IKEUCHI LAB.

[Modeling the Nervous System]

Department of Materials and Environmental Science

Biomolecular and Cellular Engineering

Department of Chemistry & Biotechnology

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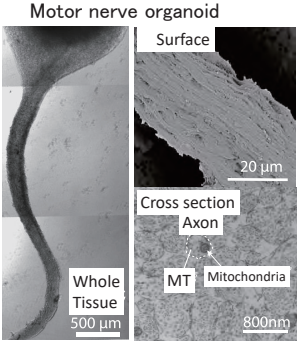
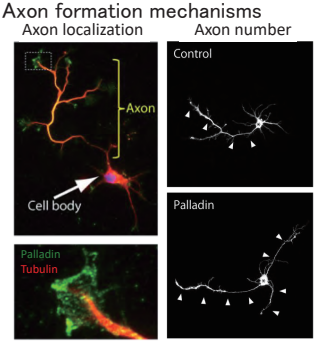
Understanding the Human Brain by Recreating and Connecting Brain Cells Outside of the Body

Despite years of research, most of the functions of the human brain remain to be understood. The human brain is filled with a hundred billion neurons with long protrusions that interlink in a complex manner. At Ikeuchi Laboratory, we are generating these brain nerve cells from induced pluripotent stem cells (iPS). By connecting and manipulating these neurons in different ways, we are demystifying the underlining processes of our brain functions. By discovering the processes of the human brain, we aim to understand brain disorders and neurodegenerative diseases to accelerate the development of new drugs.

Motor nerve organoid



Axon formation mechanisms



Tissue mimicking connections in brain

Controlling stem cells with light