

Breeding Science

Special Subjects
Elective 2 credit

KAJITANI, Masayuki

1. Course Description

In this course, we will learn the progress of genetic recombination technology and breeding engineering as the main theme. Through case studies, we will add commentary not only to understand the fundamental technology of molecular breeding, but also to look at the historical background and ripple effects of that technology.

2. Course Objectives

By learning this course, you will be able to understand and explain how genetic recombination technology has evolved and how it has been applied in the field of breeding.

3. Grading Policy

The final grade is calculated by totaling the evaluation of your approach at the time of exercise (quantity and quality of presentation) and the evaluation of the final issue report. The focus of the assignment evaluation is not only on what is written in the text, but also on the bibliographies that you compiled, summarized, and devised further to convey to the audience and readers.

4. Textbook and Reference

Textbook

Textbooks are not used. Printed teaching materials will be distributed as necessary.

5. Requirements(Assignments)

Printed teaching materials will be distributed in advance. Students should attend classes after reading them.

6. Note

In this course, we will proceed with exercises based on reference materials in English.

7. Schedule

- [1] Introduction to Genetic Engineering
- [2] Let's know about DNA
- [3] Basic Strategy and Technique of Molecular Breeding 1: Restriction Enzyme and Ligase
- [4] Basic Strategy and Technology of Molecular Breeding 2: Expression Control
- [5] Molecular breeding in bacteria 1: Difference between prokaryotic cells and eukaryotic cells
- [6] Molecular breeding in bacteria 2: From expression to purification
- [7] Molecular breeding in plants 1: Gene transfer by Agrobacterium
- [8] Molecular breeding in plants 2: First generation and second generation
- [9] Molecular breeding in animals 1: Taming virus
- [10] Molecular breeding in animals 2: Practical development
- [11] Cloned protein and sugar chain 1: structure and function of sugar chain
- [12] Cloned protein and sugar chain 2: sugar chain and its physiological action
- [13] Presentation of task report 1: Presentation by student (1st)
- [14] Presentation of task report 2: Presentation by students (Part 2)
- [15] Summary and comprehensive discussion