

Department of Internal Medicine

Division of Gastroenterology and Hepatology

Hisao Tajiri, *Professor*
 Yoshio Aizawa, *Associate Professor*
 Ichiro Takagi, *Associate Professor*
 Hisato Nakajima, *Lecturer*
 Fumitoki Watanabe, *Lecturer*
 Michiko Negishi, *Lecturer*
 Tomohisa Ishikawa, *Lecturer*

Kiyotaka Fujise, *Professor*
 Hirokazu Nishino, *Associate Professor*
 Akira Torii, *Associate Professor*
 Tateki Yamane, *Lecturer*
 Shigeto Murakami, *Lecturer*
 Shigeo Koido, *Lecturer*
 Atsushi Hokari, *Lecturer*

Research Activities

Alimentary tract

1. The role of toll-like receptor 4 in the intestinal immune response: The roles of toll-like receptor 4-induced signal include the removal of invasive bacteria and mucosal repair.
2. The role of CCL25/CCR9 chemokine ligand/receptor pair in Crohn's disease small bowel: CCR9⁺ T cells in the small bowel in Crohn's disease are proinflammatory and support the use of CCR9 antagonists in Crohn's disease.
3. The phenomenon of CD4⁺CD25⁺ regulatory T cells in ulcerative colitis: CD4⁺CD25⁺ T cells lose their original function in ulcerative colitis and may be unable to counterbalance the chronic mucosal inflammation in ulcerative colitis.
4. How do dendritic cell subsets determine the development of tolerance of or immunity to commensal and pathogenic antigens?: Mucosal dendritic cell subsets populate the entire lamina propria of the small and large intestines and are constantly engaged in sampling and processing of food antigens, commensal bacteria, and intestinal pathogens.
5. The effect of urocortin I on mucosal cells in the colon: Increased expression of urocortin 1 results in inflammation of mucosal cells in the colon.
6. The correlation with the efficacy of leukocytapheresis (CAP) therapy with special attention to CD16⁺ subset: Profound depression of monocytes by CAP could predict favorable response, while late over-shooting of CD16⁺ monocytes could be a hallmark of unfavorable response.
7. The efficacy of bridging therapy for ulcerative colitis: Bridging therapy consisting of azathioprine/6-mercaptopurine and granulocyte apheresis may become a new treatment strategy for cases of intractable ulcerative colitis in which endoscopic remission induction is problematic.
8. Cancer vaccine: Dendritic cells fused with human tumor cells and stimulated with OK-432 may be applicable to antitumor immunotherapy.

Liver

1. The study of intrahepatic immunological reaction in a model of portal vein injection of activated CD8⁺ T cells: The liver is a specific site for trapping activated CD8⁺ T cells.

2. Intrahepatic expression of the co-stimulatory molecules programmed death-1 and its ligands in autoimmune liver disease: The interaction of programmed death-1 on T cells with increased expression of B7-H1 and B7-DC on Kupffer cells and liver sinusoidal endothelial cells might be involved in the down-regulation of autoreactive lymphocytes and result in the regulation of pathogenesis in autoimmune liver disease.
3. A study of nonalcoholic fatty liver disease: Nonalcoholic fatty liver disease includes both nonalcoholic fatty liver and nonalcoholic steatohepatitis. The serum ICAM-1 concentration is increased in patients with nonalcoholic steatohepatitis. The serum level of ICAM-1 in patients with nonalcoholic fatty liver disease may be a useful marker for the diagnosis of nonalcoholic steatohepatitis.
4. The possible cause of non-virus-related hepatocellular carcinoma: Patients with alcoholic liver disease or nonalcoholic steatohepatitis must be followed up with special attention to the development of hepatocellular carcinoma.
5. Development of an implanted bioartificial liver: Immortalized mouse hepatocytes, sinusoidal endothelial cells, and Ito cells, were co-cultured, and liver organoids were constructed in a radial-flow bioreactor.
6. Immunohistochemical examination of lecithin: retinol acyltransferase, desmin and cellular retinol binding protein 1 in rodent liver: In mouse and rat livers, Ito cells were positively stained by antibodies against lecithin: retinol acyltransferase, desmin, and cellular retinol binding protein 1.
7. Antiviral effect on hepatitis B virus in the early stages of co-administration of adefovir: We investigated the therapeutic effects that can be expected after the start of adefovir administration. In our investigation, no significant factors related to antiviral effects for hepatitis B virus were observed in the early period (4 weeks) following the start of adefovir administration.
8. *In vitro* hepatotoxic examination using a mini-bioartificial liver (mini-liver) and ^{13}C stability isotope labeling glucose: A mini-liver was constructed with human functional hepatocellular carcinoma cells cultured in 3 dimensions in a radial-flow bioreactor.

Publications

Koido S, Hara E (Saitama Cancer Cent Res Inst Clin Oncol), Homma S, Torii A, Mitsunaga M, Yanagisawa S, Toyama Y, Kawahara H, Watanabe M, Yoshida S, Kobayashi S, Yanaga K, Fujise K, Tajiri H. Streptococcal preparation OK-432 promotes fusion efficiency and enhances induction of antigen-specific CTL by fusions of dendritic cells and colorectal cancer cells. *J Immunol* 2007; **178**: 613-22.

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