

Neurophysiology

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Other Faculty Members

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Major Scientific Interests of the Group

We are studying mechanisms of circulatory and respiratory regulation by the central nervous system. We are especially electrophysiologically approaching mechanisms of circulatory and respiratory regulation by the autonomic nervous system using *in vivo* and *in situ* preparations of rodents.

Projects for Regular Students in Doctoral or Master's Programs

- 1) Cardiovascular regulation by the central nervous system
- 2) Respiratory regulation by the central nervous system

Study Programs for Short Stay Students (one week – one trimester) (select one or two)

- 1) Recording cardiovascular parameters.
- 2) Recording respiratory parameters
- 3) Recording neural activities
- 4) Mathematical analysis of cardiorespiratory and neural parameters.

Selected Publications

- 1) Mizukami R, Matsumoto M, **Koganezawa T** The lateral habenula regulates stress-related respiratory responses via the monoaminergic system. *Pflugers Arch - Eur J Physiol.* 2025, 477(3), 441-452
- 2) Sato Y, Matsumoto M, **Koganezawa T** The dopaminergic system mediates the lateral habenula-induced autonomic cardiovascular responses. *Front Physiol.* 2024, 15, 1496726
- 3) **Okazaki M**, Matsumoto M, **Koganezawa T** Hydrogen sulfide production in the medullary respiratory center modulates the neural circuit for respiratory pattern and rhythm generations. *Sci Rep.* 2023, 13, 20046
- 4) Nakamagoe K, Matsumoto S, Touno N, Tateno I, **Koganezawa T** Saccadic oscillations as a biomarker of clinical symptoms in amyotrophic lateral sclerosis. *Neurol Sci.* 2023, 44(8), 2787-2793
- 5) Doan TH, Sato Y, Matsumoto M, **Koganezawa T** Lateral Habenula Regulates Cardiovascular Autonomic Responses via the Serotonergic System in Rats. *Front Neurosci.* 2021, 15, 655617
- 6) Nakamagoe K, Yamada S, Kawakami R, Maeno T, Koganezawa T, Tamaoka A Clinical Application of the Vestibular Stimulation Effect on Balance Disorders with Dementia. *Curr Alzheimer Res.*, 2021, 18(1), 1-7
- 7) **Okazaki M**, Uozu S, Sato Y, Matsumoto M, **Koganezawa T** Endogenous hydrogen sulfide maintains eupnea in an in situ arterially perfused preparation of rats. *Commun Biol*, 2020, 3(1), 583