

Molecular Virology

1. Staffs and Students (April 2010)

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2. Purpose of Education

Microbiology covers several aspects of bacteriology, immunology and virology. Through the studies on various microbes it is expected to understand host-parasite relationship and mechanisms of pathogenicity. Unlike the past, microbiology has rapidly been drawn to the center of the biological stage.

Our laboratory mainly deals with viral oncogenesis and immunodeficiency in humans. Especially, several projects are carried out with the emphasis on investigations into the mechanisms of viral replication and pathogenesis induced by human retroviruses (HIV-1 and HTLV-I) and human herpes viruses. The purpose of many of the studies being undertaken is to identify critical events and molecules responsible for the efficient replication of these viruses, and in case of human retroviruses, those for transformation or destruction of normal lymphocytes. Virological, immunological and molecular approaches are being applied for this purpose.

3. Research Subjects

Following studies have been extensively carried out in our laboratory with various biological and molecular biological techniques:

- Pathogenesis of HIV and HTLV (mutation, virulence, apoptosis, polymorphism).
- Studies on signal transduction pathways targeted by viral proteins.
- Molecular cloning by genetic complementation of components essential for virus replication in mammalian cells.

4. Publications: Original articles

1. Masuda M, Maruyama T, Ohta T, Ito A, Hayashi T, Tsukasaki K, Kamihira S, Yamaoka S, Hoshino H, Yoshida T, Watanabe T, Stanbridge EJ, *Murakami Y. : CADM1 interacts with Tiam1 and promotes invasive phenotype of human T-cell leukemia virus type I (HTLV-I) transformed cells and adult T-cell leukemia (ATL) cells: possible involvement of CADM1 in pathogenesis of ATL. *J. Biol. Chem.* 285: 15511-15522, 2010
2. Saitoh, Y., Marti'nez Bruyn, V.J., Uota, S., Hasegawa, A., Yamamoto, N., Imoto, I., Inazawa, J. and *Yamaoka, S.: Overexpression of NF-kB Inducing Kinase Underlies Constitutive NF-kB Activation in Lung Cancer Cells. *Lung Cancer* 70: 263-270, 2010
3. Suzuki S, Zhou Y, Refaat A, Takasaki I, Koizumi K, Yamaoka S, Tabuchi Y, Saiki I, Sakurai H: Human T cell lymphotropic virus 1 manipulates interferon regulatory signals by controlling the TAK1-IRF3 and IRF4 pathways. *J Biol Chem.* 285:4441-4446, 2010
4. Sakuma R, Ohmine S, Ikeda Y: Determinants for the rhesus monkey TRIM5 α -mediated block of the late phase of HIV-1 replication. *J Biol Chem.* 285:3784-3793, 2010
5. Ohmine S, Sakuma R, Sakuma T, Thatava T, Solis GP, Ikeda Y: Cytoplasmic body component TRIM5 α requires lipid-enriched microdomains for efficient HIV-1 restriction. *J Biol. Chem.* 285-34508-34517, 2010