

## CURRICULUM VITAE

### Ege Taner Kavalali

Department of Pharmacology  
Vanderbilt University  
465 21st Avenue South, 7130A MRBIII  
PMB407933 Nashville, TN 37240-7933  
phone: 615-343-5480 (direct)  
e-mail: ege.kavalali@vanderbilt.edu

### EDUCATION AND TRAINING

1995-1999 Postdoctoral Fellow, Department of Molecular and Cellular Physiology, Stanford University, Stanford, California (Supervisor: Dr. Richard W. Tsien)  
1998 Molecular Cloning of Neural Genes Course, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York  
1995 Ph.D. Biomedical Engineering, Rutgers University, New Brunswick, New Jersey (Supervisor: Dr. Mark R. Plummer)  
1990 B.S. Electrical Engineering, Boğaziçi University, Bebek, Istanbul, Turkey  
1989 Engineering Trainee at EMCO Maier & Co., Hallein, Austria  
1988 Engineering Trainee at TELETAS Communications Inc., Istanbul, Turkey  
1986 Terakki Vakfı Şişli Terakki Lisesi (Lycée), Nişantaşı, Istanbul, Turkey

### ACADEMIC POSITIONS

2019- Acting Chair, the Department of Pharmacology, Vanderbilt University  
2019- Professor, the Department of Biological Sciences, Vanderbilt University  
2018- William Stokes Chair in Experimental Therapeutics  
2018-2019 Vice Chair for Research, the Department of Pharmacology, Vanderbilt University  
2018- Professor, the Department of Pharmacology, Vanderbilt University  
2011-2018 Rosewood Corporation Chair in Biomedical Science, UT Southwestern Medical Center  
2010-2018 Professor, the Department of Neuroscience and the Department of Physiology, UT Southwestern Medical Center  
2008-2016 Chair, Graduate Program in Neuroscience, Division of Basic Science, UT Southwestern Medical Center  
2005-2010 Associate Professor (with Tenure), the Department of Neuroscience and the Department of Physiology, UT Southwestern Medical Center  
1999-2005 Assistant Professor, Center for Basic Neuroscience and the Department of Physiology, UT Southwestern Medical Center

### AWARDS/HONORS/LECTURESHIPS

2020 Plenary Lecture, the Korean Society for Brain and Neural Sciences Annual Meeting  
2019 Humboldt-Forschungspreis, Alexander von Humboldt Foundation, Germany  
2019 Michael C. Wilson Memorial Lecture, University of New Mexico  
2018 Award for Excellence in Postdoctoral Mentoring, UT Southwestern Postdoctoral Association  
2017 Swammerdam Lecture, Graduate School Neurosciences Amsterdam, Vrije Universiteit, University of Amsterdam and the Netherlands Institute for Neuroscience, Amsterdam, The Netherlands  
2016 Chair, Gordon Research Conference on Synaptic Transmission  
2015 Shizhang Bei Lecture, Institute of Biophysics, Chinese Academy of Sciences, Beijing, China

2015	Special Lecture, Society for Neuroscience Meeting, Chicago
2014	Vice Chair, Gordon Research Conference on Synaptic Transmission
2013	NARSAD Distinguished Investigator Award (Brain & Behavior Research Foundation)
2006	American Heart Association Established Investigator Award
1999	Effie Marie Cain Scholar in Medical Research, UT Southwestern Medical Center at Dallas.
1996	American Heart Association California Affiliate Postdoctoral Fellowship, Stanford University, Stanford, California
1994-1995	Charles and Johanna Busch Research Fellowship, Rutgers University, New Brunswick, New Jersey
1990	Graduating with Honors, Department of Electrical Engineering, Boğaziçi University, Istanbul, Turkey
1986	“Türkiye İş Bankası” Award (for ranking 20th in 1986 Turkish University Entrance Examinations)

### PROFESSIONAL AFFILIATIONS

1994-	Society for Neuroscience
1994-	Biophysical Society
2019-	American Association for the Advancement of Science

### EDITORIAL BOARDS, PEER REVIEW

#### Journals

2018	Member of Editorial Board, Journal of Neuroscience Research
2017	Associate Editor, Journal of Neuroscience Research Special Issue on Spontaneous Neurotransmission
2014-	Member of Editorial Board, Synapse
2013-2019	Reviewing Editor, The Journal of Neuroscience
2011-present	Member, Faculty of 1000
2008-2013	Associate Editor, The Journal of Neuroscience
2000-present	<b>Frequent Reviewer for:</b> Cell, eLife, Nature Communications, Nature Neuroscience, Nature Reviews Neuroscience, Neuron, Proceedings of the National Academy of Sciences of the USA, Science.

#### External Review Boards

2018	Ad Hoc Member, Board of Scientific Councilors, NINDS
2017	External Reviewer, The School of Life Sciences & McGovern Institute for Brain Research at Peking University, Beijing, China
2016	External Reviewer, Neurosciences Graduate Program, Stanford University, Stanford, CA
2015	Subcommittee for the Neurobiology Division Review of the MRC Laboratory of Molecular Biology, Cambridge, UK
2014	Ad Hoc Member, Board of Scientific Councilors, NINDS
2013-present	Member Advisory Board, SFB 1089 Synaptic Microcircuits, University of Bonn Medical Center, Bonn, Germany

#### Grants

2014-2015	NIMH Review Panel for Silvio O. Conte Centers for Basic or Translational Mental Health Research
2016-2017	Chair, Neurotransporters, Receptors, and Calcium Signaling study section (NTRC), NIH Center for Scientific Review

- 2011-2016 Member, Neurotransmitters, Receptors, and Calcium Signaling study section (NTRC), NIH Center for Scientific Review
- 2000-present **Frequent Reviewer for:** Israel Science Foundation, Italian Telethon Foundation, Medical Research Council (U.K.), NIH Center for Scientific Review and Special Emphasis Panels, The Wellcome Trust (U.K.), United States-Israel Binational Science Foundation, Deutsche Forschungsgemeinschaft, Novo Nordisk Fonden.

## TEACHING AND SERVICE

### Extramural

- 2020 External Doctoral Dissertation Evaluator, The Kreitman School of Advanced Graduate Studies, Ben-Gurion University of the Negev, Israel
- 2018 Organizer, Society for Neuroscience Basic- Translational-Clinical Roundtable on Rapid Antidepressant Action (Synaptic Mechanisms and Clinical Aspects)
- 2014 External Ph.D. Dissertation Examiner, Department of Physiology, University of Toronto, Toronto, Canada
- 2009-2012 Member, Society for Neuroscience Program Committee
- 2007-2008 Member, Biophysical Society, Exocytosis/Endocytosis Subgroup Council
- 1997 Guest Lecturer, Mechanisms of Signal Transduction (MCB 230), University of California at Berkeley.

### At Vanderbilt

- 2021 Member, ad hoc Committee on Tenure Clock Review, Vanderbilt University School of Medicine
- 2020-2021 Member, Executive Committee of the Executive Faculty, Vanderbilt University School of Medicine
- 2020- Co-Chair, Dean's Advisory Council for Mental Health and Wellness, Vanderbilt University School of Medicine Basic Sciences
- 2020 Lecturer in Fundamentals of Neuroscience (NURO 8345) and Fundamentals of the Excitable Membrane for Biologists (NURO 8324) courses, Vanderbilt University
- 2019-2020 Member, Department of Medicine Chair Search Committee, Vanderbilt University Medical Center
- 2018-2019 Member, Vanderbilt Brain Institute Faculty Search Committee, Vanderbilt University
- 2018- Member, Vanderbilt Brain Institute, Vanderbilt University
- 2018- Member, Neuroscience and Pharmacology Graduate Programs at Vanderbilt. In this capacity, member of Ph.D. thesis committees and Ph.D. supervisor to 4 students.

### At UT Southwestern

- 2017 Organizer, History of Neuroscience Journal Club, UT Southwestern Medical Center
- 2017-2018 Member, Neurology Chair Search Committee, UT Southwestern Medical Center
- 2017 Promotion & Tenure Workshop, The Office of Faculty Diversity and Development and the Office of Women's Careers, UT Southwestern Medical Center
- 2011- 2018 Member, Promotions and Tenure Committee, UT Southwestern Medical Center
- 2011- 2012 Member, Neurosurgery Chair Search Committee, UT Southwestern Medical Center
- 2010-2016 Director, The Cellular Biophysics of the Neuron Training Program, National Institute of Neurological Diseases and Stroke (T32 NS069562).
- 2008-2014 Member, Department of Neuroscience Faculty Search Committee, UT Southwestern Medical Center
- 2008-2010 Member, Psychiatry Chair Search Committee, UT Southwestern Medical Center

2008-2016	Member, Division of Basic Science Steering Committee, UT Southwestern Medical Center
2006-2014	Member, Oversight Committees for the Live Cell Imaging, the Molecular and Cellular Imaging and the Mouse Metabolism Facilities, UT Southwestern Medical Center
2005-2007	Coordinator, Neuroscience Graduate Program Qualifying Examinations UT Southwestern Medical Center
2006-2008	Chair, International Graduate Admissions Committee, Division of Basic Science, UT Southwestern Medical Center
2005-2008	Member, Graduate Admissions Committee, Division of Basic Science, UT Southwestern Medical Center
2001-2010	Organizer and lecturer, Chemical Neurotransmission course, UT Southwestern Medical Center
2001-2010	Coordinator, Neuroscience Seminar Series, Department of Neuroscience, UT Southwestern Medical Center
1999-2018	Member, Neuroscience and Molecular Biophysics Graduate Programs at UT Southwestern. In this capacity, lecturer in several Neuroscience courses, member of qualifying examination committees, Ph.D. thesis committees, and Ph.D. supervisor to 8 students (8 graduated).

#### Teaching Assistantships

1991-1994	Teaching Assistant, Department of Biological Sciences, Rutgers University, New Brunswick, New Jersey.
1988-1989	Teaching Assistant, Department of Physics, Boğaziçi University, Istanbul, Turkey.

#### BIBLIOGRAPHY

##### *Thesis and Dissertation*

1. **Kavalali ET** (1990). A computer simulation of K<sup>+</sup> and Na<sup>+</sup> channels from Hodgkin-Huxley kinetics. Senior thesis. Bogaziçi University, Istanbul, Turkey.  
Advisor: Prof. Yusuf P. Tan, Institute of Biomedical Engineering
2. **Kavalali ET** (1995). Functional characterization of calcium channel potentiation in rat hippocampal neurons. Ph.D. dissertation. Rutgers University, New Brunswick, N.J.  
Advisor: Prof. Mark R. Plummer, Department of Biological Sciences

##### *Research Articles*

1. **Kavalali ET**, Plummer MR (1994). Selective potentiation of a novel calcium channel in rat hippocampal neurones. *The Journal of Physiology (Lond.)* 480: 475-484.
2. **Kavalali ET**, Plummer MR (1996). Multiple voltage-dependent mechanisms potentiate calcium channel activity in hippocampal neurons. *The Journal of Neuroscience* 16: 1072-1082.
3. **Kavalali ET**, Hwang KS, Plummer MR (1997). cAMP-dependent enhancement of dihydropyridine-sensitive calcium channel availability in hippocampal neurons. *The Journal of Neuroscience* 17: 5334-5348.
4. **Kavalali ET**, Zhuo M, Bito H, Tsien RW (1997). Dendritic Ca<sup>2+</sup> channels characterized by recordings from isolated hippocampal dendritic segments. *Neuron* 18: 651-663.

5. Klingauf J\*, **Kavalali ET\***, Tsien RW (1998). Kinetics and regulation of fast endocytosis at hippocampal synapses. *Nature* 394: 581-585. (\*Equal contribution)
6. **Kavalali ET**, Klingauf J, Tsien RW (1999). Properties of fast endocytosis at hippocampal synapses. *Philosophical Transactions of Royal Society London B* 354: 337-346.
7. **Kavalali ET**, Klingauf J, Tsien RW (1999). Activity-dependent regulation of synaptic clustering in a hippocampal culture system. *Proceedings of the National Academy of Sciences of the USA* 96: 12893-12900.
8. Pyle JL, **Kavalali ET**, Choi S, Tsien RW (1999). Visualization of synaptic activity in hippocampal slices with FM1-43 enabled by fluorescence quenching. *Neuron* 24: 803-808.
9. Pyle JL, **Kavalali ET**, Piedras-Renteria ES, Tsien RW (2000). Rapid reuse of readily releasable pool vesicles at hippocampal synapses. *Neuron* 28: 221-231.
10. Schoch S, Deák F, Königstorfer A, Mozhayeva M, Sara Y, Südhof TC\*, **Kavalali ET\*** (2001). SNARE function analyzed in synaptobrevin/VAMP knockout mice. *Science* 294:1117-1122 (\*Corresponding Authors).
11. Mozhayeva MG, Sara Y, Liu X, **Kavalali ET** (2002). Development of vesicle pools during maturation of hippocampal synapses. *The Journal of Neuroscience* 22: 654-665.
12. Sara Y, Mozhayeva MG, Liu X, **Kavalali ET** (2002). Fast vesicle recycling supports neurotransmission during sustained stimulation at hippocampal synapses. *The Journal of Neuroscience* 22: 1608-1617.
13. Biederer T, Sara Y, Mozhayeva M, Atasoy D, Liu X, **Kavalali ET**, Südhof TC (2002). SynCAM, a synaptic adhesion molecule that drives synapse assembly. *Science* 297:1525-1531.
14. Virmani T, Han W, Liu X, Südhof TC, **Kavalali ET** (2003). Synaptotagmin 7 splice variants differentially regulate synaptic vesicle recycling. *EMBO Journal* 22: 5347-5357.
15. Mozhayeva MG, Matos MF, Liu X, **Kavalali ET** (2004). Minimum essential factors required for vesicle mobilization at hippocampal synapses. *The Journal of Neuroscience* 24: 1680-1688.
16. Piedras-Rentería ES, Pyle JL, Diehn M, Glickfeld LL, Harata CN, Cao Y, **Kavalali ET**, Brown PO, Tsien RW (2004). Presynaptic homeostasis at CNS nerve terminals compensates for lack of a key Ca<sup>2+</sup> entry pathway. *Proceedings of the National Academy of Sciences of the USA* 101: 3609-3614.
17. Deák F, Schoch S, Liu X, Südhof TC\*, **Kavalali ET\*** (2004). Synaptobrevin is essential for fast synaptic vesicle endocytosis. *Nature Cell Biology* 6: 1102-1108 (\*Corresponding Authors).
18. Sara Y, Biederer T, Atasoy D, Chubykin A, Mozhayeva MG, Südhof TC, **Kavalali ET** (2005). Selective capability of SynCAM and Neuroligin for functional synapse assembly. *The Journal of Neuroscience* 25: 260-270
19. Sara Y, Virmani T, Deák F, Liu X., **Kavalali ET** (2005). An isolated pool of vesicles recycles at rest and drives spontaneous neurotransmission. *Neuron* 45: 563-573

20. Luikart BW, Nef S, Virmani T, Lush ME, Liu Y, **Kavalali ET**, Parada LF (2005). TrkB has a cell-autonomous role in the establishment of hippocampal schaffer collateral synapses. *The Journal of Neuroscience* 25: 3774-3786
21. Virmani T, Gupta P, Liu X, **Kavalali ET**, Hofmann SL (2005). Progressively reduced synaptic vesicle pool size in cultured neurons derived from neuronal ceroid lipofuscinosis-1 knockout mice. *Neurobiology of Disease* 20: 314-323
22. Chen Y, Beffert U, Ertunc M, Tang T-S, **Kavalali ET**, Bezprozvanny I, Herz J (2005). Reelin Modulates NMDA Receptor Activity in Cortical Neurons. *The Journal of Neuroscience* 25: 8209-8216
23. Virmani T, Ertunc M, Sara Y, Mozhayeva M, **Kavalali ET** (2005). Phorbol Esters Target the Activity-Dependent Recycling Pool and Spare Spontaneous Vesicle Recycling. *The Journal of Neuroscience* 25:10922-10929.
24. Mahgoub MA, Sara Y, **Kavalali ET**, Monteggia LM (2006). Reciprocal interaction of 5-HT and neuronal activity in regulation of CRE-dependent gene expression. *The Journal of Pharmacology and Experimental Therapeutics* 317: 88-96.
25. Virmani T, Atasoy D, **Kavalali ET** (2006). Synaptic vesicle recycling adapts to chronic changes in activity. *The Journal of Neuroscience* 26: 2197-2206.
26. Nelson ED, **Kavalali ET**, Monteggia LM (2006). MeCP2-dependent transcriptional repression regulates excitatory neurotransmission. *Current Biology* 16: 710-716.
27. Deák F, Shin OH, Tang J, Hanson P, Ubach J, Jahn R, Rizo J, **Kavalali ET**, Südhof TC (2006). Rabphilin regulates SNARE-dependent re-priming of synaptic vesicles for fusion. *EMBO Journal* 25: 2856–2866.
28. Deák F, Shin OH, **Kavalali ET\***, Südhof TC\* (2006). Structural determinants of synaptobrevin 2 function in synaptic vesicle fusion. *The Journal of Neuroscience* 26: 6668-6676 (\*Corresponding Authors).
29. Ertunc M, Sara Y, Chung C, Atasoy D, Virmani T, **Kavalali ET** (2007). Fast synaptic vesicle reuse slows the rate of synaptic depression in the CA1 region of hippocampus. *The Journal of Neuroscience* 27: 341-354.
30. Wasser C, Ertunc M, Liu X, **Kavalali ET** (2007). Cholesterol-dependent balance between evoked and spontaneous synaptic vesicle recycling. *The Journal of Physiology (Lond.)* 579: 413-429.
31. Atasoy D, Schoch S, Ho A, Nadasy KA, Liu X, Zhang W, Mukherjee K, Nosyreva ED, Fernandez-Chacon R, Missler M, **Kavalali ET**, Südhof TC (2007). Deletion of CASK in mice is lethal and impairs synaptic function. *Proceedings of the National Academy of Sciences of the USA* 104: 2525-2530.
32. Chubykin AA, Atasoy D, Etherton MR, Brose N, **Kavalali ET**, Gibson JR, Südhof TC (2007). Activity-Dependent Validation of Excitatory versus Inhibitory Synapses by Neuroligin-1 versus Neuroligin-2. *Neuron* 54: 919-931.
33. Bronk P, Deák F, Wilson MC, Liu X, Südhof TC, **Kavalali ET** (2007). Differential effects of SNAP-25 deletion on Ca<sup>2+</sup>-dependent and Ca<sup>2+</sup>-independent neurotransmission. *Journal of Neurophysiology* 98: 794-806.

34. Nelson ED, **Kavalali ET\***, Monteggia LM\* (2008). Activity-dependent suppression of miniature neurotransmission through the regulation of DNA methylation. *The Journal of Neuroscience* 28: 395-406 (\*Corresponding Authors).
35. Barbosa AC, Kim M, Ertunc M, Adachi M, Nelson ED, McAnally J, Richardson JA, **Kavalali ET**, Monteggia LM, Bassel-Duby R, Olson EN (2008). MEF2C, a transcription factor that facilitates learning and memory by negative regulation of synapse numbers and function. *Proceedings of the National Academy of Sciences of the USA* 105:9391-9396.
36. Chung C, Deak F, **Kavalali ET** (2008). Molecular substrates mediating lanthanide-evoked neurotransmitter release in central synapses. *Journal of Neurophysiology* 100: 2089-2100.
37. Atasoy D, Ertunc M, Moulder KL, Blackwell J, Chung C, Su J, **Kavalali ET** (2008). Spontaneous and evoked glutamate release activates two populations of NMDA receptors with limited overlap. *The Journal of Neuroscience* 28: 10151-10166.
38. Espinosa F, **Kavalali ET** (2009). NMDA receptor activation by spontaneous glutamatergic neurotransmission. *Journal of Neurophysiology* 101: 2290-2296.
39. Darios F, Wasser C, Shakirzyanova A, Giniatullin A, Goodman K, Munoz-Bravo JL, Raingo J, Jorgacevski J, Kreft M, Zorec R, Rosa JM, Gandia L, Gutiérrez LM, Binz T, Giniatullin R, **Kavalali ET**, Davletov B (2009). Sphingosine targets synaptobrevin and activates synaptic vesicle exocytosis. *Neuron* 62: 683-694.
40. Akhtar MW, Raingo J, Nelson ED, Montgomery RL, Olson EN, **Kavalali ET\***, Monteggia LM\* (2009). Histone deacetylases 1 and 2 form a developmental switch that controls excitatory synapse maturation and function. *The Journal of Neuroscience* 29: 8288-8297 (\*Corresponding Authors).
41. Deák F, Liu X, Khvotchev M, Li G, **Kavalali ET**, Sugita S, Südhof TC (2009).  $\alpha$ -Latrotoxin stimulates a novel pathway of  $\text{Ca}^{2+}$ -dependent synaptic exocytosis independent of the classical synaptic fusion machinery. *The Journal of Neuroscience* 29: 8639-8648.
42. Durakoglugil M, Chen Y, White CL, **Kavalali ET**, Herz J (2009). Reelin Signaling Antagonizes  $\beta$ -Amyloid at the Synapse. *Proceedings of the National Academy of Sciences of the USA* 106: 15938-15943.
43. Chung C, Barlyko B, Leitz J, Liu X, **Kavalali ET** (2010). Acute dynamin inhibition dissects synaptic vesicle recycling pathways that drive spontaneous and evoked neurotransmission. *The Journal of Neuroscience* 30:1363-1376.
44. Nosyreva E, **Kavalali ET** (2010). Activity-Dependent Augmentation of Spontaneous Neurotransmission during Endoplasmic Reticulum Stress. *The Journal of Neuroscience* 30:7358-7368.
45. Sara Y, Bal M, Adachi M, Monteggia LM, **Kavalali ET** (2011). Use-dependent AMPA receptor block reveals segregation of spontaneous and evoked glutamatergic neurotransmission. *The Journal of Neuroscience* 31:5378-5382.
46. Zhao M, Raingo J, Chen ZJ, **Kavalali ET** (2011). Cc2d1a, a C2 domain containing protein linked to non-syndromic mental retardation, controls functional maturation of central synapses. *The Journal of Neurophysiology* 105:1506-1515.

47. Nelson ED, Bal M, **Kavalali ET**, Monteggia LM (2011). Selective impact of MeCP2 and associated Histone Deacetylases on the dynamics of evoked excitatory neurotransmission. *The Journal of Neurophysiology* 106:193-201.
48. Autry AE, Adachi M, Nosyreva E, Na ES, Los MF, Cheng PF, **Kavalali ET\***, Monteggia LM\* (2011). NMDA receptor blockade at rest triggers rapid behavioural antidepressant responses. *Nature* 475:91-95 (\*Corresponding Authors).
49. Leitz J, **Kavalali ET** (2011). Ca<sup>2+</sup>-influx slows single synaptic vesicle endocytosis. *The Journal of Neuroscience* 31:16318-16326.
50. Ramirez DMO, Khvotchev M, Trauterman B, **Kavalali ET** (2012). Vti1a identifies a vesicle pool that preferentially recycles at rest and maintains spontaneous neurotransmission. *Neuron* 73:121-134.
51. Na ES, Nelson ED, Adachi M, Autry AE, Mahgoub MA, **Kavalali ET**, Monteggia LM (2012). A mouse model for MeCP2 duplication syndrome: MeCP2 overexpression impairs learning and memory and synaptic transmission. *The Journal of Neuroscience* 32:3109-3117.
52. Raingo J, Khvotchev M, Liu P, Darios F, Li YC, Ramirez DMO, Adachi M, Lemieux P, Toth K, Davletov B, **Kavalali ET** (2012). VAMP4 directs synaptic vesicles to a pool that selectively maintains asynchronous neurotransmission. *Nature Neuroscience* 15:738-745.
53. Akhtar MW, Kim M, Adachi M, Morris MJ, Qi X, Richardson JA, Bassel-Duby R, Olson EN **Kavalali ET**, Monteggia LM (2012). In vivo Analysis of MEF2 Transcription Factors in Synapse Regulation and Neuronal Survival. *PLoS ONE* 7:e34863.
54. Kim M, Akhtar MW, Adachi M, Mahgoub M, Bassel-Duby R, **Kavalali ET**, Olson EN, Monteggia LM (2012). An Essential Role for Histone Deacetylase 4 in Synaptic Plasticity and Memory Formation. *The Journal of Neuroscience* 32:10879-10886.
55. Nosyreva E, Szabla K, Autry AE, Ryazanov AG, Monteggia LM\*, **Kavalali ET\*** (2013). Acute suppression of spontaneous neurotransmission drives synaptic potentiation. *The Journal of Neuroscience* 33:6990-7002 (\*Corresponding Authors).
56. Bal M, Leitz J, Reese AL, Ramirez DMO, Durakoglugil M, Herz J, Monteggia LM, **Kavalali ET** (2013). Reelin mobilizes a VAMP7-dependent synaptic vesicle pool and selectively augments spontaneous neurotransmission. *Neuron*, 80:934-946.
57. Gideons E, **Kavalali ET**, Monteggia LM (2014). Mechanisms underlying differential effectiveness of memantine and ketamine in rapid antidepressant responses. *Proceedings of the National Academy of Sciences of the USA* 111: 8649–8654.
58. Nosyreva E, Autry AE, **Kavalali ET**, Monteggia LM (2014). Age dependence of the rapid antidepressant and synaptic effects of acute NMDA receptor blockade. *Frontiers in Molecular Neuroscience* 7:94.
59. Leitz J, **Kavalali ET** (2014). Fast retrieval and autonomous regulation of single spontaneously recycling synaptic vesicles. *eLife* 10.7554/eLife.03658.



60. Liu Y, Li H, Sugiura Y, Han W, Gallardo G, Khvotchev M, Zhang Y, **Kavalali ET**, Südhof TC, Lin W (2015). Ubiquitin-synaptobrevin fusion protein causes degeneration of presynaptic motor terminals in mice. *The Journal of Neuroscience* 35: 11514-11531.
61. Reese AL, **Kavalali ET** (2015). Spontaneous neurotransmission signals through store-driven Ca<sup>2+</sup> transients to maintain synaptic homeostasis. *eLife* 10.7554/eLife.09262.
62. Nelson BR, Makarewich CA, Anderson DM, Winders BR, Troupes CD, Wu F, Reese AL, McAnally JR, Che X, **Kavalali ET**, Cannon SC, Houser SR, Bassel-Duby R, Olson EN (2016). A peptide encoded by a transcript annotated as long noncoding RNA enhances SERCA activity in muscle. *Science* 351: 271-275.
63. Afuwape OAT, **Kavalali ET** (2016). Imaging synaptic vesicle Exocytosis-Endocytosis with pH sensitive fluorescent proteins. *Methods in Molecular Biology* 1474:187-200.
64. Mahgoub M, Adachi M, Suzuki K, Liu X, **Kavalali ET**, Chahrour MH, Monteggia LM (2016). MeCP2 and Histone Deacetylases 1 and 2 in Dorsal Striatum collectively suppress repetitive behaviors. *Nature Neuroscience* 19:1506-1512.
65. Reese AL, **Kavalali ET** (2016) Single synapse evaluation of the postsynaptic NMDA receptors targeted by evoked and spontaneous neurotransmission. *eLife*. 10.7554/eLife.21170.
66. Afuwape OAT, Wasser C, Schikorski T, **Kavalali ET** (2017) Synaptic vesicle pool specific modification of neurotransmitter release by intravesicular free radical generation. *The Journal of Physiology (Lond.)* 595:1223-1238.
67. Li YC, Chanaday NL, Xu W, **Kavalali ET** (2017) Synaptotagmin-1 and synaptotagmin-7-dependent fusion mechanisms target synaptic vesicles to kinetically distinct endocytic pathways. *Neuron* 93:616-631.
68. Horvath PM, **Kavalali ET**, Monteggia LM (2017) CRISPR/Cas9 system-mediated impairment of synaptobrevin/VAMP function in postmitotic hippocampal neurons. *Journal of Neuroscience Methods* 278:57-64.
69. Crawford DC, Ramirez DMO, Trauterman B, Monteggia LM, **Kavalali ET** (2017) Selective molecular impairment of spontaneous neurotransmission modulates synaptic efficacy. *Nature Communications* 8:14436.
70. Schaukowitz K, Reese AL, Kim SK, Kilaru G, Joo JY, **Kavalali ET**, Kim TK (2017) An intrinsic transcriptional program underlying synaptic scaling during activity suppression. *Cell Reports* 18:1512-1526.
71. Suzuki K, Nosyreva E, Hunt KW, **Kavalali ET**, Monteggia LM (2017) Effects of a ketamine metabolite on synaptic NMDAR function. *Nature*, 546: E1-E3.
72. Ramirez DMO, Crawford DC, Chanaday NL, Trauterman B, Monteggia LM, **Kavalali ET** (2017) Loss of Doc2-dependent spontaneous neurotransmission augments glutamatergic synaptic strength. *The Journal of Neuroscience* 37:6224-6230.
73. Darios F, Jorgacevski J, Flašker A, Zorec R, García-Martínez V, Villanueva J, Gutiérrez L, Leese C, Bal M, Nosyreva E, **Kavalali ET**, Davletov B (2017). Sphingomimetic multiple sclerosis drug FTY720 activates vesicular synaptobrevin and augments neuroendocrine secretion. *Scientific Reports* 20:5958.

74. Gideons ES, Lin PY, Mahgoub M, **Kavalali ET**, Monteggia LM (2017). Chronic lithium treatment elicits its antimanic effects via BDNF-TrkB dependent synaptic downscaling. *eLife* 6: e25480.
75. Stallings NR, O'Neal MA, Hu J, **Kavalali ET**, Bezprozvanny I, Malter JS (2018). Pin1 regulates A $\beta$ 42-mediated dendritic spine loss. *Science Signaling* 11: eaap8734.
76. Chanaday NL, **Kavalali ET** (2018). Optical detection of three modes of endocytosis at hippocampal synapses. *eLife* 7: e36097.
77. Liu P, Khvotchev M, Li YC, Chanaday NL, **Kavalali ET** (2018). Copine-6 binds to SNAREs and selectively suppresses spontaneous neurotransmission. *The Journal of Neuroscience* 38:5888-5899.
78. Hoerder-Suabedissen A, Korrell KV, Hayashi S, Jeans A, Ramirez DMO, Grant E, Christian HC, **Kavalali ET**, Wilson MC, Molnár Z (2019). Cell-specific loss of SNAP25 from cortical projection neurons allows normal development but causes subsequent neurodegeneration. *Cerebral Cortex*, 29:2148-2159.
79. Lin PY, **Kavalali ET**, Monteggia LM (2018). Genetic Dissection of Presynaptic and Postsynaptic BDNF-TrkB signaling in synaptic efficacy of CA3-CA1 synapses. *Cell Reports* 24:1550-1561.
80. Monteggia LM, Lin PY, Adachi M, **Kavalali ET** (2019). Behavioral analysis of SNAP-25 and Synaptobrevin-2 haploinsufficiency in mice. *Neuroscience*, 420:129-135.
81. Hussain S, Fredriksen I, Ringsevjen H, **Kavalali ET**, Davanger S. (2019). Antibodies raised against aldehyde-fixed antigens improve sensitivity for postembedding electron microscopy. *J Neurosci Methods* 317:1-10.
82. Horvath PM, Piazza MK, Monteggia LM, **Kavalali ET** (2020). Spontaneous and evoked neurotransmission are partially segregated at inhibitory synapses. *eLife*, 9:e52852.
83. Lin PY, Chanaday NL, Horvath PM, Ramirez DMO, Monteggia LM, **Kavalali ET** (2020). VAMP4 maintains a Ca<sup>2+</sup>-sensitive pool of spontaneously recycling synaptic vesicles. *The Journal of Neuroscience*, 40: 5389-5401.
84. Afuwape OAT, Chanaday NL, Kasap M, Monteggia LM, **Kavalali ET** (2020). Persistence of quantal synaptic vesicle recycling following dynamin depletion. *bioRxiv* doi: <https://doi.org/10.1101/2020.06.12.147975>, submitted for peer review
85. Simmons RL, Li Haiyan, Alten B, Santos MS, Jiang R, Paul B, Lalani SJ, Cortesi A, Parks K, Khandelwal N, Smith-Packard B, Phoon MA, Shinawi M, Hussain SA, **Kavalali ET**, Sherr EH, Voglmaier, SM (2020). Overcoming Presynaptic Effects of VAMP2 Mutations with 4-Aminopyridine Treatment. *Human Mutation* 41: 1999-2011.
86. Alten B, Zhou Q, Shin OH, Esquivies L, Lin PY, White KI, Sun R, Chung WK, Monteggia LM, Brunger AT, **Kavalali ET** (2021). Role of aberrant spontaneous neurotransmission in SNAP25-associated encephalopathies. *Neuron* 109: 59-72.
87. Vilcaes AA, Chanaday NL\*, **Kavalali ET\*** (2021). Interneuronal exchange and functional integration of synaptobrevin via extracellular vesicles. *Neuron* 109: 971-983.E5 (\*Corresponding Authors).
88. Matthews EA, Sun W, McMahon SM, Doengi M, Halka L, Anders , Müller JA, Steinlein P, Vana N, van Dyk G, Pitsch J, Becker AJ, Pfeifer A, **Kavalali ET**, Lamprecht A, Henneberger C, Stein V, Schoch S, Dietrich D

(2021). Leaky wiring of the brain: local cluster of coupled synapses and extracellular signal integration *bioRxiv* doi: <https://www.biorxiv.org/content/10.1101/2021.02.05.429974v1.abstract>, submitted for peer review

89. Chanaday NL, Nosyreva E, Shin OH, Zhang H, Aklan I, Atasoy D, Bezprozvanny I, **Kavalali ET** (2021). Presynaptic store-operated Ca<sup>2+</sup> entry drives excitatory spontaneous neurotransmission and augments endoplasmic reticulum stress. *Neuron*, in press
90. Kim JW, Autry AE, Na ES, Adachi M, Bjorkholm C, **Kavalali ET**, Monteggia LM (2021). Sustained effects of rapidly-acting antidepressants require BDNF-dependent MeCP2 phosphorylation. *Nature Neuroscience*, in press.
91. Kim JW, Herz J, **Kavalali ET**, Monteggia LM (2021). A key requirement for synaptic Reelin signaling in ketamine-mediated behavioral and synaptic action. *Proceedings of the National Academy of Sciences of the USA*, in press.
92. Shumate KM, Tas ST, **Kavalali ET**, Emeson RB (2021). RNA editing-mediated regulation of CAPS1 localization and its impact on synaptic transmission. *Journal of Neurochemistry*, in press.

### **Reviews and Commentary**

1. Harata N, Pyle JL, Aravanis AM, Mozhayeva M, **Kavalali ET**, Tsien RW (2001). Limited number of recycling vesicles in small CNS nerve terminals: implications for neural signaling and cell biology of vesicular cycling. *Trends in Neurosciences* 24: 637-643.
2. **Kavalali ET** (2002). SNARE interactions in membrane trafficking: a perspective from mammalian central synapses. *BioEssays* 24: 926-936.
3. **Kavalali ET** (2006). Synaptic vesicle reuse and its implications. *The Neuroscientist* 12: 57-66.
4. Atasoy D, **Kavalali ET** (2006). Presynaptic unsilencing: searching for a mechanism. *Neuron* 50: 345-346.
5. Chung C, **Kavalali ET** (2006). Seeking a function for spontaneous neurotransmission. *Nature Neuroscience* 9: 989-990.
6. **Kavalali ET** (2007). Multiple vesicle recycling pathways in central synapses and their impact on neurotransmission. *The Journal of Physiology (Lond.)* 585: 669-679.
7. Krämer H, **Kavalali ET** (2008). Dynamin-independent synaptic vesicle retrieval? *Nature Neuroscience* 11: 6-8.
8. Wasser C, **Kavalali ET** (2009). Leaky synapses: Regulation of spontaneous neurotransmission in central synapses. *Neuroscience* 158:177-188.
9. Monteggia LM, **Kavalali ET** (2009). Rett Syndrome and the impact of MeCP2 associated transcriptional mechanisms on neurotransmission. *Biological Psychiatry* 65: 204-210.
10. Chung C, **Kavalali ET** (2009). Synaptic Vesicle Endocytosis: Get Two for the Price of One? *Neuron* 61: 333-334.
11. Ramirez DM, **Kavalali ET** (2011). Differential regulation of spontaneous and evoked neurotransmitter release at central synapses. *Curr Opin Neurobiol.* 21:275-282.

12. **Kavalali ET**, Chung C, Khvotchev M, Leitz J, Nosyreva E, Raingo J, Ramirez DM (2011). Spontaneous Neurotransmission: An Independent Pathway for Neuronal Signaling? *Physiology (Bethesda)* 26:45-53.
13. **Kavalali ET**, Nelson ED, Monteggia LM (2011). Role of MeCP2, DNA methylation, and HDACs in regulating synapse function. *J. Neurodevelop. Disord.* 3:250-256.
14. Ramirez DM, **Kavalali ET** (2012). The role of non-canonical SNAREs in synaptic vesicle recycling. *Cellular Logistics* 2:20-27.
15. **Kavalali ET**, Monteggia LM (2012) Synaptic mechanisms underlying rapid antidepressant action of ketamine. *The American Journal of Psychiatry* 169:1150-1156
16. Monteggia LM, **Kavalali ET** (2012). Depression brought to light (News and Views). *Nature*, 491:537-538.
17. Na ES, Nelson ED, **Kavalali ET**, Monteggia LM (2013) The impact of MeCP2 loss or gain of function on synaptic plasticity. *Neuropsychopharmacology Reviews* 38:212-219.
18. Monteggia LM, Gideons E, **Kavalali ET** (2013). The role of eEF2 kinase in rapid antidepressant action of ketamine. *Biological Psychiatry* 73:1199-1203.
19. Monteggia LM, **Kavalali ET** (2013). Scopolamine and ketamine: evidence of convergence? *Biological Psychiatry* 74: 712-713.
20. **Kavalali ET**, Jorgensen EM (2014). Visualizing presynaptic function. *Nature Neuroscience* 17: 10-16.
21. **Kavalali ET**, Monteggia LM (2015). How does ketamine elicit a rapid antidepressant response? *Current Opinion in Pharmacology*, 20C:35-39.
22. **Kavalali ET** (2015). The mechanisms and functions of spontaneous neurotransmitter release. *Nature Reviews Neuroscience* 16:5-16.
23. Crawford DC, **Kavalali ET** (2015). Molecular underpinnings of synaptic vesicle pool heterogeneity. *Traffic*, 16:338-364.
24. Leitz J, **Kavalali ET** (2016). Ca<sup>2+</sup>-dependence of synaptic vesicle endocytosis. *The Neuroscientist* 22:464-476 [Epub ahead of print in 2015].
25. Li YC, **Kavalali ET** (2015). How do RIM-BPs link voltage-gated Ca<sup>2+</sup> channels to evoked neurotransmitter release? *Neuron*, 87:1119-1121.
26. Li YC, **Kavalali ET** (2017). Synaptic Vesicle Recycling Machinery Components as Potential Therapeutic Targets. *Pharmacological Reviews*, 69:141-160.
27. **Kavalali ET**, Monteggia LM (2017). The ketamine metabolite 2R,6R-hydroxynorketamine blocks NMDA receptors and impacts downstream signaling linked to antidepressant effects. *Neuropsychopharmacology Reviews*, 43:221-222.
28. Chanaday NL, **Kavalali ET** (2017). How do you recognize and reconstitute a synaptic vesicle after fusion? *F1000 Research*, 6:1734.

29. **Kavalali ET** (2017). Spontaneous neurotransmission: a form of neural communication comes of age. *Journal of Neuroscience Research*, 96:331-334.
30. Chanaday NL, **Kavalali ET** (2018). Presynaptic origins of distinct modes of neurotransmitter release. *Current Opinion in Neurobiology*, 51:119-126.
31. Chanaday NL, **Kavalali ET** (2018). Time course and temperature dependence of synaptic vesicle endocytosis. *FEBS Letters*, 592:3606-3614.
32. **Kavalali ET** (2020). Neuronal Ca<sup>2+</sup> signalling at rest and during spontaneous neurotransmission. *The Journal of Physiology (Lond.)* 598:1649-1654.
33. Bezprozvanny I, **Kavalali ET** (2020). Presynaptic endoplasmic reticulum and neurotransmission. *Cell Calcium*, 85:102133.
34. Chanaday NL, **Kavalali ET** (2020). Is Ca<sup>2+</sup> essential for synaptic vesicle endocytosis? *Trends in Neurosciences*, 43:77-79.
35. **Kavalali ET**, Monteggia LM (2020). Targeting homeostatic synaptic plasticity for treatment of mood disorders. *Neuron* 106:715-726.
36. Shin OH, **Kavalali ET** (2021). Evolutionary diversity of the dual Ca<sup>2+</sup> sensor system for neurotransmitter release. *Cell Calcium*, in press.

#### **Book Chapters**

1. Bito H, **Kavalali ET**, Zhuo M, Deisseroth K, Tsien RW (2000). Synaptic modulation of dendritic Ca<sup>2+</sup> influx and gene expression. In *Slow Synaptic Responses and Modulation*, K. Kuba, H. Higashida, D.A. Brown and T. Yoshioka, eds. (Springer Verlag Tokyo), pp. 182-187.
2. Virmani T, **Kavalali ET** (2005). Synaptic vesicle recycling as a substrate for neural plasticity, In: *Synaptic Plasticity and Transsynaptic Signaling*, Stanton PK, Bramham C, and Scharfman HE (Eds.), Springer Science + Business Media, pp. 255-272.
3. Khvotchev M, **Kavalali ET** (2008). Measuring exocytosis, In: *Pharmacology of Neurotransmitter Release, Handbook of Experimental Pharmacology*, Vol. 184, Südhof TC, and Starke K (Eds.), Springer Verlag, pp. 23-43.
4. Atasoy D, **Kavalali ET** (2008). Neurotransmitter Release Machinery: Components of the Neuronal SNARE Complex and Their Function, In: *Structural and Functional Organization of the Synapse*, Ehlers MD, and Hell J (Eds.), Springer Verlag, pp. 91-110.
5. Atasoy D, **Kavalali ET** (2009). Synaptic Structure: Presynaptic Organization: Development of presynaptic functional and morphological organization. In: *Encyclopedia of Neuroscience*, Albright T, Bloom FE, Gage F, Spitzer N and Squire L (Eds.), Elsevier, pp. 967-974.
6. **Kavalali ET** (2009). Key processes and structures: Presynaptic Organization: Optical monitoring of exo- and endocytosis. In: *Encyclopedia of Neuroscience*, Albright T, Bloom FE, Gage F, Spitzer N and Squire L (Eds.), Elsevier, pp. 279-283.

7. **Kavalali ET** (2009). Key processes and structures: Presynaptic Organization: Kiss and Run Endocytosis. In: Encyclopedia of Neuroscience, Albright T, Bloom FE, Gage F, Spitzer N and Squire L (Eds.), Elsevier, pp. 1007-1013.
8. **Kavalali ET**, Monteggia LM (2012). Analysis of MeCP2 Function in the CNS. In: Epigenetics, brain and behavior, Paolo Sassone-Corsi and Yves Christen (Eds.), Springer, pp 133-143.

***Interviews and podcasts***

1. <https://www.brainfacts.org/in-the-lab/meet-the-researcher/2016/people-behind-the-science-ege-kavalali-113016>
2. <http://www.neuwritewest.org/blog/neurotalk-s5e16-ege-kavalali>