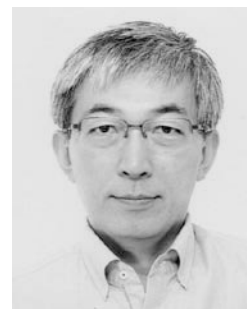


Molecular Neurobiology

Principal Investigator Masayuki Masu

E-mail.address mmasu@md.tsukuba.ac.jp

URL <http://www.md.tsukuba.ac.jp/duo/molneurobiol/>



Other Faculty Members

Lecturer: Kensuke Shiomi: kshiomi@md.tsukuba.ac.jp

Lecturer: Kazuko Keino-Masu: kazumasu@md.tsukuba.ac.jp

Assistant Professor: Takuya Okada: okada.takuya.gw@u.tsukuba.ac.jp

Major Scientific Interests of the Group

Our main research focus is to study the molecular mechanisms that regulate the neural circuit formation and higher brain functions. Using integrative approaches including molecular biology, biochemistry, pharmacology, developmental biology, and neuroanatomy, we have been investigating how complex networks are formed in the developing brain and how the mature brain functions are acquired and regulated. We are particularly interested in the molecules that play a role in neural differentiation, cell migration, axon guidance, and synaptogenesis.

Projects for Regular Students in Doctoral or Master's Programs

- 1) Molecular study on neural differentiation
- 2) Molecular study on axon guidance
- 3) Molecular study on brain function

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

- 1) Immunohistochemistry, in situ hybridization, and microscopy
- 2) Tracing of neural circuits
- 3) 3D imaging of neural network

Selected Publications

- 1) Okada T, Keino-Masu K, Suto F, Mitchell KJ, Masu M. Remarkable complexity and variability of corticospinal tract defects in adult Semaphorin 6A knockout mice. **Brain Res.** 1710, 209-219, 2019.
- 2) Okada T et al. Desulfation of heparan sulfate by Sulf1 and Sulf2 is required for corticospinal tract formation. **Sci. Rep.** 7, 13847, 2017.
- 3) Masu M. Proteoglycans and axon guidance: a new relationship between old partners. **J. Neurochem.** 139, 58-75, 2016.
- 4) Nagamine S et al. Organ-specific sulfation patterns of heparan sulfate generated by extracellular sulfatases Sulf1 and Sulf2 in mice. **J. Biol. Chem.** 287, 9579-9590, 2012.
- 5) Okada T, Keino-Masu K, and Masu, M. Migration and nucleogenesis of mouse precerebellar neurons visualized by *in utero* electroporation of a green fluorescent protein gene. **Neurosci. Res.** 57, 40-49, 2007.
- 6) Keino-Masu K, Masu M, et al. *Deleted in Colorectal Cancer (DCC)* encodes a netrin receptor. **Cell** 87, 175-185, 1996.