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RESEARCH AREA

My research is focused on studying the expression patterns and regulation of energy balance-regulating genes at the mRNA and protein level in the hypothalamus and more broadly in the central nervous system. Gene expression and regulation of proopiomelanocortin (POMC)-producing neurons in the arcuate nucleus of the hypothalamus. Gene expression and regulation of tanycytes, the specialized ependymal cells of the hypothalamus. Expression and regulation of proglucagon, glucagon-like peptide-1 (GLP-1) and GLP-1 receptor in the central nervous system. Studying the general expression patterns of other genes involved in energy homeostasis.

TECHNIQUES AVAILABLE IN THE LAB

All kinds of histological (e.g., cryosectioning) and basic molecular biology techniques required to perform fluorescent (or chromogenic) in situ hybridization, immunohistochemistry, and immunofluorescence. Basic microscopy techniques, fluorescent microscopy including confocal imaging, image analysis and processing.

SELECTED PUBLICATIONS

Sánchez-Jaramillo, E., **Wittmann, G.**, Menyhért, J., Singru, P., Gómez-González, G. B., Sánchez-Islas, E., Yáñez-Recendis, N., Pimentel-Cabrera, J. A., León-Olea, M., Gereben, B. et al. (2022) Origin of thyrotropin-releasing hormone neurons that innervate the tuberomammillary nuclei. **Brain Structure and Function 227(7):** 2329-2347.

Sankhe, A. S., Bordeleau, D., Alfonso, D. I. M., **Wittman, G.,** & Chee, M. J. (2023) Loss of glutamatergic signalling from MCH neurons reduced anxiety-like behaviours in novel environments. **J Neuroendocrinol 35(1):** e13222.

Sinkó, R., Mohácsik, P., Kővári, D., Penksza, V., **Wittmann, G.**, Mácsai, L., Fonseca, T. L., Bianco, A. C., Fekete, C., Gereben, B. (2023). Different hypothalamic mechanisms control decreased circulating thyroid hormone levels in infection and fasting-induced non-thyroidal illness syndrome in male thyroid hormone action indicator mice. **Thyroid 33(1):** 109-118.

Mohácsik, P., Halmos, E., Dorogházi, B., Ruska, Y., **Wittmann, G.**, Bianco, A. C., Fekete, C., Gereben, B. (2024) The Musashi-1-Type 2 Deiodinase Pathway Regulates Astrocyte Proliferation. **J Biol Chem** 107477.

Ruska, Y., Peterfi, Z., Szilvásy-Szabó, A., Kővári, D., Hrabovszky, E., Dorogházi, B., Gereben, B., Toth, B., Matziari, M., **Wittann, G.** et al. (2024). GLP-1 receptor signaling has different effects on the perikarya and axons of the hypophysiotropic thyrotropin-releasing hormone synthesizing neurons in male mice. **Thyroid 34(2):** 252-260.