Syllabus

1. Course Title, style, and credit

Molecular Physiology in sensory systems

lecture

1 credit

2. Appropriate grade level and Eligible Departments

D1, 2 (obligatory), D3-5 (optional) School of life Science

3. Lectures

Makoto Tominaga

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4. Time

[oral]

10:00~12:00 on

2014 January 17, 24, 31

February 7, 14, 21, 28

March 7

5. Place

[oral]

Okazaki Institute for Integrative Bioscience（Yamate）Bld. 3, 9F, Seminar room B

NIPS (Myodaiji) 1F, Lecture room (remote lecturing)

January 17, 24, 31,　February 7, 14

NIPS (Myodaiji) 1F, Lecture room

Okazaki Institute for Integrative Bioscience（Yamate）Bld. 3, 9F, Seminar room B (remote lecturing)

February 21, 28,　March 7

6. Prerequisties and Styles

Basic knowledge on the sensory system will help to understand the lecture but is

not essential.

7 . Contents

Sensory organs are essential systems to detect outside environments. In mammals, we have 5 major sensory detections, which are vision, hearing, taste, smelling and touch. The sensory organs are well-developed and specialized, and specific cell-sensors detect outside environments in those. In this lecture, you learn the structure and feature of sensory organs, and also signal transduction though the specific cell-sensor.

8. Course objectives

1. To understand specific characteristics of sensory organs
2. To understand mechanisms of signal transduction in the organs, and how they work
3. To understand importance of molecular mechanisms of sensory system in physiology.

9. Schedule

(1) January 17th, 2014
Introduction of molecular sensing
Makoto Tominaga (NIPS)

(2) January 24th, 2014
Molecular mechanisms of thermosensation
Makoto Tominaga (NIPS)

(3) January 31st, 2014
Molecular mechanisms of nociception
Makoto Tominaga (NIPS)

(4) February 7th, 2014
Molecular mechanisms of mechanosensation and hearing
Yoshiro Suzuki (NIPS)

(5) February 14th, 2014
Molecular mechanisms of sensing and regulation of cell volume
Yasunobu Okada (NIPS)

(6) February 21st, 2014
Molecular mechanisms of vision
Amane Koizumi (NIPS, NINS)

(7) February 28th, 2014

Molecular mechanisms of taste

Yuzo Ninomiya (Kyushu University Graduate School of Dental Science)

(8) March 7th, 2014

Molecular mechanisms of olfaction

Kazushige Touhara (Graduate School of Agricultural and Life Science, The University of Tokyo)

１０． Lecture materials and readings

Principles of Neural Science (5th edition) (McGraw-Hill)

１１． Grades

Students are requested to file the short essay related to the Course Objectives. Grading on a scale of 100 is determined by the quality of the report and attendance.

１２. Notes

Nothing particular