

## CURRICULUM VITAE

### **Name:**

Mark Laubach, PhD

### **Appointment:**

Professor of Neuroscience (tenured)

### **Education:**

A.B., Biology & Chemistry, Lafayette College, Easton, Pennsylvania, 1989

M.A., Biology, Bryn Mawr College, Bryn Mawr, Pennsylvania, 1991

Ph.D., Neuroscience, Wake Forest University, Winston-Salem, North Carolina, 1997

### **Career/Academic Appointments:**

2016-present, Professor of Neuroscience with Tenure, American University

2014-2016, Associate Professor of Biology with Tenure, American University

2014-present, Member, Center for Behavioral Neuroscience at American University

2008-2014, Associate Professor of Neurobiology, Yale University School of Medicine

2007-2014, Associate Fellow, John B. Pierce Laboratory

2005-2014, Principal Investigator, Swartz Center for Theoretical Neurobiology at Yale

2002-2008, Assistant Professor of Neurobiology, Yale University School of Medicine

2001-2007, Assistant Fellow, John B. Pierce Laboratory

1997-2001, Postdoctoral fellow, Dept of Neurobiology, Duke University

### **Professional Honors and Recognition**

2020: Founding co-organizer of Gordon Research Conference on the Frontal Cortex (with Dr Alicia Izquierdo from UCLA)

2019: Reviewing Editor at eNeuro

2016: Scholar-Teacher of the Year, American University

2015: Associate Editor at the Journal of Neuroscience

2013: "Top reviewer" award from the Journal of Neuroscience

2013: Interviewed for Nature NeuroPod podcast about human and rat cognitive control signals

2012: Interviewed by NPR about effects of aging on prefrontal cortex

2002: American Federation for Aging Research, Young Investigator Award

1998: National Institute of Health, Postdoctoral National Research Service Award

1994: National Institute of Health, Predoctoral National Research Service Award

1991 – present: Member, Society for Neuroscience

### **Honors for Trainees Mentored by Dr Laubach**

2018: Linda Amarante, Cosmos Scholar, Cosmos Club Foundation

2016: Linda Amarante, Graduate Research Fellowship, National Science Foundation

2013: Benjamine Liu (Undergraduate), Rhodes Scholar

2012: Benjamine Liu (Undergraduate), Mellon Fellowship

2010: Marcelo Caetano, Postdoctoral Award, American Federation for Aging Research

2009: Faculty advisor for Nandakumar Narayanan, Donald B. Lindsley Prize (Best dissertation in behavioral neuroscience) by the Society for Neuroscience

2008: Nandakumar Narayanan (MD-PhD program), MD - PhD Thesis Award

2004: Faculty advisor for Nandakumar Narayanan (MD-PhD student), National Defense Science and Engineering Graduate Fellowship

### **Current Funding**

Agency: NSF  
I.D.# 1948181  
Title: “The OpenBehavior Project”  
PI: Mark Laubach, Ph.D.  
Total costs for project period: \$648,138  
Project period: 01/15/21 –12/31/23

Agency: NIH  
I.D.# 1R15DA046375-01A1  
Title: “Neuronal mechanisms of reward signaling in the prefrontal cortex”  
PI: Mark Laubach, Ph.D.  
Total costs for project period: \$386,100  
Project period: 09/30/18 – 08/31/21

### **Previous funding (last ten years)**

Agency: American University Faculty Research Support Grant  
Title: “Reward Signaling by the Prefrontal Cortex”  
PI: Mark Laubach, Ph.D.  
Total costs for project period: \$10,000  
Project period: 05/01/18 – 04/30/19

Agency: American University Faculty Research Support Grant  
Title: “Optogenetic and Chemogenetic Studies on the Rodent Frontal Cortex”  
PI: Mark Laubach, Ph.D.  
Total costs for project period: \$10,000  
Project period: 05/01/17 – 04/30/18

Agency: NSF  
I.D.# 1121147  
Title: “Neural basis of executive control in rodents” (renewal of NSF 0642951)  
PI: Mark Laubach, Ph.D.  
Total costs for project period: \$550,000  
Project period: 08/01/11 – 05/31/17

Agency: Klarman Family Foundation  
Title: “Functional connectomics of cortico-striatal-hypothalamic circuits”  
PI: Mark Laubach, Ph.D.  
Total costs for project period: \$392,704  
Project period: 10/01/14 –06/30/17

Agency: Klarman Family Foundation  
Title: “Apathy versus exuberance: Optogenetic control of food seeking in corticostriatal systems”  
PI: Mark Laubach, Ph.D.  
Total costs for project period: \$141,000  
Project period: 06/01/13 – 05/31/14

Agency: NIH/NIDDK

Title: “Corticostriatal Processing of Taste, Motivation and Self-Control of Food Intake”

PI: Mark Laubach, Ph.D.

Total costs for project period: \$130,163

Project period: 07/01/13 – 06/30/14

Agency: NIH/NIA

I.D.# P01-AG030004

Title: “Neural ensemble recordings in the prefrontal cortex of aged rodents”

PI: Mark Laubach, Ph.D.

Total direct costs for the project period: \$975,000

Project period: 04/01/08 – 02/28/13

Agency: NSF

I.D.# 0642951

Title: “Top-down control of sensorimotor performance by prefrontal cortex”

PI: Mark Laubach, Ph.D.

Total costs for project period: ~\$360,000

Project period: 01/01/07 – 09/30/10

#### **Invited Speaking Engagements, Conference Organization, and Outreach Activities (last ten years)**

- 2019: Seminar hosted by Department of Anatomy and Neurobiology, University of Maryland School of Medicine: “Rodent prefrontal cortex, value encoding, and the OpenBehavior Project”
- 2018: Seminar hosted by Neuroscience Department in the Icahn School of Medicine, Mount Sinai, New York, NY: “What, if anything, is the rodent prefrontal cortex?” (rescheduled to 2019 due to family issue)
- 2018: Sixth Conference on the Computational Properties of Prefrontal Cortex, Nashville, TN, October, 2018: “The OpenBehavior Project”
- 2018: Workshop on the Medial Frontal Cortex, Institut de Neurosciences Cognitives et Intégratives d'Aquitaine, Université de Bordeaux, September, 2018: “What, if anything, is the rodent prefrontal cortex?”
- 2018: Conference for High Impact Research, American University, May 14, 2018: “The OpenBehavior Project”
- 2017: Speaker at STEAM Faire at American University (October): “Neuroscience Research at American University”
- 2016: Invited speaker at Queens University (Kingston, ON), May 2015, Host: Martin Pare
- 2016: Founder (with Alexxai Kravitz) of OpenBehavior, web site for sharing open-source designs for tools used in behavioral neuroscience research: <https://edspace.american.edu/openbehavior/>
- 2016: Co-organizer (with Emmanuel Procyk and Charles Wilson), Fifth Conference on the Computational Properties of Prefrontal Cortex, Leon, France, August, 2016. <https://cppc2016.sciencesconf.org/>
- 2016: Invited speaker in workshop (Computations of the dorsomedial prefrontal cortex) at Cosyne meeting at Whistler, Utah
- 2015: Invited speaker in mini-symposium on prefrontal cortex at the Society for Neuroscience meeting in Chicago: “Neuronal mechanisms of value-guided decisions in the medial prefrontal cortex”
- 2015: Co-organizer (with Bruno Averbeck and Jeremy Seamans), Fourth Conference on the Computational Properties of Prefrontal Cortex, American University, Washington, DC, May 15-17, 2015
- 2015: Invited speaker at Rutgers University, May, 2015, Host: Gary Aston-Jones
- 2015: Invited speaker at University of Pittsburgh, May, 2015, Host: Bitu Moghaddam

- 2014: Co-organizer (with Jeremy Seamans, Geoff Schoenbaum and David Euston) and speaker, Conference on the Computational Properties of Prefrontal Cortex, Whistler, BC, Oct 3-5, 2014.
- 2014: Invited speaker at University of Maryland College Park, August, 2014, Host: Jonathan Fritz
- 2014: Invited speaker at NIMH research campus, January, 2014, Host: Bruno Averbeck
- 2014: Invited speaker at NIDA research campus, January, 2014, Host: Geoff Schoebaum
- 2013: Invited speaker, American University, December, 2013: “Self-control and the medial prefrontal cortex”
- 2013: Interview for the Nature NeuroPod podcast on neural basis of adaptive control in rats and humans
- 2013: Co-organizer (with Sebastien Bouret and Jerome Salley) and speaker, Neural Circuits for the Adaptive Control of Behavior (MCC2013), Paris, France, September 24-26, 2013
- 2013: Co-organizer (with Jamie Roitman) and speaker, Workshop on Reward-Based Decision-Making, The 13<sup>th</sup> Computational and Systems Neuroscience meeting (CoSyNe), Snowbird, March, 2013.
- 2013: Invited speaker, Workshop on Modulation and the Prefrontal Cortex, Winter Brain Conference, Breckenridge, CO, January, 2012.
- 2012: Invited seminar, Neuroscience Program, University of British Columbia, December, 2012: “Self-control and the medial prefrontal cortex”
- 2012: Invited participant in nanosymposium on Time Perception and Rhythmic Processing, Annual meeting of the Society for Neuroscience, October, 2012, “Development of action timing signals in the medial prefrontal cortex during learning”
- 2012: Seminar, Neuroscience Program, University of Texas at San Antonio, September, 2012: “Self-control and the medial prefrontal cortex”
- 2012: Invited speaker in the Dimensionality Reduction Workshop at Janelia Farms, July, 2012: “Neural integrators in the frontal cortex: Understanding network function using multivariate statistical methods”
- 2012: Lecture, North Haven Public Library, North Haven, CT: Lions, Tigers, and Brain... Oh My! (Childrens Program), July, 2012.
- 2012: Lecture, New Haven Public Library, New Haven, CT: Lions, Tigers, and Brain... Oh My! (Childrens Program), July, 2012.
- 2012: Invited speaker, Workshop on decision-making in rodents, The 12<sup>th</sup> Computational and Systems Neuroscience meeting (CoSyNe), Snowbird, March, 2012: “Taste-guided decision-making and the neural control of intake”
- 2012: Seminar, Graduate Program in Neuroscience, SUNY Stony Brook, February, 2012: Neural basis of reaction time variability
- 2011: Speaker at the 19<sup>th</sup> meeting of the Society for the Study of Ingestive Behavior, July, 2011, Clearwater, FL: Functional interactions between the prefrontal and insular cortices during a sucrose-shift procedure.
- 2011: Invited lecturer, Faculty for the Neuromorphic Cognition Engineering Workshop at the 2011 Summer School on Neuromorphic Engineering, June-July 2011, Telluride, CO. – Unable to attend due to family illness.
- 2011: Seminar, Centre for Theoretical Neuroscience, University of Waterloo, Canada, May 2011: Lost in transition: aging-related changes in executive control by the medial prefrontal cortex.
- 2011: Seminar, Neuroscience Program, Brown University, May 2011: Lost in transition: aging-related changes in executive control by the medial prefrontal cortex.
- 2011: Invited speaker, Workshop on Medial Frontal Cortex (Organized by Jerome Sallet and Mark Walton from Oxford), The 11<sup>th</sup> Computational and Systems Neuroscience meeting (CoSyNe), March, 2011, “A neural mechanism for linking actions to outcomes in the medial prefrontal cortex”
- 2011: Coordinator (with Brent Doiron and Adam Kohn) for Workshops at the 2011 Computational and Systems Neuroscience Meeting (Cosyne), Snowbird, UT, March, 2011.

## Professional Service

### Peer Review Groups/Grant Study Sections:

- 2019: Activation & Modulation, Neural Systems Cluster, NSF, September 2019
- 2019: ZMH1 ERB-S (08) S Study Section (NIMH Neural Circuit Engagement), June 2019
- 2018: SPC Study Section (R-level grants), NIH, June, 2018
- 2017: SPC Study Section (R-level grants), NIH, October 2017.
- 2015: ZRG1-F02B-D (NIH NRSA Fellowships), June, 2015.
- 2015: Collaborative Research in Computational Neuroscience, NSF/NIH, March 2015.
- 2014: Collaborative Research in Computational Neuroscience, NSF/NIH, March 2014.
- 2013: Collaborative Research in Computational Neuroscience, NSF/NIH, March 2013.
- 2012: Activation Section, Neural Systems Cluster, NSF, April 2012.
- 2012: Collaborative Research in Computational Neuroscience, NSF/NIH, January 2012.
- 2011: Activation Section, Neural Systems Cluster, NSF, October 2011.
- 2011: Collaborative Research in Computational Neuroscience, NSF/NIH, March 2011.
- 2010: Activation Section, Neural Systems Cluster, NSF, October 2010.
- 2008: ZRG1-IFCN (Special section for reviews of grants by members of the Cognitive Neuroscience (COG) and Learning & Memory (LAM) study sections), July 2008

### Journal Service:

- 2019-present: Review Editor for eNeuro
- 2018-2019 Guest editor for special issue of HardwareX on open-source tools for neuroscience research (with Alexxai Kravitz from Washington University)
- 2017-present Mentor for Mentored Reviewer Training Program at the Journal of Neuroscience
- 2015-present Associate Editor at the Journal of Neuroscience
- 2014 – 2015 Guest editor for special issue of the Journal of Physiology Paris on “Neural Mechanisms for the Adaptive Control of Behavior”
- 2009-2017 Associate Editor, Frontiers in Integrative Neuroscience
- 1999-present Referee for Journal of Neuroscience (“Top Reviewer” award in 2013), Behavioral Neuroscience, Cerebral Cortex, Frontiers in Neuroscience, Journal of Neurophysiology, Journal of Neuroscience Methods, Nature, Nature Neuroscience, Neuron, Neuroscience, PNAS, PLoS Biology, PLoS One, and others; Pre-screening of papers for editors at Current Biology, Nature Neuroscience and Neuron.

### University Service, and Mentoring at American University (since 2014):

- 2019-2021: Committee on Faculty Actions
- 2016–present Director, PhD Program in Behavior, Cognitive, and Neuroscience
- 2015–2019 Member, Institutional Animal Care and Use Committee
- 2015 Member of Search Committee for Term Faculty lecturer position in Biology
- 2014-15 Member of Search Committee for Chair of Computer Science at American University
- 2014-15 Member of committee charged with evaluating faculty scholarship in Biology
- 2014–present Science Rank and Tenure Committee
- 2014–present Biology Rank and Tenure Committee

## Bibliography

### *Peer-reviewed publications in journals*

1. **Laubach M**, Woodward DJ. 5'-Nucleotidase in the rodent ventral striatum: Relation to the distribution of leu-enkephalin, cell clusters and infralimbic cortical innervation. *Journal of Comparative Neurology*, 1995, 360:49-58.

2. Nicolelis MAL, Ghazanfar AA, Stambaugh CR, Oliveira LM, **Laubach M**, Chapin JK, Nelson RJ, Kaas JH. Simultaneous encoding of tactile information by three primate cortical areas. *Nature Neuroscience*, 1998, 1:621-630.
3. **Laubach M**, Shuler M, Nicolelis MAL. Independent component analyses for quantifying neuronal ensemble interactions. *Journal of Neuroscience Methods*, 1999, 94:141-154.
4. **Laubach M**, Wessberg J, Nicolelis MAL. Cortical ensemble activity increasingly predicts behavioral outcomes during learning of a motor task. *Nature*, 2000, 405:567-571.
5. Wessberg J, Stambaugh CR, Kralik JD, Beck PD, **Laubach M**, Chapin JK, Kim J, Biggs SJ, Srinivasan MA, Nicolelis MAL. Real-time prediction of hand trajectory by ensembles of cortical neurons in primates. *Nature*, 2000, 408:361-365.
6. Hugh GS, **Laubach M**, Nicolelis MAL, Henriquez CS. A simulator for the analysis of neuronal ensemble activity: application to reaching tasks. *Neurocomputing*, 44-46:847-854, 2002.
7. **Laubach M**. Wavelet-based processing of neuronal spike trains prior to discriminant analysis. *Journal of Neuroscience Methods*, 134:159-68, 2004.
8. Luczak A, Hackett T, Kajikawa Y, **Laubach M**. Multivariate receptive field mapping in the marmoset auditory cortex. *Journal of Neuroscience Methods*, 136:77-85, 2004.
9. Krupa DJ, Wiest MC, Shuler M, **Laubach M**, Nicolelis MAL. Layer Distinct Somatosensory Cortical Activation During Active Tactile Discrimination. *Science*, 304:1989-92, 2004.
10. Narayanan NS, Kimchi EY, **Laubach M**. Redundancy and synergy of neuronal ensembles in motor cortex. *Journal of Neuroscience*, 25:4207-4216, 2005.
11. **Laubach M**. Who's on first? What's on second? The time course of learning in corticostriatal systems. *Trends in Neuroscience*. 28:509-11, 2005.
12. Narayanan NS, Horst NK, **Laubach M**. Reversible inactivations of rat medial prefrontal cortex impair the ability to wait for a stimulus. *Neuroscience*. 139:865-76, 2006.
13. Narayanan NS, **Laubach M**. Top-down control of motor cortex ensembles by dorsomedial prefrontal cortex. *Neuron*, 52:921-931, 2006.
14. Allen TA, Narayanan NS, Kholodar-Smith DB, Zhao Y, **Laubach M**, Brown TH. Imaging the spread of reversible brain inactivations using fluorescent muscimol. *Journal of Neuroscience Methods*. 171:30-38.
15. Narayanan NS, **Laubach M**. Neuronal correlates of post-error slowing in rat dorsomedial prefrontal cortex. *Journal of Neurophysiology*. 2008 100:520-525.
16. Narayanan NS, **Laubach M**. Methods for studying functional interactions among neuronal populations. *Methods Mol Biol*. 2009 489:135-65. PMID: 18839091
17. Kimchi EY, **Laubach M**. Dynamic encoding of action selection by the medial striatum. *Journal of Neuroscience*. 2009 29:3148-59. PMID: 19279252
18. Narayanan NS, **Laubach M**. Delay activity in rodent frontal cortex during a simple reaction time task. *Journal of Neurophysiology*. 2009 101: 2859-287. PMID: 19339463
19. Kimchi EY, Torregrossa M, Taylor J, **Laubach M**. Neuronal correlates of instrumental learning in the dorsal striatum. *Journal of Neurophysiology*. 2009 102:465-89. PMID: 19439679, PMCID: PMC2712266
20. Smith NJ, Narayanan NS, **Laubach M**. Past performance is indicative of future returns. *Neuron*. July 30, 2009. PMID: 19439679, PMCID: PMC2712266
21. Horst NK, **Laubach M**. The role of rat dorsomedial prefrontal cortex in spatial working memory. *Neuroscience*. 2009 164:444-56. PMID: 19665526, PMCID: PMC2761984
22. Kimchi EY, **Laubach M**. The dorsomedial striatum reflects response bias during learning. *Journal of Neuroscience*. 2009 29:14891-14902. PMID: 19940185
23. Sears RM, Liu RJ, Narayanan NS, Sharf R, Yeckel MF, **Laubach M**, Aghajanian GK, DiLeone RJ. Regulation of nucleus accumbens activity by the hypothalamic neuropeptide melanin-concentrating hormone. *Journal of Neuroscience*. 2010 Jun 16;30(24):8263-73.

24. Smith NJ, Horst NK, Liu B, Caetano MS, **Laubach M**. Reversible inactivation of rat premotor cortex impairs temporal preparation, but not inhibitory control, during simple reaction-time performance. *Frontiers in Integrative Neuroscience*, 4:124, 2010. doi:10.3389/fnint.2010.00124
25. Wang M, Gamo NJ, Yang Y, Jin LE, Wang XJ, **Laubach M**, Mazer JA, Lee D, Arnsten AF. Neuronal basis of age-related working memory decline. *Nature*. 2011 Jul 27;476(7359):210-3. doi: 10.1038/nature10243. PubMed PMID: 21796118; PubMed Central PMCID: PMC3193794.
26. Horst NK, Heath CJ, Neugebauer NM, Kimchi EY, **Laubach M**, Picciotto MR. Impaired auditory discrimination learning following perinatal nicotine exposure or  $\beta 2$  nicotinic acetylcholine receptor subunit deletion. *Behav Brain Res*. 2012 May 16;231(1):170-80. PubMed PMID: 22433585; PubMed Central PMCID: PMC3334440.
27. Caetano MS, Horst NK, Harenberg L, Liu B, Arnsten AF, **Laubach M**. Lost in transition: aging-related changes in executive control by the medial prefrontal cortex. *J Neurosci*. 2012 Mar 14;32(11):3765-77. PubMed PMID: 22423097; PubMed Central PMCID: PMC3328309.
28. Horst NK, **Laubach M**. Working with memory: Evidence for a role for the medial prefrontal cortex in performance monitoring during spatial delayed alternation. *J Neurophysiol*. 2012 Sep 26. [Epub ahead of print] PMID: 23019007.
29. Caetano MS, Jin LE, Harenberg L, Stachenfeld KL, Arnsten AFT, **Laubach M**. Noradrenergic control of error perseveration in medial prefrontal cortex. *Front Integr Neurosci*. 2013 Jan 2;6:125. PMID: 23293590
30. Horst NK, **Laubach M**. Reward-related activity in the medial prefrontal cortex is driven by consumption. *Front Neurosci*. 2013 Apr 11;7:56. PMID: 23596384
31. Narayanan NS, Cavanagh JF, Frank MJ, **Laubach M**. Common medial frontal mechanisms of adaptive control in humans and rodents. *Nature Neurosci*. 2013 16(12):1888-95.
32. Bekolay T, **Laubach M**, Eliasmith C. A spiking neural integrator model of the adaptive control of action by the medial prefrontal cortex. *J Neurosci*. 2014 34(5):1892-902.
33. Amarante LM, **Laubach M**. For better or worse: reward comparison by the ventromedial prefrontal cortex. *Neuron*. 2014 Jun 18;82(6):1191-3. doi: 10.1016/j.neuron.2014.05.046.
34. **Laubach M**, Caetano MS, Narayanan NS. Mistakes were made: Neural mechanisms for the adaptive control of action initiation by the medial prefrontal cortex. *J Physiol. Paris*. 2015 Jan 28. pii: S0928-4257(15)00002-9. doi: 10.1016/j.jphysparis.2014.12.001. [Epub ahead of print]
35. Parent MA, Amarante LM, Liu B, Weikum D, **Laubach M**. The medial prefrontal cortex is crucial for the maintenance of persistent licking and the expression of incentive contrast. *Front Integr Neurosci*. 2015 Mar 27;9:23. doi: 10.3389/fnint.2015.00023.
36. Parent MA, Amarante LM, Swanson TK, **Laubach M**. Cholinergic and ghrelinergic receptors and KCNQ channels in the medial PFC regulate the expression of palatability. *Frontiers in Behavioral Neuroscience*, 2015 9(N/A), 284. <http://www.ncbi.nlm.nih.gov/pubmed/26578914>
37. Narayanan NS, **Laubach M**. Inhibitory Control: Mapping Medial Frontal Cortex. *Current Biology*, 2017 Feb 20; 4:R148–R150.
38. Amarante LM, **Laubach M**. Medial Frontal Theta is Entrained to Rewarded Actions. *Journal of Neuroscience*, 37(44), 10757-10769.
39. **Laubach M**, Amarante LM, Swanson K, White SR. What, If Anything, Is Rodent Prefrontal Cortex? *eNeuro*. 2018 Oct 25;5(5). pii: ENEURO.0315-18.2018. doi: 10.1523/ENEURO.0315-18.2018.
40. Swanson K, Goldbach HC, **Laubach M**. The rat medial frontal cortex controls pace, but not breakpoint, in a progressive ratio licking task. *Behav Neurosci*. 2019 Aug;133(4):385-397. doi: 10.1037/bne000322. Epub 2019 Jun 6. PubMed PMID: 31169385.
41. White SR, Amarante LM, Kravitz AV, **Laubach M**. The Future Is Open: Open-Source Tools for Behavioral Neuroscience Research. *eNeuro*. 2019 Aug 9;6(4). pii: ENEURO.0223-19.2019. doi: 10.1523/ENEURO.0223-19.2019. Print 2019 Jul/Aug. PubMed PMID: 31358510; PubMed Central PMCID: PMC6712209.

42. Amarante LM, Newport J, Mitchell M, Wilson J, **Laubach M**. An Open Source Syringe Pump Controller for Fluid Delivery of Multiple Volumes. *eNeuro*. 2019 Sep 9;6(5). pii: ENEURO.0240-19.2019. doi: 10.1523/ENEURO.0240-19.2019. Print 2019 Sep/Oct. PubMed PMID: 31416819; PubMed Central PMCID: PMC6734045.
43. Xu J, Galardi MM, Pok B, Patel KM, Zhao CW, Andrews JP, Singla S, McCafferty CP, Feng L, Musonza ET, Kundishora AJ, Gummadaavelli A, Gerrard JL, **Laubach M**, Schiff ND, Blumenfeld H. Thalamic stimulation improves postictal cortical arousal and behavior, *Journal of Neuroscience*,40,38,7343-7354,2020 DOI: 10.1523/JNEUROSCI.1370-20.2020
44. Amarante LM, **Laubach M**. Rhythmic activity in the medial and orbital frontal cortices tracks reward value and the vigor of consummatory behavior. *bioRxiv* 2020.09.22.308809; doi: <https://doi.org/10.1101/2020.09.22.308809>
45. Swanson K, Averbeck BB, **Laubach M**. Noradrenergic regulation of Win-Stay/Lose-Shift policy and choice determinism in a two-armed bandit task. *bioRxiv* 2020.11.13.382069; doi: <https://doi.org/10.1101/2020.11.13.382069>
46. Swanson K, White SR, Preston MW, Wilson J, Mitchell M, **Laubach M**. An open source platform for presenting dynamic visual stimuli. *bioRxiv* 2020.12.24.424344; doi: <https://doi.org/10.1101/2020.12.24.424344>

*Peer-reviewed publications in books*

47. Nicolelis MAL, Stambaugh CR, Brisben A, **Laubach M**. Methods for simultaneous multisite neural ensemble recordings in behaving primates, In: Nicolelis, M.A.L., ed. *Methods for Neural Ensemble Recordings*. 1999, Boca Raton: CRC, 121-156.
48. **Laubach M**, Narayanan NS, Kimchi EY. Single-neuron and ensemble contributions to decoding simultaneously recorded spike trains. In: C. Holscher and M., eds. *Populations coding in the brain*. Cambridge University Press. 2008.
49. Narayanan NS, **Laubach M**. Assessing functional coupling between brain areas with multielectrode recordings. In: F. Hyder, ed., *Dynamic imaging: Towards quantitative understanding of brain function*. Humana Press. 2008.
50. **Laubach M**. A comparative perspective on executive and motivational control by the medial prefrontal cortex. In: R. Mars, J Sallet, M Rushworth, N Yeung, eds., *Neural Basis of Cognitive and Motivation Control*. MIT Press, 2011.