

Syllabus

1. Course title, style, and credit

Function and dysfunction of glial cells

1 credit

2. Appropriate grade level and Eligible Departments

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

3. Lectures

Kazuhiro Ikenaka

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4. Time

[Oral]

10:00~12:00 on Friday

January 9, 16, 30

February 6, 13, 20, 27

March 13

5. Place

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

6. Prerequisites and Styles

Basic knowledge on the neurobiology will help to understand the lecture but is not essential.

7. Contents

Glial cells are now considered to play significant roles in exerting brain function. Astrocytes and microglia associate with neuronal cell body (including synapse) and regulate its excitability, while oligodendrocytes (OLs) associate with axon and regulate conduction velocity. In this lecture we will focus on glial diseases and present evidences showing that glial cells have many other functions and their abnormality leads to various neurological and psychiatric diseases.

8. Course objectives

1. Understanding the roles of glial cells in exerting brain function.
2. Understanding how glial dysfunction leads to neuropsychiatric diseases.

9. Schedule

(1) January 9th

“Function and Disorder of Glial Cells” over view
Kazuhiro Ikenaka (NIPS)

(2) January 16th

Evolutionary aspects of glial cells
Kei Ito (University of Tokyo)

(3) January 30th

Involvement of glial cells in the pain
Kazuhide Inoue (Kyushu University)

(4) February 6th

Formation and function of the myelin
Takeshi Shimizu (NIPS)

(5) February 13th

Neurological diseases related to glial dysfunction
Junichi Kira (Kyushu University)

(6) February 20th

Development of glial cells and generation of glial heterogeneity
Kazuhiro Ikenaka (NIPS)

(7) February 27th

Psychiatric diseases related to glial dysfunction
Kenji Tanaka (Keio University)

(8) March 13th

Roles of glial cells during neural circuit formation and maintenance
Junichi Nabekura (NIPS)

10. Lecture materials and readings

Helmut Kettenmann and Bruce R. Ransom, "Neuroglia, 3rd edition" : Oxford

11. Grades

Students are requested to file a 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