
CURRICULUM VITAE

Daniel A. Dombeck

Professor
Department of Neurobiology
Northwestern University

EDUCATION & TRAINING:

START MONTH /YEAR	END MONTH/YEAR	DEGREE (if applicable)	INSTITUTION AND LOCATION	TRAINING MENTOR	SCIENTIFIC DISCIPLINE
<u>07/2006</u>	<u>01/2011</u>	<u>Postdoc</u>	<u>Princeton University, Princeton NJ</u>	<u>David Tank</u>	<u>Neuroscience</u>
<u>06/2005</u>	<u>06/2006</u>	<u>Postdoc</u>	<u>Cornell University, Ithaca, NY</u>	<u>Ron Harris-Warrick, Watt Webb</u>	<u>Physics/Neuroscience</u>
<u>08/2000</u>	<u>05/2005</u>	<u>Ph.D.</u>	<u>Cornell University, Ithaca, NY</u>	<u>Watt Webb</u>	<u>Physics</u>
<u>08/1996</u>	<u>06/2000</u>	<u>B.S</u>	<u>University of Illinois, Urbana-Champaign, IL</u>	<u>N/A</u>	<u>Physics</u>

PROFESSIONAL POSITIONS:

START MONTH /YEAR	END MONTH /YEAR	POSITION TITLE	DEPARTMENT	INSTITUTION AND LOCATION
<u>02/2011</u>	<u>09/2017</u>	<u>Assistant Professor</u>	<u>Neurobiology</u>	<u>Northwestern University, Evanston, IL</u>
<u>09/2017</u>	<u>06/2023</u>	<u>Associate Professor</u>	<u>Neurobiology</u>	<u>Northwestern University, Evanston, IL</u>
<u>06/2023</u>	<u>Present</u>	<u>Professor</u>	<u>Neurobiology</u>	<u>Northwestern University, Evanston, IL</u>

Significant Professional Activities

Honors/Awards

2023	Wender-Lewis Teaching and Research Professorship
2017	AT&T Research Fellow.
2015	McKnight Scholar Award, McKnight Endowment Fund for Neuroscience.
2011	Whitehall Research Grant Award, Whitehall Foundation.
2011	Klingenstein Fellowship, Esther & Joseph Klingenstein Foundation.
2010	Chicago Biomedical Consortium (CBC) Junior Investigator Award.
2010	Searle Leadership Fund Award, Northwestern University.
2007	Research Award for Innovation in Neuroscience, Society for Neuroscience.
2007	Patterson Trust Postdoctoral Fellowship Program in Brain Circuitry.

Advisory Panels/Leadership

2021-Present	Associate Director Northwestern University Interdepartmental Neuroscience Program.
2020-Present	Director T32 NIH training grant, Neurobiology of Information Storage.
2014-Present	Northwestern University Interdepartmental Neuroscience Program advisory panel.
2012-Present	Chicago Biomedical Consortium Catalyst Award advisory panel.

Peer-Reviewed Publications

1. Climer JR*, Davoudi H*, Oh JY*, Dombeck DA (2025) "Hippocampal representations drift in stable multisensory environments." *Nature*.
 2. Xuan F, Li G, Li Y, Dombeck DA (2025) "Modulation of speed-dependent acetylcholine release in the hippocampus by spatial task engagement." *Cell Reports*.
 3. Issa JB, Radvansky BA, Xuan F, Dombeck DA (2024). Lateral entorhinal cortex subpopulations represent experiential epochs surrounding reward. *Nature Neuroscience*.
 4. Pinke D*, Issa JB*, Dara GA, Dobos G, Dombeck DA (2023) "Full field-of-view virtual reality goggles for mice". *Neuron*.
 5. Azcorra M*, Gaertner Z*, Davidson C, He Q, Kim H, Nagappan S, Hayes CK, Ramakrishnan C, Fenno L, Kim YS, Deisseroth K, Awatramani R, Dombeck DA (2023) "Unique functional responses differentially map onto genetic subtypes of dopamine neurons." *Nature Neuroscience*.
 6. Gaertner Z, Azcorra M, Dombeck DA, Awatramani R (2022). "Molecular heterogeneity in the substantia nigra: A roadmap for understanding PD motor pathophysiology." *Neurobiology of Disease*, 175, 105925.
 7. Luppi MP*, Azcorra M*, Caronia-Brown G*, Poulin JF, Gaertner Z, Gatica S, Moreno-Ramos OA, Nouri N, Dubois M, Ma YC, Ramakrishnan C, Fenno L, Kim YS, Deisseroth K, Cicchetti F, Dombeck DA, Awatramani R (2021) "Sox6 expression distinguishes dorsally and ventrally biased dopamine neurons in the substantia nigra with distinctive properties and embryonic origins." *Cell Reports*, 37, 109975.
 8. Radvansky BA, Oh JY, Climer JR, Dombeck DA (2021) "Behavior determines the hippocampal spatial mapping of a multisensory environment." *Cell Reports*, 36, 109444.
 9. Adoff MD*, Climer JR*, Davoudi H, Marvin JS, Looger LL, Dombeck DA (2021) "The functional organization of excitatory synaptic input to place cells." *Nature Communications*, 12, 3558.
 10. Climer JR, Dombeck DA (2021) "Information theoretic approaches to deciphering the neural code with functional fluorescence imaging." *eNeuro*, 8 (5).
 11. Heys JG, Wu Z, Allegra-Mascaro AL, Dombeck DA (2020) "Inactivation of the Medial Entorhinal Cortex Selectively Disrupts Learning of Interval Timing." *Cell Reports*, 32 (108163).
 12. Howe MW, Ridou I, Letizia-Allegra-Mascaro A, Larios A, Azcorra M, Dombeck DA (2019) "Coordination of rapid cholinergic and dopaminergic signaling in striatum during spontaneous movement." *eLife*.
 13. Heys JG, Dombeck DA (2018) "Evidence for a subcircuit in medial entorhinal cortex representing elapsed time during immobility." *Nature Neuroscience*, 21: 1574-1582.
 14. Sheffield MEJ, Dombeck DA (2019) "Dendritic mechanisms of hippocampal place field formation." (Review) *Current Opinion in Neurobiology*, 54:1-11.
 15. Poulin J-F, Caronia G, Hofer C, Cui Q, Helm B, Ramakrishnan C, Chan CS, Dombeck DA, Deisseroth K, Awatramani R (2018) "Mapping projections of molecularly defined dopamine neuron subtypes using intersectional genetic approaches." *Nature Neuroscience*, 21:1260-1271.
 16. Patriarchi T, et al (2018) "Ultrafast neuronal imaging of dopamine dynamics with designed genetically encoded sensors." *Science*.
 17. Radvansky BA, Dombeck DA (2018) "An olfactory virtual reality system for mice." *Nature Communications*, 9:839.
 18. Sheffield, ME, Adoff MD, Dombeck DA (2017) "Increased Prevalence of Calcium Transients across the Dendritic Arbor during Place Field Formation." *Neuron* 96, 490–504.
 19. Howe MW, Dombeck DA, (2016) "Rapid signaling in distinct dopaminergic axons during locomotion and reward." *Nature*, 535, 505-510.
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20. Sheffield ME, Dombeck DA (2015) "Calcium transient prevalence across the dendritic arbour predicts place field properties." *Nature* 517, 200-204.
21. Heys JG, Rangarajan KV, Dombeck DA (2014) "The functional micro-organization of grid cells revealed by cellular resolution imaging." *Neuron* 84, 1079-90.
22. Dombeck DA, Reiser MB (2012) "Real neuroscience in virtual worlds." (Review) *Curr Opin Neurobiol* 22, 3-10.
23. Ozden I, Dombeck DA, Hoogland TM, Tank DW, Wang SS (2012) "Widespread state-dependent shifts in cerebellar activity in locomoting mice" *PLOS ONE* 7(8), 1-16.
24. Dombeck DA, Harvey CD, Tian L, Looger LL, Tank DW (2010) "Functional imaging of hippocampal place cells at cellular resolution during virtual navigation." *Nature Neuroscience* 13(11), 1433-1440.
25. Dombeck DA, Graziano MS, Tank DW (2009) "Functional clustering of neurons in motor cortex determined by cellular resolution imaging in awake behaving mice." *J Neurosci* 29(44), 13751-13760.
26. Harvey CD, Collman FC, Dombeck DA, Tank DW (2009) "Intracellular dynamics of hippocampal place cells during virtual navigation." *Nature* 461(7266), 941-946.
27. Dombeck DA, Khabbaz AN, Collman F, Adelman TL, Tank DW (2007) "Imaging large-scale neural activity with cellular resolution in awake, mobile mice." *Neuron* 56, 43-57.
28. Kwan AC, Dombeck DA, Webb WW (2008) "Polarized microtubule arrays in apical dendrites and axons." *Proc Natl Acad Sci USA* 105(32), 11370-5.
29. Wilson JM, Dombeck DA, Diaz-Rios M, Harris-Warrick RM, Brownstone RM (2007) "Two-photon calcium imaging of network activity in XFP-expressing neurons in the mouse." *J Neurophysiol* 97(4), 3118-25.
30. Diaz-Rios M, Dombeck DA, Webb WW, Harris-Warrick RM (2007) "Serotonin modulates dendritic calcium influx in commissural interneurons in the mouse spinal locomotor network." *J Neurophysiol* 98, 2157-67.
31. Sacconi L, Dombeck DA, Webb WW (2006) "Overcoming photodamage in second-harmonic generation microscopy: real-time optical recording of neuronal action potentials." *Proc Natl Acad Sci USA* 103, 3124-3129.
32. Dombeck DA, Sacconi L, Blanchard-Desce M, Webb WW (2005) "Optical recording of fast neuronal membrane potential transients in acute mammalian brain slices by second-harmonic generation microscopy." *J Neurophysiol* 94, 3628-3636.
33. Dombeck DA, Blanchard-Desce M, Webb WW (2004) "Optical recording of action potentials with second-harmonic generation microscopy." *J Neurosci* 24, 999-1003.
34. Levene MJ, Dombeck DA, Kasischke KA, Molloy RP, Webb WW (2004) "In vivo multiphoton microscopy of deep brain tissue." *J Neurophysiol* 91, 1908-1912.
35. Dombeck DA, Kasischke KA, Vishwasrao HD, Ingelsson M, Hyman BT and Webb WW (2003) "Uniform polarity microtubule assemblies imaged in native brain tissue by second-harmonic generation microscopy." *Proc Natl Acad Sci USA* 100(12), 7081-7086.
36. Chernenko AV, Giannetta RW, Dombeck DA, et al. (2002) "Thermopower study in a double bend quantum structure." *Physics of Low-Dimensional Structures* 3-4, 139-151.
37. Dombeck T, Ringo R, Koetke DD, Dombeck DA, et al. (2001) "Measurement of the neutron reflectivity for Bragg reflections off a perfect silicon crystal." *Phys Rev A* 64, 053607, 1-9.

Active Grants

NSF/NCS-FO, MacIver (PI), Dombeck (co-PI), 9/2025-8/2028, "How Ecology Induces Cognition: Paleontology, Machine Learning, and Neuroscience"

ASAP-020600, Awatramani (Lead PI), Dombeck Core-PI), 11/1/21-10/31/26, "Redefining PD pathophysiology mechanisms in the context of heterogeneous substantia nigra neuron subtypes".

NIH-NIMH T32MH067564, Dombeck (Role: PI), 7/1/03-6/30/28, "Training Program in Neurobiology of Information Storage".

BRAIN 1U01NS128655-01, Dombeck (PI), Yasuda (PI), Griesbeck (PI), 10/2022-9/2026, "Multiplex Imaging of Brain Activity and Plasticity with Optimized FRET/FLIM-based Sensors".
