

Centers of Advanced Medicine

Center for Neuroscience of Pain

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General Summary

The Jikei Center for Neuroscience of Pain (JCNP) was established in April 2014 as the first member of the Core Centers for Advanced Medicine of The Jikei University as a stronghold to advance the clinical and biomedical research on various aspects of the neuroscience of pain, under the support of the Ministry of Education, Culture, Sports, Science and Technology-Supported Program for the Strategic Research Foundation at Private Universities (S1311009; FY2013–2017).

After concluding the 5-year project in FY2017, the JCNP has continued its activity as a central site to develop and advance clinical and nonclinical studies and to teach about the neuroscience of pain.

In particular, the JCNP has been a center for collaboration between pain researchers and graduate students belonging to clinical or nonclinical units. These units include the Departments/Divisions of Neuroscience, Gene Therapy, Regenerative Medicine, Institute of Clinical Research, Anesthesiology, Orthopaedic Surgery, Rheumatology, Diabetes, Metabolism and Endocrinology, Dermatology, Obstetrics and Gynecology, and Pharmacology. In addition to performing collaborative research activities, we have also organized joint seminars, colloquiums, and open talks.

Research Activities

As the research activities of the center are promoted as collaborations of departments and research teams, the publication lists are provided in the pages for each department and division. These are some examples of such collaborations promoted in FY2019:

- 1) Brain mechanisms underlying the rheumatoid arthritis-associated emotional and cognitive complications
- 2) Mechanisms underlying the pain chronification in the rodent model of low back pain, with a particular interest in the involvement of the amygdala network: a study using high-magnetic field magnetic resonance imaging
- 3) Brain mechanism underlying widespread/ectopic sensitization in primary chronic pain
- 4) Brain mechanisms for the pleasantness of scratching as an exacerbating factor of dermatitis
- 5) Delivery-dependent modulation of the central oxytocin receptors as a neural basis for the modulation of labor pain

The following are 2 important publications from the Department of Neuroscience, where the headquarters of the JCNP are located.

Publications

Oto Y, Takahashi Y, Kurosaka D, Kato F. Alterations of voluntary behavior in the course of disease progress and pharmacotherapy in mice with collagen-induced arthritis. *Arthritis Res Ther.* 2019 Dec 12; **21**(1): 284. doi: 10.1186/s13075-019-2071-z. PMID: 31831067; PMCID: PMC6909634.

Arimura D, Shinohara K, Takahashi Y, Sugimura YK, Sugimoto M, Tsurugizawa T, Marumo K, Kato F. Primary Role of the Amygdala in Spontaneous Inflammatory Pain-Associated Activation of Pain Networks - A Chemogenetic Manganese-Enhanced MRI Approach. *Front Neural Circuits.* 2019 Oct 1; **13**: 58. doi: 10.3389/fncir.2019.00058. PMID: 31632244; PMCID: PMC6779784.