DIONNET L BHATTI MAZO

PhD Candidate in Neuroscience, Harvard University

dbhatti@g.harvard.edu | Cambridge, MA | personal website | google scholar

EDUCATION

2019 - Present **PhD in Neuroscience**
Harvard University, Cambridge MA

2011-2015 **BS in Biology and Psychology**
University of Georgia, Athens GA

RESEARCH POSITIONS

2019 - Present **Graduate student**, Harvard Medical School, Department of Neurobiology
Advisors: Gord Fishell, PhD (2022-present) and Todd E. Anthony, PhD (2020-2022)

2017-2019 **Research assistant,** The Rockefeller University, Laboratory of Molecular and Cellular Neuroscience
Advisors: Paul Greengard, PhD and Yong Kim, PhD
Focus: Cellular and molecular basis of stress-induced behavioral adaptations

2015-2017 **Research technician**, Washington University in St. Louis, Department of Anesthesiology
Advisor: Michael Bruchas, PhD
Focus: Neural circuits and motivated behavior

2014-2015 **Undergraduate research assistant**, University of Georgia, Department of Psychology
Advisor: Philip V. Holmes, PhD
Thesis: *Acute galanin administration into the prelimbic cortex reduces expression of conditioned contextual threat and prevents threat-related plasticity in rats*

GRANTS, AWARDS, AND FELLOWSHIPS

2024 **Excellence in Service Award,** Harvard University Program in Neuroscience
2024-2025 **NIMH R36 Dissertation Grant Award** (R36MH136796):
Molecular and Functional Organization of Lateral Septum in Threat Processing
2022 - 2023 **NIMH Diversity R01 Supplement Award** (R01MH117421-04S1)
2021 **Selected attendee**, IBRO-RIKEN CBS Summer Program 2021, Japan (Virtual due to COVID19)
2020 **Travel Award**, International Behavioral Neuroscience Society Conference, Glasgow (Cancelled due to COVID19)
2019 - 2022 **NSF GRFP**, National Science Foundation Graduate Research Fellowship
2019 - 2022 **Neuroscience Scholar Program (NSP) Fellowship**, Society for Neuroscience
2019 - 2021 **Graduate Prize Fellowship**, Harvard University
2015 **CURO Research Scholar**, University of Georgia
2014 **Summer Undergraduate Research Fellowship**, New York University - Center for Neural Science; Neurobiology of Cognition Laboratory; PI: André Fenton
2014 **CURO Research Assistantship Award,** University of Georgia
2011-2015 **HOPE Scholarship**, Georgia Student Finance Commission
2011-2015 **Broad Prize Scholarship**, The Broad Foundation

MEMBERSHIPS AND SERVICE

2024 **Symposium Chair,** Molecular and functional organization of the lateral septum, Society for Neuroscience
2021 - 2023 **Co-president**, Underrepresented Scholars in Neuroscience (USN), Harvard University
2020 - 2022 **Diversity and Inclusion Core Committee Member**, Dept. of Neurobiology, Harvard Medical School
2021 - 2022 **Graduate Student Interviewer**, Program in Neuroscience Admissions Committee, Harvard University
2020 **Ad-hoc Reviewer**, Behavioural Brain Research
2020, 2021 **Reviewer**, Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) Conference
2020, 2021 **Member**, International Behavioral Neuroscience Society (IBNS)
2019 – Present **Executive Board Member**, Underrepresented Scholars in Neuroscience (USN), Harvard University
2014 – Present **Member**, Society for Neuroscience (SfN)

TEACHING AND MENTORSHIP

Mentees:

Marc Berger; Undergraduate research assistant, Tufts University (June 2024 - Present)
Amelie Kinsey; Co-op research assistant, Northeastern University (June 2024 - Present)
Alexandra Lewis; Co-op research assistant, Northeastern University (January - June 2024)
Lala Mkhiryan; Research assistant/Lab manager, Boston Children's Hospital (2022-2023)
Nicolas Pena; Rotating Graduate Student, Harvard Medical School/Boston Children's Hospital (Summer 2022)
Amanda Pasqualini; Research assistant, Boston Children's Hospital (2021-2023)
Beatrice Castillo-Sahugan; Undergraduate, Harvard College (2021-2022)
Hannah Oden-Brunson; Undergraduate, Washington University (2016-2017)
Kate Kimbell; Undergraduate, Washington University (2016-2017)

Teaching:

Fall 2021, 2022, 2023, 2024 *Teaching Fellow,* Neurobiology of Behavior (Neuro80), Harvard College

PUBLICATIONS IN PREPARATION (# indicates corresponding author)

1. **Bhatti Mazo DL#**, Pasqualini AL, Brito SI, Wu SJ, Levitt P, Anthony TE, Fishell G. Feature-specific threat coding in lateral septum guides defensive decision-making. #corresponding author
2. **Bhatti Mazo DL#**, Brito SI, Pasqualini AL, Pena N, Fishell G. A hypothalamic-septal circuit signals aversive salience to limit exploration. #corresponding author

LEAD AUTHOR PUBLICATIONS (* indicates equal contribution)

2024 13. **Bhatti DL**, Jin J, Cheng J, McCabe K, Lee KW, Beradso C, Sinha S, Kim Y. Ahnak in the prefrontal cortex mediates behavioral correlates of stress resilience and rapid antidepressant-like action in mice. *Frontiers in Molecular Neuroscience*

2022 12. **Bhatti DL**, Medrihan L, Chen MX, Jin J, McCabe KA, Wang W, Azevedo EP, Ledo JH, Kim Y. Molecular and cellular adaptations in hippocampal parvalbumin neurons mediate behavioral responses to chronic social stress. 2022;15. *Frontiers in Molecular Neuroscience*

2021 11. Luskin AT*, **Bhatti DL***, Mulvey B, Pedersen CE, Girven KS, Oden-Brunson H, Kimbell K, Blackburn T, Sawyer A, Gereau IV RW, Dougherty JD, Bruchas MR. Extended amygdala-parabrachial circuits alter threat assessment and regulate feeding. 2021 Feb 26;7(9):eabd3666. * equal contribution *Science Advances*

2018 10. Lu L*, Gutruf P*, Xia L*, **Bhatti DL*,** Wang X, Vazquez-Guardado A, Ning X, Shen X, Sang T, Ma R, Pakeltis G. Wireless optoelectronic photometers for monitoring neuronal dynamics in the deep brain. 2018 Feb 13;115(7):E1374-83. * equal contribution *PNAS*

PUBLICATIONS (other)

2019 9. Hooversmith JM, **Bhatti DL**, Holmes PV. Galanin administration into the prelimbic cortex impairs consolidation and expression of contextual fear conditioning. 2019 Dec 16;375:112160. *Behavioural Brain Research*

8. Parker KE*, Pedersen CE*, Gomez AM*, Spangler SM, Walicki MC, Feng SY, Stewart SL, Otis JM, Al-Hasani R, McCall JG, Sakers K, **Bhatti DL,** Copits BA, Gereau RW, Jhou T, Kash TJ, Dougherty JD, Stuber GD, Bruchas MR. A paranigral VTA nociceptin circuit that constrains motivation for reward. 2019 Jul 25;178(3):653-71. *Cell*

7. Massaly N, Copits BA, Wilson-Poe AR, Hipólito L, Markovic T, Yoon HJ, Liu S, Walicki MC, **Bhatti DL**, Sirohi S, Klaas A, Walker BM, Neve R, Cahill CM, Shoghi KI, Gereau RW, McCall JG, Al-Hasani R, Bruchas MR, Moron JA. Pain-induced negative affect is mediated via recruitment of the nucleus accumbens kappa opioid system. 2019 May 8;102(3):564-73. *Neuron*

2018 6. Mulvey B, **Bhatti DL,** Gyawali S, Lake AM, Kriaucionis S, Ford CP, Bruchas MR, Heintz N, Dougherty JD. Molecular and functional sex differences of noradrenergic neurons in the mouse locus coeruleus. 2018 May 22;23(8):2225-35. *Cell Reports*

2017 5. McCall JG*, Siuda ER*, **Bhatti DL,** Lawson LA, McElligott ZA, Stuber GD, Bruchas MR. Locus coeruleus to basolateral amygdala noradrenergic projections promote anxiety-like behavior. Elife. 2017 Jul 14;6:e18247. *eLife*

2016 4. Park SI, Shin G, McCall JG, Al-Hasani R, Norris A, Xia L, Brenner DS, Noh KN, Bang SY, **Bhatti DL**, Jang KI, Kang SK, Mickle AD, Dussor G, Price TJ, Gereau RW, Bruchas MR, Rogers JA. Stretchable multichannel antennas in soft wireless optoelectronic implants for optogenetics. 2016 Dec 13;113(50):E8169-77. *PNAS*

3. Seo DO*, Funderburk SC*, **Bhatti DL**, Motard LE, Newbold D, Girven KS, McCall JG, Krashes M, Sparta DR, Bruchas MR. A GABAergic projection from the centromedial nuclei of the amygdala to ventromedial prefrontal cortex modulates reward behavior. 2016 Oct 19;36(42):10831-42. *Journal of Neuroscience*

2. Siuda ER, Al-Hasani R, McCall JG, **Bhatti DL**, Bruchas MR. Chemogenetic and optogenetic activation of gαs signaling in the basolateral amygdala induces acute and social anxiety-like states. 2016 Jul;41(8):2011-23. *Neuropsycho-pharmacology*

2015 1. Simone J, Bogue EA, **Bhatti DL,** Day LE, Farr NA, Grossman AM, Holmes PV. Ethinyl estradiol and levonorgestrel alter cognition and anxiety in rats concurrent with a decrease in tyrosine hydroxylase expression in the locus coeruleus and brain-derived neurotrophic factor expression in the hippocampus. 2015 Dec 1;62:265-78. *Psychoneuro-endocrinology*

CONFERENCE PRESENTATIONS (only includes national and international conferences)

8. D.L. Bhatti Mazo (2024). Feature-specific threat coding in lateral septum determines defensive action. Talk, Society for Neuroscience, Chicago.
6. D.L. Bhatti and T.E. Anthony (2021). Experience-dependent encoding of threat stimuli by lateral septum Crfr2 neurons. Virtual Poster, IBRO-Riken CBS Summer Program, Tokyo, Japan. (Virtual due to COVID19)
6. D.L. Bhatti, A. Luskin, ... , R.W. Gereau, J.D. Dougherty, M.R. Bruchas. (2019). Extended amygdala-parabrachial circuits alter threat assessment and control feeding. Poster, Society for Neuroscience Diversity Session, Chicago.
5. D.L. Bhatti A. Luskin, C.E. Pedersen, K. Kimbel, H. Oden-Brunson, R.W. Gereau, M.R. Bruchas. (2018). Extended amygdala-parabrachial circuits alter threat perception and feeding behavior. Poster, Society for Neuroscience, San Diego.
4. D.L. Bhatti, L. Lu, L. Xia, P. Gutruf, J.A. Rogers, M.R. Bruchas (2016). Wireless photometry for in vivo behavioral studies of neural circuit function. BRAIN Initiative Investigators Meeting, Bethesda, MD.
3. D.L. Bhatti, M.R. Bruchas (2016). The role of extended amygdala input to the locus coeruleus in motivated behaviors. Poster, Society for Neuroscience, San Diego.
2. D.L. Bhatti, J.M. Smith, P.V. Holmes. (2015). Galanin administration intra-vmPFC suppresses expression of conditioned contextual fear and modulates plasticity during fear extinction. Poster, Society for Neuroscience, Chicago.
1. D.L. Bhatti, J. Simone, P.V. Holmes (2014). Ethinyl Estradiol and Levonorgrestrel Impair Novel Object Recognition Memory in Female Rats. Poster, Southeast Neuroscience Conference, Augusta, GA.

REFERENCES

Gordon Fishell, PhD, Professor of Neurobiology
Department of Neurobiology, Harvard Medical School
Gordon_Fishell@hms.harvard.edu

Bernardo Sabatini, MD, PhD, Alice and Rodman W. Moorhead III Professor of Neurobiology
Department of Neurobiology, Harvard Medical School
Bernardo_Sabatini@hms.harvard.edu

Bradford Lowell, MD, PhD, Professor of Medicine
BIDMC, Harvard Medical School
blowell@bidmc.harvard.edu

Thomas Schwarz, PhD, Professor of Neurobiology and Neurology
Harvard Medical School and Boston Children's Hospital
thomas.schwarz@childrens.harvard.edu

BIBLIOGRAPHY (for research summary)

1. Spiegel, E. A., Miller, H. R. & Oppenheimer, M. J. Forebrain and rage reactions. *Journal of Neurophysiology* **3**, 538–548 (1940).
2. Ramirez, J. M., Salas, C. & Portavella, M. Offense and Defense after Lateral Septal Lesions in Columba Livia. *International Journal of Neuroscience* **41**, 241–250 (1988).
3. Anthony, T. E. *et al.* Control of Stress-Induced Persistent Anxiety by an Extra-Amygdala Septohypothalamic Circuit. *Cell* **156**, 522–536 (2014).
4. Hashimoto, M. *et al.* Lateral septum modulates cortical state to tune responsivity to threat stimuli. *Cell Reports* **41**, 111521 (2022).
5. Valentino, R. J. & Van Bockstaele, E. Opposing regulation of the locus coeruleus by corticotropin-releasing factor and opioids. *Psychopharmacology* **158**, 331–342 (2001).
6. Holbrook, T. L., Galarneau, M. R., Dye, J. L., Quinn, K. & Dougherty, A. L. Morphine Use after Combat Injury in Iraq and Post-Traumatic Stress Disorder. *New England Journal of Medicine* **362**, 110–117 (2010).
7. Henckens, M. J. A. G., Deussing, J. M. & Chen, A. Region-specific roles of the corticotropin-releasing factor–urocortin system in stress. *Nat Rev Neurosci* **17**, 636–651 (2016).
8. Furlanis, E. *et al.* An enhancer-AAV toolbox to target and manipulate distinct interneuron subtypes. 2024.07.17.603924 Preprint at https://doi.org/10.1101/2024.07.17.603924 (2024).
9. Wang, H. *et al.* A tool kit of highly selective and sensitive genetically encoded neuropeptide sensors. *Science* **382**, eabq8173 (2023).
10. Dong, C. *et al.* Unlocking opioid neuropeptide dynamics with genetically encoded biosensors. *Nat Neurosci* **27**, 1844–1857 (2024).
11. Wang, L. *et al.* A high-performance genetically encoded fluorescent indicator for in vivo cAMP imaging. *Nature Communications* **13**, 5363 (2022).
12. Massengill, C. I., Day-Cooney, J., Mao, T. & Zhong, H. Genetically encoded sensors towards imaging cAMP and PKA activity *in vivo*. *Journal of Neuroscience Methods* **362**, 109298 (2021).
13. Reid, C. M. *et al.* Multimodal classification of neurons in the lateral septum. 2024.02.15.580381 Preprint at https://doi.org/10.1101/2024.02.15.580381 (2024).
14. Xie, Z. *et al.* Mechanically evoked defensive attack is controlled by GABAergic neurons in the anterior hypothalamic nucleus. *Nat Neurosci* **25**, 72–85 (2022).
15. Mongeau, R., Miller, G. A., Chiang, E. & Anderson, D. J. Neural Correlates of Competing Fear Behaviors Evoked by an Innately Aversive Stimulus. *J. Neurosci.* **23**, 3855–3868 (2003).
16. Stagkourakis, S. *et al.* A neural network for intermale aggression to establish social hierarchy. *Nat Neurosci* **21**, 834–842 (2018).
17. Soden, M. E. *et al.* Genetic Isolation of Hypothalamic Neurons that Regulate Context-Specific Male Social Behavior. *Cell Reports* **16**, 304–313 (2016).