R5.10.1

# 主な研究課題・発表代表論文

神経生理学講座（旧生理学第二講座）Physiology
研究領域　高次神経科学
教授　美津島 大　Dai Mitsushima
Web ページ：http://ds.cc.yamaguchi-u.ac.jp/~seiri2/

## 主な研究課題

・海馬CA1における文脈学習の分子メカニズムと、経路特異的なシナプス可塑性の発達変化
・経験内容特異的に表現される海馬CA1ニューロン群の神経活動とシナプス可塑性
・錐体路系／錐体外路系に特異的な一次運動野におけるシナプス可塑性と運動学習
・Amyloid $\beta_{1\text{-}42}$ oligomerによる学習機能の障害：多様な有害作用点の抽出と拮抗分子

## 発表代表論文

1）Kida H, Kawakami R, Sakai K, Otaku H, Imamura K, Han-Thiri-Zin, Sakimoto Y, Mitsushima D. Motor training promotes both synaptic and intrinsic plasticity of layer V pyramidal neurons in the primary motor cortex. **J Physiol.** 601: 335-353, https://doi.org./10.1113/JP283755, 2023.
2) Sakimoto Y, Shintani A, Yoshiura D, Goshima M, Kida H, Mitsushima D. A critical period for learning and plastic changes at hippocampal CA1 synapses. **Scientific Reports**, 12: 7199, doi: 10.1038/s41598-022-10453-z, 2022.
2) Paw-Min-Thein-Oo, Sakimoto Y, Kida H, Mitsushima D. Proximodistal heterogeneity in learning-promoted pathway-specific plasticity at dorsal CA1 synapses. **Neuroscience**, doi: 10.1016/j.neuroscience.2020.04.040. 437: 184-194, 2020.
2）Ishikawa J, Tomokage T, Mitsushima D. A possible coding for experience: ripple-like events and synaptic diversity. **BioRxiv**, https://doi.org/10.1101/2019.12.30.891259, preprint 2019.
3）Sakimoto Y, Kida H, Mitsushima D. Temporal dynamics of learning-promoted synaptic diversity in CA1 pyramidal neurons. **FASEB J**, 33: 14382-14393, https://doi.org/10.1096/fj.201801893, 2019.
4）Sakamoto Y. et al., Learning promotes subfi eld-specific synaptic diversity in hippocampal CA1 neurons. **Cerebral Cortex**, 29 :2183-2195, doi : 10.1093/cercor/bhz022, 2019.
5）Kida H, et al. Motor training promotes both synaptic and intrinsic plasticity of layer II/III pyramidal neurons in the primary motor cortex. **Cerebral Cortex**, 26: 3494-507, doi : 10.1093/cercor/bhw134, 2016.
6）Hosokawa T, et al. Stoichiometry and phosphoisotypes of hippocampal AMPA-type glutamate receptor phosphorylation. **Neuron**, 85(1): 60-67, doi.org/10.1016/j.neuron.2014.11.026, 2015.
7）Takase K, et al. Developmental trajectory of contextual learning and 24-h acetylcholine release in the hippocampus. **Scientific Reports**, 4: 3738, doi : 10.1038/ srep03738, 2014.
8）Mitsushima D, et al. A cholinergic trigger drives learning-induced plasticity at hippocampal

synapses. **Nature Communications**, 4: 2760, doi: 10.1038/ ncomms3760, 2013.
9) Mitsushima D, et al. Contextual learning requires synaptic AMPA receptor delivery in the hippocampus. **Proc Natl Acad Sci USA**, 108: 12503-12508, 2011.
10) Mitsushima D, et al. Gonadal steroids maintain 24-h acetylcholine release in the hippocampus: organizational and activational effects in behaving rats. **J Neurosci**, 29: 3808-3815, 2009.