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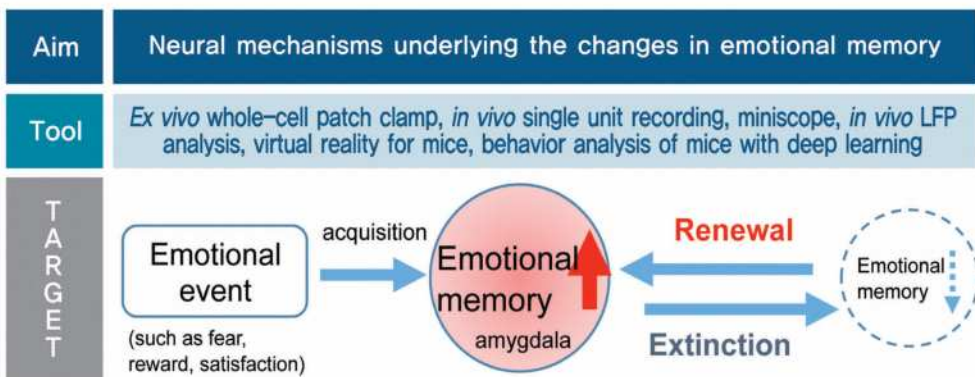
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Neurophysiology of emotional memory

Emotional memory, a special category of memory involving the implicit learning and storage of information about the emotional significance of events, is modeled in rodent experiments using associational training. The neural system underlying emotional memory critically involves the amygdala and structures with which it is connected. This emotional memory can be modulated by additional training, such as extinction. After extinction training, emotional memory is diminished and, at some cases, erase permanently. However, at certain circumstance, weakened memory suddenly relapsed robustly. My research interest is focused on the neural mechanisms underlying these changes in emotional memory after acquisition, such as extinction and renewal.



Research keywords

Emotional memory, extinction, renewal, *ex vivo* / *in vivo* electrophysiology, metaplasticity.

Curriculum Vitae

2016~Present : Principal Investigator, KBRI
 2014~2016 : Research Professor, Basic science
 2009~2014 : Assistant Research Professor, Basic Science
 Institute, Seoul National University.
 2004~2009 : Postdoctoral Fellow, School of Biological
 Sciences, Seoul National University

Academic Credential

2004 : Ph.D., School of Biological Sciences, Seoul National University.
 1998 : M.S., School of Biological Sciences, Seoul National University.
 1996 : B.S., Dept. of Molecular Biology, Seoul National University.

Memberships

2016~Present : Member, Society for Neuroscience
 2014~Present : Member, The Korean Society for Brain and Neural Sciences
 2014~Present : Board of directors, The Korean Society for Integrative Biology

Key techniques

Ex vivo whole-cell patch clamp, *In vivo* single unit recording, miniscope, *In vivo* LFP analysis, Virtual reality for mice, Behavior analysis of mice with deep learning.

Research Interests/Topics

- Neural mechanisms underlying weakening of emotional memory.
- Studies on the renewal of extinguished emotional memory.
- Neural circuit for the impulse control.

Research Publications (selected)

- An B*, Kim J*, Park K*, **Lee S***, Song S*, Choi S. Amount of fear extinction changes its underlying mechanisms. *eLife*, 6:e25224, 2017. (*,co-first author)
- Park S, Lee J, Park K, Kim J, SongB, Hong I, Kim J, **Lee S***, Choi S*. Sound tuning of amygdala plasticity in auditory fear conditioning. *Sci. Rep.*, 6:31069, 2016. (*,co-corresponding author)
- Park K, Song B, Kim J, Hong I, Song S, Lee J, Park S, Kim J, An B, Lee HW, Lee S, Kim H, Lee JC, **Lee S***, Choi S*. ABA renewal involves enhancements in both GluA2-lacking AMPA receptor activity and GluA1 phosphorylation in the lateral amygdala. *PLoS One*, 9:e100108, 2014. (*,co-corresponding author)
- **Lee S**, Song B, Kim J, Park K, Hong I, An B, Song S, Lee J, Park S, Kim J, Park D, Lee CH, Kim K, Shin KS, Tsien RW, Choi S. GluA1 phosphorylation at serine 831 in the lateral amygdala is required for fear renewal. *Nat Neurosci*, 16:1436. 2013.