Principal Researcher	Makoto Shimizu	**Number of Reserchers**	4
Research Institution・Department・Title	Professor, Department of Applied Biological Chemistry, The University of Tokyo	**Location of Institution**	Bunkyo-ku, Tokyo

Title of Project	Intestinal tract as an organ for detoxification and excretion — Molecular analyses of its regulation by food factors
Abstract of Research Project	The major function of the intestine has been recognized as digestion/absorption of nutrients and food substances. However, the intestinal barrier function to inhibit the invasion of harmful substances is equally important. The purpose of this study is to reveal the molecular aspects of xenobiotic transporters and detoxication enzymes in the intestinal system. Regulation of these xenobiotic-related molecules by food-derived factors is to be studied. Search for the food factors that regulate the activity of transporters for xenobiotics, (ABC-transporters such as P-glycoprotein and MRP) will be the first topic, and the regulatory mechanisms will be analyzed at a molecular level. Induction or regulation of such detoxication enzymes as glutathione-S-transferase in the intestinal epithelium and liver cells by food factors is the second topic. Food factors with such functions will be searched and the molecular mechanisms for the regulation will be studied. The inflammation-related molecules such as prostaglandin are known to be cell-protective. Regulation of these molecules by food factors is also the target of this study. Our study will provide new information for the design of new food that will prevent us from harmful substances such as environmental pollutants.
References	(1) K. Ishizuka, Y. Miyamoto, H. Satsu, R. Sato and M. Shimizu, Characterization of lysophosphatidylcholine in its inhibition of taurine uptake by human intestinal Caco-2 cells. *Biosci. Biotechnol. Biochem.*, 66(4), 730-736 (2002) (2) M. Shimizu, Y. Hatsugai, T. Okada, Evaluation of food functions and safety by using animal cell culture systems. *J. Jpn. Soc. Food Sci. Technol.*, 48(9), 643-649（2001）
Term of Project	Fiscal years 2003-2007．（5years）

Budget Allocation (in thousand of yen)	FY2003	FY2004	FY2005	FY2006	FY2007	TOTAL
	20,400	17,400	16,900	14,900	14,600	84,200

Homepage Address	None (in preparation)