

BIOGRAPHICAL SKETCH

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Follow the sample format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME Julie A. Kauer		POSITION TITLE Professor of Medical Science	
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
Swarthmore College	A.B. with Distinction	1979	Psychology
Yale University	Ph.D.	1986	Pharmacology

A. Personal Statement

My laboratory is focused on understanding synaptic plasticity at the cellular level. We have projects focusing on TRPV1-dependent LTD in hippocampal synapses, ventral tegmental synaptic plasticity that is triggered by drugs of abuse, and most recently, synaptic plasticity in the dorsal horn of spinal cord involved in pain transmission. We use primarily electrophysiological approaches to explore the molecular mechanisms required for each of these forms of synaptic plasticity.

B. Positions and Honors**Professional Training and Academic Career**

1986-1989	Postdoctoral Fellow, Department of Pharmacology, University of California San Francisco, CA
1989-1991	Postdoctoral Fellow, Department of Molecular and Cellular Physiology Stanford University School of Medicine, Stanford, CA
1991-2000	Assistant Professor, Department of Neurobiology, Duke University Medical Center, Durham, NC
2000-2006	Associate Professor, Department of Pharmacology, Physiology and Biotechnology Brown University, Providence, RI
2003-2006	Associate Professor, Department of Neuroscience Brown University, Providence, RI
2006-present	Professor, Departments of Pharmacology, Physiology and Biotechnology and Department of Neuroscience Brown University, Providence, RI

Honors and Service

Woods Hole Neurobiology course instructor, 1991, 1993
Woods Hole Neurobiology course lecturer, 1994-2003, 2008-9
NIH Internal Review Group MDCN-5, 2000-2004
Scholar in Residence, University of Pennsylvania Systems and Integrative Behavior, 4/01
Associate Editor, Journal of Neuroscience, 2001-2006
Associate Editor, Journal of Neurophysiology, 2002-present
Society for Neuroscience Program Committee, 2003-2007
Society for Neuroscience Jacob P. Waletzky Memorial Award Committee 2003
Vice Chair, Gordon Research Conference "Synaptic Transmission", 8/04
Chair, Gordon Research Conference "Synaptic Transmission", 7/06
Editorial Board, Physiology, 2006-present



Principal Investigator/Program Director (Last, first, middle): Kauer, Julie A.

Invited Adrian Seminar in Neuroscience, Cambridge University, Cambridge, UK

Special Lecturer, Society for Neuroscience meeting 11/09

NINDS Board of Scientific Counselors, 2008- present

Editorial Board, Physiological Reviews, 2010- present

C. Selected Publications

- Kauer, J.A., R.C. Malenka and R.A. Nicoll (1988) A persistent postsynaptic modification mediates long term potentiation in the hippocampus. **Neuron** 1: 911-917.
- Kauer, J.A., R.C. Malenka and R.A. Nicoll (1988) NMDA application potentiates synaptic transmission in hippocampus. **Nature** 334: 250-252.
- Malenka, R.C., J.A. Kauer, R.S. Zucker and R.A. Nicoll (1988) Postsynaptic calcium is sufficient for potentiation of hippocampal synaptic transmission. **Science** 242: 81-84.
- Nicoll, R.A., J.A. Kauer and R.C. Malenka (1988) The current excitement in long term potentiation. **Neuron** 1: 97-103.
- Malenka, R.C., J.A. Kauer, D.J. Perkel, M.D. Mauk, P.T. Kelly, R.A. Nicoll and M.N. Waxham (1989) An essential role for postsynaptic calmodulin and protein kinase activity in long-term potentiation. **Nature** 340: 554-557.
- Nicoll, R.A., R.M. Malenka and J.A. Kauer (1990) Functional comparison of neurotransmitter receptor subtypes in the mammalian central nervous system. **Physiol. Rev.** 70: 513-565.
- McMahon, L.L., and J. A. Kauer (1997) Hippocampal interneurons express a novel form of synaptic plasticity. **Neuron** 18: 1-11.
- Kandler, K., L.C. Katz, and J.A. Kauer. (1998) Focal photolysis of caged glutamate reveals an entirely postsynaptic form of hippocampal long-term depression. **Nature Neurosci.** 1: 119-123.
- Tecott, L.H., S.F. Logue, J.M. Wehner and J.A. Kauer. (1998) Selective impairments in contextual processing and dentate gyrus function in mice lacking serotonin 5-HT_{2C} receptors. **Proc. Natl. Acad. Sci.** 95: 15026-15031.
- Jones, S. and J.A. Kauer (1999) Amphetamine depresses excitatory synaptic transmission in the ventral tegmental area via serotonin receptors. **J. Neurosci.** 19: 9780-9787.
- S. Jones, Kornblum, J.L., and J.A. Kauer (2000) Amphetamine blocks long-term depression of ventral tegmental area synapses. **J. Neurosci.** 20: 5575-5580.
- Bliss, T., M. Errington, E. Fransen, J.M. Godfraind, J.A. Kauer, R.F. Kooy[†], P.F. Maness and A. J.W. Furley (2000) Long term potentiation in mice without L1CAM. **Curr. Biol.** 10: 1607-1610.
- Gutlerner, J.L., E.C. Penick, E. M. Snyder and J. A. Kauer (2002) Novel PKA-dependent long-term depression of excitatory synapses. **Neuron** 36: 921-931.
- Kauer, J.A. (2003) Addictive drugs and stress trigger a common change at VTA synapses. **Neuron** 37: 549-550.
- Faleiro, L., Jones, S. and Kauer, J.A. (2003) An increase in AMPAR/NMDAR ratios in the ventral tegmental area (VTA) is detectable within two hours of amphetamine injection. **Ann. N.Y. Acad. Sci.** 1003: 391-394.
- Li, Y. and Kauer, J. A. (2004) Repeated exposure to amphetamine disrupts dopaminergic modulation of excitatory synaptic plasticity and neurotransmission in nucleus accumbens. **Synapse** 51: 1-10.
- Kauer, J. A. (2004) Learning mechanisms in addiction: synaptic plasticity in the ventral tegmental area as a result of exposure to drugs of abuse. **Ann. Rev. Physiol.** 66: 447-475.

□ Principal Investigator/Program Director (Last, first, middle): Kauer, Julie A.

- Faleiro, L., Jones, S. and Kauer, J.A. (2004) Rapid synaptic plasticity of glutamatergic synapses on dopamine neurons in the ventral tegmental area in response to acute amphetamine injection. **Neuropsychopharmacol.** 29: 2115-2125.
- Park, M., E.C. Penick, J.G. Edwards, J.A. Kauer, and M.D. Ehlers (2004) Recycling endosomes supply AMPA receptors for LTP. **Science** 305: 1972-1975.
- Mair, R.C. and Kauer, J.A. (2006) Amphetamine depresses excitatory synaptic transmission at prefrontal cortical layer V synapses. **Neuropharmacol.** 52: 193-199.
- Kauer J.A. and Malenka R.C. (2006) LTP: AMPA receptors trading places. **Nat Neurosci.** 9:593-4.
- Nugent, F.S., Penick, E.C., and Kauer, J.A. (2007) Opioids block long-term potentiation of GABAergic synapses. **Nature** 446:1086-90.
- Nugent, F.S., Hwang A.R., Udaka, Y. and Kauer, J.A. (2007) High frequency afferent stimulation induces long-term potentiation of field potentials in the ventral tegmental area. **Neuropsychopharmacol.** 33:1704-1712.
- Kauer, J.A. and Malenka, R.C. (2007) Synaptic plasticity and addiction. **Nature Rev Neurosci** 8: 844-858.
- Nugent, F. S. and Kauer, J.A. (2008) LTP of GABAergic synapses in the ventral tegmental area and beyond. **J. Physiol.** 585: 1487-1493.
- Gibson, H.E., Edwards, J.G., Page, R. S., Van Hook, M.J. and Kauer J.A. (2008) TRPV1 channels mediate long-term depression at synapses on hippocampal interneurons. **Neuron** 57: 746-759. PMC2698707
- Wang Z., Edwards J.G., Riley N., Provance, D.W. Jr., Karcher R., Li X.-D., Davison I.G., Ikebe M., Mercer J.A., Kauer J.A., and Ehlers M.D. (2008) Myosin Vb mobilizes recycling endosomes and AMPA receptors for postsynaptic plasticity. **Cell:** 135: 535-548. PMC2585749
- Niehaus, J.L., Cruz-Bermudez, N.D., Kauer, J.A. (2008) Plasticity of Addiction: a Mesolimbic Dopamine Short-Circuit? **Amer J Addictions** 18: 259-71. PMC3125054
- Kauer, J.A. and Gibson, H.E. (2009) Hot flash: TRPV channels in the brain. **Trends Neurosci** 32:215-24.
- Nugent, F.S., Niehaus, J.L., and Kauer, J.A. PKG and PKA signaling in LTP at GABAergic synapses. (2009) **Neuropsychopharmacol** 34:1829-42. PMC2680921
- McBain, C. J. and Kauer, J.A. (2009) Presynaptic plasticity: targeted control of inhibitory networks. **Curr Opin. Neurobiol.** 19:254-62. PMCID3121152
- Niehaus, J.L., Murali, M. and Kauer, J.A. (2010) Drugs of abuse and stress impair LTP at inhibitory synapses in the ventral tegmental area. **Eur J Neurosci** 32: 108-117. PMC2908505
- Edwards, J.G., Gibson, H.E., Jensen, T., Nugent, F., Walther, C., Blickenstaff, J. and Kauer, J.A. (2010) A novel non-CB1/TRPV1 endocannabinoid-mediated mechanism depresses excitatory synapses on hippocampal CA1 interneurons. **Hippocampus** 22: 209-221. PMC3117951
- Sumioka, A., Brown, T.E., Kauer, J.A. and Tomita, S. (2011) PDZ binding of TARP-γ8 controls synaptic transmission, but not synaptic plasticity. **Nature Neurosci** 14: 1410-12. PMC3206644

Funding (current)

Brown University Seed Fund Award Kauer/Lipscombe (co-PIs) 03/15/2012 – 06/30/2013
“Molecular and Cellular Mechanisms Underlying the Transition from Acute to Chronic Pain”

NIH/NIDA RO1 Kauer (PI) 12/01/11 - 11/30/2016
“Inhibitory synaptic transmission, stress and drugs of abuse”



Principal Investigator/Program Director (Last, first, middle): Kauer, Julie A.

Funding (pending)

NIH/NINDS (PI) RO1
"Synaptic plasticity in the dorsal horn"

04/01/12 - 03/31/2017