Prostaglandin E_2-associated inflammation and bacterial infection in gastric tumorigenesis

Masanobu Oshima

Division of Genetics, Cancer Research Institute
Kanazawa University
Kakuma-machi, Kanazawa 920-1192, Japan

Epidemiological and clinical studies have indicated that chronic inflammation plays an important role in cancer development. *H. pylori* infection-associated inflammation is tightly associated with gastric cancer. To examine the role of inflammatory responses in gastric tumorigenesis, we constructed gastric cancer mouse model (*Gan* mice), in which inflammatory COX-2/PGE_2 pathway and Wnt signaling are activated simultaneously in gastric mucosa. Induction of COX-2/PGE_2 pathway resulted in recruitment of macrophages to the stomach and expression of inflammatory cytokines and chemokines increased, constructing inflammatory microenvironment. On the other hand, Wnt activation is one of the important oncogenic pathways in gastrointestinal cancer development. However, Wnt activation alone did not cause tumor development although self-renewal activity was increased like stem cells. Importantly, cooperation of Wnt activation and COX-2/PGE_2 pathway-associated inflammation caused development of gastric cancer with 100% incidence. Moreover, we found that inflammatory cytokine TNF-α plays an important role in gastric cancer development. Accordingly, we believe that regulation of inflammatory micro-environment leads to an effective preventive and therapeutic strategy against gastric cancer.

Masanobu Oshima
Professor, Division of Genetics, Cancer Research Institute
Kanazawa University, Japan
E-mail: oshimam@staff.kanazawa-u.ac.jp

EDUCATIONS/TRAINING

1986	Hokkaido University School of Veterinary Medicine, Japan (DVM)
1988	Hokkaido University Graduate School of Veterinary Medicine, Japan (MS)
1995	PhD from Hokkaido University, Japan
1997-1999	Research assistant (Postdoc) Merck Research Laboratories, USA

POSITIONS AND HONORS

1988-1992	Research Scientist, Chugai Pharmaceutical Co. Ltd, Japan
1992-1999	Research Scientist, Banyu Tsukuba Research Institute (Merck), Japan
2000-2005	Associate Professor, Department of Pharmacology, Kyoto University Graduate School of Medicine, Japan
2005-present	Professor, Division of Genetics, Cancer Research Institute, Kanazawa Univ., Japan

2005-present:	Board member, Japanese Society of Veterinary Science
2009-present:	Associate Editor, Cancer Science

RECENT PUBLICATIONS

1. Kong D, Piao YS, Yamashita S, Oshima H, Oguma K, Fushida S, Fujimura T, Minamoto T, Seno H, Yamada Y, Satou K, Ushijima T, Ishikawa T, and Oshima M. Inflammation-induced repression of tumor suppressor miR-7 in gastric tumor cells. ***Oncogene***, 31: 3949-3960, 2012.
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