

Research field:

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Other Faculty Members

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Major Scientific Interests of the Group

We aim to elucidate the mechanisms of organ dysfunction and neural alterations occurring in perioperative and critical care settings, by integrating experimental models and large-scale clinical data, ultimately leading to the development of innovative diagnostic, monitoring, and therapeutic strategies in anesthesiology and pain medicine.

Projects for Regular Students in Doctoral or Master's Programs

- 1) Visualization of cellular oxygenation dynamics in anesthesiology-related pathological models using advanced bioluminescence imaging
- 2) Elucidation of mechanisms underlying chronic pain with a focus on memory-related brain regions
- 3) Development of novel hemodynamic algorithms to predict postoperative adverse outcomes through large-scale perioperative database analysis

Study Programs for Short Stay Students (one week – one semester)

- 1) Histological investigation of inflammatory responses in the hippocampus in animal models of postoperative cognitive dysfunction
- 2) Perioperative database analyses of postoperative organ failures

Selected Publications

- 1) Morado-Urbina CE, Kato J, Svensson CI, et al. Sex-dependent effects of the targeted nerve growth factor mutation (R100E) on pain behavior, joint inflammation, and bone erosion in mice. *Pain*. 165(12):2814-2828, 2024.
- 2) Kato J, Murase R, Morisaki H, et al. Levels of preoperative cerebrospinal fluid pro-inflammatory mediators and chronic pain after total knee arthroplasty surgery. *Acta Anaesthesiologica Scandinavica*. 67(8):1091-1101, 2023.