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## MAJOR RESEARCH INTERESTS

- Neural basis of long-term memory (LTM).
- Synaptic tagging and capture (STC) as an elementary mechanism for storing LTM in neural networks.
- Metaplasticity as a compensatory mechanism for improving memory in neural networks.
- Epigenetic regulation of plasticity and memory
- Synaptic memory in Neurodegenerative Diseases

## SELECTED PUBLICATIONS

- 1) Benoy, A., Dasgupta, A., & Sajikumar, S. (2018). Hippocampal area CA2: an emerging modulatory gateway in the hippocampal circuit. *Experimental brain research*, 1-13.
- 2) Dasgupta, A., Baby, N., Krishna, K., Hakim, M., Wong, Y. P., Behnisch, T & Sajikumar, S. (2017). Substance P induces plasticity and synaptic tagging/capture in rat hippocampal area CA2. *Proceedings of the National Academy of Sciences*, 114(41), E8741-E8749.
- 3) Shetty, M. S., Sharma, M., & Sajikumar, S. (2017). Chelation of hippocampal zinc enhances long-term potentiation and synaptic tagging/capture in CA1 pyramidal neurons of aged rats: implications to aging and memory. *Aging cell*, 16(1), 136-148.
- 4) Li, Q., Navakkode, S., Rothkegel, M., Soong, T. W., Sajikumar, S., & Korte, M. (2017). Metaplasticity mechanisms restore plasticity and associativity in an animal model of Alzheimer's disease. *Proceedings of the National Academy of Sciences*, 114(21), 5527-5532.
- 5) Shetty, M. S., & Sajikumar, S. (2017). Differential involvement of Ca<sup>2+</sup>/calmodulin-dependent protein kinases and mitogen-activated protein kinases in the dopamine D1/D5 receptor-mediated potentiation in hippocampal CA1 pyramidal neurons. *Neurobiology of learning and memory*, 138, 111-120.
- 6) Sharma, M., Dierkes, T., & Sajikumar, S. (2017). Epigenetic regulation by G9a/GLP complex ameliorates amyloid-beta 1-42 induced deficits in long-term plasticity and synaptic tagging/capture in hippocampal pyramidal neurons. *Aging cell*, 16(5), 1062-1072.
- 7) Sharma, M., Razali, N. B., & Sajikumar, S. (2016). Inhibition of G9a/GLP complex promotes long-term potentiation and synaptic tagging/capture in hippocampal CA1 pyramidal neurons. *Cerebral Cortex*, 27(6), 3161-3171.
- 8) Krishna K, Behnisch T, Sajikumar S. (2016). Inhibition of Histone Deacetylase 3 Restores Amyloid- $\beta$  Oligomer-Induced Plasticity Deficit in Hippocampal CA1 Pyramidal Neurons. *J Alzheimers Dis*. 2016 Feb 10;51(3):783-91. doi: 10.3233/JAD-150838.
- 9) Sharma M, Shetty MS, Arumugam TV and Sajikumar S (2015). Histone deacetylase 3 inhibition re-establishes synaptic tagging and capture in aging through the activation of nuclear factor kappa B. *Scientific Reports* 2015; 5: 16616, doi:10.1038/srep16616
- 10) Shetty MS, Gopinadhan S and Sajikumar S (2015). Dopamine D1/D5 receptor signalling regulates synaptic cooperation and competition in hippocampal CA1 pyramidal neurons via sustained ERK1/2 activation. *Hippocampus*. 2015 Jul 20; doi: 10.1002/hipo.2249
- 11) Sajikumar S (2015) Synaptic Tagging and Capture: From Synapses to Behavior. Editor. SPRINGER, New York. ISBN: 978-1-4939-1760-0 (Print) 978-1-4939-1761-7 (Online)
- 12) Sajikumar S, Morris RG, Korte M (2014). Competition between recently potentiated synaptic inputs reveals a winner-take-all phase of synaptic tagging and capture. *Proc Natl Acad Sci U S A*. 2014 Aug 19;111(33):12217-21. doi: 10.1073/pnas.1403643111. Epub 2014 Aug 4.