

CURRICULUM VITAE

Michael M. Halassa

43 Vassar Street, 46-5081

Cambridge, MA 02138

617-253-5757

mhalassa@mit.edu

EDUCATION AND TRAINING

1997-2004	M.D.	Medicine and Surgery	University of Jordan
2004-2009	Ph.D.	Neuroscience	PENN
2009-2013	Residency	Psychiatry	MGH
2013-2014	Fellowship	Psychotic Disorders	MGH
2009-2014	Postdoc.	Systems Neuroscience	MIT

ACADEMIC APPOINTMENTS

2018-	Assistant Professor	Brain and Cognitive Science	MIT
2014-2018	Assistant Professor	Neuroscience Institute	NYU
2012-2014	Instructor	Department of Psychiatry	Harvard

HONORS (selected)

Prizes

2017 Vilcek Prize for Creative Promise in the Biomedical Sciences

2015 Daniel X. Freedman Prize for Exception Research in Basic Brain & Behavioral Science

Notable Highlights

2018 Kavli/NAS Frontiers of Science Fellow

2017 Takeda/New York Academy of Science Innovator

2017 NYU Langone Medical Center Next Generation Star

2015 Allen Institute Next Generation Leader

Awards and Scholarships

2019 Max Planck Society Fellow

2017 Pew Scholar Award for Biomedical Sciences

2016 Human Frontiers Science Program Investigator

2015 NIMH Director's Innovator Award (BRAINS)

2015 NARSAD Young Investigator Award

2015 Klingenstein-Simons Fellowship in the Neurosciences

2015 Feldstein Medical Foundation Award

2015 Alfred P. Sloan Foundation Scholar Award

2012 NIH Pathway to independence career award (K99/R00), NINDS

2009 Flexner award for outstanding thesis in Neuroscience, PENN

MEMBERSHIP IN PROFESSIONAL SOCIETIES

2004-present Society for Neuroscience

MAJOR RESEARCH FOCUS

My lab combines well-controlled parametric behavior with physiological, genetic and optical approaches to understand the neural basis of cognitive control and flexibility. Using the mouse as a model system, we link neural mechanism to cognitive processes through an intermediate computational description. By focusing on the interactions between thalamus and cortex, we have identified novel and unsuspected roles for the thalamus in processes such as attention, executive function and perceptual decision making.

BIBLIOGRAPHY

Original Reports

Most relevant

Nakajima, M., Schmitt L.I., **Halassa M.M.**, Prefrontal cortex regulates sensory filtering through a basal ganglia-to-thalamus pathway. *Neuron* (2019).

Rikhye, R.V., Gilra, A., **Halassa M.M.** Thalamic regulation of switching between cortical representations enables cognitive flexibility. *Nature Neuroscience* 21: 1753–1763 (2018).

Schmitt, L.I., Wimmer, R.D., Nakajima, M., Mofakham, S., Happ, M., **Halassa, M.M.**, Thalamic amplification of cortical connectivity sustains attentional control. *Nature* 545: 219-223 (2017)

Wells, M.F., Wimmer, R.D., Schmitt, L.I., Feng, G., **Halassa, M.M.**, Thalamic reticular impairment underlies attention deficit in Ptchd1Y^{-/-} mice. *Nature* 532: 58-63 (2016)

Wimmer, R.D., Schmitt, L.I., Davidson, T.J., Nakajima, M., Deisseroth, K., **Halassa, M.M.**, Thalamic control of sensory selection in divided attention. *Nature* 526: 705–709 (2015)

Lewis, L.D., Voigts, J., Flores, F.J., Schmitt, L.I., Wilson, M.A., **Halassa, M.M.***, Brown, E.N., Thalamic reticular nucleus induces fast and local modulation of arousal state. *Elife* DOI: 10.7554/eLife.08760. (2015) *Co-senior

Others (sorted by relevance)

Halassa, M.M., Chen, Z., Wimmer, R.D., Brunetti, P.M., Zhao, S., Zikopoulos, B., Wang, F., Brown, E.N., Wilson, M.A., State-dependent architecture of thalamic reticular sub-networks. *Cell* 158: 808-824 (2014).

Halassa, M.M., Siegle, J.H., Ritt, J., Ting, J., Feng, G., Moore, C.I., Selective optical drive of thalamic reticular nucleus generates thalamic bursts and cortical spindles. *Nature Neuroscience* 14:1118-20 (2011).

Chen, Z., Wimmer, R.D., Wilson, M.A., **Halassa, M.M.**, Thalamic circuit mechanisms link sensory processing in sleep and attention. *Front. Neural Circuits* 9:83 (2015)

Mihali A., Young A.G., Adler L.A., **Halassa M.M.**, Ma W.J. A Low-Level Perceptual Correlate of Behavioral and Clinical Deficits in ADHD. *Comput Psychiatr.* 2:141-163 (2018)

Oline S.N., Liang L., Kirk J.C., Schmitt L.I., Komorowski R.W., Remondes M., **Halassa M.M.** Scalable, Lightweight, Integrated and Quick-to-Assemble (SLIQ) Hyperdrives for Functional Circuit Dissection. *Front. Neural Circuits* 11:8 (2017)

Bruentti, P.M., Wimmer, R.D., Siegle, J.H, Voigts, J. Wilson, M.A., and **Halassa, M.M.** Design and Fabrication of ultra-light weight, adjustable multi-electrode probes for electrophysiological recordings in mice. *Journal of Visualized Experiments* 91: e51675 (2014)

Halassa, M.M., Florian, C., Fellin, T., Munoz, J.R., Lee, S.Y., Abel, T., Haydon, P.G., Frank, M.G. Astrocytic modulation of sleep homeostasis and cognitive consequences of sleep loss. *Neuron* 61: 216-219 (2009)

Fellin, T., **Halassa, M.M.**, Terunuma, M., Succol, F., Takano, H., Moss, SJ & Haydon, P.G. Endogenous non neuronal modulators of synaptic transmission control cortical slow oscillations in vivo. *Proceedings of the National Academy of Sciences of the United States of America* 106: 15037-42 (2009)

Halassa, M.M., Fellin, T., Takano, H., Dong, J.H. & Haydon, P.G. Synaptic islands defined by the territory of a single astrocyte. *Journal of Neuroscience* 27: 6473-6477 (2007)

Clasadonte, J., McIver, S.R., Schmitt, L.I., **Halassa, M.M.**, Haydon P.G. Chronic sleep restriction disrupts sleep homeostasis and behavioral sensitivity to alcohol by reducing the extracellular accumulation of adenosine. *Journal of Neuroscience* 34:1879-91 (2014)

Florian, C., Vecsey, C.G., **Halassa, M.M.**, Haydon, P.G., Abel, T., Astrocyte-derived Adenosine and A1 Receptor Activity Contribute to Sleep Loss-Induced Deficits in Hippocampal Synaptic Plasticity and Memory in Mice. *Journal of Neuroscience* 31: 6956-62 (2011)

Zhang, Q., Pangrsic, T., Kreft, M., Krzan, M., Li, N., Sul, J.Y., **Halassa, M.**, Van Bockstaele, E., Zorec, R., Haydon, P.G. Fusion-related release of glutamate from astrocytes. *J. Biol. Chem.* 279:12724-12733 (2004)

Foley J., Blutstein T., Lee S., Erneux C., **Halassa M.M.**, Haydon P. Astrocytic IP3/Ca²⁺ Signaling Modulates Theta Rhythm and REM Sleep. *Front. Neural Circuits* 11:3 (2017)

Reviews (selected)

Halassa, M.M. and Sherman, S.M. Thalamo-cortical circuit motifs: a general framework. *Neuron* (in press)

Krol, A., Wimmer, R.D., **Halassa, M.M.**, Feng, G. Thalamic reticular dysfunction as a circuit endophenotype in neurodevelopmental disorders. *Neuron* 98: 282-295. (2018)

Rikhye, R., Wimmer R.D., **Halassa M.M.**, Towards an integrative theory of thalamic function. *Annual Review of Neuroscience* 41:163-183 (2018)

Halassa, M.M., & Kastner S., Thalamic functions in distributed cognitive control. *Nature Neuroscience* 20:1669-1679 (2017)

Nakajima, M., & **Halassa, M.M.**, Thalamic control of functional cortical connectivity. *Current Opinions in Neurobiology* 44: 127-131 (2017)

Schmitt, L.I., & **Halassa, M.M.**, Interrogating the mouse thalamus to correct human neurodevelopmental disorders. *Molecular Psychiatry* 22:183-191 (2017)

Happ, M., & **Halassa, M.M.**, Too bored to stay awake. *Nature Neuroscience* 19: 1274-6 (2016)

Halassa, M.M., & Acsady, L. Thalamic inhibition: diverse sources, diverse scales. *Trends in Neuroscience* 39: 680-693 (2016).

Halassa, M.M. and Haydon, P.G. Integrated Brain Circuits: Astrocytic Networks Modulate Neuronal Activity and Behavior. *Annual Review of Physiology*, 72, 335-55 (2010)

Halassa, M.M., Fellin, T. & Haydon, P.G. The tripartite synapse: roles for gliotransmission in health and disease. *Trends Mol. Med.* 13, 54-63 (2007)

Books

Fellin, T. and Halassa, M.M. (Editors). Neuromethods Series: Methods in Neuronal Network Analysis, Springer, New York (2011)

INVITED SEMINARS AND LECTURES (selected)

- 2020 Gordon Conference ‘*Neurobiology of Cognition*’, Newry, ME
- 2020 University of Washington St. Louis Seminar Series, St. Louis, MO
- 2020 Gordon Conference ‘*Thalamocortical interactions*’, Ventura, California
- 2020 NYU Department of Psychiatry Grand Rounds, New York, NY
- 2019 Optogen Meeting, Venice, Italy
- 2019 Paris Descartes University Seminar Series, Paris, France
- 2019 University of California Irvine MSTP Distinguished Lecture Series, Irvine, CA
- 2019 Ascona meeting on Neural Circuits, Ascona, Switzerland
- 2019 Columbia University Bioengineering Seminar Series, New York, NY

2019 Neuroscience School for Advanced Studies Summer School, Venice, Italy
2019 Harvard Center for Brain Science Seminar series, Cambridge, MA
2019 UT Austin Conference on Learning and Memory, Austin, TX
2019 UT Austin Seminar, Austin, TX
2019 Brandeis University, Waltham, MA
2019 Max Planck Florida Institute Sunposium 2019, Jupiter, Florida
2018 Rockefeller University Neurobiology Seminar Series, New York, New York
2018 Friedrich Miescher Institute for Biomedical Research, Basel, Switzerland
2018 Sainsbury Wellcome Centre, London, United Kingdom
2018 Synapsy Workshop on Neurobiology of Mental Health, Geneva, Switzerland
2018 École polytechnique fédérale de Lausanne, Neurotheory seminar, Lausanne, Switzerland
2017 Columbia Neurotheory seminar series, New York, New York
2017 American College for Neuropsychopharmacology, Hollywood, Florida
2017 Society for Neuroscience Meeting, Washington, D.C.
2017 Yale University, New Haven, Connecticut
2017 Japan Optogenetic Symposium, Sendai, Japan
2017 University of Illinois, Urbana Champaign, Illinois
2017 Duke University, Durham, North Carolina
2017 University of Chicago, Chicago, Illinois
2017 Ludwig-Maximilians-Universität München, Munich, Germany
2017 Stanley Center Symposium, Broad Institute, Cambridge, Massachusetts
2017 NYU Nature Conference on Neurogenetics
2017 CSHA Francis Crick Symposium, Suzhou, China
2017 Columbia University Neurobiology Seminar Series, New York, New York
2017 Johns Hopkins Neurobiology Seminar Series, Baltimore, Maryland
2017 Harvard Medical School Neurobiology Seminar Series, Boston, Massachusetts
2017 University of California, San Diego, California
2017 University of California, San Francisco, California
2016 Oregon Health and Science University, Portland, Oregon
2016 Monitoring Molecules in Neuroscience Meeting, Gothenburg, Sweden
2016 Hungarian Academy of Science, Budapest, Hungary
2016 Gordon Conference '*Thalamocortical interactions*', Ventura, California
2016 COSYNE workshop '*Recent innovations in attention research*', Snowbird, Utah
2016 Grand Rounds, Yale University, New Haven, Connecticut
2016 National Institute on Drug Abuse, Baltimore, Maryland
2015 Washington State University, Spokane, Washington
2015 Allen Institute showcase meeting, Seattle, Washington
2015 SUNY Downstate, New York
2015 Cold Spring Harbor Laboratory, New York
2015 Janelia Farm Conference '*Thalamus and Corticothalamic Interactions*', Virginia
2015 Lehigh University, Lehigh, Pennsylvania
2015 Psychiatry Grand Rounds, New York University Langone Medical Center
2015 Gladstone Institute, San Francisco, California
2014 McGovern Institute, Peking University, Beijing, China
2014 Computational Neuroscience meeting, Quebec, Canada
2014 Gordon Conference '*Sleep regulation and function*', Galveston, Texas

2014 Combined Neurosciences Grand Rounds, Massachusetts General Hospital

SERVICE TO PROFESSIONAL PUBLICATIONS

Ad-hoc reviewer

Nature, Science, Cell, Nature Neuroscience, Neuron, Nature Communications, Current Biology, PNAS, PLOS Biology, Cell Reports, Journal of Neuroscience, Behavioral Brain Research, Biological Psychiatry, Brain Stimulation, Cerebral Cortex, Frontiers in Neural Circuits, Journal of Neurochemistry, Neuropsychopharmacology, Neuroscience, Neuropharmacology, Neuron Glia Biology, PLoS Computational Biology, Psychosomatics, Schizophrenia Research