Principal Investigator: Hajime Arai (Professor)

We carry out more than 700 surgeries annually, covered all fields of neurosurgery. Our department has developed a strong commitment to update our knowledge on surgical treatment, emergency care, neurology, peri-surgical management, imaging diagnosis, and basic research, in order to provide contemporary education and foster specialists in neurosurgery.

Group Leaders and Research Topics

1) Masakazu Miyajima (Senior Associate Professor)
    Kazuaki Shimoji (Associate Professor)
    Madoka Nakajima (Associate Professor)

In our group, we are focusing on idiopathic normal-pressure hydrocephalus and congenital malformations such as congenital hydrocephalus, craniosynostosis, and spina bifida. Our goal is to find a new way to diagnose these diseases and to develop a new treatment by using samples such as cerebrospinal fluid and blood plasma of these patients.

Hydrocephalus

We are interested in biomarkers such as glycoproteins and microRNA in idiopathic normal-pressure hydrocephalus to explore new diagnostic tools. We are making efforts to identify a target gene for familial hydrocephalus. We also use H-Tx rats as a hydrocephalus model to investigate the pathogenesis of hydrocephalus.

Craniosynostosis

In craniosynostosis, a clinical trial is currently ongoing for the treatment for mild metopic suture synostosis with clinical symptoms. We are also attempting to find target genes for both syndromic and non-syndromic craniosynostosis.

Other congenital malformations

We are also focused on finding target genes for familial cavernous angiomas, Sturge-Weber syndrome, and spina bifida.

Publications:


2) Hidenori Oishi (Professor, Division of Neuroendovascular Therapy)

Munetaka Yamamoto (Associate Professor)

The research in our division encompasses a wide range of topics on cerebrovascular disease and neuroendovascular therapy.

Publications:

3) Oishi H, Yamamoto M, Shimizu T, Yoshida K, Arai H: Endovascular therapy of 500 small asymptomatic unrup-

3) Atsushi Umemura (Senior Associate Professor, Division of Movement Disorder Unit)

My group organizes the “Movement Disorder Unit” with neurologists and psychiatrists. The main topic of my research is deep brain stimulation for movement disorders.

Publications:

4) Hidenori Sugano (Associate Professor)
Madoka Nakajima (Associate Professor)
Atsushi Umemura (Senior associate professor)

My group is devoted to research in functional neurosurgery. We perform clinical studies on epilepsy surgery and deep brain stimulation for movement disorders, among other topics in the field. We also conduct basic research on neurogenesis in the hippocampus by using immuno-histochemistry and patch-clamp technique. Our research topics are neural plasticity related to epileptogenicity and acquiring neural function, and EEG analysis using high-frequency oscillation.

Publications:

5) Hisato Ishii (Associate Professor)
Yuichi Tange (Assistant Professor)

Our group aims to elucidate the oncogenesis of brain neoplasms and discover specific therapies, especially for hypothalamic and pituitary tumors.

Publications:

6) Akihide Kondo (Associate Professor)

Our group studies clinical oncology with molecular analysis for tumors and approaches for practical surgeries.

Publications:

7) Takeshi Hara (Assistant Professor)

Our group aims to treat spinal diseases and to research biomechanics of the cervical spine using 3D models from imaging studies.