Pharmacology and Neurobiology

1. Staffs and Students (April, 2009)

Professor	Tsutomu TANABE	
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Graduate Student	Li LI, Kasumi KOUCHI	Eri SAKURAI,

2. Purpose of Education

2-1

Undergraduate course: Pharmacology course provides the principle of pharmacological basis of therapeutics. Several representative therapeutic drugs in each disease will be picked up and systematic lectures -from basic pharmacology to mechanism of action, drug metabolism, clinical application and side effects- will be provided. Students are projected to acquire self-learning skills during the course and expected to be ready for handling clinical cases by pharmacological means.

We consider education through the pharmacology lab work is important. Students are given opportunity to dissect out several tissues (heart, skeletal muscle, ileum and vas deferens) from living animals by themselves and test the effect of a number of drugs including specific agonist, antagonist and non-selective drugs. Lab work course is divided into two parts. In the first part, students were given several known drugs for testing the known effect on these tissues. In the second part, students are given two unknown drugs and requested to identify the name and concentration of each drug using the tissues they prepare by themselves.

2-2

Graduate course: During the first couple of months, students are requested to acquire basic techniques of biochemistry, molecular biology, pharmacology and electrophysiology that are routinely used in our laboratory. Then students will be given a small project to do using the techniques they have learned during the initial training. Students are also required to read relevant scientific papers and conduct seminar style lectures to other lab members monthly. After completion of the initial phase, students start their own project under the supervision of the faculties in the lab.

3. Research Subject

1. Molecular basis of calcium channelopathy
2. Molecular mechanism of neurodegenerative disease
3. Mechanism of modal shift of cell sensor: from touch perception to pain sensation
4. Molecular mechanism of neuropathic pain
5. Molecular mechanism of drug tolerance
6. Hormonal modulation of stem cell development

4. Publications

Original articles:

1. Kondo, D., Saegusa, H., Yabe, R., Takasaki, I., Kurihara, T., Zong, S. and Tanabe, T.: Peripheral-type benzodiazepine receptor antagonist is effective in relieving neuropathic pain in mice. J. Pharmacol. Sci. 110: 55-63 2009.
2. Li, L., Saegusa, H. and Tanabe, T.: Deficit of heat shock transcription factor 1- heat shock 70kDa protein 1A axis determines the cell death vulnerability in a model of spinocerebellar ataxia type 6. Genes to Cells 14: 1253-1269, 2009.
3. Sakurai, E., Kurihara, T., Kouchi, K., Saegusa, H., Zong, S. and Tanabe, T.: Upregulation of casein kinase 1 epsilon in dorsal root ganglia and spinal cord after mouse spinal nerve injury contributes to neuropathic pain. Molecular Pain 5: 74, 2009.

Meetings:

1. Tsutomu Tanabe, Li Li, Hironao Saegusa: Enhanced stress-induced cell death in HEK293 cells expressing carboxyl-terminal portion of human Cav2.1 with a spinocerebellar ataxia type 6 mutation. Keystone Symposia: Neurodegenerative Diseases: New Molecular Mechanisms, Keystone CO, USA 2009.
2. T. Tanabe, L. Li and H. Saegusa: Identification of the molecules determining cell death vulnerability in a cellular

model of spinocerebellar ataxia type 6. The 39th Annual Meeting of the Society for Neuroscience, Chicago, USA 2009.

3. T. Tanabe, L. Li and H. Saegusa: Heat shock 70kDa protein 1A in a cellular model of spinocerebellar ataxia type 6. The 49th Annual Meeting of the Americal Society for Cell Biology, San Diego, California, USA 2009.
4. Li, L., Saegusa, H. and Tanabe, T.: Down-regulation of heat shock transcription factor 1-heat shock 70kDa protein 1A axis and increased caspase-dependent apoptosis in a cell model of spino cerebellar ataxia type 6 (SCA6). The 32nd Annual Meeting of the Molecular Biology Society of Japan, Yokohama, Japan 2009.