

CURRICULUM VITAE

IDENTICAL INFORMATION

Name: Hisayoshi Hayashi, Ph D

E-mail: hayashih@u-shizuoka-ken.ac.jp

EDUCATION

April/1987-March/1991 School of Food and Nutritional Sciences,
University of Shizuoka

April/1995-March/1998 Graduate School of Nutritional and Environmental
Sciences, University of Shizuoka

Awarded the degree of PhD in food and nutritional
sciences for a thesis entitled
"Cellular mechanisms of small intestinal
nutrient transport". Work supervised by
Prof. Yuichi Suzuki.

EMPLOYMENT

June/1991-May/1995 Research Assistant Professor, Laboratory of Physiology,
School of Food and Nutritional Sciences,
University of Shizuoka (1991-1993 Prof. Takeshi Hoshi,
1993-1995 Prof. Yuichi Suzuki)

April/1998-present Research Assistant Professor, Laboratory of Physiology
School of Food and, Nutritional Sciences,
University of Shizuoka, (Prof. Yuichi Suzuki)

June/1999-March/2002 Research fellow, Cell Biology Program,
The Hospital for Sick Children, Canada,
(Prof. Sergio Grinstein)

April/2002- Sept/2010 Research Assistant Professor, Laboratory of Physiology
School of Food and, Nutritional Sciences,
University of Shizuoka, (Prof. Yuichi Suzuki)

Oct/2010- March/2012 Assistant Professor, Laboratory of Physiology
School of Food and, Nutritional Sciences,
University of Shizuoka

April/2012- Present Associate Professor, Laboratory of Physiology
School of Food and, Nutritional Sciences,
University of Shizuoka

MEMBERSHIPS

The Japanese Society of Physiology (Councilor)
The Japanese Biochemical Society
Japan Society of Nutrition and Food Science
The Japanese Society of Digestion and Absorption
The American Physiological Society

PUBLICATIONS

1. Ikari A, Fujii N, Hahakabe S, Hayashi H, Yamaguchi M, Yamazaki Y, Endo S, Matsunaga T, Sugatani J: Hyperosmolarity-Induced Down-Regulation of Claudin-2 Mediated by Decrease in PKC β -Dependent GATA-2 in MDCK Cells. *J Cell Physiol.* 230, 2776-87, 2015
2. Khan MR, Islam MT, Yazawa T, Hayashi H, Suzuki Y, Uwada J, Anisuzzaman AS, Taniguchi T: Muscarinic cholinergic-mediated activation of JNK negatively regulates intestinal secretion in mice. *J Pharmacol Sci.* 127, 150-3, 2015
3. Ikari A., Tonegawa C., Sanada A., Kimura T., Sakai H., Hayashi H., Hasegawa H., Yamaguchi M., Yamazaki Y., Endo S., Matsunaga T., Sugatani J.: Tight junctional localization of claudin-16 is regulated by syntaxin 8 in renal tubular epithelial cells. *J Biol Chem.*, 289, 13112-13123, 2014
4. Khan RI, Yazawa T., Anisuzzaman AS, Semba S., Ma Y., Uwada J., Hayashi H., Suzuki Y., Ikeuchi H., Uchino M., Maemoto A., Muramatsu I., Taniguchi T.: Activation of focal adhesion kinase via M1 muscarinic acetylcholine receptor is required in restitution of intestinal barrier function after epithelial injury. *Biochim Biophys Acta.*, 1842, 635-645, 2014
5. Ikehara O, Hayashi H, Waguri T, Kaji I, Karaki S, Kuwahara A, Suzuki Y.: Luminal trypsin induces enteric nerve-mediated anion secretion in the mouse cecum. *J Physiol Sci.* 64, 119-128, 2014
6. Ikari A, Atomi K, Yamazaki Y, Sakai H, Hayashi H, Yamaguchi M, Sugatani J. Hyperosmolarity-induced up-regulation of claudin-4 mediated by NADPH oxidase-dependent H₂O₂ production and Sp1/c-Jun cooperation. *Biochim Biophys Acta.* 1833, 2617-27, 2013
7. Khan MRS , Anisuzzaman ASM , Semba S, Ma Y, Uwada J, Hayashi H, Suzuki Y, Takano T, Ikeuchi H, Uchino M, Maemoto A, Ushikubi F, Muramatsu I, Taniguchi T. M1 is a major subtype of muscarinic acetylcholine receptors on mouse colonic epithelial cells. *J Gastroenterology* 48, 885-96, 2013
8. Inoue H, Kobayashi-Yamakawa K, Suzuki Y, Nakano T, Hayashi H, Kuwano T. A case study on the association of variation of bitter-taste receptor gene TAS2R38 with the height, weight and energy intake in Japanese female college students. *J Nutr Sci Vitaminol.* 59 16-21, 2013

9. Hayashi H, Tamura A, Krishnan D, Tsukita S, Suzuki Y, Kocinsky HS, Aronson PS, Orłowski J, Grinstein S, 9 and Alexander RT. Ezrin is Required for the Functional Regulation of the Epithelial Sodium Proton Exchanger, NHE3. PLoS One 8 (2), e55623, 2013
10. Ikehara O, Hayashi H, Waguri T, Kaji I, Karaki SI, Kuwahara A, Suzuki Y. Subepithelial trypsin induces enteric nerve-mediated anion secretion by activating proteinase-activated receptor 1 in the mouse cecum. J Physiol Sci. 62.211-219, 2012
11. Ikari A, Atomi K, Takiguchi A, Yamazaki Y, Hayashi H, Hirakawa J, Sugatani J Enhancement of cell-cell contact by claudin-4 in renal epithelial Madin-Darby canine kidney cells. J Cell Biochem.113, 499-507, 2012
12. Hayashi H, Yamashita Y. Role of N-glycosylation in cell surface expression and protection against proteolysis of the intestinal anion exchanger SLC26A3. Am J Physiol Cell Physiol.302, C781-95, 2012
13. Tamura A, Hayashi H, Imasato M, Yamazaki Y, Hagiwara A, Wada M, Noda T, Watanabe M, Suzuki Y, Tsukita S. Loss of Claudin-15, but Not Claudin-2, Causes Na⁺ Deficiency and Glucose Malabsorption in Mouse Small Intestine. Gastroenterology, 140, 913-923, 2011
14. Koivusalo M, Welch C, Hayashi H, Scott CC, Kim M, Alexander T, Touret N, Hahn KM, Grinstein S. Amiloride inhibits macropinocytosis by lowering submembranous pH and preventing Rac1 and Cdc42 signaling. J Cell Biol. 188, 547-563, 2010
15. Ikehara O, Hayashi H, Watanabe Y, Yamamoto H, Mochizuki T, Hoshino M, Suzuki Y. Proteinase-activated receptors-1 and 2 induce electrogenic Cl⁻ secretion in the mouse cecum by distinct mechanisms. Am J Physiol. 299, G115-125, 2010
16. Hayashi H, Suruga K, Yamashita Y. Regulation of intestinal Cl⁻/HCO₃⁻ exchanger SLC26A3 by intracellular pH. Am J Physiol, 296, C1279-90, 2009
17. Inagaki-Tachibana E, Tsukahara T, Kaji K, Eguchi R, Kanazawa H, Hayashi H, Suzuki Y. Involvement of DNA fragmentation of enterocytes in mucosal injury to a mouse jejunum incubated in Ussing chambers. Nagoya J Med Sci, 71, 11-18, 2009.
18. Inagaki-Tachibana E, Hayashi H, Suzuki Y. The electrophysiological properties of the mucosal barrier in the injured mouse jejunum in Ussing chambers. J Nutr Sci Vitaminol (Tokyo). Jun;54(3):269-71 2008.
19. Hayashi H, Aharonovitz O, Alexander RT, Touret N, Furuya W, Orłowski J, Grinstein S. Na⁺/H⁺ exchange and pH regulation in the control of neutrophil chemokinesis and chemotaxis. Am J Physiol. 294, C526-34, 2008.

20. Karaki S, Tazoe H, Hayashi H, Kashiwabara H, Tooyama K, Suzuki Y, Kuwahara A. Expression of the short-chain fatty acid receptor, GPR43, in the human colon. *J Mol Histol*, 39, 135-42, 2008.
21. Inagaki-Tachibana E, Natori Y, Hayashi H, Suzuki Y. In vitro diffusion barriers of the mouse jejunum in Ussing chambers. *J Nutr Sci Vitaminol (Tokyo)*. 54, 30-8, 2008.
22. Tamura A, Kitano Y, Hata M, Katsuno T, Moriwaki K, Sasaki H, Hayashi H, Suzuki Y, Noda T, Furuse M, Tsukita S, Tsukita S. Megaintestine in claudin-15-deficient mice. *Gastroenterology*, 134, 523-34, 2008.
23. Uchiyama H, Hayashi H, Tanji K, Sugimoto O, Suzuki Y. pH stat studies on bicarbonate secretion in the isolated mouse ileum. *Biomed Res*. 28, 239-46, 2007.
24. Kawamata K, Hayashi H, Suzuki Y. Propionate absorption associated with bicarbonate secretion in vitro in the mouse cecum. *Pflugers Arch*, 454, 253-62, 2007.
25. Kawamata K, Hayashi H, Suzuki Y. Chloride-dependent bicarbonate secretion in the mouse large intestine. *Biomed Res*, 27, 15-21, 2006.
26. Uchiyama H, Hayashi H, Suzuki Y. Functional characterization of Cl⁻/HCO₃⁻ exchange in villous cells of the mouse ileum. *Biomed Res*. 27, 265-74, 2006.
27. Karaki S, Mitsui R, Hayashi H, Kato I, Sugiya H, Iwanaga T, Furness JB, Kuwahara A. Short-chain fatty acid receptor, GPR43, is expressed by enteroendocrine cells and mucosal mast cells in rat intestine. *Cell Tissue Res*, 324, 353-60, 2006.
28. Ikari A, Matsumoto S, Harada H, Takagi K, Hayashi H, Suzuki Y, Degawa M, Miwa M. Phosphorylation of paracellin-1 at Ser217 by protein kinase A is essential for localization in tight junctions. *J Cell Sci*, 119, 1781-9, 2006.
29. Inagaki E, Natori Y, Ohgishi Y, Hayashi H, Suzuki Y. Segmental difference of mucosal damage along the length of a mouse small intestine in an Ussing chamber. *J Nutr Sci Vitaminol (Tokyo)*, 51, 406-12, 2005.
30. Tamura A, Kikuchi S, Hata M, Katsuno T, Matsui T, Hayashi H, Suzuki Y, Noda T, Tsukita S, Tsukita S. Achlorhydria by ezrin knockdown: defects in the formation/expansion of apical canaliculi in gastric parietal cells. *J Cell Biol*, 169, 21-8, 2005.
31. Ikari A, Hirai N, Shiroma M, Harada H, Sakai H, Hayashi H, Suzuki Y, Degawa M, Takagi K. Association of paracellin-1 with ZO-1 augments the reabsorption of divalent cations in renal epithelial cells. *J Biol Chem*, 279, 54826-32, 2004.
32. Hayashi H, Szász K, Coady-Osberg N, Furuya W, Bretscher AP, Orlowski J, Grinstein S. Inhibition and redistribution of NHE3, the apical Na⁺/H⁺ exchanger, by Clostridium difficile toxin B. *J Gen Physiol*, 123, 491-504, 2004.

33. Hayashi H, Suzuki T, Yamamoto T, Suzuki Y. Cholinergic inhibition of electrogenic sodium absorption in the guinea pig distal colon *Am J Physiol*, 284, G617-628, 2003.
34. Hayashi H, Szászi K, Coady-Osberg N, Orlowski J, Kinsella JL, Grinstein S. A slow pH-dependent conformational transition underlies a novel mode of activation of the epithelial Na⁺/H⁺ exchanger-3 isoform. *J Biol Chem*, 277, 11090-11096, 2002.
35. Wang C, Hayashi H, Harrison R, Chiu B, Chan JR, Ostergaard HL, Inman RD, Jongstra J, Cybulsky MI, Jongstra-Bilen J. Modulation of Mac-1 (CD11b/CD18)-mediated adhesion by the leukocyte-specific protein 1 is key to its role in neutrophil polarization and chemotaxis. *J Immunol*, 169, 415-23, 2002.
36. Tsuchiya Y, Hayashi H, Suzuki Y. Na⁺-dependent recovery of intracellular pH from acid loading in mouse colonic crypt cells. *Tohoku J Exp Med*, 193, 1-11, 2001.
37. Sato Y, Hanai H, Nogaki A, Hirasawa K, Kaneko E, Hayashi H, Suzuki Y. Role of the vasopressin V-1 receptor in regulating the epithelial functions of the guinea pig distal colon. *Am J Physiol*, 277, G819-828, 1999.
38. Koyama K, Sasaki I, Naito H, Funayama Y, Fukushima K, Unno M, Matsuno S, Hayashi H, Suzuki Y. Induction of epithelial Na⁺ channel in rat ileum after proctocolectomy. *Am J Physiol*, 276, G975-984, 1999.
39. Hayashi H, Suzuki Y. Regulation of intracellular pH during H⁺-coupled oligopeptide absorption in enterocytes from guinea-pig ileum. *J Physiol*. 511, 573-586, 1998.
40. Kitaoka S, Hayashi H, Yokogoshi H, Suzuki Y. Transmural potential changes associated with the in vitro absorption of theanine in the guinea pig intestine. *Biosci Biotechnol Biochem*, 60, 1768-1771, 1996.
41. Ikuma M, Hanai H, Kaneko E, Hayashi H, Hoshi T. Effects of aging on the regulation of intracellular pH in the rat jejunum. *J Gerontol A Biol Sci Med Sci*, 51, B346-353, 1996.
42. Ikuma M, Hanai H, Kaneko E, Hayashi H, Hoshi T. Effects of aging on the microclimate pH of the rat jejunum. *Biochim Biophys Acta*, 1280, 19-26, 1996.
43. Dougen M, Hayashi H, Yajima T, Suzuki Y : Stimulation of bicarbonate secretion by luminal short-chain fatty acid in the rat and human colon in vitro, *Jpn J Physiol*, 44, 519-531, 1994.
44. Hayashi H, Hoshi T. Properties of active magnesium flux across the small intestine of the guinea pig. *Jpn J Physiol*, 42, 561-75, 1992.

Review

1. Hayashi H, Szászi K, Grinstein S. Multiple modes of regulation of Na⁺/H⁺ exchangers.

Ann N Y Acad Sci. 2002, 976:248-58.