Department of Pediatrics and Adolescent Medicine

Principal Investigator: Toshiaki Shimizu (Professor)

Twelve research groups exist in our department. Each subspecialty group has an active research team and carries out basic and clinical research actively.

Group Leaders and Research Topics

1) Gastroenterology group
Toshiaki Shimizu (Professor)
  Takahiro Kudo (Associate Professor)
We examine the pathogenesis of mucosal immunity including inflammatory bowel disease, food protein-induced enterocolitis syndrome, and Helicobacter pylori infection, using mucosal biopsy samples. In mucosal immunologic research, cytokine profiles such as TNF-α, IFN-γ, IL-17, and IL-26, and lymphoid follicle proliferation factors have been analyzed. Furthermore, functional digestive examinations for functional gastrointestinal disorders, using gastroelectromyogram and C13-acetate breath test for gastric emptying examination, have also been performed.
Reference:

2) Nutrition group
Toshiaki Shimizu (Professor)
  Tomohiro Kitamura (Assistant Professor)
The efficacy of nutritional treatment for premature and very low-birth-weight infants is examined. We also carry out clinical trials researching the safety of artificial milk supplemented with proteins and other nutrients, such as biotin and oligosaccharide. As clinical research, nutritional support team activities for inpatients are performed.
Reference:

3) Allergy and immunology group
Yoshikazu Ohtsuka (Associate Professor)
  Mari Mori (Assistant Professor)
We analyze signaling molecules related to FceRI expression in allergic patients and investigate mechanisms of rectal bleeding in infancy in relation to the induction of tolerance. We also examine the effects of probiotics and omega-3 fatty acids in allergic and rheumatic diseases.
Reference:

4) Cardiology group
Masahiko Kishiro (Associate Professor)
  Ken Takahashi (Associate Professor)
We examine cardiovascular function in congenital and acquired heart diseases using novel two-dimensional speckle tracking imaging and three-dimensional volume measurements. We analyze arterial function in adults with a history of Kawasaki disease.
Reference:

5) Neonatology group
Hiromichi Shoji (Associate Professor)
  Ken Hisata (Associate Professor)
We examine lipid profile, insulin sensitivity, IGF-1, and oxidative stress in preterm infants. The effects of breastfeeding on the risk factors for metabolic syndrome in preterm infants are also studied. We examine glucose metabolism soon after birth in very premature infants with low and appropriate-for-gestational-age birth weights.
Reference:

6) Infection group
Ken Hisata (Associate Professor)
We examine the clinical application of nucleic acid amplification test (NAT) in pediatric infectious diseases and the molecular epidemiology of methicillin-resistant Staphylococcus aureus (MRSA) in Japan. Extended-spectrum beta-lactamases (ESBLs) for treatment, prevention, and surveillance are also studied. We further examine the metagenomics of neonatal gut microbiomes and probiotics in children.
Reference:

7) Hematology and oncology group
Jyunya Fujimura (Associate Professor)
  Sachi Sakaguchi (Assistant Professor)
We examine the molecular mechanisms of differentiation and proliferation of lymphoblasts in BCP-ALL and new tyrosine kinase-related fusion genes and their roles in Ph-like ALL. Personalized long-term follow-up of pediatric cancer survivors using an electronic database is also performed. We further
study the prophylaxis of febrile neutropenia by reducing chemotherapy–induced gastrointestinal mucosal injury.

Reference:

8) Endocrinology and metabolism group
Hidenori Haruna (Associate Professor)
Noriyuki Takubo (Assistant Professor)
We examine the effect of short stature homeobox-containing (shox) gene on early embryonic growth and bone formation in zebrafish. We also examine growth disturbance in Japanese children with IBD and prolonged intracranial hypertension after recombinant growth hormone therapy.
Reference:

9) Hepatology and metabolism group
Mitsuyoshi Suzuki (Assistant Professor)
Kei Minowa (Assistant Professor)
We examine a scoring system for the prediction of severe acute pancreatitis in children and familial and hereditary pancreatitis. The transmission route and genotype of chronic hepatitis B virus infection in children in Japan are further studied. We also examine the association of IL28B polymorphisms with virological response to peginterferon and ribavirin therapy in children and adolescents with chronic hepatitis C.
Reference:

10) Neurology group
Mitsuru Ikeno (Assistant Professor)
We study the utility of amplitude–integrated electroencephalography for various neurological diseases in childhood. The efficacy and safety of fosphenytoin for neonatal and infantile neurological diseases are also examined. We further study the correlation between genotype and phenotype in benign partial epilepsy in infants.
Reference:

11) Nephrology group
Amane Endo (Assistant Professor)
We examine the synergistic protective effects of mizoribine and angiotensin II receptor blockade on cyclosporine A nephropathy and the synergistic effect of mizoribine and a direct renin inhibitor, aliskiren, on unilateral ureteral obstruction–induced renal fibrosis in rats. Increased urinary angiotensinogen is also studied as an effective marker of chronic renal impairment in very low–birth–weight infants.
Reference:

12) Child and adolescent mental health group
Kyoko Tanaka (Associate Professor)
Naomi Yoshikawa (Assistant Professor)
We provide assessment, and diagnostic and treatment services for infants to adolescents with developmental and psychiatric problems. Our research interests include areas such as developmental disorders (autism spectrum disorder, ADHD, specific language impairment), high–risk infants, children with psychosomatic illness, and battered children.
Reference:

13) Other references