

[Keywords] Signal transduction, Gene expression, Gene recombination, Immunoblotting

[Academics] Toshiya Arakawa

[Course aims]

This course deals with basic concepts and techniques in cell and molecular biology. Modern biology is built on the foundation of molecular biology, and to understand different research fields, knowledge of basic molecular biology—especially 1) signal transduction mechanisms and 2) regulation of gene expression—is important. In addition, this course includes basic training in gene recombination experiments and protein identification by immunoblotting.

[Course objectives]

At the end of this course, students should be able to

- (1) Explain basic mechanisms of signal transduction in cells.
- (2) Explain basic mechanisms of DNA replication, transcription, and translation in eukaryotes.
- (3) Explain and perform gene recombination experiments.
- (4) Separate and identify specific proteins by immunoblotting.

[Course content]

Class	Theme	Content	Academics
1	Classroom lectures	Molecular biology of the cell, with special emphasis on 1)Signal transduction 2)Gene expression	Toshiya Arakawa
2	Laboratory courses	Specially focused on 1)Gene recombination 2)Protein identification by immunoblotting	Toshiya Arakawa

[Class implementation method]

Combination of face-to-face learning and distance learning

Class implementation depends on the implementation policy of each department (graduate school) or school.

[Grading policies]

The students' overall grade in the class will be based on class attendance and reports.

[Textbook]

Students will be informed regarding the textbook.

[Reference book]

Same as above

[Preparation for course]

Students must understand the course objectives and must prepare for the classes accordingly.