

**Division  
of  
Molecular Bioregulation**

## Publications

1. Yang, X., Lu, P., Ishida, Y., Kuziel, W.A., Fujii, C., and Mukaida, N. (2006) Attenuated liver tumor formation in the absence of CCR2 with a concomitant reduction in the accumulation of hepatic stellate cells, macrophages, and neovascularization. *Int. J. Cancer* 118: 335-345.
2. Kagaya, T., Nakamoto, Y., Sakai, Y., Tsuchiyama, T., Yagita, H., Mukaida, N., and Kaneko, S. (2006) Monocyte chemoattractant protein-1 gene delivery enhances antitumor effects of herpes simplex virus thymidine kinase/ganciclovir system in a model of colon cancer. *Cancer Gene Ther.* 13: 357-366.
3. Yang, X., Lu, P., Fujii, C., Nakamoto, Y., Gao, J-L., Kaneko, S., Murphy, P.M., and Mukaida, N. (2006) Essential contribution of a chemokine, CCL3, and its receptor, CCR1, to hepatocellular carcinoma progression. *Int. J. Cancer* 118: 1869-1876.
4. Ishida, Y., Kondo, T., Kimura, A., Tsuneyama, K., Takayasu, T., and Mukaida, N. (2006) Opposite roles of neutrophils and macrophages in the pathogenesis of acetaminophen-induced acute liver injury. *Eur. J. Immunol.* 36: 1028-1038.
5. Ishida, Y., Kondo, T., Kimura, A., Matsushima, K., and Mukaida, N. (2006) Absence of IL-1 receptor antagonist impaired wound healing along with aberrant NF- $\kappa$ B activation and a reciprocal suppression of TGF- $\beta$  signal pathway. *J. Immunol.* 176: 5598-5606.
6. Li, Y-Y., Popivanova, B.K., Nagai, Y., Ishikura, H., Fujii, C., and Mukaida, N. (2006) Pim-3, a proto-oncogene with serine/threonine kinase activity, is aberrantly expressed in human pancreatic cancer and phosphorylates Bad to block Bad-mediated apoptosis in human pancreatic cancer cell lines. *Cancer Res.* 66: 6741-6747.
7. Kimura, A., Ishida, Y., Hayashi, T., Wada, T., Yokoyama, H., Sugaya, T., Mukaida, N., and Kondo, T. (2006) Interferon- $\gamma$  plays protective roles in sodium arsenite-induced renal injury by up-regulation of intrarenal multidrug resistance-associated protein 1 expression. *Am. J. Pathol.* 169: 1118-1128.
8. Yoshida, N., Imamoto, E., Uchiyama, K., Kuroda, M., Naito, Y., Mukaida, N., Kawabe, A., Shimada, Y., Yoshikawa, T., and Okanoue, T. (2006) Molecular mechanisms involved in interleukin-8 production by normal human oesophageal epithelial cells. *Aliment. Pharmacol. Ther. Symp. Ser.* 2: 219-226.
9. Yamashima, T., Popivanova, B.K., Guo, J., Kotani, S., Wakayama, T., Iseki, S., Sawamoto, K., Okano, H., Fujii, C., Mukaida, N., and Tonchev, A.B. (2006) Implication of Down syndrome cell adhesion molecule in the hippocampal neurogenesis of ischemic monkeys. *Hippocampus* 16: 924-935.
10. Edwards, M.R., Hewson, C.A., Laza-Stanca, V., Lau, H-T. H., Mukaida, N., Hershenon, M.B., and Johnston, S.L. (2007) Protein kinase R, I $\kappa$ B kinase- $\beta$  and NF- $\kappa$ B are required for human rhinovirus induced pro-inflammatory cytokine production in bronchial epithelial cells. *Mol.*

Immunol. 44: 1598-1608.

11. Lu, P., Li, L., Mukaida, N., and Zhang, X. (2007) Alkali-induced corneal neovascularization occurs independently of CXCR2-mediated neutrophil infiltration. *Cornea* 26: 199-206.
12. Tsuchiyama, T., Nakamoto, Y., Sakai, Y., Marukawa, Y., Kitahara, M., Mukaida, N., and Kaneko, S. (2007) Prolonged, NK cell-mediated antitumor effects of suicide gene therapy combined with monocyte chemoattractant protein-1 against hepatocellular carcinoma. *J. Immunol.* 178: 574-583.
13. Tachibana, Y., Nakamoto, Y., Mukaida, N., and Kaneko, S. (2007) Intrahepatic interleukin-8 production during disease progression of chronic hepatitis C. *Cancer Lett.* 251: 36-42.
14. Popivanova, B.K., Li, Y-Y., Zheng, H., Omura, K., Fujii, C., Tsuneyama, K., and Mukaida, N. (2007) A proto-oncogene, Pim-3 with serine/threonine kinase activity, is aberrantly expressed in human colon cancer cells and can prevent Bad-mediated apoptosis. *Cancer Sci.* 98: 321-328.
15. Nakamoto, Y., Mizukoshi, E., Tsuji, H., Sakai, Y., Kitahara, M., Arai, K., Yamashita, T., Yokoyama, K., Mukaida, N., Matsushima, K., Matsui, O., and Kaneko, S. (2007) Combined therapy of transcatheter hepatic arterial embolization with intratumoral dendritic cell infusion for hepatocellular carcinoma; clinical safety. *Clin. Exp. Immunol.* 147: 296-305.
16. Tucker, R.M., Hendrickson, R.J., Mukaida, N., Gill, R.G., and Mack, C.L. (2007) Progressive biliary destruction independently of functional tumor necrosis factor-alpha pathway in a rhesus rotavirus-induced murine model of biliary atresia (BA). *Viral Immunol.* 20: 34-43.
17. Ishida, Y., Kimura, A., Kondo, T., Hayashi, T., Ueno, M., Takakura, N., Matsushima, K., and Mukaida, N. (2007) Essential involvement of the CC chemokine ligand 3-CC chemokine receptor 5 axis in bleomycin-induced pulmonary fibrosis through regulation of macrophage and fibrocyte infiltration. *Am. J. Pathol.* 170: 843-854.
18. Yoshida, N., Katada, K., Handa, O., Takagi, T., Kokura, S., Naito, Y., Mukaida, N., Soma, T., Shimada, Y., Yoshikawa, T., and Okanoue, T. (2007) Interleukin-8 production via protease-activated receptor 2 in human esophageal epithelial cells. *Int. J. Mol. Med.* 19: 335-340.
19. Hayashi, T., Ishida, Y., Kimura, A., Iwakura, Y., Mukaida, N., and Kondo, T. (2007) IFN- $\gamma$  protects cerulein-induced acute pancreatitis by repressing NF- $\kappa$ B activation. *J. Immunol.* 178: 7385-7394.
20. Teruya, H., Higa, F., Akamine, M., Ishikawa, C., Okudaira, T., Tomimori, K., Mukaida, N., Tateyama, M., Heuner, K., Fujita, J., and Mori, N. (2007) Mechanisms of *Legiollaea pneumophila*-induced interleukin-8 expression in human lung epithelial cells. *BMC Microbiology* 7:102.
21. Zheng, H-C., Tsuneyama, K., Takahashi, H., Miwa, S., Sugiyama, T., Popivanova, B.K., Fujii, C., Nomoto, K., Mukaida, N., and Takano, T. (2008) Aberrant Pim-3 expression is involved in gastric adenoma-adenocarcinoma sequence and cancer progression. *J. Cancer Res. Clin. Oncol.* 134: 481-488.
22. Popivanova, B.K., Kitamura, K., Wu, Y., Kondo, T., Kagaya, T., Kaneko, S., Oshima, M., Fujii,

- C., and Mukaida, N. (2008) Blocking TNF- $\alpha$  in mice reduces colorectal carcinogenesis associated with chronic colitis. *J. Clin. Invest.* 118: 560-570.
23. Lu, P., Li, L., Kuno, K., Wu, Y., Baba, T., Li, Y-Y., Zhang, X., and Mukaida, N. (2008) Protective roles of the fractalkine/CX3CL1-CX3CR1 interactions in alkali-induced corneal neovascularization through enhanced anti-angiogenic factor expression. *J. Immunol.* 180: 4283-4291.
24. Hisatsune, J., Nakayama, M., Isomoto, H., Kurazono, H., Mukaida, N., Mukhopadhyay, A.K., Azuma, T., Yamaoka, Y., Sap, J., Yamasaki, E., Yashiro, K., Moss, J., and Hirayama, T. (2008) Molecular characterization of *Helicobacter pylori* VacA induction of IL-8 in U937 cells reveals a prominent role for p38MAPK in activating transcription factor-2, cAMP response element binding protein, and NF- $\kappa$ B activation. *J. Immunol.* 180: 5017-5027.
25. Sawanobori, Y., Ueha, S., Kurachi, M., Shimaoka, T., Talmadge, J.E., Abe, J., Shono, Y., Kitabatake, M., Kakimi, K., Mukaida, N., and Matsushima, K. (2008) Chemokine-mediated rapid turnover of myeloid-derived suppressor cells in tumor-bearing mice. *Blood* 111: 5457-5466.
26. Furuichi, K., Wada, T., Kitajikma, S., Toyama, T., Okumura, T., Hara, A., Kawachi, H., Shimizu, F., Sugaya, T., Mukaida, N., Narumi, S., Matsushima, K., and Kaneko, S. (2008) IFN-inducible protein 10 (CXCL10) regulates tubular cell proliferation in renal ischemia-reperfusion injury. *Nephron Exp. Nephrol.* 109: c29-c38.
27. Tsuchiyama, T., Nakamoto, Y., Sakai, Y., Mukaida, N., and Kaneko, S. (2008) Optimal amount of monocyte chemoattractant protein-1 enhances antitumor effects of suicide gene therapy against hepatocellular carcinoma by M1 macrophage activation. *Cancer Sci.* 99: 2075-2082.
28. Iida, N., Nakamoto, Y., Baba, T., Kakinoki, K., Li, Y-Y., Wu, Y., Matsushima, K., Kaneko, S., and Mukaida, N. (2008) Tumor cell apoptosis induces tumor-specific immunity in a CC chemokine receptor 1- and 5-dependent manner in mice. *J. Leukocyte Biol.* 84: 1001-1010.
29. Ishida, Y., Hayashi, T., Goto, T., Kimura, A., Akimoto, S., Mukaida, N., and Kondo, T. (2008) Essential involvement of CX3CR1-mediated signals in the bactericidal host defense during septic peritonitis. *J. Immunol.* 181: 4208-4218.
30. Lu, P., Li, L., Wu, Y., Mukaida, N., and Zhang, X. (2008) Essential contribution of CCL3 to alkali-induced corneal neovascularization by regulating vascular endothelial growth factor production by macrophages. *Mol. Vis.* 14: 1614-1622.
31. Wu, Y., Li, Y-Y., Matsushima, K., Baba, T., and Mukaida, N. (2008) CCL3-CCR5 axis regulates intratumoral accumulation of leukocytes and fibroblasts, and promotes angiogenesis in murine lung metastasis process. *J. Immunol.* 181: 6384-6393.
32. Ishibe, T., Kimura, A., Ishida, Y., Takayasu, T., Hayashi, T., Tsuneyama, K., Matsushima, K., Sakata, I., Mukaida, N., and Kondo, T. (in press) Recued acetaminophen-induced liver injury in mice by genetic disruption of IL-1 receptor antagonist. *Lab. Invest.*

33. Lu, P., Li, L., Lin, G., van Rooijen, N., Mukaida, N., and Zhang, X. (in press) Opposite roles of CCR2 and CX3CR1 macrophages in alkali-induced corneal neovascularization. *Cornea*.
34. Li, Y-Y., Wu, Y., Tsuneyama, K., Baba, T., and Mukaida, N. (in press) Essential contribution of Ets-1 to constitutive Pim-3 expression in human pancreatic cancer cells. *Cancer Sci*.

### **Other achievements**

Patent No. 2008-16078

Intermediate synthetics of stemonamide and their application for the prevention and/or the treatment of cancer (Pending on June 19, 2008)

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