

Experiments in Biochemistry

Syllabus Number

5E234

Basic Major Subjects

Elective Requisites 2
credit

UCHINO, Shigeo

1. Course Description

In this experimental course, you will experience a series of experiments using tobacco mosaic virus (TMV), a plant virus.

- (1) Separate and purify the virus particles from the sample containing the virus.
- (2) Extract and purify the viral genome from purified virus particles.
- (3) Verify the biological activity of purified viral particles and viral genome.

2. Course Objectives

After completing this practice, you can make sure the knowledge gained in the biochemistry lecture through experimentation, and you can master the strategies of scientific research.

3. Grading Policy

Since this course is an experimental subject, attendance is one of the necessary condition. After completing the experiment, submit your report and, if accepted, this course will be completed. The final grade is evaluated based on that report.

4. Textbook and Reference

Textbook

Kajitani, M. et al. Dedicated experiment manual (will be delivered in advance)

Kajitani, M. Manual of "Scientific calculation exercise (Fundamental Experiments in Biosciences No.7)" (Distributed)

Kagaku Dojin (ed.) Guidebook for safely carrying out experiments in bioscience (ISBN978-4-7598-1921-2) Kagaku Dojin

5. Requirements(Assignments)

Prior to the start of the experiment, we will also distribute preliminary report assignments along with experiment manuals. Please carefully read the manual, prepare, and do preliminary report tasks, and then go through experiments.

After starting the experiment, we will ask you to submit a brief report on implementation report every week. I will return it after correction and use it as a reference for the final report.

6. Note

Please prepare laboratory white coat and name tag by yourself. (You can purchase them at university store.)

7. Schedule

Preparation of reagents

Extraction and purification of TMV particles from infected leaves

Extraction and purification of TMV particles, measurement of concentration, inoculation to tobacco

SDS-PAGE of TMV coat protein

Electron microscopic observation of TMV particles

TMV-RNA extraction from TMV particles, measurement of concentration, inoculation to tobacco

Agarose gel electrophoresis of TMV-RNA, guidance on report creation

Summary and report writing