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
   E-mail: tominaga@nips.ac.jp
   TEL: 0564-59-5286  FAX: 0564-59-5285
   NIPS (Myodaiji) 1st Floor, 2nd building

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. Prerequisites 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 through 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 28\textsuperscript{th}, 2014
  Molecular mechanisms of taste
  Yuzo Ninomiya (Kyushu University Graduate School of Dental Science)

(8) March 7\textsuperscript{th}, 2014
  Molecular mechanisms of olfaction
  Kazushige Touhara (Graduate School of Agricultural and Life Science, The University of Tokyo)

1.0. Lecture materials and readings
  Principles of Neural Science (5\textsuperscript{th} edition) (McGraw-Hill)

1.1. 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.

1.2. Notes
  Nothing particular