasive method for the analysis of sleep/wake behavior in rats. Poster presented at 44th annual meeting of the Society for Neuroscience. 2014 Nov 15-19; Washington, D.C

Izygon, J., Nghiem, D., Shahin, J., McGhiey, D., **Madison, C.**, Masood, A., Henceroth-Chomiak, M., Srinivasarao, G., Malin, D.H., & Ward, C.P. The effects of sleep deprivation on pre and post-training in a one-trial discriminative learning task. Poster presented at 44th annual meeting of the Society for Neuroscience. 2014 Nov 15-19; Washington, D.C.

PROFESSIONAL EXPERIENCE

Bay Area Learning Center, Houston, TX 2017-2018
Private Tutor & Technology Instruction

- I tutored SAT, ACT, biology, anatomy & physiology, chemistry, geometry, algebra, human geography, English, writing, and study skills, and taught a PC skills and beginner programming class (Javascript) to a class of twenty students, grades 2-5.

Houston Tutorial Association, Houston, TX 2017-2018
Private Tutor

- I tutored PSAT, SAT, ACT, biology, chemistry, algebra, geography, and Spanish for high school, junior high, and elementary students.
- I helped students bring up failing grades to A's and B's.

University of Houston-Clear Lake, Houston, TX 2015-2016
Coordinator of Academic Records

- In addition to Records Clerk duties, I developed & updated web content, designed & ran reports & used data to improve daily processes. I sent mass communications using Blackboard Connect & PeopleSoft, troubleshot student & staff issues. I adjudicated student appeals in accordance with university policies & state & federal laws, and I coordinated two commencement ceremonies per year
- I successfully encouraged clerks to do extra digital archival work by creating a reward system based on number of documents scanned, and I designed five new forms to improve office services
- I created & conducted an improved training presentation for commencement workers which eliminated the need for three meetings

Records Clerk 2013-2015

- I maintained one-third of the university's records, worked with faculty & staff in other departments to create the course schedule, determined student eligibility for in-state tuition, maintained a working knowledge of federal & state privacy laws, trained coworkers & troubleshot student registration issues
- I assumed the duties of Senior Records Clerk four months after starting; I wrote fillable template responses for common student requests, saving time for each e-mail inquiry.

Wayne Wright, LLP, Houston, TX 2012-2013
Case Manager, Social Security Disability Dept.

- I prepared Social Security Disability cases from initial request to final appeal & hearing. I conducted regular client interviews, & collected information from healthcare providers. I also trained new case managers and organized office events.
- I created & implemented an improved filing system which saved case managers on average half an hour each day

Country Critters Grooming & Boarding, Alvin, TX 2011-present
Dog Groomer & Business Owner

- I groom dogs, manage inventory, bookkeep and maintain the client database.
- I helped build the shop out of shipping containers and rebuilt after it flooded during hurricane Harvey.

SERVICE & PROFESSIONAL DEVELOPMENT

Professional Development:

Academy for Future Faculty, TAMU, 2020-2021
Center for the Integration of Research, Teaching, & Learning, Level I Certificate, 2021
Optimize Your Grant Application, SFN 2019
Science Management, SFN 2019
Building a Neuroscience Career at a Teaching Focused Institution, SFN 2019
An Introduction to Evidence Based Undergraduate STEM Teaching, 2019
Mentoring Undergraduate Researchers Workshop, 2019

Service:

National High School Science Bowl, Regionals Moderator, 2021
Texas Junior Academy of Science, Finals Judge – Natural Sciences, 2021
Graduate & Professional Student Government Senator, 2021-present

- Scholarship Committee member & WISE representative, 2021-present

- Serving as Parliamentarian, 2021-present
- Serving as Election Commissioner, 2022

Women in Science & Engineering (WISE)

- Department Representative, Psychological & Brain Sciences, 2021-present
- GPSG Senator, 2021-present

Black Box Community Theater,

- Costume Co-Lead, "Once in a Lifetime", Spring 2022
- Costume Lead, "Much Ado About Nothing", Fall 2021

Texas A&M Student Research Week, Layman Judge, 2021
Army Educational Outreach Program eCybermission, Virtual Science Fair Judge, 2021
AP Research Mentor, Bryan ISD, 2020-2021
Team Rubicon Disaster Relief Volunteer, 2020-present
Texas State Science Fair Judge, Upper & Lower Divisions, 2019-2022
Hurricane Harvey Clean-Up, Houston, TX, 2017
Friends for Life Shelter, Volunteer Animal Care, 2015-2016
Psi Chi, UHCL Chapter Treasurer, 2014-2015
Houston ASPCA, Volunteer Animal Care, 2011-2012

Science Outreach:

Psychological & Brain Sciences, Grad School Q&A Panelist, 2020-2022
"Women in Science" Interview, Twitch Stream with ecologist "Hyena Jack", July 2021
Brain Day, neuroscience presentation to high school students 2021
Expand Your Horizons, neuroscience presentation to junior high girls, 2019

PROFESSIONAL & ACADEMIC AFFILIATIONS

International Behavioral Neuroscience Society, 2019-present
American Association of University Women, 2019-present
Women in Science and Engineering (WISE), 2019-present

- Serving as officer: GPSG Senator & Department Representative, 2021-present

Social & Affective Neuroscience Society, 2015- 2017
Society for Neuroscience, 2013-present

SKILLS & CERTIFICATIONS

UndocuAlly Training, George Mason University, 2021
Aggie Sustainability Alliance Champion, 2021-present
Basic Life Support-Healthcare Provider, AHA, 2018-present
Veterinary Assistant Certification, San Juan College, 2015
Psychological First Aid, Johns Hopkins University, 2014