

Stanford



Richard Roth

Instructor, Neurosurgery

Bio

ACADEMIC APPOINTMENTS

- Instructor, Neurosurgery

Publications

PUBLICATIONS

- **Stimulus-dependent synaptic plasticity underlies neuronal circuitry refinement in the mouse primary visual cortex.** *Cell reports*
Lopez-Ortega, E., Choi, J. Y., Hong, I., Roth, R. H., Cudmore, R. H., Huganir, R. L.
2024; 43 (4): 113966
- **Adolescent oligodendrogenesis and myelination restrict experience-dependent neuronal plasticity in adult visual cortex.** *bioRxiv : the preprint server for biology*
Xin, W., Kaneko, M., Roth, R. H., Zhang, A., Nocera, S., Ding, J. B., Stryker, M. P., Chan, J. R.
2023
- **A positively tuned voltage indicator for extended electrical recordings in the brain.** *Nature methods*
Evans, S. W., Shi, D., Chavarha, M., Plitt, M. H., Taxidis, J., Madruga, B., Fan, J. L., Hwang, F., van Keulen, S. C., Suomivuori, C., Pang, M. M., Su, S., Lee, et al
2023; 20 (7): 1104-1113
- **Motor learning selectively strengthens cortical and striatal synapses of motor engram neurons.** *Neuron*
Hwang, F., Roth, R. H., Wu, Y., Sun, Y., Kwon, D. K., Liu, Y., Ding, J. B.
2022
- **Visualizing synaptic plasticity in vivo by large-scale imaging of endogenous AMPA receptors.** *eLife*
Graves, A. R., Roth, R. H., Tan, H. L., Zhu, Q., Bygrave, A. M., Lopez-Ortega, E., Hong, I., Spiegel, A. C., Johnson, R. C., Vogelstein, J. T., Tward, D. J., Miller, M. I., Huganir, et al
2021; 10
- **AMPA Receptors Exist in Tunable Mobile and Immobile Synaptic Fractions In Vivo.** *eNeuro*
Chen, H., Roth, R. H., Lopez-Ortega, E., Tan, H., Huganir, R. L.
2021
- **An optimized CRISPR/Cas9 approach for precise genome editing in neurons.** *eLife*
Fang, H., Bygrave, A. M., Roth, R. H., Johnson, R. C., Huganir, R. L.
2021; 10
- **From Neurons to Cognition: Technologies for Precise Recording of Neural Activity Underlying Behavior.** *BME frontiers*
Roth, R. H., Ding, J. B.
2020; 2020: 7190517
- **Cortical Synaptic AMPA Receptor Plasticity during Motor Learning** *NEURON*

Roth, R. H., Cudmore, R. H., Tan, H. L., Hong, I., Zhang, Y., Huganir, R. L.
2020; 105 (5): 895-+

● **Lamina-specific AMPA receptor dynamics following visual deprivation *in vivo* *ELIFE***

Tan, H. L., Roth, R. H., Graves, A. R., Cudmore, R. H., Huganir, R. L.
2020; 9

● **An ultrasensitive biosensor for high-resolution kinase activity imaging in awake mice. *Nature chemical biology***

Zhang, J. F., Liu, B. n., Hong, I. n., Mo, A. n., Roth, R. H., Tenner, B. n., Lin, W. n., Zhang, J. Z., Molina, R. S., Drobizhev, M. n., Hughes, T. E., Tian, L. n., Huganir, et al
2020

● **Single-fluorophore biosensors for sensitive and multiplexed detection of signalling activities *NATURE CELL BIOLOGY***

Mehta, S., Zhang, Y., Roth, R. H., Zhang, J., Mo, A., Tenner, B., Huganir, R. L., Zhang, J.
2018; 20 (10): 1215-+

● **Dynamic imaging of AMPA receptor trafficking *in vitro* and *in vivo* *CURRENT OPINION IN NEUROBIOLOGY***

Roth, R. H., Zhang, Y., Huganir, R. L.
2017; 45: 51-58

● **Homer1a drives homeostatic scaling-down of excitatory synapses during sleep *SCIENCE***

Diering, G. H., Nirujogi, R. S., Roth, R. H., Worley, P. F., Pandey, A., Huganir, R. L.
2017; 355 (6324): 511-+

● **Synaptic Organization of the Neuronal Circuits of the Claustrum *JOURNAL OF NEUROSCIENCE***

Kim, J., Matney, C. J., Roth, R. H., Brown, S. P.
2016; 36 (3): 773-784