ABC proteins and cell adhesion proteins

Lab. Cellular Biochemistry
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“To live” means to maintain the specific intracellular environment and homeostasis and to regulate growth and differentiation. To live, cells have to transport various compounds including cholesterol into and out of cells and to coordinate signals from extracellular environments and growth factors. Our goal is to understand these cellular events using methods of molecular biology and cell biology.

ABC proteins protect our body from toxic xenobiotics and excess cholesterol

Forty-eight human ATP-binding cassette superfamily proteins (ABC proteins) have been found to be important for various cellular functions involved in host defense mechanisms, glucose homeostasis, and lipid homeostasis. We are studying the physiological functions of ABC proteins and molecular mechanisms to help improve and maintain our health.

Regulatory mechanisms of cell proliferation, differentiation and migration through cell adhesion

Cell adhesion to extracellular matrix, including collagen, regulates various cellular events, including cell proliferation, differentiation, and migration. We have focused on cytoplasmic proteins accumulated at cell adhesion sites, which transduce cell adhesion signals into cells. Our goal is to understand the coordination of cell adhesion and growth factor signals using methods of molecular biology and cell biology.

ABCA1 is involved in the generation of HDL (good) cholesterol in an ATP-dependent manner. 

49 ABC proteins play important roles in our body.

Cell adhesion sites and actin cytoskeleton of mammalian cells are stained green and red, respectively.
Keywords

ABC proteins, transporter, mammalian cells, cholesterol homeostasis, life-style related diseases, efflux of xenobiotics, multidrug resistance, membrane proteins, cell adhesion, cytoskeleton, cell proliferation, migration, signal transduction, invasion of cancer cells

Recent Publications

Atsushi Kodan, Tomohiro Yamaguchi, Toru Nakatsu, Keita Sakiyama, Christopher J. Hipolito, Akane Fujioka, Ryo Hirokane, Keiji Ikekuchi, Bunta Watanabe, Jun Hiratake, Yasuhisa Kimura, Hiroaki Suga, Kazumitsu Ueda, Hiroaki Kato

Hiroshi Yamashita*, Takafumi Ichikawa*, Daisuke Matsuyama, Yasuhisa Kimura, Kazumitsu Ueda, Susan W. Craig, Ichiro Harada, and Noriyuki Kioka
*equally contributed to this work

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Lucia Tomiyama, Takuhito Sezaki, Michinori Matsuo, Kazumitsu Ueda, and Noriyuki Kioka
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