

Syllabus

1. Course Title, style, and credit:

Neuronal Regulation of Metabolism

(X) Lecture, () Discussions () Practice

1 credit

2. Appropriate grade level and Eligible Departments:

(x) 1, (x) 2, (x) 3, (x) 4, (x) 5:

(x) Department of Physiological Science, School of Life Science

3. Lecturer(s):

Yasuhiko Minokoshi

(minokosh@nips.ac.jp, Tel: 0564-55-7741, Myodaiji)

4. Time:

(oral) 10:00-12:00 on Friday, (May 11, 18, 25, June 1, ,8, 15, 22, 29 in 2018)

5. Place:

(oral) Lecture room, 1st Floor in Myodaiji building of NIPS.

6. Prerequisites and Styles

There is no lecture course especially requested to have been finished in advance. The entire course will be presented in English.

7. Contents:

To maintain whole-body energy homeostasis is important for living organism. Recent studies demonstrate that the brain and inter-tissue communications for metabolic regulation play a crucial role in the achievement of physiological functions in cells and tissues. In this course, we present recent understanding how the brain controls food intake, and whole body metabolism. We also present neural regulation of stress response, body temperature and sleep-wake cycle and its integration with body metabolic homeostasis. In addition, we

introduce cutting-edge techniques to explore the mechanisms.

8. Course objectives:

- (1) To understand the crucial roles of the brain and inter-tissue communications in the control of metabolic and energy homeostasis and physiological functions in cells and tissues.
- (2) To understand the integrated role of the brain in the control of feeding behavior, metabolism, body temperature and sleep-awake cycle in coordination with sensory, emotional and reward system.
- (3) To understand the cutting-edge techniques to explore the mechanisms.

9. Schedule:

(1) May 11, 2018

Introduction of neural regulation of whole body energy metabolism

Yasuhiko Minokoshi (NIPS)

(2) May 18, 2018

Cutting-edge techniques to explore neural regulation of energy metabolism

Ken-ichiro Nakajima and Kunio Kondoh (NIPS)

(3) May 25, 2018

Central regulation of feeding behavior

Yasuhiko Minokoshi (NIPS)

(4) June 1, 2018

Central regulation of whole body metabolism

Yasuhiko Minokoshi (NIPS)

(5) June 8, 2018

Taste and brain

Ken-ichiro Nakajima (NIPS)

(6) June 15, 2018

Stress and brain

Kunio Kondoh (NIPS)

(7) June 22, 2018

Neural mechanisms that regulate sleep/wakefulness states

Takeshi Sakurai (Univ. of Tsukuba, Int. Natl. Inst. Integ. Sleep Med.)

(8) June 29, 2018

Central circuits for body temperature regulation

Kazuhiro Nakamura (Nagoya Univ, Med, Integrative Physiology)

10. Lecture materials and readings

Nothing in particular

11. Grades:

A theme based on the 3 course objectives will be presented by the lecturer at the end of the course. Students are requested to submit an essay report on the theme by the dead line. The grades are determined by the quality of the report, and either “passed” or “failed”.

12. Notes

Nothing in particular