科目ナンバリング	U-LAS14 20064 LE68						
授業科目名<英訳>	Introduction to Molecular Cell Biology-E2 Introduction to Molecular Cell Biology-E2			担当者所属職名・氏名	薬学研究科　講師　MACPHERSON TOM		
群	自然科学科目群			分野(分類)	生物学(各論)	使用言語	英語
旧群	B群	単位数	2単位	週コマ数	1コマ	授業形態	講義（対面授業科目）
開講年度・開講期	2026・前期	曜時限	火4	配当学年	全回生	対象学生	全学向

[授業の概要・目的]

From molecules to minds; discover how cells make life happen.

This course takes you on a journey through the living cell, from the molecular machines that power it to the networks of neurons that make up the brain.
Each week builds a layer of understanding: you ’ll explore how membranes move molecules, how skeletons give cells shape, and how communication within and between cells creates everything from muscle movement to memory.
Along the way, we'll explore microbes, uncover how viruses hijack cells, and see what happens as cells age or die.

Through lectures, discussions, and presentations, you ’ll discover that cell biology isn ’t just about tiny parts, it ’s about the dynamic systems that make life possible.

[到達目標]

This course aims to build a solid understanding of how cells function as the basic units of life.
Students will learn how biological molecules come together to form cell structures, how cells communicate and coordinate to build tissues and organs, and how these processes underpin everything from muscle movement to brain function.
By connecting molecular mechanisms to real-world biological systems, students will gain an appreciation for how the microscopic world shapes the living organisms around and within us.
Finally, students will develop the ability to understand and discuss various aspects of cell biology in English

[授業計画と内容]

1. Course Introduction, Introduction to Molecular Cell Biology
2. Biological Macromolecules
3. The Cell Membrane & Transport
4. The Cytoskeleton
5. Viruses
6. Microbes: Bacteria & Archaea
7. Midterm Exam, Feedback, & Explanation of Class Presentations
8. Musculoskeletal Cells
9. Cells in the Brain; Cell types & Functions
10. Cells in the Brain II; Neural Circuits & Communication
11. Cells in the Brain III; Learning & Memory
12. Class Presentations
13. Cells in the Brain IV; Biological Rhythms & Sleep
14. Cell Ageing and Death

Introduction to Molecular Cell Biology-E2(2)へ続く↓↓↓

Introduction to Molecular Cell Biology-E2(2)

≪Final exam≫
15. Feedback

[履修要件]

This course pairs well with “ Basic Biology and Metabolism（2nd semester)”, but prior knowledge is not essential. Any students with a general interest and curiosity about the study Cell Biology are free to join.

[成績評価の方法・観点]

Attendance & Participation 25%.
Midterm Exam (Multiple Choice) 25%.
Class Presentation (Short Oral Talk) 25%.
Final Exam (Multiple Choice) 25%.

[教科書]

Alberts, Hopkin, Johnson, Morgan, Raff, Roberts, Walter 『Essential Cell Biology 6th edition』（W.W. Norton and Company, 2023）ISBN:978-1-324-03339-4
We will also occasionally use the following free textbook.
OpenStax Biology 2e freely available to download at the URL below

[参考書等]

（参考書）
授業中に紹介する

（関連ＵＲＬ）

https://openstax.org/details/books/biology-2e

[授業外学修（予習・復習）等]

Review of the textbook prior to class, previous lecture materials and preparation for in class presentation assignments.

[その他（オフィスアワー等）]

The contents of the syllabus are a guide to the content of the course, the exact content may change. Input from students is very welcome to suggest aspects Cell Biology to cover in the course. I am always happy to discuss with prospective students or students via email and meet with prior appointment.

[主要授業科目（学部・学科名）]