Syllabus

1. Course title, style, and credit
Molecular and Cellular Neurobiology
1 credit

2. Appropriate grade level and Eligible Departments
D1, 2 (obligatory), D3-5 (optional) School of Life Science

3. Lectures
Masaki Fukata
E-mail: mfukata@nips.ac.jp
TEL: 0564-59-5873 FAX: 0564-59-5870
8th Floor East, 3rd Building, NIPS (Yamate Area)

4. Time
[Oral]
October 21, 24, 31
November 7, 28
December 5, 15, 19

October 21 (Tue) 13:00～15:00
December 15 (Mon) 15:00～17:00
Other than that above (Fri) 10:00～12:00

5. Place
Seminar Room, 2nd Floor West, 2nd Building, NIPS (Yamate Area)

6. Prerequisites and Styles
Basic knowledge on the molecular and cellular biology will help to understand the lecture but is not essential.

7. Contents
Reorganizing cytoskeleton and cell adhesion, cells, especially neurons, exert their physiological functions such as morphological change, cell migration, cell polarization and synaptic transmission. In this course, we will give a series of lectures on their molecular mechanisms, which are being elucidated.

8. Course objectives
1. Understand the basis of cytoskeleton, cell adhesion and motor proteins.
2. Learn the basis of cell biology and molecular biology and understand
3. Understand the molecular basis of synaptic transmission and synaptic plasticity.
9. Schedule
   (1) October 21st
   Cytoskeleton and cell adhesion
   Masaki Fukata (NIPS)

   (2) October 24th
   Signal transduction and posttranslational modification of proteins
   Masaki Fukata (NIPS)

   (3) October 31st
   Methods in molecular and cellular neurobiology: Immunological methods and
   superresolution microscopy
   Yuko Fukata (NIPS)

   (4) November 7th
   Basic structural biology for neurobiology: Protein structure and synaptic
   transmission
   Norihiko Yokoi (NIPS)

   (5) November 28th
   Synaptic transmission ~ Molecular basis of presynapse ~
   Toshihisa Ohtsuka (Yamanashi University)

   (6) December 5th
   Synaptic transmission ~ Molecular basis of postsynapse ~
   Yuko Fukata (NIPS)

   (7) December 15th
   Synaptic plasticity in cerebellar Purkinje cells
   Keiko Tanaka (Korea Institute of Science and Technology)

   (8) December 19th
   Molecular basis of synaptic plasticity -Imaging signal transduction by two
   photon fluorescence microscopy-
   Hideji Murakoshi (NIPS)

10. Lecture materials and readings
Science

Mark F.Bear et al, “Neuroscience: Exploring the Brain, 3rd edition” :
Lippincott Williams & Wilkins Inc.
(These books are in our Lab.)
11. Grades
Students are requested to file the short essay related to the Course Objectives. Either passed or failed is determined by the quality of the report. Students must attend the classes at least half of total classes to take a credit.

12. Notes
Nothing in particular