

# Experiments in Microbiology

Syllabus Number

5E231

Basic Major Subjects

Elective Requisites 2  
credit

TAKAYAMA, Yuko

## 1. Course Description

The purpose of this course is to learn the following techniques

- (1) Ligation of the lacZ DNA with the plasmid
- (2) Transformation of the recombinant plasmid
- (3) Purification and identification of the recombinant plasmid
- (4) Restriction enzyme mapping of the lacZ DNA
- (5) Isolation of microbes from environments and their cultivation
- (6) Classification of bacteria by PCR

Skills obtained by this class are related to DP2 and DP3.

## 2. Course Objectives

The course aims at studying the basic techniques of the DNA cloning using the plasmid of Escherichia coli and cultivation of microbes.

## 3. Grading Policy

Experiment report: 100% (A pass is a score of 60% or higher.)

## 4. Textbook and Reference

Textbook

Handouts are used.

## 5. Requirements(Assignments)

N/A

## 6. Note

## 7. Schedule

Ligation of the lacZ DNA with the plasmid and transformation of the recombinant plasmid into E. coli.

Digestion of the recombinant plasmid DNA and separation of digested plasmid DNA by agarose gel electrophoresis

Preparation of the plasmid DNA by alkaline lysis method

Restriction enzyme mapping of the lacZ DNA

Preparation of media for cultivating bacteria and fungi

Inoculation of environmental microbes

Isolation of bacteria and observation of fungi

Classification of bacteria by PCR