

# Cell Biology

Syllabus Number

5C224

Basic Major Subjects

Elective Requisites 2  
credit

OTA RYOMA

## 1. Course Description

This course aims a basic and comprehensive understanding about the structure and function of the cell. This course will cover topics such as gene expression, cellular membrane, energy metabolism, signal transduction, the cytoskeleton, and cell cycle regulation. In this course, students will acquire knowledge and skills related to DP1 and DP2.

## 2. Course Objectives

The goals of this course are the fundamental understanding of cellular biology. Upon completion of this course, the student will be able to describe the regulatory mechanism of gene expression, the function of cellular membrane and cytoskeleton, energy metabolism pathway, the role and regulation of signal transduction, and cell cycle regulation.

## 3. Grading Policy

The final grade will be based on two quizzes at 5th and 10th lecture (20 point each) and the final examination (60 point). A score of 60 points or more (out of 100 points) is passed. To give feedback, the answer of the final exam will be uploaded to the LMS. The reexamination will not be taken place.

## 4. Textbook and Reference

Textbook

和田勝(著)、高田耕司(編) 基礎から学ぶ生物学・細胞生物学 第4版 羊土社 ISBN: 978-4758121088

Reference

中村桂子・松原謙一(翻訳) Essential細胞生物学 原書第4版 南江堂 ISBN: 978-4524261994

東京大学生命科学教科書編集委員会(編) 理系総合のための生命科学 第5版 羊土社 ISBN: 978-4758121026

## 5. Requirements(Assignments)

Students should review the biology that you learned in high school and read over the parts of textbook related to topics in the next lecture.

## 6. Note

Distribute the print if necessary. The content of the lecture will be uploaded to the LMS after each lecture.

## 7. Schedule

- [1] Introduction to cell biology  
Textbook: P20-24, P32-34, and P39-42
- [2] Organelles  
Textbook: P49-54 and P66-71
- [3] Regulatory mechanisms of gene expression  
Textbook: P78-93
- [4] Energy metabolism  
Textbook: P103-125
- [5] Quiz 1
- [6] Cellular membrane  
Textbook: P72-73, P126-130, and P141-143
- [7] Intracellular compartment and vesicle transport  
Textbook: P94-95  
(Reference: Essential細胞生物学 P487-522)
- [8] Cytoskeleton and cell movement  
Textbook: P126-145
- [9] Cellular signal transduction  
Textbook: P146-168
- [10] Quiz 2
- [11] Mitosis and meiosis  
Textbook: P169-185 and P186-193
- [12] Cell death  
Textbook: P256-274
- [13] Cell differentiation  
Textbook: P196-204
- [14] Current topics: Cellular reprogramming and regeneration
- [15] Final exam