Medical Instrument (Biomedical Information)

1. Staffs and Students (April, 2009)

Professor	Kenji YASUDA	
Associate Professor	Tomoyuki KANEKO	
Assistant Professor	Ikurou SUZUKI,	Fumimasa NOMURA
Graduate Student	Tomonari KOUGUCHI,	Yuki TOMOE,
	Sachie OHHARA,	Ryoko MATSUI

2. Purpose of Education

Medical instrument (Biomedical information) is a branch of institute of biomaterials and bioengineering which deals with the measurement of epigenetic information and memorization stored in living system such as brain (neural network system), immune system, and cardio systems caused by environmental hysteresis. Main objective of medical instrument in the graduate course is to provide students opportunity to study fusion of latest technologies of nano- and bio-tech, and to develop artificial organ model on chip for drug discovery and toxicology use.

3. Research Subjects

1) Studies on Epigenetic Information Stored Living System.
2) Constructing "On-chip Organ Model" using Nano-Bio Technology.
3) Bio-computing using "Real Neural Network on Chip".
4) New Drug Discovery Technology applying Single Molecule Measurement.

4. Publications

Original Articles

1. T. Tanaka, S. Tohyama, M. Murata, F. Nomura, T. Kaneko, H. Chen, F. Hattori, T. Egashira, T. Seki, Y. Ohno, U. Koshimizu, S. Yuasa, S. Ogawa, S. Yamanaka, K. Yasuda and K. Fukuda, In vitro pharmacologic testing using human induced pluripotent stem cell-derived cardiomyocytes, Biochem. Biophys. Res. Commun., Vol. 385, pp. 497-502, 2009.
2. A. Kira, H. Kim and K. Yasuda, Contribution of curvature of gold nano-particle for the improvement of the number density of immobilized DNA, Langmuir, 25 (3), pp.1285-1288, 2009.
3. Y. Shimamoto, M. Suzuki, S. V. Mikhailenko, K. Yasuda and S. Ishiwata, Inter-sarcomere coordination in muscle revealed through individual sarcomere response to quick stretch, PNAS, 106 (29), pp.11954–11959, 2009.
4. A. Kira, H. Kim and K. Yasuda, Homogeneous Immobilization of Probe DNAs on DNA Chip using Polyurea Thin Film, e-Journal of Surface Science and Nanotechnology (e-JSSNT), 7, pp.728-730, 2009.
5. H. Kim, K. Yasuda and H. Takei, Production of nanoscopic metal labels for electron microscopy: Specific detection of target DNA, Sensors and Actuators B Chemical, 142 (1), pp.1-6, 2009.

Invited Talks

1. Kenji YASUDA, Tomoyuki KANEKO, Fumimasa NOMURA, Atsushi SUGIYAMA, Sunao MANABE, Samuel Cohen, On-Chip Pre-Clinical Cardiac Toxicity: Testing Compounds Beyond hERG and QT using Cell Network Re-Entry Model on a Chip, ILSI Health and Environmental Sciences Institute Annual HESI Emerging Issues Meeting, Tuson, AZ, USA, Jan., 2009.
2. Kenji YASUDA, Reconstructive approach for on-chip tissue/organ model screening system for drug discovery and toxicology, APBioChEC '09, Kobe, Japan, Nov., 2009.

Meetings

1. Hideyuki Terazono, Hiroyuki Takei and Kenji Yasuda, Micro droplet PCR: Development of high-speed real-time PCR system for rapid and precise nucleotide recognition, 22nd International Microprocesses and Nanotechnology Conference, Sapporo, Japan, Nov, 2009.
2. Hyonchol Kim, Hiroyuki Takei and Kenji Yasuda, Production of nano-particles created with several materials for labeling of biological molecules, 22nd International Microprocesses and Nanotechnology Conference, Sapporo, Japan, Nov, 2009.
3. Hyonchol Kim, Hiroyuki Takei and Kenji Yasuda, Quantitative and sensitive detection of target DNA using nano-particles as labels, 49th Annual Meeting of the American Society for Cell Biology, San Diego, USA, Dec, 2009.

4. Hideyuki Terazono, Hiroyuki Takei, Akihiro Hattori and Kenji Yasuda, Development of a high-speed and automatable real-time PCR system for rapid nucleotide recognition, 49th Annual Meeting of the American Society for Cell Biology, San Diego, USA, Dec, 2009.
5. Masahito Hayashi and Kenji Yasuda, Single event observation of sequential phagocytosis by a mouse alveolar macrophage, 49th Annual Meeting of the American Society for Cell Biology, San Diego, USA, Dec, 2009.
6. Tomoyuki Kaneko, Fumimasa Nomura, Yuki Tomoe and Kenji Yasuda, Community effects in cardiomyocyte networks analyzed with on-chip single-cell measurement system, 49th Annual Meeting of the American Society for Cell Biology, San Diego, USA, Dec, 2009.