

Syllabus

1. Course Title, style, and credit

Molecular Basis of Neural Signaling

Lecture

1 credit

2. Appropriate grade level and Eligible Departments

All Departments

For Department of Physiological Sciences, D1, 2 (obligatory), D3–5 (optional)

3. Lectures

Keiji Imoto

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Yamate 3rd Building, 9th Floor West, NIPS (Yamate Area)

4. Time

[Oral]

10:00 -- 12:00 on Friday

May 13, 20, 27

June 3, 10, 17, 24

July 1

5. Place

Seminar room B of the Yamate 3rd Building, 9th Floor (Yamate Area)

The lectures will be delivered by the remote lecture system.

6. Prerequisites and Styles

Basic knowledge on the central nervous system will help to understand the lecture but is not essential.

7. Contents

We will introduce the basic mechanisms of information processing at the molecular and cellular levels and in the nervous system together with their biophysical backgrounds.

8. Course objectives

1. To understand the biophysical backgrounds of action potential generation

2. To understand the measuring and assessment methods of activities of various neuronal networks

9. Schedule

(1) May 13

Overview of molecular basis of neuronal information processing (1)

Keiji Imoto (NIPS)

(2) May 20

Overview of molecular basis of neuronal information processing (2)

Keiji Imoto (NIPS)

(3) May 27

Overview of molecular basis of neuronal information processing (3)

Keiji Imoto (NIPS)

(4) June 3

Measuring activity of neuron population

Toru Tsujimoto (NIPS)

(5) June 10

Spinal cord and pain

Hidemasa Furue (NIPS)

(6) June 17

Synaptic and perisynaptic mechanisms

Shin-ichiro Satake (NIPS)

(7) June 24

in vivo patch clamp method
Hidemasa Furue (NIPS)

(8) July 1

Molecular basis of memory
Yoko Yamagata (NIPS)

10. Lecture materials and readings

The following book is recommended to read, although it is not used as a textbook.

“Neuroscience: Exploring the Brain, 3rd ed ” by Bear MF, Connors BW, and Paradiso MA, Lippincott Williams & Wilkins, 2006.

11. Grades

Students are requested to file the short essay related to the Course Objectives. Students must attend the classes at least half of total classes to take a credit. For evaluation, more than 60 in a 100-point scale is judged successful.

12. Notes

Nothing in particular