Seth R. Taylor, Ph.D.

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Blue text indicates work performed at or during time at BYU

Education

Yale University, New Haven, CT 2008-2014
- Ph.D. with Distinction
- Dissertation: Cell-type specific projections and manipulations within the mesolimbic system

Brigham Young University, Provo, UT 2002-2008
- Bachelor of Science in Neuroscience
- Graduated summa cum laude

Professional Employment

Jan 2023 – Present	Assistant Professor, Cell Biology and Physiology Brigham Young University
July 2020 – Dec 2022	Research Assistant Professor, Cell and Developmental Biology Vanderbilt University
Feb 2018 – June 2020	Postdoctoral Scholar, Cell and Developmental Biology Vanderbilt University
Feb 2015 – Jan 2018	Postdoctoral Scholar, Neurobiology University of California, San Diego

Publications

Osuma A, Destain H, Mann J., Li Y, **Taylor SR**, Prahlad M, Weigle IQ, Marques F, Schulz NG, Mathies LD, Islam P, Brown AEX, Smith JJ, Kratsios P. Cell type-specific functions of the PBAF chromatin-remodeling complex in neuronal diversification. 2025. *Nature Communications* https://doi.org/10.1038/s41467-025-67434-9

Barrett A, Varol E, Weinreb A, **Taylor SR**, McWhirter RM, Cros C, Vidal B, Basaravaju M, Poff A, Tipps JA, Majeed M, Wang C, Bayer EA, Reilly M, Yemini E, Sun HS, Hobert O, Miller DM, Hammarlund M. Integrating bulk and single cell RNA-seq refines transcriptomic profiles of individual C. elegans neurons. *eLife* (2025) 14:RP106183 https://doi.org/10.7554/eLife.106183.1

Weinreb A, Varol E, Barrett A, McWhirter M, **Taylor SR**, Courtney I, Basavaraju M, Poff A, Tipps J, Collings B, Krishnaswamy S, Miller DM, Hammarlund M. Alternative splicing across the *C. elegans* nervous system. *Nature Communications* (2025) 16(4508).

Calarco JA, **Taylor SR**, Miller DM. Detecting gene expression in *Caenorhabditis elegans*. *Genetics* (2025) 229(1): 1-108.
Journal IF: 5.1, Citations = 1, Role = contributing author

Taylor SR, McWhirter RD, Matlock BK, Flaherty DK, Miller DM. Protocol for isolating specific *C. elegans* neuron types for bulk and single-cell RNA sequencing. *STAR Protocols* (2024) doi: https://doi.org/10.1016/j.xpro.2024.103439
Journal IF: 1.3, Citations = 1, Role = First author

Smith JJ*, **Taylor SR***, Blum JA, Gitler AD, Miller DM, Kratsios P. A molecular atlas of adult *C. elegans* motor neurons reveals ancient diversity delineated by conserved transcription factor codes. *Cell Reports* (2024) 43(3); 113857. *co-first authorship
Journal IF: 6.9, Citations = 16, Role = co-first author

Taylor SR, Kobayashi M, Vilella A, Tiwari D, Zolboot N, Du JX, Spencer KR, Hartzell A, Girgiss C, Abaci YT, Shao Y, De Sanctis C, Bellenchi GC, Darnell RB, Gross C, Zoli M, Berg DK, Lippi G. MicroRNA-218 instructs proper assembly of hippocampal networks. *eLife* (2023) **12**:e82729.
Journal IF: 6.4, Citations = 8, Role = First author

Ripoll-Sanchez L, Watteyne J, Sun HS, Fernandez R, **Taylor SR**, Weinreb A, Hammarlund M, Miller DM, Hobert O, Beets I, Vertes PE, Schafer WR. The neuropeptidergic connectome of *C. elegans*. *Neuron* (2023) 111(22); 3570-3589.e5.

Mineur YS, Mose TN, Maibom KL, Pittenger ST, Soares AR, Wu H, **Taylor SR**, Huang Y, Picciotto MR. ACh signaling modulates activity of the GABAergic signaling network in the basolateral amygdala and behavior in stress-relevant paradigms. *Molecular Psychiatry* (2022) 27(12): 4918-4927.

Taylor SR, Santpere G, Weinreb A, Barrett A, Reilly MB, Xu C, Varol E, Oikonomou P, Glenwinkel L, McWhirter R, Poff A, Basavaraju M, Rafi I, Yemini E, Cook SJ, Abrams A, Vidal B, Cros C, Tavazoie S, Sestan N, Hammarlund M, Hobert O, Miller DM. Molecular topography of an entire nervous system. *Cell* (2021) 184(16):4329-4347.

Glenwinkel L, **Taylor S,** Langebeck-Jensen K, Pereira L, Reilly MB, Basavaraju M, Rafi I, Yemini E, Pocock R, Sestan N, Hammarlund M, Miller DM, Hobert O. In silico analysis of the transcriptional regulatory logic of neuronal identity specification throughout the *C. elegans* nervous system. *eLife* (2021) 10:e64906.

Barrett A, McWhirter R, **Taylor SR**, Weinreb A, Miller DM, Hammarlund M. A head-to-head comparison of ribodepletion and polyA selection approaches for *C. elegans* low input RNA-sequencing libraries. *G3* (2021) 11(7), doi: 10.1093/g3journal/jkab121

Gerhard DM, Pothula S, Liu RJ, Wu M, Li XY, Girgenti MJ, **Taylor SR**, Duman CH, Delpire E, Picciotto MR, Wohleb ES, Duman RS. GABA interneurons are the cellular trigger for ketamine's rapid antidepressant actions. *J Clin Invest* (2020) 130(3):1336-1349.

Deyama S, Bang E, Wohleb ES, Li XY, Kato T, Gerhard DM, Dutheil S, Dwyer JM, **Taylor SR,** Picciotto MR, Duman RS. Role of Neuronal VEGF signaling in the prefrontal cortex in the rapid antidepressant effects of ketamine. *Am J Psychiatry* (2019) 176(5):388-400.

Calarco CA, Li Z, **Taylor SR**, Lee S, Zhou W, Friedman JM, Mineur YS, Gotti C, Picciotto MR. Molecular and cellular characterization of nAChR subtypes in the arcuate nucleus of the mouse hypothalamus. *European Journal of Neuroscience.* (2018) 48:1600-1619.

Lippi G, Fernandes CC, Ewell LA, John D, Romoli B, Curia G, **Taylor SR**, Frady EP, Jensen AB, Liu JC, Chaabane MM, Belal C, Nathanson JL, Zoli M, Leutgeb JK, Biagini G, Yeo GW, Berg DK. MicroRNA-101 regulates multiple developmental programs to constrain excitation in adult neural networks. *Neuron.* (2016) 92:1337-1351.

Fan L, Balakrishna S, Jabba SV, Bonner PE, **Taylor SR**, Picciotto MR, Jordt SE. Menthol decreases oral nicotine aversion in C56Bl/6 mice through a TRPM8-dependent mechanism. *Tab Control* (2016) 25:ii50-ii54.

Wohleb ES, Wu M, Gerhard DM, **Taylor SR**, Picciotto MR, Alreja M, Duman RS. GABA interneurons mediate the rapid antidepressant-like effects of scopolamine. *J Clin Invest* (2016) 126(7):2482-94.

Taylor SR, Badurek S, Minichiello L, DiLeone RJ, Nashmi R, Picciotto MR. GABAergic and glutamatergic projections of the mouse ventral tegmental area. *J Comp Neurol* (2014) 522(14):3308-34.

Mineur YS, **Taylor SR**, Picciotto MR. Calcineurin down-regulation in the amygdala is sufficient to induce anxiety-like and depression-like behaviors in C57Bl/6J male mice. *Biol Psychiatry* (2014) 75(12):991-8.

Mazei-Robison MS, Appasani R, Edwards S, Wee S, **Taylor SR,** Picciotto MR, Koob GF, Nestler EJ. Self-administration of ethanol, cocaine, or nicotine does not decrease the soma size of ventral tegmental area dopamine neurons. *PLoS One.* (2014) 9(4):e95962.

Gamo NJ, Duque A, Paspalas CD, Kata A, Fine R, Boven L, Bryan C, Lo T, Anighoro K, Bermudez L, Peng K, Annor A, Raja A, Mansson E, **Taylor SR,** Kiran P, Simen AA, Arnsten AFT. Role of disrupted in schizophrenia 1 (DISC1) in stress-induced prefrontal cognitive dysfunction. *Translational Psychiatry* (2013) Dec 3;3:e328.

Richard MB, **Taylor SR**, Greer CA. Age-induced disruption of selective olfactory bulb synaptic circuits. *Proceedings of the National Academy of Sciences U S A* (2010) 31;107(35):15613-8.

Ludlow KH, Bradley KD, Allison DW, **Taylor SR**, Yorgason JT, Hansen DM, Walton CH, Sudweeks SN, Steffensen SC. Acute and chronic ethanol modulate dopamine D2-subtype receptor responses in ventral tegmental area GABA neurons. *Alcohol: Clinical and Experimental Research* (2009) 33(5):804-11.

Steffensen SC, **Taylor SR**, Horton ML, Barber EN, Lyle LT, Stobbs SH and Allison DW. Cocaine disinhibits dopamine neurons in the ventral tegmental area via use-dependent blockade of GABA neuron voltage-sensitive sodium channels. *European Journal of Neuroscience* (2008) 28: 2028-2040.

Preprints/Manuscripts in Review – BYU undergraduate students highlighted in red

Smith JJ, **Taylor S,** Destain H, Kim G, Hall DH, White JG, Miller DM, Kratsios P. Intrinsic and non-cell autonomous roles for a neurodevelopmental syndrome-linked transcription factor. *bioRxiv* 2025. doi: https://doi.org/10.64898/2025.12.23.696256

Taylor SR, Olson C, Ripoll-Sanchez L, Valperga G, McWhirter R, Barney ST, Atkinson A, Goel S, Weinreb A, Hardin A, Rolfson A, Pattee J, Aguilar GR, Merritt DM, Eroglu M, Majeed M, Grundvig E, Child E, Beets I, Vertes PE, Schafer W, Varol E, Hammarlund M, Hobert O, Miller DM. A gene expression atlas of juvenile nervous system. *bioRxiv.* 2025. doi: https://doi.org/10.1101/2025.11.21.689793

Chai CM, **Taylor SR**, Tischbirek CH, Wong WR, Cai L, Miller DMM, Sternberg PW. The forkhead transcription factor FKH-7/FOXP acts in chemosensory neurons to regulate developmental decision-making. *bioRxiv*. 2025. doi: https://doi.org/10.1101/2025.02.17.638733

Poster Presentations from time at BYU – BYU undergraduate students highlighted in red

2 internal undergraduate posters (BYU Life Sciences Conference, BYU Library Conference). External poster and other presentations are shown below.

Barney ST, Rolfson A, Bennett S, Davis E, Lyman M, Child E, **Taylor SR**. The Hox transcription factor *mab-5* is necessary and sufficient for transcriptional differences between left/right Q-derived neuron pairs in *Caenorhabditis elegans*. Neuroscience Snowbird Symposium. 2025

Huber R, Hardin A, Child E, Smith JJ, Miller DMM, Kratsios P, **Taylor SR.** Loss of *unc-3* differentially affects transcriptional fates among cholinergic motor neurons in *C. elegans*. Neuroscience Snowbird Symposium. 2025

Taylor SR, Murray J, Oren-Suissa M, St. Ange, J, Toker I, Large C, Walker A. Strategies for Single-Cell Profiling in *C. elegans*. Workshop at 25th International Worm Meeting. 2025

Barney ST, Rolfson A, Bennett S, Davis E, Lyman M, Child E, **Taylor SR**. The Hox transcription factor *mab-5* is necessary and sufficient for transcriptional differences between left/right Q-derived neuron pairs in *Caenorhabditis elegans*. 25th International Worm Meeting. 2025

Barney T, Rolfson A, Bennett S, **Taylor SR**. Left/Right neuronal asymmetry is established by the HOX gene mab-5 in *Caenorhabditis elegans*. Society for Neuroscience 2024

Olson C, McWhirter R, Hardin A, **Taylor SR**, Miller DMM. A gene expression profile of the P-cell postembryonic motor neuron lineage. CeNeuro. 2024

Honors and Awards

- Awarded PhD with Distinction, Yale University, 2014
- National Science Foundation Graduate Research Fellowship, Yale 2010-2013
- Passed Qualifying Exam with Distinction, Yale University, 2010
- Neuroscience Valedictorian, BYU 2008
- Graduated Summa Cum Laude, BYU 2008
- Office of Creative Research Activities Undergraduate Research Grant, BYU 2008
- National Merit Scholar, BYU 2002-2008
- Phi Kappa Phi, BYU 2007-2008

Invited/Selected Talks

- University of Utah, Department of Biology, Salt Lake City, UT, November 2025
- 24th International *C. elegans* Conference, Glasgow, Scotland. 2023.
- Molecular Mechanisms of Neuronal Connectivity (Cold Spring Harbor Meeting). Virtual Meeting. July 2020.
- 23rd International *C. elegans* Conference, Los Angeles, CA, July 2019.
- Keystone Symposium: Synapses and Circuits: Formation, Function and Dysfunction, Santa Fe, NM, March 2017.
- Winter Conference on Brain Research. Breckenridge, CO, January 2016.

Didactic Teaching

Instructor Brigham Young University

- Cell 360 Undergraduate Cell Biology — Spring 2023 – Present
- Cell 660 Graduate Cell Biology — Fall 2025 - Present

Teaching Fellow Yale University — Winter 2014
Department of Psychology - Drugs, Brain & Behavior

- Delivered lecture on tobacco and nicotine
- Helped write exams
- Led review sessions

Teaching Fellow Yale University Fall 2013
Department of Psychology - Animals Models of Psychiatric Disorders,
- Led review sessions

Teaching Fellow Yale University Fall 2010
Principles of Neuroscience (Graduate Level Neuroscience Course)
- Evaluated response papers

Teaching Fellow Yale University Fall 2009
Department of Cognitive Science - Brain and Thought
- Led discussion section
- Helped select primary research articles for student reading
- Led review sessions

BYU Graduate Student Committees:

- 2022 – 2025: Chad Pollard (Cell PhD), committee member. Title: *Detection of Neuron Derived cfDNA in Blood Plasma: A New Diagnostic Approach for Neurodegenerative Conditions*
- 2023 – Present: Bailey Calder (Cell PhD), committee member. Title: *The Effect of Redox Disruption on Neurogenesis and Circuitry Development within the Optic Tectum*
- 2023 – Present: Kevin Gray (Neuroscience MS), committee member. Title: *Exploring the impact of redox changes on optic tectum development and behavior*
- 2023 – Present: Suehelen Garcia (Neuroscience PhD), committee member. Title: TBD
- 2025 – Present: Mitchell Casey (Cell MS), committee member. Title: TBD

Citizenship

Manuscript Reviewer
- 2025: Science, PLOS One

BYU Citizenship
- 2023 – 2024: Cell Biology and Physiology Department Awards Committee (committee member)
- 2023 – Present: Cell Biology and Physiology Department Safety Representative
- 2023 – Present: College of Life Sciences Compliance and Risk Management Committee (committee member)
- 2024 – Present: Neuroscience Club Faculty Advisor
- 2025 – Present: Cell Biology and Physiology Graduate Department Committee (committee member)

Professional Development and Teaching Training

Seminar in College Teaching, Vanderbilt University Fall 2019
- Part of the Certificate in College Teaching from the Center for Teaching at Vanderbilt

Sanford Burnham Prebys Leaders Program 2016-2017
- A year-long training program in leadership styles and development

Teaching and Learning at the College Level, UC San Diego Spring 2017
- A quarter-long course on evidence-based teaching offered by the UCSD Teaching and Learning Commons

Course Design Studio, UC San Diego Spring 2017

Fundamentals of Teaching: Science, Yale University Fall 2010

Community Teaching and Outreach

Neuroscience Outreach Program 2009-2014

- Established schedule of visits to local schools (elementary through high school)
- Taught and led demonstrations on comparative neuroanatomy, muscle physiology, sensation and perception, and sheep brain dissections
- Secured an external grant for and organized a High School Brain Awareness Day event bringing 60-70 high school students to Yale in Spring 2010