

Molecular Oncology

1. Staffs and Students (April, 2009)

Professor	Yasuhito YUASA	
Lecturer	Yoshimitsu AKIYAMA,	Hiroshi FUKAMACHI
Visiting Professor	Masabumi SHIBUYA	
Tokunin Assistant Professor	Feng WANG,	Tsuyoshi OSAWA,
	Rika TSUCHIDA,	Masashi MURAMATSU
Secretary	Yoshiko OZAWA	
Graduate Student	Takeshi OTSUBO,	Shu SHIMADA,
	Ayako MIMATA,	Rie WADA,
	Yutaka HASHIMOTO,	Pichayanoot ROTKRUA,
	Aika HIRATSUKA	

2. Purpose of Education

• Undergraduate course:

Hygiene is our charge. The undergraduate curriculum of hygiene includes lectures, small-group seminars, and laboratory studies. Topics of lectures consist of environmental pollution and human health, world-wide environmental problems, carcinogen and occupational cancer, smoking-related diseases, infectious diseases including AIDS and hepatitis, food poisoning, anoxia and heat-related diseases.

• Graduate course:

The graduate students pursue their own projects associated with one of researches being in progress in the division. Every student can learn the basic scientific techniques, such as genetic engineering, cell culture and biochemical procedures. There are also many special lectures on cancer, gene, cell biology and biochemistry for the graduate students. On weekly seminars, the students present their own research data and introduce important papers from newly-arrived journals. Once the students get new findings, they are encouraged to present them at the domestic or international meeting and write manuscripts.

3. Research Subjects

- 1) Cellular and molecular analyses of cancer-related genes, such as oncogenes and tumor suppressor genes, in gastroenterological cancers
- 2) Molecular mechanism of cell growth, differentiation and apoptosis
- 3) Involvement of differentiation-related genes in gastroenterological diseases
- 4) Cancer stem cells
- 5) DNA methylation and cancer
- 6) Transcription factors and cancer
- 7) Effect of environmental factors on gene expression and DNA methylation
- 8) Involvement of microRNA in gastric carcinogenesis
- 9) Involvement of VEGF receptors in tumor growth and metastasis
- 10) Importance of bone marrow-derived cells in tumor growth
- 11) Mechanism of tumor resistance to anti-angiogenesis therapy

4. Publications

Original Article

1. Yuasa Y, Nagasaki H, Akiyama Y, Hashimoto Y, Takizawa T, Kojima K, Kawano T, Sugihara K, Imai K, and Nakachi K: DNA methylation status is inversely correlated with green tea intake and physical activity in gastric cancer patients. *Int. J. Cancer* 2009;124:2677-2682.
2. Hellebrekers DMEI, Lentjes, MHFM, van den Bosch SM, Wouters AD, Daenen K, Melotte V, Smits KM, Partouns-Hendriks IEJM, Akiyama Y, Yuasa Y, Sanduleanu S, Khalid-de Bakker C, Jonkers D, Weijenberg MP, Louwagie J, van Criekinge W, Carvalho B, Meijer GA, Baylin SB, Herman JG, de Bruïne AP & van Engeland M: GATA4 and GATA5 are potential tumor suppressors and biomarkers in colorectal cancer. *Clinical Cancer Res.*, 2009;15:3990-3997.
3. Komi Y, Suzuki Y, Shimamura M, Kajimoto S, Nakajo S, Masuda M, Shibuya M, Itabe H, Shimokado K, Oettgen P,

- Nakaya K, Kojima S. Mechanism of Inhibition of Tumor Angiogenesis by beta-Hydroxyisovalerylshikonin. *Cancer Sci.* 100:269-277, 2009.
4. Osawa T, Muramatsu M, Watanabe M, Shibuya M. Hypoxia and Low Nutrition Double Stress Induces Aggressiveness in a Murine Model of Melanoma. *Cancer Sci.* 100:844-851, 2009.
 5. Koga J, Matoba T, Egashira K, Kubo M, Miyagawa M, Iwata E, Sueishi K, Shibuya M, Sunagawa K. Soluble Flt-1 gene transfer ameliorates neointima formation after wire injury in flt-1 tyrosine kinase-deficient mice. *Arterioscler Thromb Vasc Biol.* 29:458-464, 2009.
 6. Kubota Y, Takubo K, Shimizu T, Ohno H, Kishi K, Shibuya M, Saya H, Suda T. M-CSF inhibition selectively targets pathological angiogenesis and lymphangiogenesis. *J Exp Med.* 206:1089-102, 2009
 7. Wittko IM, Schänzer A, Kuzmichev A, Schneider FT, Shibuya M, Raab S, Plate KH. VEGFR-1 regulates adult olfactory bulb neurogenesis and migration of neural progenitors in the rostral migratory stream in vivo. *J Neurosci.* 29: 8704-8714, 2009.
 8. Imai N, Miwa H, Shikami M, Suganuma K, Gotoh M, Hiramatsu A, Wakabayashi M, Watarai M, Hanamura I, Imamura A, Mihara H, Shitara K, Shibuya M, Nitta M. Growth inhibition of AML cells with specific chromosome abnormalities by monoclonal antibodies to receptors for vascular endothelial growth factor. *Leukemia Res.* 33: 1650-1657, 2009.
 9. Xiong Y, Huo Y, Chen C, Zeng H, Lu X, Wei C, Ruan C, Zhang X, Hu Z, Shibuya M, Luo J. VEGF Receptor-2 Y1175 signaling controls VEGF-induced vWF release from endothelial cells via PLCgamma1- and PKA-dependent pathways. *J Biol Chem.* 284: 23217-2324, 2009.
 10. Suzuki H, Ohkuchi A, Matsubara S, Takei Y, Murakami M, Shibuya M, Suzuki M, Sato Y. Effect of recombinant placental growth factor 2 on hypertension induced by full-length mouse soluble fms-like tyrosine kinase 1 adenoviral vector in pregnant mice. *Hypertension.* 54:1129-1135, 2009.

Book

1. Shibuya, M. Professor Hidesaburo Hanafusa: A 50-Year Quest for the Molecular Basis of Cancer. *J Biochem.* 146: 3-5, 2009.