
Present Position

Assistant Professor
The Jackson Laboratory
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Bar Harbor, ME 04609
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[Lab website](#); [Google Scholar](#)

Research Interests

We use experimental approaches to study how cortical circuits support adaptive behaviors. Current work is focused on investigating the cell types and synapses in frontal cortex using neuroanatomic, chemogenetic, and genetic approaches. Previous work and ongoing interest in how these same cortical circuits are adversely affected by aging and Alzheimer's disease.

Education

2001-2005 University of Colorado-Boulder. B.A., Psychology/Biology
2007-2012 Icahn School of Medicine at Mt. Sinai; Ph.D., Department of Neuroscience
Advisor: Dr. John Morrison

Positions

2019–present Assistant Professor, The Jackson Laboratory, Bar Harbor, ME
2019–present Visiting Scientist at Janelia Research Campus/HHMI
2015–2019 Research Scientist, Janelia Research Campus/HHMI, Ashburn, VA
Advisor: Dr. Nelson Spruston
2012–2015 Postdoctoral Fellow, Janelia Research Campus/HHMI, Ashburn, VA
Advisor: Dr. Nelson Spruston
2011 Lecturer, Department of Neuroscience, Icahn School of Medicine at Mount Sinai, New York, NY
2010 Teaching assistant, Department of Neuroscience, Icahn School of Medicine at Mount Sinai, New York, NY
2005–2007 Research Technician, The Rockefeller University, New York, NY
Advisor: Dr. Bruce McEwen
2004–2005 Undergraduate Research Assistant, University of Colorado Boulder, Department of Psychology and Center for Neuroscience, Boulder, CO
Advisor: Dr. Linda Watkins

Fellowships, Awards, Research Funding

2021-present Director's Innovation Award from The Jackson Laboratory
2012-2019 Internally funded by HHMI; Janelia Research Campus does not allow funding from outside sources.
2010–2011 Awarded Phillip Hausfeld Memorial Scholarship Award in the Neurosciences
2009–2011 Ruth L. Kirschstein National Research Service Awards F31 Predoctoral Fellowship from the National Institute of Aging (AG034794) at Icahn School of Medicine at Mount Sinai, New York, NY
2004–2005 Awarded Undergraduate Research Opportunities Program Fellowship via HHMI at CU-Boulder

Erik B. Bloss

Curriculum Vitae, 2021

Teaching Activities

2021	Lecturer, University of Maine Graduate Program, Orono, ME
2011	Lecturer, Department of Neuroscience, Icahn School of Medicine at Mount Sinai, New York, NY
2010	Teaching assistant, Department of Neuroscience, Icahn School of Medicine at Mount Sinai, New York, NY

Professional Activities and Affiliations

Recent Invited Talks:

- 2017 European Institute for Theoretical Neuroscience
- 2017 Society for Neuroscience Nanosymposium
- 2017 Gordon Research Conference
- 2016 Society for Neuroscience Minisymposium

ad hoc reviewer for *Cerebral Cortex*, *eLife*, *Endocrinology*, *eNeuro*, *Frontiers in Neuroscience*, *Journal of Comparative Neurology*, *Journal of Neuroscience*, *Nature Neuroscience*, *Neurobiology of Aging*, *Neuroendocrinology*

Memberships:

- The Jackson Laboratory Center for Aging and Alzheimer's Disease
- The Jackson Laboratory for Addiction Biology
- 2005–present Member, Society for Neuroscience

Peer-reviewed Journal Publications (most recent first)

1. Graham KG, Spruston N, **Bloss EB**. Hippocampal and thalamic afferents form distinct synaptic microcircuits in the mouse infralimbic frontal cortex. *Cell Rep*, Oct 19;37(3):109837, 2021
2. **Bloss EB**, Hunt DL. Revealing the synaptic hodology of mammalian neural circuits with multiscale neurocartography. *Frontiers of Neuroinformatics*, 2019 Jul 30;13:52. doi: 10.3389/fninf.2019.00052. eCollection 2019.
3. **Bloss EB**, Cembrowski MS, Karsh B, Colonell J, Fetter RD, Spruston N. Single excitatory axons form clustered synapses onto CA1 pyramidal cell dendrites. *Nature Neuroscience*, Mar;21(3):353-363, 2018.
4. **Bloss EB**, Cembrowski MS, Karsh B, Colonell J, Fetter R, and Spruston N. Structured dendritic inhibition supports branch-selective integration in CA1 pyramidal cells. *Neuron*, 89(5):1016-30, 2016.
5. Milstein AD, **Bloss EB**, Dilly GA, Zemelman BV, and Magee JC. Inhibitory Gating of Input Comparison in the CA1 Microcircuit. *Neuron*, 87(6):1274-89, 2015. 87(6):1274-89, 2015.
6. Viswanathan S, Williams ME, **Bloss EB**, Stasevich TJ, Speer CM, Nern A, Pfeiffer BD, Hooks BM, Li WP, English BP, Tian T, Henry GL, Macklin JJ, Patel R, Gerfen CR, Zhuang X, Wang Y, Rubin GM, and Looger LL. High-performance probes for light and electron microscopy. *Nature Methods*, 12(6):568-76, 2015.
7. McCall T, Weil ZM, Nacher J, **Bloss EB**, El Maarouf A., Rutishauser U, McEwen BS. Depletion of polysialic acid from neural cell adhesion molecule (PSA-NCAM) increases CA3 dendritic arborization and increases vulnerability to excitotoxicity. *Exp Neurol*. 241:5-122013
8. Graves AR, Moore SJ, **Bloss EB**, Mensch B, Kath WL, and Spruston N. Hippocampal pyramidal neurons comprise two distinct cell types that are countermodulated by metabotropic receptors. *Neuron*, 76(4):776-89, 2012.

Erik B. Bloss

Curriculum Vitae, 2021

9. Ohm DT*, **Bloss EB***, Janssen WG, Dietz KC, Wadsworth S, Lou W, Gee NA, Lasley BL, Rapp PR, and Morrison JH. Clinically relevant hormone treatments fail to induce spinogenesis in prefrontal cortex of aged female rhesus monkeys. *J Neurosci* 32(34):11700-11705, 2012. (*co-first authors).
10. **Bloss EB**, Puri R, Yuk FJ, Punsoni M, Hara Y, Janssen WG, McEwen BS, and Morrison JH. Morphological and molecular changes in aging rat prelimbic prefrontal cortical synapses. *Neurobiology of Aging*, 34(1):200-210, 2012.
11. **Bloss EB**, Janssen WG, Ohm DT, Yuk FJ, Wadsworth S, Saardi KM, McEwen BS, and Morrison JH. Evidence for reduced experience-dependent dendritic spine plasticity in the aging prefrontal cortex. *J Neurosci*, 31(21):7831–9, 2011.
12. Karatsoreos IN, Bhagat SM, **Bloss EB**, Morrison JH, McEwen BS. Disruption of circadian clocks has ramifications for metabolism, brain and behavior. *Proc. Natl. Acad. Sci. USA*, 108(4):1657-62, 2011.
13. Bozdagi O, Wang XB, Nikitczuk JS, Anderson TR, **Bloss EB**, Radice GL, Zhou Q, Benson DL, Huntley GW. Persistence of coordinated long-term potentiation and dendritic spine enlargement at mature hippocampal CA1 synapses requires N-cadherin. *J Neurosci*. 28 (30):9984-9, 2010.
14. **Bloss EB**, Hunter RG. Hippocampal kainate receptors. *Vitam Horm*. 82:167-84, 2010.
15. **Bloss EB**, Janssen WG, McEwen BS, and Morrison JH. Interactive effects of stress and aging on structural plasticity in the prefrontal cortex. *J Neurosci*, 30(19): 6726-6731, 2010.
16. Hains LE, Loram LC, Weiseler JL, Frank MG, **Bloss EB**, Sholar P, Taylor FR, Harrison JA, Martin TJ, Eisenach JC, Maier SF, Watkins LR. Pain intensity and duration can be enhanced by prior challenge: initial evidence suggestive of a role of microglial priming. *J Pain*. 11(10):1004-14, 2010.
17. Hunter RG, **Bloss EB**, McCarthy KJ, McEwen BS. Regulation of the nicotinic receptor alpha7 subunit by chronic stress and corticosteroids. *Brain Res*. 1325:141-6, 2010.
18. Zhang M, Poplawski M, Yen K, Cheng H, **Bloss E**, Zhu X, Patel H, Mobbs CV. Role of CBP and SATB-1 in aging, dietary restriction, and insulin-like signaling. *PLoS Biol*. 7(11):e1000245, 2009.
19. Goldwater DS, Pavlides C, Hunter RG, **Bloss EB**, Hof PR, McEwen BS, Morrison JH. Structural and functional alterations to rat medial prefrontal cortex following chronic restraint stress and recovery. *Neuroscience*.164(2):798-808, 2009.
20. Hunter RG, Bellani R, **Bloss E**, Costa A, McCarthy K, McEwen BS. Regulation of kainate receptor subunit mRNA by stress and corticosteroids in the rat hippocampus. *PLoS One*. 4(1):e4328, 2009.
21. **Bloss EB**, Hunter RG, Waters EM, Munoz C, Bernard K, McEwen BS. Behavioral and biological effects of chronic S18986, a positive AMPA receptor modulator, during aging. *Exp Neurol*. 210(1):109-17, 2008.
22. Hunter RG, Bellani R, **Bloss E**, Costa A, Romeo RD, McEwen BS. Regulation of CART mRNA by stress and corticosteroids in the hippocampus and amygdala. *Brain Res*. 1152:234-40, 2007.

Book Chapters

Bloss EB, Morrison JH, McEwen BS. Stress and Aging: A Question of Resilience with Implications for Disease. From *The Handbook of Stress: Neuropsychological Effects on the Brain*, 349-366, Wiley-Blackwell Publishing, 2011.