

# Stanford

---



## Julie Kauer

Professor (Research) of Psychiatry and Behavioral Sciences

 NIH Biosketch available Online

### Bio

---

#### ACADEMIC APPOINTMENTS

- Professor (Research), Psychiatry and Behavioral Sciences
- Member, Wu Tsai Neurosciences Institute

#### HONORS AND AWARDS

- Fellow, American Association for the Advancement of Science (2012)

#### BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Reviewing Editor, eLife (2017 - present)
- Councilor, Society for Neuroscien (2018 - present)

#### LINKS

- Kauer lab web site: <http://med.stanford.edu/kauer-lab.html>

### Teaching

---

#### STANFORD ADVISEES

##### Doctoral Dissertation Reader (AC)

Julieta Gomez-Frittelli, Gabriella Muwanga

##### Postdoctoral Faculty Sponsor

Chelsie Brewer, Claire Manning, Valentina Martinez Damonte

##### Postdoctoral Research Mentor

Yihe Ma

#### GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Neurosciences (Phd Program)

### Publications

---

#### PUBLICATIONS

- **Loss of mitochondrial enzyme GPT2 causes early neurodegeneration in locus coeruleus.** *Neurobiology of disease*  
Baytas, O., Kauer, J. A., Morrow, E. M.  
2022: 105831

- **Somatodendritic Release of Cholecystokinin Potentiates GABAergic Synapses Onto Ventral Tegmental Area Dopamine Cells.** *Biological psychiatry*  
Martinez Damonte, V., Pomrenze, M. B., Manning, C. E., Casper, C., Wolfden, A. L., Malenka, R. C., Kauer, J. A.  
2022
- **Adolescent sleep shapes social novelty preference in mice.** *Nature neuroscience*  
Bian, W. J., Brewer, C. L., Kauer, J. A., de Lecea, L.  
2022
- **TRPV1-Expressing Sensory Neuron Stimulation-based Model of Inflammatory Injury Enhances the Excitability of Spinal Neurons Targeting the Periaqueductal Gray**  
Brewer, C., Kauer, J. A.  
CHURCHILL LIVINGSTONE.2022: 8
- **Hyperexcitable arousal circuits drive sleep instability during aging.** *Science (New York, N.Y.)*  
Li, S. B., Damonte, V. M., Chen, C., Wang, G. X., Kebschull, J. M., Yamaguchi, H., Bian, W. J., Purmann, C., Pattni, R., Urban, A. E., Mourrain, P., Kauer, J. A., Scherrer, et al  
2022; 375 (6583): eabh3021
- **Endogenous opsin 3 (OPN3) protein expression in the adult brain using a novel OPN3 -mCherry knock-in mouse model.** *eNeuro*  
Olinski, L. E., Tsuda, A. C., Kauer, J. A., Oancea, E.  
2020
- **Periaqueductal Gray and Rostromedial Tegmental Inhibitory Afferents to VTA Have Distinct Synaptic Plasticity and Opiate Sensitivity.** *Neuron*  
St Laurent, R. n., Martinez Damonte, V. n., Tsuda, A. C., Kauer, J. A.  
2020
- **Synaptic plasticity at inhibitory synapses in the ventral tegmental area depends upon stimulation site.** *eNeuro*  
St Laurent, R., Kauer, J.  
2019
- **Properties of neurons in the superficial laminae of trigeminal nucleus caudalis.** *Physiological reports*  
Pradier, B., McCormick, S. J., Tsuda, A. C., Chen, R. W., Atkinson, A. L., Westrick, M. R., Buckholtz, C. L., Kauer, J. A.  
2019; 7 (12): e14112
- **Two-Pronged Control of the Dorsal Raphe by the VTA.** *Neuron*  
Kauer, J. A., Polter, A. M.  
2019; 101 (4): 553–55
- **NMDA receptor activation induces long-term potentiation of glycine synapses.** *PloS one*  
Kloc, M. L., Pradier, B., Chirila, A. M., Kauer, J. A.  
2019; 14 (9): e0222066
- **Long-Term Depression Induced by Optogenetically Driven Nociceptive Inputs to Trigeminal Nucleus Caudalis or Headache Triggers** *JOURNAL OF NEUROSCIENCE*  
Pradier, B., Bin Shin, H., Kim, D., St Laurent, R., Lipscombe, D., Kauer, J. A.  
2018; 38 (34): 7529–40
- **Persistent but Labile Synaptic Plasticity at Excitatory Synapses** *JOURNAL OF NEUROSCIENCE*  
Pradier, B., Lanning, K., Taljan, K. T., Feuille, C. J., Nagy, M., Kauer, J. A.  
2018; 38 (25): 5750–58
- **Synaptic function and plasticity in identified inhibitory inputs onto VTA dopamine neurons** *EUROPEAN JOURNAL OF NEUROSCIENCE*  
Polter, A. M., Barcomb, K., Tsuda, A. C., Kauer, J. A.  
2018; 47 (10): 1208–18
- **Constitutive activation of kappa opioid receptors at ventral tegmental area inhibitory synapses following acute stress** *ELIFE*  
Polter, A. M., Barcomb, K., Chen, R. W., Dingess, P. M., Graziane, N. M., Brown, T. E., Kauer, J. A.  
2017; 6
- **Three-Dimensional Neural Spheroid Culture: An In Vitro Model for Cortical Studies** *TISSUE ENGINEERING PART C-METHODS*

- Dingle, Y. L., Boutin, M. E., Chirila, A. M., Livi, L. L., Labriola, N. R., Jakubek, L. M., Morgan, J. R., Darling, E. M., Kauer, J. A., Hoffman-Kim, D. 2015; 21 (12): 1274–83
- **Poststress Block of Kappa Opioid Receptors Rescues Long-Term Potentiation of Inhibitory Synapses and Prevents Reinstatement of Cocaine Seeking** *BIOLOGICAL PSYCHIATRY*  
Polter, A. M., Bishop, R. A., Briand, L. A., Graziane, N. M., Pierce, R., Kauer, J. A. 2014; 76 (10): 785–93
  - **Yin and Yang: Unsilencing Synapses to Control Cocaine Seeking** *NEURON*  
Kauer, J. A., Polter, A. M. 2014; 83 (6): 1234–36
  - **Different Classes of Sensory Neurons Visualized and Controlled in Spinal Dorsal Horn by Optogenetic Methods**  
Dubreuil, D. M., Allen, S. E., Chirila, A. M., Denome, S., Kauer, J. A., Lipscombe, D. ROCKEFELLER UNIV PRESS.2014: 6A–7A
  - **Long-term potentiation of glycinergic synapses triggered by interleukin 1 beta** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Chirila, A. M., Brown, T. E., Bishop, R. A., Bellono, N. W., Pucci, F. G., Kauer, J. A. 2014; 111 (22): 8263–68
  - **Stress and VTA synapses: implications for addiction and depression** *EUROPEAN JOURNAL OF NEUROSCIENCE*  
Polter, A. M., Kauer, J. A. 2014; 39 (7): 1179–88
  - **Christianson Syndrome Protein NHE6 Modulates TrkB Endosomal Signaling Required for Neuronal Circuit Development** *NEURON*  
Ouyang, Q., Lizarraga, S. B., Schmidt, M., Yang, U., Gong, J., Ellisor, D., Kauer, J. A., Morrow, E. M. 2013; 80 (1): 97–112
  - **Loss of interneuron LTD and attenuated pyramidal cell LTP in Trpv1 and Trpv3 KO mice** *HIPPOCAMPUS*  
Brown, T. E., Chirila, A. M., Schrank, B. R., Kauer, J. A. 2013; 23 (8): 662–71
  - **Kappa Opioid Receptors Regulate Stress-Induced Cocaine Seeking and Synaptic Plasticity** *NEURON*  
Graziane, N. M., Polter, A. M., Briand, L. A., Pierce, R., Kauer, J. A. 2013; 77 (5): 942–54
  - **A novel non-CBI/TRPV1 endocannabinoid-mediated mechanism depresses excitatory synapses on hippocampal CA1 interneurons** *HIPPOCAMPUS*  
Edwards, J. G., Gibson, H. E., Jensen, T., Nugent, F., Walther, C., Blickenstaff, J., Kauer, J. A. 2012; 22 (2): 209–21
  - **PDZ binding of TARP gamma-8 controls synaptic transmission but not synaptic plasticity** *NATURE NEUROSCIENCE*  
Sumioka, A., Brown, T. E., Kato, A. S., Bredt, D. S., Kauer, J. A., Tomita, S. 2011; 14 (11): 1410–12
  - **Drugs of abuse and stress impair LTP at inhibitory synapses in the ventral tegmental area** *EUROPEAN JOURNAL OF NEUROSCIENCE*  
Niehaus, J. L., Murali, M., Kauer, J. A. 2010; 32 (1): 108–17
  - **Presynaptic plasticity: targeted control of inhibitory networks** *CURRENT OPINION IN NEUROBIOLOGY*  
McBain, C. J., Kauer, J. A. 2009; 19 (3): 254–62
  - **PKG and PKA Signaling in LTP at GABAergic Synapses** *NEUROPSYCHOPHARMACOLOGY*  
Nugent, F. S., Niehaus, J. L., Kauer, J. A. 2009; 34 (7): 1829–42
  - **Hot flash: TRPV channels in the brain** *TRENDS IN NEUROSCIENCES*  
Kauer, J. A., Gibson, H. E. 2009; 32 (4): 215–24

- **Plasticity of Addiction: A Mesolimbic Dopamine Short-Circuit?** *AMERICAN JOURNAL ON ADDICTIONS*  
Niehaus, J. L., Cruz-Bermudez, N. D., Kauer, J. A.  
2009; 18 (4): 259–71
- **Myosin Vb Mobilizes Recycling Endosomes and AMPA Receptors for Postsynaptic Plasticity** *CELL*  
Wang, Z., Edwards, J. G., Riley, N., Provance, D., Karcher, R., Li, X., Davison, I. G., Ikebe, M., Mercer, J. A., Kauer, J. A., Ehlers, M. D.  
2008; 135 (3): 535–48
- **TRPV1: hot new channels in the brain** *FUTURE NEUROLOGY*  
Kauer, J. A.  
2008; 3 (5): 507–10
- **High-frequency afferent stimulation induces long-term potentiation of field potentials in the ventral tegmental area** *NEUROPSYCHOPHARMACOLOGY*  
Nugent, F. S., Hwong, A. R., Udaka, Y., Kauer, J. A.  
2008; 33 (7): 1704–12
- **LTP of GABAergic synapses in the ventral tegmental area and beyond**  
Nugent, F. S., Kauer, J. A.  
BLACKWELL PUBLISHING.2008: 1487–93
- **TRPV1 channels mediate long-term depression at synapses on hippocampal interneurons** *NEURON*  
Gibson, H. E., Edwards, J. G., Page, R. S., Van Hook, M. J., Kauer, J. A.  
2008; 57 (5): 746–59
- **Synaptic plasticity and addiction** *NATURE REVIEWS NEUROSCIENCE*  
Kauer, J. A., Malenka, R. C.  
2007; 8 (11): 844-858
- **Opioids block long-term potentiation of inhibitory synapses** *NATURE*  
Nugent, F. S., Penick, E. C., Kauer, J. A.  
2007; 446 (7139): 1086–90
- **Amphetamine depresses excitatory synaptic transmission at prefrontal cortical layer V synapses** *NEUROPHARMACOLOGY*  
Mair, R. D., Kauer, J. A.  
2007; 52 (1): 193-199
- **LTP: AMPA receptors trading places** *NATURE NEUROSCIENCE*  
Kauer, J. A., Malenka, R. C.  
2006; 9 (5): 593–94
- **Long-term synaptic plasticity at excitatory and inhibitory synapses on dopamine neurons of the VTA**  
Kauer, J. A., Nugent, F. S., Penick, E. C.  
NATURE PUBLISHING GROUP.2005: S59
- **Neuroscience - A home for the nicotine habit** *NATURE*  
Kauer, J. A.  
2005; 436 (7047): 31–32
- **Inhibitory synapses turn exciting** *NATURE NEUROSCIENCE*  
Kauer, J. A.  
2005; 8 (3): 257–58
- **Rapid synaptic plasticity of glutamatergic synapses on dopamine neurons in the ventral tegmental area in response to acute amphetamine injection** *NEUROPSYCHOPHARMACOLOGY*  
Faleiro, L. J., Jones, S., Kauer, J. A.  
2004; 29 (12): 2115–25
- **Recycling endosomes supply AMPA receptors for LTP** *SCIENCE*  
Park, M., Penick, E. C., Edwards, J. G., Kauer, J. A., Ehlers, M. D.  
2004; 305 (5692): 1972-1975

- 
- **Learning mechanisms in addiction: Synaptic plasticity in the ventral tegmental area as a result of exposure to drugs of abuse** *ANNUAL REVIEW OF PHYSIOLOGY*  
Kauer, J. A.  
2004; 66: 447–75
  - **Repeated exposure to amphetamine disrupts dopaminergic modulation of excitatory synaptic plasticity and neurotransmission in nucleus accumbens** *SYNAPSE*  
Li, Y., Kauer, J. A.  
2004; 51 (1): 1–10
  - **Addictive drugs and stress trigger a common change at VTA Synapses** *NEURON*  
Kauer, J. A.  
2003; 37 (4): 549–50
  - **Novel protein kinase A-dependent long-term depression of excitatory synapses** *NEURON*  
Gutlerner, J. L., Penick, E. C., Snyder, E. M., Kauer, J. A.  
2002; 36 (5): 921–31
  - **Long-term potentiation in mice lacking the neural cell adhesion molecule L1** *CURRENT BIOLOGY*  
Bliss, T., Errington, M., Fransen, E., Godfraind, J. M., Kauer, J. A., Kooy, R. F., Maness, P. F., Furley, A. J.  
2000; 10 (24): 1607–10
  - **Amphetamine blocks long-term synaptic depression in the ventral tegmental area** *JOURNAL OF NEUROSCIENCE*  
Jones, S., Kornblum, J. L., Kauer, J. A.  
2000; 20 (15): 5575–80
  - **Amphetamine depresses excitatory synaptic transmission via serotonin receptors in the ventral tegmental area** *JOURNAL OF NEUROSCIENCE*  
Jones, S., Kauer, J. A.  
1999; 19 (22): 9780–87
  - **Blockade of hippocampal long-term potentiation by sustained tetanic stimulation near the recording site** *JOURNAL OF NEUROPHYSIOLOGY*  
Kauer, J. A.  
1999; 81 (2): 940–44
  - **Perturbed dentate gyrus function in serotonin 5-HT<sub>2C</sub> receptor mutant mice** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Tecott, L. H., Logue, S. F., Wehner, J. M., Kauer, J. A.  
1998; 95 (25): 15026–31
  - **Functionally distinct groups of interneurons identified during rhythmic carbachol oscillations in hippocampus in vitro** *JOURNAL OF NEUROSCIENCE*  
McMahon, L. L., Williams, J. H., Kauer, J. A.  
1998; 18 (15): 5640–51
  - **Focal photolysis of caged glutamate produces long-term depression of hippocampal glutamate receptors** *NATURE NEUROSCIENCE*  
Kandler, K., Katz, L. C., Kauer, J. A.  
1998; 1 (2): 119–23
  - **Properties of carbachol-induced oscillatory activity in rat hippocampus** *JOURNAL OF NEUROPHYSIOLOGY*  
Williams, J. H., Kauer, J. A.  
1997; 78 (5): 2631–40
  - **Hippocampal interneurons are excited via serotonin-gated ion channels** *JOURNAL OF NEUROPHYSIOLOGY*  
McMahon, L. L., Kauer, J. A.  
1997; 78 (5): 2493–2502
  - **Hippocampal interneurons express a novel form of synaptic plasticity** *NEURON*  
McMahon, L. L., Kauer, J. A.  
1997; 18 (2): 295–305
  - **Whole-cell patch-clamp recording reveals subthreshold sound-evoked postsynaptic currents in the inferior colliculus of awake bats** *JOURNAL OF NEUROSCIENCE*

Covey, E., Kauer, J. A., Casseday, J. H.  
1996; 16 (9): 3009–18

- **METABOTROPIC GLUTAMATE RECEPTOR-INDUCED DISINHIBITION IS MEDIATED BY REDUCED TRANSMISSION AT EXCITATORY SYNAPSES ONTO INTERNEURONS AND INHIBITORY SYNAPSES ONTO PYRAMIDAL CELLS** *NEUROSCIENCE LETTERS*

DESAI, M. A., MCBAIN, C. J., KAUER, J. A., CONN, P. J.  
1994; 181 (1-2): 78–82

- **ACTIVATION OF METABOTROPIC GLUTAMATE RECEPTORS DIFFERENTIALLY AFFECTS 2 CLASSES OF HIPPOCAMPAL INTERNEURONS AND POTENTIATES EXCITATORY SYNAPTIC TRANSMISSION** *JOURNAL OF NEUROSCIENCE*

MCBAIN, C. J., DICHIARA, T. J., KAUER, J. A.  
1994; 14 (7): 4433–45