Laboratory of Molecular Neuropharmacology

Professor Hitoshi HASHIMOTO 06-6879-8180 hasimoto@phs.osaka-u.ac.jp
Associate Professor Norihito SHINTANI 06-6879-8181 shintani@phs.osaka-u.ac.jp
FAX 06-6879-8184

The term, "a pharmacological action", means a response of living bodies to drugs. To know how the pharmacological actions are revealed, investigation of cellular and molecular mechanisms of living bodies is essential. In other words, pharmacology is, not only a scientific basis for the development of new drugs, but also largely contributes to the life science by providing many findings on the regulatory mechanisms of cells and organs. At present, when the total codes on the human genomes have been read, the functions of the human genomes becomes a main subject for life scientists to clarify. Thus, molecular pharmacology is an important academic field including gene technology (reverse pharmacology).

For example, we are now showing the functions of new neuropeptides by using gene knockout mice which we recently generated (theme 1). Neuroscience is a big science of the 21st-century, because its progress has great impacts on a wide range of cultures including medicine and philosophy. In order to generate a novel drug, our lab is executing a systematic research for regulation of brain functions and responses to drugs in an aspect of molecular pharmacology. That is, our objects of the research extend from behavioral observations on whole animals to molecular biology on enzymes, drug receptors and genomes. The basis of brain functions is intracellular communications, which is regulated by a restricted recognition of transmitters and transduction of the signals between neurons in an appropriate manner. We are investigating the signal transduction systems by means of molecular biological and neurochemical approaches and aim to generation of a novel drug. Some drugs examined in our lab are now applied to clinical trials.

Research topics

1) Functional analysis of neuropeptide (PACAP) in brain and pancreas by molecular pharmacological approaches
2) Mechanisms for molecular basis of psychiatric function
3) Functional analysis of new biological target molecules for drug discovery
4) Molecular pharmacology of neural stem cell

Recent publications