JULIE A. KAUER
Curriculum Vitae

Julie Ann Kauer, B.A., Ph.D.
Professor of Medical Science
Department of Molecular Pharmacology, Physiology and Biotechnology
And Neuroscience
Brown University, Box G-B4
Providence, RI 02912
Phone: (401) 863-9803
E-mail: Julie_Kauer@Brown.edu

Education

Swarthmore College	1979	B.A., Psychology, with Distinction
Yale University	1986	Ph.D., Pharmacology

Professional Training and Academic Career

1986-1989	Postdoctoral Fellow, Department of Pharmacology University of California San Francisco 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
2000-2005	Associate Professor, Department of Pharmacology, Physiology and Biotechnology Brown University, Providence, RI
2003-2005	Associate Professor, Department of Neuroscience Brown University, Providence, RI
2006-	Professor, Department of Pharmacology, Physiology and Biotechnology Professor, Department of Neuroscience Brown University, Providence, RI

Publications

Book Chapters

Bunney, B.S., L.T. Meltzer, J.A. Kauer and L.A. Chiodo (1983) (+)-3-PPP: A selective dopamine autoreceptor agonist? Electrophysiological studies in

the basal ganglia. In: Dopamine Receptor Agonists, A. Carlsson and J.L.C. Nilsson, eds., Swedish Pharmaceutical Press, Sweden, pp. 138-144.

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Kauer, J. A. (2017) Life experiences and addictive drugs change your brain in similar ways. In: Think Tank: 45 Curious Neuroscientists Explain the Biological Roots of Human Experience. D.J. Linden, editor, Yale University Press.

Refereed Journal Articles

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Kaczmarek, L.K. and J.A. Kauer (1983) Calcium entry causes a prolonged refractory period in peptidergic neurons of Aplysia. **J. Neurosci.** 3: 2230-2239.

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Kauer, J.A. and L.K. Kaczmarek (1985) Peptidergic neurons of Aplysia lose their response to cyclic adenosine 3':5'-monophosphate during a prolonged refractory period. **J. Neurosci.** 5: 1339-1345.

Kauer, J.A., T.E. Fisher and L.K. Kaczmarek (1987) Alpha bag cell peptide directly modulates the excitability of the neurons that release it. **J. Neurosci.** 7: 3623-3632.

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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.

Bekoff, A., J.A. Kauer, A. Fulstone and T. R. Summers (1989) Neural control of limb coordination. II. Hatching and walking motor output patterns in the absence of input from the brain. **Exp. Brain Res.** 74: 609-617.

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.

Kauer, J.A., R.C. Malenka, D.J. Perkel and R.A. Nicoll (1990) Postsynaptic mechanisms involved in long-term potentiation. **Adv. Exp. Med. Biol.** 268: 291-299.

Desai, M.A., C.J. McBain, J.A. Kauer and P.J. Conn (1994) Metabotropic glutamate receptor-induced disinhibition is mediated by reduced transmission at excitatory synapses onto interneurons and inhibitory synapses onto pyramidal cells. **Neurosci. Lett.** 181: 78-82.

McBain, C.J., T.J. DiChiara, J.A. Kauer (1994) Activation of metabotropic glutamate receptors distinguishes two classes of hippocampal interneurons and potentiates excitatory synaptic transmission. **J. Neurosci.** 14: 4433-4445.

Covey, E., J.A. Kauer and J.H. Casseday (1996) Whole-cell patch-clamp recording reveals subthreshold sound-evoked postsynaptic currents in the inferior colliculus of awake bats. **J. Neurosci.** 16: 3009-3018.

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Williams, J.H. and J.A. Kauer (1997) Pharmacological and circuit properties of carbachol-induced oscillatory activity in rat hippocampus. **J. Neurophysiol. 78:** 2631-2640.

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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.

Kauer, J. A. (1999) Blockade of hippocampal long-term potentiation by strong local stimulation. **J. Neurophysiol. 81**: 940-944.

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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. **Current Biology 10**: 1607-1610.

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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. **NY 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.

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., Penick, E.C., Edwards J.G., Kauer, J.A. and Ehlers, M.D. (2004) Recycling endosomes supply AMPA receptors for LTP. **Science** 305: 1972-1975.
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Mair, R.C. and Kauer, J.A. (2006) Amphetamine depresses excitatory synaptic transmission at prefrontal cortical layer V synapses. **Neuropharmacol.** 52: 193-199.

Nugent, F.S., Penick, E.C., and Kauer, J.A. (2007) Opioids block long-term potentiation of GABAergic synapses. **Nature** 446:1086-1090.

{Write-ups of this paper were published in Agence France Presse, Reuters, Scientific American, Neurology Reviews, Nature Neuroscience, and others, and I participated in radio interviews on the BBC and in Western Australia regarding this work.
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Nugent, F.S.,. Hwong 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.

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

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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

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Ouyang, Q., Lizarraga, S.B., Schmidt, M., Yang, U., Gong, J., Ellisor, D., Kauer, J.A., and Morrow, E.M. (2013) Christianson syndrome protein NHE6 modulates TrkB endosomal signaling required for neuronal circuit development. **Neuron** 80: 97-112. PMC3830955.

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Polter, A.M., Bishop, R.A., Briand, L.A., Graziane, N.M., Pierce, R. C., and Kauer, J.A. (2014) Post-stress block of kappa opioid receptors rescues LTP_{GABA} and prevents reinstatement of cocaine seeking. **Biol. Psychiatry** 76:785-93. PMC 4019343
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Dingle Y-T L, Chirila AM, Boutin, ME, Livi L, Labriola NR, Jacubek L, Morgan JR, Darling EM, Kauer JA, Hoffman-Kim D. (2015) 3D Neural spheroid culture: an in vitro model for the central nervous system. **Tissue Engineering 21:** 1274-83. PMID: 26414693

Polter, A.M., Barcomb, K., Chen, R.W., Dingess, P.M., Graziane, N.M., Brown, T.E., and Kauer, J.A. (2017) Constitutive activation of kappa opioid receptors at VTA inhibitory synapses following acute stress. **Elife** DOI: 10.7554/eLife.23785. PMC 5389861

Polter, A.M., Barcomb, K., Tsuda, A.C., and Kauer, J.A. Synaptic function and plasticity of inhibitory inputs onto VTA dopamine neurons. In revision.

Pradier, B., Lanning, K., Talijan, K.T., Feuille, C.J., Nagy, M.A., and Kauer J.A. Persistent but labile synaptic plasticity at excitatory synapses. In revision.

Kloc, M., Chirila, A.M., and Kauer, J.A. NMDA receptor activation induces long-term potentiation of glycine synapses. In revision.

Pradier, B., Shi, H.-B,. Kim, D.-S., Lipscombe, D. and Kauer, J.A. Long-term depression induced by optogenetically driven nociceptive inputs to trigeminal nucleus or migraine triggers. In revision.

Invited Review Articles

Kaczmarek, L.K., J.A. Strong, and J.A. Kauer (1986) The role of protein kinases in the control of prolonged changes in neuronal excitability. **Prog. Brain Res.** 69: 77-90.

Nicoll, R.A., J.A. Kauer and R.C. Malenka (1988) The current excitement in long term potentiation. **Neuron** 1: 97-103.

Nicoll RA, Malenka RC, Kauer JA. (1989) The role of calcium in long-term potentiation. **Ann N Y Acad Sci. 568**:166-70.

Malenka, R.C., J.A. Kauer, D.J. Perkel and R.A. Nicoll (1989) The impact of postsynaptic calcium on synaptic transmission -- its role in long-term potentiation. **Trends Neurosci.** 12: 444-450.

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.

Kauer J.A., and L.L. McMahon (1997) Depressing transmission in GABAergic hippocampal neurons. **Mol. Psychiatry 2:** 434-436.

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Kauer, J.A. (2005) Inhibitory synapses turn exciting. **Nature Neurosci 8**: 257-258.

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Kauer J.A. and Malenka R.C. (2006) LTP: AMPA receptors trading places. **Nat Neurosci. 9**:593-4.

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**.** PMC2375707

Kauer, J.A. (2008) Brain TRPV1 channels and synaptic plasticity. **Future Neurol. 3**: 507-510. (not peer-reviewed)

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. (not peer-reviewed)

McBain, C. J. and Kauer, J.A. (2009) Presynaptic plasticity: targeted control of inhibitory networks. **Curr Opin. Neurobiol. 19**:254-62. PMCID3121152

Polter, A.M. and Kauer, J.A. (2014) Stress and VTA synapses: Implications for addiction and depression. **Eur. J. Neurosci**. **39**: 1179-88. PMC4019343

Kauer JA, Polter AM. (2014) Yin and Yang: unsilencing synapses to control cocaine seeking. **Neuron 83**:1234-6.

Abstracts:

Bekoff, A. and J. A. Kauer (1980) Neural control of hatching in the chick. **Soc. Neurosci. Abstr.** 6: 75.

Meltzer, L.T., J.A. Kauer and B.S. Bunney (1982) +3PPP: Evaluation of effects on pre- and postsynaptic central dopamine receptors. **Soc. Neurosci. Abstr.** 8: 922.

Kauer, J.A. and L.K. Kaczmarek (1984) Peptidergic neurons of Aplysia lose their response to cyclic AMP during a prolonged refractory period. **Soc. Neurosci. Abstr.** 10: 1102.

Kauer, J.A. and L.K. Kaczmarek (1985) A neuropeptide autoreceptor modulates neuronal excitability. **Soc. Neurosci. Abstr.** 11: 710.

Kauer, J.A. and L.K. Kaczmarek (1986) An inwardly rectifying K+ current in Aplysia is enhanced by a neuropeptide acting as an autoreceptor. **Soc. Neurosci. Abstr.** 12: 149.

Kauer, J.A., R.C. Malenka and R.A. Nicoll (1988) NMDA ionophoresis or synaptic stimulation causes potentiation of synaptic transmission when paired with postsynaptic depolarization in hippocampal pyramidal cells of the rat. **J. Physiol.** 398: 34.

Kauer, J.A., R.C. Malenka, R.S. Zucker and R.A. Nicoll (1988) An increase in postsynaptic calcium is sufficient to enhance synaptic transmission in hippocampus. **Soc. Neurosci. Abstr.** 14: 914.

Kauer, J.A. and R.A. Nicoll (1988) An APV-resistant, non-associative form of long-term potentiation in the rat hippocampus. In: Synaptic Plasticity of the Hippocampus, H.L. Haas and G. Buzsaki, eds. Springer, Berlin: 65.

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Perkel, D.J., R.C. Malenka, J.A. Kauer, P.T. Kelly, M.N. Waxham, M.D. Mauk and R.A. Nicoll (1989) Essential role of postsynaptic calmodulin and protein kinase activity in LTP. **Soc. Neurosci. Abstr.** 15: 166.

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Schweizer, F.E., J.A. Kauer, D.D. Friel, and R.W. Tsien (1992) Approaches to quantal analysis at the CA3-CA1 synapse in rat hippocampal slices. **Soc. Neurosci. Abstr.** 18: 403.

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McBain, C.J. and J.A. Kauer (1993) Metabotropic glutamate receptors strongly excite hippocampal CA1 stratum oriens interneurons. **Soc. Neurosci. Abstr.** 19: 625.

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Dolen , G. and J.A. Kauer. (1998) Long-term potentiation in subiculum. **Soc. Neurosci. Abst.** 24: 327.

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A.M. Chirila, T. E. Brown, B. Schrank, J. A. Kauer (2011) Essential role for transient receptor potential vanilloid 3 (TRPV3) in synaptic plasticity in the hippocampus. Soc. Neurosci. Abstr., online.

T.E. Brown, N.W. Bellono, J.A. Kauer (2012) Interleukin-1beta potentiates glycinergic synapses on layer II neurons in the dorsal horn of the spinal cord. Soc. Neurosci. online.

A.M. Polter, J. A. Kauer (2012) Long lasting changes in inhibitory synaptic plasticity in the ventral tegmental area after stress. Soc. Neurosci., online.

A.M. Chirila, T. E. Brown, J. A. Kauer (2012) Signaling events underlying TRPV1-mediated long-term depression at excitatory synapses on hippocampal interneurons. Soc. Neurosci., online.

A.M. Chirila, T. E. Brown, N.G. Bellono, J. A. Kauer. (2013) Interleukin 1β induces long-term potentiation of glycinergic synapses on dorsal horn GABAergic neurons. Soc. Neurosci., online.

A.M. Polter, R.A. Bishop, L. Briand, R.C. Pierce, J.A. Kauer (2013) A role for glucocorticoid and kappa opioid receptors in long-lasting effects of stress on VTA inhibitory synaptic plasticity. Soc. Neurosci., online.

A.M. Polter, R.A. Bishop, L. Briand, R.C. Pierce, J.A. Kauer (2014) A kappa opioid receptor antagonist reverses stress-induced neuroplasticity and cocaine-seeking even well after the stressor. Soc. Neurosci., online.

A.M. Chirila, T. E. Brown, R.J. Stevenson, R. A. Bishop, J. A. Kauer. (2014) Long-term potentiation of glycinergic synapses triggered by interleukin- 1β. Soc. Neurosci., online.

A. Andrade, S. Denome, J.A. Kauer, D. Lipscombe. (2014) Optogenetic control of CaV3.2 positive and TRPV1 positive sensory neurons and their synaptic inputs to dorsal horn spinal cord. Soc. Gen Physiol.

M.E. Boutin, Y.T.L. Dingle, A.M. Chirila, L.L. Livi, N.R. Labriola, J.R. Morgan, E.M. Darling, J.A. Kauer, D. Hoffman-Kim. (2015) Characterization of 3D cortical spheroids as an in vitro model of the central nervous system. TERMIS conference.

R. St. Laurent, C.I Moore, D. Lipscombe, B. W. Connors, U. Hochgeschwender, J.A. Kauer (2016) Bioluminescent control of optogenetics in acute brain slices. Soc. Neurosci., online.

A. Pal, Z. Zaid, W.E. Medendorp, J.A. Kauer, B.W. Connors, C.I. Moore, D. Lipscombe, U. Hochgeschwender. (2016) Split Gaussia luciferase based genetically encoded calcium indicator. Soc. Neurosci., online.

M. Gomez-Ramirez, A.I. More, B.W. Connors, J.A. Kauer, D. Lipscombe, U. Hochgeschwender, C.I. Moore (2016) Bioluminescent optogenetics (BL-OG): A systematic investigation of the neurophysiological effects of BL-OG in vivo. Soc. Neurosci., online.

D.M. DuBrueil, D.-S. Kim, E.J. Lopez-Soto, S. Denome, J.A. Kauer, D. Lipscombe. (2016) Selective activation of TRPV1-lineage neurons and analyses of nocifensive behavior and synaptic transmission in acute spinal cord slices reveal synaptic plasticity of inhibitory but not excitatory circuits. Soc. Neurosci., online.

B. Pradier, D.-S. Kim, D. Lipscombe, J.A. Kauer. (2016) Nociceptive inputs to trigeminal nucleus caudalis neurons – implications for migraine. Soc. Neurosci., online.

A.M. Polter, R. Chen, P. Dingess, K. Barcomb, T. Brown, J.A. Kauer. (2016) Acute stress induces constitutive activation of kappa opioid receptors. Soc. Neurosci., online.

M. Kloc, A. Chirila, R. Stevenson, J.A. Kauer. (2016) Potentiation of glycinergic IPSCs in the dorsal horn by Ca2+, NMDA and cAMP. Soc. Neurosci., online.

K. Barcomb, A.M. Polter, A.C. Tsuda, J.A. Kauer. (2016) Circuit-specific plasticity of inhibitory synapses on VTA dopamine neurons. Soc. Neurosci., online.

B. Pradier, H.-B. Shi, D.-S. Kim, J. A. Kauer (2017) Nociceptive inputs to trigeminal nucleus caudalis neurons - implications for migraine. Soc. Neurosci., online.

K. Barcomb, A.M. Polter, A.C. Tsuda, J.A. Kauer. (2016) Optogenetic Activation of Specific GABAergic Circuits in the Ventral Tegmental Area. Soc. Neurosci., online.

R. St. Laurent and J.A. Kauer. (2017) Novel Opioid-Sensitive Inhibitory Long-Term Potentiation, Soc. Neurosci., online.

Invited lectures

Invited Lectures

December, 1994	"Hippocampal interneurons", University of Chicago School of Medicine, Chicago, IL
April, 1996	"LTP is absent in hippocampal interneurons", Chicago Medical School, Finch Health Sciences, Chicago, IL
November, 1997	"Synaptic plasticity in hippocampal interneurons", University of Colorado, Denver, CO
December, 1997	"Synaptic plasticity in hippocampal interneurons", Conference on Neural Information Processing Systems, Breckenridge, CO
January, 1998	"Synaptic plasticity in hippocampal interneurons", Salk Institute, San Diego, CA
March, 1998	"LTD in hippocampal interneurons", University of California, San Francisco, CA
March, 1998	"LTD in hippocampal interneurons", Stanford University, Stanford, CA

April, 1998	"Long-term synaptic depression in hippocampal interneurons", Spring Hippocampal Reserch Conference, Grand Cayman
July, 1998	"Hippocampal interneurons are excited by serotonin", Fourth IUPHAR Satellite Meeting on Serotonin, Rotterdam, Netherlands
July, 1998	"Synaptic plasticity in hippocampal interneurons", University of Milan, Milan Italy
September, 1998	"Long-term Synaptic Depression in Hippocampal Interneurons and Pyramidal Cells", Johns Hopkins University, Baltimore, MD
October, 1998	"Long-term Synaptic Plasticity in Hippocampal Interneurons and Pyramidal Cells", NINCDS, Bethesda, MD
February, 1999	"Long-term Synaptic Plasticity in Hippocampal Interneurons and Pyramidal Cells", University of Pennsylvania, Dept. of Biology
March, 1999	"Amphetamine modulates synaptic transmission in the VTA", University of Colorado, Denver Dept. of Pharmacology
March, 1999	"Amphetamine blocks long-term depression in the ventral tegmental area", University of Southern California, Dept. of Biology
April, 1999	"Amphetamine blocks synaptic plasticity in the ventral tegmental area", University of Texas, Austin, Dept. of Neurobiology
April, 1999	"Amphetamine blocks synaptic plasticity in the ventral tegmental area", Brown University, Dept. of MPPB
May, 1999	"Amphetamine blocks synaptic plasticity in the ventral tegmental area", University of California, Davis Dept. of Neuroscience
November, 1999	"Amphetamine blocks synaptic plasticity in the ventral tegmental area", Yale University, Dept. of Psychiatry
February, 2000	"Plasticity of excitatory synapses in the midbrain dopaminergic reward pathway: block by amphetamine", New York University, Dept. of Neurobiology
July, 2000	"Synaptic transmission in the ventral tegmental area", International Narcotics Research Conference, Seattle, WA
December, 2000	"Amphetamine blocks synaptic plasticity in the ventral tegmental area", American College of Neuropsychopharmacology, San Juan, Puerto Rico
January, 2001	"Amphetamine blocks synaptic plasticity in the ventral tegmental area", Winter Conference on Brain Research Steamboat Springs, CO
May, 2001	"Amphetamine blocks synaptic plasticity in the ventral tegmental area", University of Pennsylvania, Dept. of Neurobiology

July, 2001	"Amphetamine blocks synaptic plasticity in the ventral tegmental area", Gordon Research Conference: Catecholamines Andover, NH
August, 2001	"Amphetamine blocks synaptic plasticity in the ventral tegmental area", Symposium on Synaptic Transmission Heron Island, Australia
October, 2001	"Amphetamine blocks synaptic plasticity in the ventral tegmental area", University of Alabama, Birmingham, AL
November, 2001	"Amphetamine blocks synaptic plasticity in the ventral tegmental area", Brandeis University, Waltham, MA
December, 2001	"Amphetamine blocks synaptic plasticity in the ventral tegmental area", Vanderbilt University, Nashville, TN
January, 2002	"Amphetamine blocks synaptic plasticity in the ventral tegmental area", Conference on Learning and Memory Park City, UT
February, 2002	"Amphetamine blocks synaptic plasticity in the ventral tegmental area", Baylor University, Houston, TX
May, 2002	"Amphetamine blocks synaptic plasticity in the ventral tegmental area", University of Rochester, NY
June, 2002	"Synaptic Plasticity of Ventral Tegmental Area Dopamine Neurons", Stanford University, CA
August, 2002	"Long-term depression in the ventral tegmental area requires cyclic AMP dependent protein kinase, Gordon Research Conference: Synaptic Transmission
March, 2003	"Synaptic Plasticity of Ventral Tegmental Area Dopamine Neurons", University of Pittsburgh, Pittsburgh, PA
April, 2003	"Synaptic Plasticity of Ventral Tegmental Area Dopamine Neurons", N.Y. Academy of Science Conference, New Haven, CT
May, 2003	"Synaptic plasticity in the midbrain dopaminergic reward system.", University of Washington, Seattle, WA
November, 2003	"Synaptic Plasticity of Ventral Tegmental Area Dopamine Neurons", NIDA Symposium at Society for Neuroscience Meeting
December, 2003	"Synaptic Plasticity of Ventral Tegmental Area Dopamine Neurons", Boston University, Boston, MA
February, 2004	"Synaptic Plasticity in the Ventral Tegmental Area", Molecular Mechanisms of Plasticity, Washington, DC
February, 2004	"Synaptic Plasticity in the Ventral Tegmental Area", University of Connecticut, Storrs, CT
July, 2004	"Synaptic Plasticity in the Ventral Tegmental Area", FASEB Conference: Modern Scientific Approaches to Drug Addiction, Tucson, AZ
February, 2005	"Synaptic Plasticity in the Ventral Tegmental Area", Tufts University, Boston, MA
March, 2005	"Synaptic Plasticity in the Ventral Tegmental Area", NIH Neuroscience Seminar Series, Bethesda, MD

April, 2005	"Synaptic Plasticity in the Ventral Tegmental Area", Mt. Sinai School of Medicine, New York, NY
April, 2005	"Synaptic Plasticity in the Ventral Tegmental Area: target of drugs of abuse", Loyola University, Chicago, IL
April, 2005	"Synaptic Plasticity in the Ventral Tegmental Area: target of drugs of abuse", Northwestern University, Chicago, IL
September, 2005	"Long-term potentiation of GABAergic synapses", University of Geneva, Geneva, Switzerland
September, 2005	"Synaptic Plasticity in the Ventral Tegmental Area", Gordon Research Conference on Excitatory Amino Acids and Brain Function, Aussois, France
October, 2005	"Long-term potentiation of GABAergic synapses blocked by opioids", UCLA, Los Angeles, CA
December, 2005	"Long-term potentiation of GABAergic synapses blocked by opioids", American College of Neuropsychopharmacology Conference, Waikoloa, Hawaii
January, 2006	"Long-term potentiation of GABAergic synapses blocked by opioids", UT Southwestern, Dallas, TX
January, 2006	Long-term depression at synapses on hippocampal interneurons", University of Chicago, IL
January, 2006	"Drugs of abuse modify synapses in the reward pathway", Yale University, New Haven, CT
February, 2006	"Opiates block long-term potentiation of GABAergic synapses", Medical University of South Carolina, Charleston, SC
March, 2006	"Long-term potentiation of GABAergic synapses", Picower / RIKEN Neuroscience Symposium, Cambridge, MA
June, 2006	"Long-term potentiation of GABAergic synapses blocked by opioids", University of California, San Diego, CA
September, 2006	"Opiates Block LTP at Synapses in the Midbrain Reward Pathway", University of Massachusetts, Worcester, MA
October, 2007	"Long-term potentiation of GABAergic synapses", LTP: 40 Unforgettable Years, Atlanta, GA
February, 2007	"Opiates Block LTP at Synapses in the Midbrain Reward Pathway", Keystone Meeting: Neurobiology of Addiction, Santa Fe, NM
March, 2007	"Addiction mechanisms", Brandeis University, Waltham, MA
March, 2007	"Opiates Block LTP at Synapses in the Midbrain Reward Pathway", Johns Hopkins University, Baltimore, MD
May, 2007	"Opiates Block LTP at Synapses in the Midbrain Reward Pathway", University of Connecticut
July, 2007	"Opiates Block LTP at Synapses in the Midbrain Reward Pathway", Gordon Research Conference on Inhibition in the CNS
October, 2007	"Opiates Block LTP at Synapses in the Midbrain Reward Pathway"., NYU School of Medicine, New York, NY

November, 2007	"Opiates Block LTP at Synapses in the Midbrain Reward Pathway", Journal of Physiology Symposium, San Diego, CA
December, 2007	"A hot new mechanism for long-term depression", Yale University Dept. of Neurology, New Haven, CT
January, 2008	"A hot new mechanism for long-term depression", Washington University, St. Louis, MO
February, 2008	"A hot new mechanism for long-term depression", Harvard University, Boston, MA
February, 2008	"A hot new mechanism for long-term depression", Winter Conference on Neural Plasticity, St. Lucia
March, 2008	"A hot new mechanism for long-term depression", Yale University, Dept. of Physiology, New Haven, CT
March, 2008	"A hot new mechanism for long-term depression", Albert Einstein University, New York, NY
March, 2008	"A hot new mechanism for long-term depression", University of Tennessee, Memphis, TN
May, 2008	"A hot new mechanism for long-term depression", University of North Carolina, Chapel Hill, NC
September, 2008	"TRPV1: Hot channels in hippocampal synaptic plasticity", SUNY Stony Brook, Stony Brook, NY
November, 2008	"Synaptic plasticity: the control of inhibitory circuits", Special Lecture, Society for Neuroscience Annual Meeting, Washington, DC
January, 2009	"A hot new mechanism for long-term depression", Baylor School of Medicine, Houston, TX
March, 2009	"TRPV1: a hot new mechanism for long-term depression", NINDS meeting: Synapses: Postsynaptic Mechanisms of Plasticity, Warrenton, VA
April, 2009	"A hot new mechanism for LTP", Washington State University, Pullman, WA
May, 2009	"TRPV1: hot new channels in the hippocampus", Adrian Seminar in Neuroscience, Cambridge University, Cambridge, UK
March, 2010	"A hot new mechanism for long-term depression", Student-Invited Speaker, University of Alabama, Birmingham, AL
March, 2010	"A hot new mechanism for long-term depression", Scripps Institute, La Jolla, CA
May, 2010	"A hot new mechanism for long-term depression", University of Pennsylvania, Philadelphia, PA
May, 2010	"A hot new mechanism for long-term depression", Case Western Reserve University, Cleveland, OH
June, 2010	"Stress, drugs, and plasticity: GABAergic synapses in the VTA", Rush Medical School, Chicago, IL
July, 2010	"A hot new mechanism for long-term depression ", Gordon Research Conference on Synaptic Plasticity

September, 2010	Keynote Speaker, "Stress, drugs, and plasticity: GABAergic synapses in the VTA", Washington University Neuroscience Retreat, St. Louis, MO
December, 2010	"Stress, drugs, and plasticity: GABAergic synapses in the VTA", Tufts University, Boston, MA
April, 2011	"Stress, drugs, and plasticity: GABAergic synapses in the VTA", Gallo Clinic and Research Center, UCSF, Emeryville, CA
May, 2011	"TRPV channels in long-term depression", Gordon Research Conference on Endocannabionoids, Les Diablerets, Switzerland
June, 2011	"Hippocampal LTD and TRPV channels", Gordon Research Conference on Excitatory Amino Acids
August, 2011	"Stress, drugs, and plasticity: GABAergic synapses in the VTA", Gordon Research Conference on Catecholamines
December, 2011	"Stress, drugs, and plasticity: GABAergic synapses in the VTA", Rosalind Franklin School of Medicine, North Chicago, IL
April, 2012	"Stress, drugs, and plasticity: GABAergic synapses in the VTA", NYU School of Medicine, New York, NY
May, 2012	"Stress, drugs, and plasticity: GABAergic synapses in the VTA", Uniformed Services University of the Health Sciences, Bethesda, MD
July, 2012	"Stress, drugs, and plasticity: GABAergic synapses in the VTA", Synaptic Basis of Disease, Geneva, Switzerland
November, 2012	Keynote Speaker, "Stress, drugs, and plasticity: GABAergic synapses in the VTA ", Center for the Neural Basis of Cognition retreat, Carnegie-Mellon U. and U. Pittsburgh, Pittsburgh, PA.
February, 2013	"Stress, drugs, and plasticity: GABAergic synapses in the VTA", MIT, Cambridge, MA
February, 2013	"Stress, Drugs and Synaptic Plasticity in the VTA", University of Texas, San Antonio, TX
March, 2013	"Stress, drugs, and plasticity: GABAergic synapses in the VTA" Rhode Island College, Providence, RI
April, 2013	"Synaptic plasticity in the dorsal horn: clues to pain?", University of Wyoming, Laramie, WY
April, 2013	'Acute stress activates kappa opioid receptors and triggers persistent synaptic changes in the VTA", Kappa Therapeutics 2013, Cambridge, MA
May, 2013	"History of Long-term potentiation in the hippocampus" Invited Faculty, Neuroscience School of Advanced Studies, "Synaptic plasticity and neural circuit remodeling", Cortona, Italy
September, 2013	"Glycine synapse LTP in the dorsal horn", Stanford University Conte Center Research Symposium, Stanford, CA

October, 2013	"Synaptic plasticity in the dorsal horn: clues to pain?", University of Connecticut Health Center, Farmington, CT
April, 2014	"Stress, drugs, and plasticity: GABAergic synapses in the VTA", University of Colorado School of Medicine, Denver, CO
May, 2014	"Stress, drugs, and plasticity: GABAergic synapses in the VTA", University of Indiana, Indianapolis, IN
July, 2014	"Acute stress activates kappa opioid receptors and triggers persistent synaptic changes in the VTA", International Narcotics Research Conference 2014, Montreal, Quebec
August, 2014	"Stress, drugs, and plasticity: GABAergic synapses in the VTA" Invited Faculty, Summerschool Utrecht, Universiteit Utrecht, Netherlands
January, 2015	"Long-term potentiation of glycine synapses in the pain pathway", University of Pittsburgh School of Medicine, Pittsburgh, PA
February, 2015	"Drugs and stress: synaptic plasticity in the reward pathway", George Washington University School of Medicine, Washington, DC
March, 2015	"Blocking kappa opioid receptors, even after stress, rescues LTP-GABA and prevents reinstatement of cocaine seeking", Janelia Farms meeting: "Motivational Circuits in Natural and Learned Behaviors", Ashburn, VA
May, 2015	"Long-term potentiation of glycine synapses in the pain pathway", Thomas Jefferson University School of Medicine, Philadelphia, PA
May, 2015	"Long-term potentiation of glycine synapses in the pain pathway" AND "Stress, drugs, and plasticity: GABAergic synapses in the VTA"Invited Faculty, Neuroscience School of Advanced Studies, "Synaptic plasticity and neural circuit remodeling", Florence, Italy
June, 2015	"Long-term potentiation of glycine synapses in the pain pathway", Gordon Research Conference on Excitatory Amino Acids and Brain Function, Newport, RI
July, 2015	"Long-term potentiation of glycine synapses in the pain pathway", Grass Fellows Lecture Series, Woods Hole, MA
August, 2015	"Long-term potentiation of glycine synapses in the pain pathway", Symposium: From Synapses to Circuits and Behavior, Cairns, Australia
September, 2015	"Long-term potentiation of glycine synapses in the pain pathway", Tufts University School of Medicine, Medford, MA
January, 2016	"Long-term potentiation of glycine synapses in the pain pathway", Yale University School of Medicine, New Haven, CT
April, 2016	"Acute stress activates kappa opioid receptors and triggers persistent synaptic changes in the VTA", Carlson Symposium, University of Chicago, Chicago, IL

June, 2016	"Glycine receptor LTP at synapses in the dorsal horn", Pain Mechanisms and Therapeutics Conference, Taormina, Sicily
August, 2016	"Glycine receptor LTP at synapses in the dorsal horn", Gordon Research Conference on Synaptic Transmission, Waterville Valley, NH
September, 2016	"Acute Stress Persistently Activates Kappa Opioid Receptors in the VTA", University of Michigan School of Medicine, Ann Arbor, MI
October, 2016	"Glycine synapses in the pain pathway", Amgen, Cambridge, MA
November, 2016	"Long-term potentiation of glycine synapses in the pain pathway", University of Rhode Island, South Kingston, RI
December, 2016	Invited Keynote Speaker, "Acute Stress Persistently Activates Kappa Opioid Receptors in the VTA", Front Range Neuroscience Conference, Fort Collins, CO
March, 2017	"Acute Stress Persistently Activates Kappa Opioid Receptors in the VTA", Medical College of South Carolina, Charlston, SC
May, 2017	"Stress, kappa receptor activation, and synaptic plasticity at GABAergic synapses", University of Calgary, Calgary, Alberta
August, 2017	Invited Faculty, Neuroscience School of Advanced Studies, "Synaptic plasticity and neural circuit remodeling", Siena, Italy
September, 2017	"Acute stress persistently activates kappa opioid receptors in the VTA", Northwestern University School of Medicine, Chicago, IL
April, 2018	TBA, Stanford University Neurosciences Institute, Stanford, CA
May, 2018	TBA, Jack Diamond Memorial Lecture, McMaster University, Hamilton, Ontario

Research in Progress

We currently have two major research areas.

The first project focuses on inhibitory GABAergic synapses in the ventral tegmental area (VTA), and their modulation by stress and drugs of abuse. We were the first to identify a form of long-term potentiation at these synapses, and have characterized the molecular mechanisms underlying the LTP. The VTA is essential for the development of addiction to drugs of abuse, and we find that morphine entirely blocks LTP at GABAergic synapses. This work defines a novel mechanism by which morphine can modulate the firing of dopamine neurons in the VTA known to be required for addiction. Moreover, we discovered that a brief stressful experience also entirely blocks this form of LTP. Intriguingly, we have found that kappa opioid receptors become

persistently active after acute stress, for a period lasting at least five days. We have linked this observation to stress-induced relapse to cocaine-seeking in rats; blocking kappa opioid receptors even days after the initial stress insult prevents relapse. We are currently exploring the mechanisms by which stress triggers this neurobiological adaptation. We are collaborating with Dr. Travis Brown at the University of Wyoming on the behavioral experiments. We are also using optogenetic and cell-marking tools to begin to delineate the VTA circuits responsive to opioid drugs.

In a second major project, we are also investigating synaptic plasticity in pain circuitry. We are exploring pain circuits in the dorsal horn of the spinal cord, the trigeminal nucleus caudalis, and the insular cortex. We have described a new type of synaptic plasticity triggered by the pro-inflammatory cytokine, interleukin-1β or by a rise in intracellular Ca2+ triggered either by membrane depolarization or by NMDAR activation. These mechanisms rapidly potentiate glycinergic synapses on neurons in superficial dorsal horn. This form of potentiation occurs during inflammatory pain. We have pioneered expression of channelrhodopsin in trigeminal ganglion neurons, and have begun using optogenetic selective neuronal stimulation to probe nociceptive circuitry that may contribute to migraine pain and other trigeminal pain syndromes. We have also begun to explore the effects of inflammatory cytokines on synapses in the insula. Our work in the area of nociception has been a collaboration with Dr. Diane Lipscombe.

Service:

I. To the University

MPPB Graduate Program Steering Committee (2000-present)
Neuroscience Department Search Committees (2002, 2003, 2007, 2008, 2013)
Neuroscience Department Graduate Admissions Committee (2000-2005)
Dean's Committee on Strategic Review of Biomedical Research (2002)
Summer PLME Research Assistantships Review (2002-2015)
Biomed IT Advisory Group (2004-2006)
Medical Committee on Academic Standing (2004-2012)
Undergraduate Academic Advising (2005-present)
University Committee on Academic Standing (2006-2010)
University IACUC (2006-2010)
Undergraduate prize committee (2008)
Co-director of MPP Graduate program (2009-10)
Director of MPP Graduate Program (2010)
Biology Curriculum Committee (2011-present)
University Nominations Committee (2011-2014)
Conflict of Interest Review Board (2011-present)
Chair, Conflict of Interest Review Board (2014-present)

BioMed Space Committee (2011- present)
Brown Institute for Brain Science Molecular Search co-chair, 2015 and 2017
PI on T32 Training Grant, "Predoctoral Training Program in Trans-Disciplinary Pharmacological Sciences" (2014- present)
Co-director, Brown Institute for Brain Science Center for Neural Circuits (2014-present)
Brown Institute for Brain Science Executive Committee member (2014-present)

II. To the Profession

Woods Hole Neurobiology course instructor, 1992, 1994
Woods Hole Neurobiology course lecturer, 1995-2002, 2008
Lecturer, Biotechnology for Business course, Duke University, 1993-2004
NIH Internal Review Group MDCN-5, 2000-2004
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 Award Committee 2003
Editorial Board, Physiology, 2006-2012
NIH Neuroscience Blueprint Neuroplasticity Workshop (8/2007)
NIH Neuroscience Blueprint Pain Workshop (9/2008)
NINDS Board of Scientific Counselors, 2008- 2013
Editorial Board, Physiological Reviews, 2010- present
Society for Neuroscience Axelrod Award Committee, 2014, 2015
NIH Internal Review Board NTRC (2017-present)
Ad hoc reviewer: Alzheimer's Association, Ireland Health Review Board, Wellcome Trust, Grass Fellowships, MRC fellowships (UK), NIDA Program Project (2005), Research Grants Council Hong Kong, MDCN-C Drug Development panel (2005), NIEHS review panel (2008), NICHD intramural review panel (2008), NIDA CEBRA review panel (2014), NIH CMND review panel (2014), NIH LAM review panel (2014), NINDS Board of Scientific Counselors (2014), NIH review panel ZRG1 MDCN-P (2015), NIH review panel ZRG1 MDCN-R (2015), NIH review panel NTRC (3/2017 and 9/2017).

Academic Honors and Awards

Scholar in Residence, University of Pennsylvania Systems and Integrative Behavior, 4/2001
Elected Vice Chair, Gordon Research Conference "Synaptic Transmission", 8/2004
Elected Chair, Gordon Research Conference "Synaptic Transmission", 8/2006
Special Lecture, Society for Neuroscience Annual Meeting, Washington, DC 11/2008

Adrian Seminar in Neuroscience, Cambridge University, Cambridge, UK 5/2009

Keynote Speaker, Washington University Neuroscience Retreat, St. Louis, MO, 9/2010

Keynote Speaker, Center for Neural Basis of Cognition Retreat, Carnegie-Mellon/University of Pittsburgh, 11/2012

Elected AAAS Fellow 11/2012

Keynote Speaker, Front Range Neuroscience Conference, Fort Collins, CO, 12/2016

Research Grants

a) **Past:**

NRSA, 1989-91

DuPont Co.
"Mechanism of action of DuP 996" $38,631 total costs/year
07/01/91- 06/30/93

NIH R29
"Modulation of hippocampal interneurons"
$347,126 total costs/year
04/01/92 - 03/31/97

Epilepsy Foundation of America
"Mechanisms underlying synaptic depression in hippocampal inhibitory interneurons following high-frequency stimulation"
$30,000 total costs/year
07/01/96-06/30/97

Cephalon, Inc.
"Mechanism of action of modafinil"
$45,000 total costs/year
10/01/96 - 10/01/97

NIH/NINDS RO1
"Excitability of hippocampal inhibitory interneurons"
$567,354 total costs/year
9/01/97-6/30/00

NIH/NIDA RO1

"Glutamate synapses in sensitization to drugs of abuse"
$94,699 direct costs/year
07/15/97-05/31/00

2 R01DA11289-08
"Glutamate synapses in sensitization to drugs of abuse"
$175,000 direct costs/year
07/01/00-03/31/06

NARSAD Independent Investigator Award
"Synaptic plasticity in the ventral tegmental area"
$50,000 direct costs/year
9/15/2002 – 9/14/2005

R03 DA15447-02
"Synaptic plasticity in the VTA studied in vivo"
$50,000 direct costs/year
07/01/03 - 06/30/06

R01 NS050570-01
"Glutamatergic synapses on hippocampal interneurons"
$200,000 direct costs/year
8/01/05 - 7/31/09

1P30RR031153 Atwood (PI) Kauer: Pilot project co-PI: 01/07/2011-3/31/2012
"Center for cancer signaling networks" [pilot project: "Lighting up synapses in the spinal dorsal horn", $70,000]

2 RO1 DA011289 Kauer (PI) 04/01/06 - 03/31/2011
$188,000 direct costs/year
"Inhibitory synaptic transmission and drugs of abuse"

Brown Institute for Brain Science Pilot Award Kauer/Lipscombe (co-PIs):
"Synaptic Remodeling in the Spinal Cord in Chronic Pain"
06/03/2011 - 06/01/12
$15,000 direct costs

R01NS065251-01
"TRPV1 channels in hippocampal neurons" $272,587 direct costs/year
08/01/09 - 07/31/2012

Brown University Seed Fund Award Kauer/Lipscombe (co-PIs):

"Molecular and Cellular Mechanisms Underlying the Transition from Acute to Chronic Pain" 03/15/2012 – 06/30/2014
$85,000 direct costs

Simons Award #239834
Simons Foundation & Lurie Marks Foundation (Morrow, PI; Kauer co-PI)
07/01/2012 -06/30/2014
"Endosomal NHE6 in Long Range Connectivity and Autism"
Kauer: ~$10,000 direct costs

NIH Blueprint for Neuroscience Research (**Kauer**/Lipscombe(Multi-PI)
NIDA 07/01/13 – 06/30/14
$75,000 direct costs
"Inhibitory Synaptic Transmission, Stress and Drugs of Abuse"

Pilot Award (**Kauer**/Saab: co-PIs) 06/03/2013 - 06/01/14
Brown Institute for Brain Science $30,000 direct costs
"CNS mechanisms of spinal cord stimulation for pain**"**

Current

2 RO1 DA011289 (PI: Kauer) 12/01/2011–12/31/2017
(NCE)
NIH/NIDA
"Inhibitory synaptic transmission, stress and drugs of abuse"

1R01NS088453-01 (PI: Kauer) 7/1/2014- 6/30/2019

NIH/NINDS
"Glycine receptor synaptic plasticity"

3R01NS088453-01S1 (PI: Kauer) 1/1/2015–6/30/2019

NIH/NINDS
"Glycine receptor synaptic plasticity - Supplement"
This is a diversity supplement request to the parent grant (funded) to fund a graduate student.

2RO1 NS055251-09A1 (PI: Lipscombe) 08/02/2006–07/31/2019

NIH/NINDS
"N-type Calcium Channels in Nociceptive Neurons
Role: Co-PI

W.M. Keck Foundation (PI: Moore) 07/1/2015-06/30/2018
Award #: 004538
"Bioluminescent Optogenetics to Autoregulate Excitable Cells"
Role: Co-PI

2T32GM077995-06 (PI: Kauer) 07/01/2016–06/30/2021

NIH/NIGMS
"Predoctoral Training Program in Trans-Disciplinary Pharmacological Sciences"

Under Review

RO1NS10579504 (PI: Kauer) 01/2018-03/31/2023
NIH/NINDS
"Labile LTP in short-term memory circuits"

Teaching

At Brown University:

1. Spring, 2001: Bio 110, Cell Physiology and Biophysics
   Undergraduate course, 27 students. Met weekly Wednesdays 3:00-5:20pm

2. Spring, 2001: BN294, Special topics in Neurobiology: Synaptic plasticity, co-taught with Mark Bear.
   Graduate seminar course. Met weekly Tuesdays 6:00-8:30pm.

3. Spring, 2002: Bio 274, Organ System Pharmacology
   Medical school pharmacology course, met bi-weekly Tu/Th 10:30-11:50am.

4. Fall, 2003: BI 217 Receptors, Ion Channels, and Synapses. Graduate/ undergraduate course. Met weekly Tuesdays 10:00 am-12:30.

5. Spring, 2004: Bio 110, Cell Physiology and Biophysics Undergraduate course, 19 students. Met weekly Wednesdays 3:00-5:20pm.

6. Fall, 2004: Bio 119, Synaptic transmission and plasticity. undergraduates and two graduate students. Met bi-weekly Tu/Th 1:00- 2:20 pm.

7. Fall, 2005: Bio 119, Synaptic transmission and plasticity. 13 undergraduates and one graduate student. Met bi-weekly Tu/Th 1:00-2:20 pm.

8. Fall, 2006: Bio 119, Synaptic transmission and plasticity. 18 undergraduates and two graduate students. Met bi-weekly Tu/Th 1:00-2:20 pm.

9. Fall, 2007: Bio 119, Synaptic transmission and plasticity. 18 undergraduates and two graduate students. Met bi-weekly Tu/Th 1:00-2:20 pm.

10. Spring, 2007: Bio 110, Cell Physiology and Biophysics Undergraduate course, 30 students. Met weekly Wednesdays 3:00-5:20pm.

11. Fall, 2008: Bio 1190, Synaptic transmission and plasticity. 18 undergraduates and two graduate students. Met bi-weekly Tu/Th 1:00-2:20 pm.

12. Spring, 2009: Bio 1100, Cell Physiology and Biophysics Undergraduate course, 30 students. Met weekly Wednesdays 3:00-5:20pm.

13. Spring, 2011: Biol 1100, Cell Physiology and Biophysics Undergraduate course, 30 students. Met weekly Wednesdays 3:00-5:20pm.

14. Fall, 2011: Bio 1190, Synaptic transmission and plasticity. 19 undergraduates and one graduate student. Meets weekly Th 1:00-3:50 pm.

15. Fall, 2012: Bio 1190, Synaptic transmission and plasticity. 20 undergraduates. Met TuTh 1:00-2:20 pm.

16. Spring, 2013: Biol 1100, Cell Physiology and Biophysics Undergraduate course, 29 students. Meets weekly Wednesdays 3:00-5:20pm.

17. Fall, 2014: Bio 1190, Synaptic transmission and plasticity. 22 undergraduates. Met TuTh 1:00-2:20 pm.

18. Summer, 2014: Co-taught an IMSD module with Anita Zimmerman on Scientific Writing, three 2-hour sessions.

19. Spring, 2015: Bio 1190, Synaptic transmission and plasticity. 22 undergraduates. Met TuTh 1:00-2:20 pm.

20. Spring, 2016: Bio 1190, Synaptic transmission and plasticity. 17 undergraduates. Met TuTh 1:00-2:20 pm.

21. Spring, 2017: Bio 1190, Synaptic transmission and plasticity. Meets TuTh 1:00-2:20 pm.

Lectures in courses directed by others:

1. Small group instructor, BI273: 2001, 2002, 2003
2. Two lectures, BI 274: 2003
3. One lecture, BI 2740: 2004, 2008, 2011
4. One lecture, NB 1020: 2001, 2003, 2004, 2011, 2014, 2015, 2016
5. Two lectures, BI 217: 2006
6. One lecture, NB 0010: 2003-17
7. One 2-3 hour lecture, NB 2030: 2006-2017
8. One three hour lab demonstration, NB 2030: 2011

Independent study students (*indicates published paper from work):
Suyearn Hong, 2000-1 (UTRA)

Cindy Poo, 2002-3 (UTRA)
*Tina Udaka, 2003-4 (UTRA)
Alison Hwong, 2004-5 (UTRA)
*Robert Mair, 2005-6 (UTRA)
Arlene Chang, 2005-2006
Janet Lee, 2006-7
Katherine Lanning, 2006-7 (UTRA)
Katherine Tsubota, 2007-8 (UTRA)
*Rachel Page, 2007-8 (UTRA)
Colin Feuille 2008-9 (UTRA)
*Francesco Pucci 2008-2010 (PLME summer fellowship)
Kelly Duong, 2010-11 (UTRA)
Mark Nagy, 2010-11 (UTRA)
*Benjamin Schrank, 2010-11 (UTRA)
Roy Ruttiman, 2010-2011 (UTRA)
Joshua Chu, 2010-2011
*Jingyi Gong, 2011- (UTRA)
Lorraine Fei 2011-2012 (UTRA)
*Rachel Bishop 2012- (UTRA)
Anant Gharpure 2012- (UTRA)
*Rudy Chen 2013 (PLME summer fellowship)
Laura Van Dyck 2013 (UTRA)
Elodi Healy 2014 (UTRA)
Oladele Ojo 2014 (UTRA)
Shahena Polynice 2015 (UTRA)
*Ayumi Tsuda 2015 (UTRA)
Ronan O'Shea 2016

Undergraduate Honors Theses:
Suyearn Hong, 2000-1
Cindy Poo, 2002-3
Tina Udaka, 2003-4
Alison Hwong, 2004-5
Robert Mair, 2005-6
Katherine Lanning, 2006-7
Katherine Tsubota, 2007-8
Colin Feuille, 2008-2009
Kelly Duong, 2010-2011
Benjamin Schrank, 2010-2011
Rachel Bishop, 2012-2013
Anant Gharpure, 2013-2014
Laura Van Dyck, 2013-2014
Rudy Chen 2013-2015

M.S./Ph.D. Thesis students:
Johanna Gutlerner, 2004 (degree granted from Duke University)
Nathan Riley, 2006
Manjari Murali, 2009
Anda Chirila, 2014

Rachel Stevenson, current
Robyn St. Laurent, current

Date: 2/6/2018