

科目ナンバリング									
授業科目名 <英訳>		Basic Biology-E2 Basic Biology-E2				担当者所属 職名・氏名		生命科学研究科 特命教授 HEJNA, James	
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	2025・前期		曜時限	月3		配当学年	主として1・2年生	対象学生	理系向
【授業の概要・目的】									
This class will provide a basic introduction to molecular and cell biology, in English. The class is open to 1st and 2nd year students, and will assume some prior familiarity with elementary chemistry and biology, although students from other majors are welcome to attend. The objective for the class is to nurture an intellectual curiosity about molecular and cell biology, which will lead to more in-depth study later on. We will pay attention to some of the similarities in different organisms, as well as some of the obvious differences, not only between organisms but between cell types, and at the molecular level of protein functions.									
【到達目標】									
Students will gain familiarity with the fundamental components of cells, and begin to learn how cellular function depends on complex interactions between proteins, nucleic acids, lipids, and carbohydrates, acting alone, in complexes, or in larger structures, such as organelles. Students should begin to appreciate how fundamental processes are conserved over evolutionary time, and also how they vary in different species.									
【授業計画と内容】									
First Semester, Mondays, 13:00-14:30									
1. Big and Small: organisms and molecules Weeks 2-9 will introduce the basic parts that build living cells. 2. Carbohydrates 3. Nucleic Acids-DNA, nucleotides, genes, etc. 4. Nucleic Acids-RNA, ribonucleotides, coding RNAs, non-coding RNAs, etc. 5. Proteins: structural proteins, enzymes, machines 6. Information Flow, the central dogma and beyond. 7. Ribonucleoproteins, including ribosomes and protein translation 8. Lipids and membranes: what makes a cell a cell? 9. Membranes: inside, outside, and channels 10. Energy and Metabolism: what is the power source of the cell? 11. Gene Regulation: how are genes turned on and off? 12. Prokaryotic Cells: basic biology and social interactions 13. Eukaryotic Cells: types of cells; cell differentiation; and more 14. Regulation-homeostasis, communication, and signaling 15. Final Exam 16. Feedback class									
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## Basic Biology-E2(2)

### 【履修要件】

The class is open to all 1st and 2nd year students, but it assumes some basic (high school) knowledge of chemistry and biology.

### 【成績評価の方法・観点】

Lectures will encourage student participation. There will be a final exam and some mini-quizzes to assess comprehension. Attendance will also factor into the final grade. Attendance and participation, 50 points; quizzes, 20 points; final exam, 30 points.

### 【教科書】

Asashima et al, Online textbook: A Comprehensive approach to Life Science (English version). URL: <http://csls-text.c.u-tokyo.ac.jp/index.html>

### 【参考書等】

#### （参考書）

Alberts, The Molecular Biology of the Cell. Older editions are freely searchable online on the PubMed/Books website.

I will also refer to a general biology textbook:

Reece, Urry, Cain, Wasserman, Minorsky, and Jackson. "Campbell Biology", 10th edition. Pearson Education, Inc. 2014

I will provide lecture handouts for each class, hopefully one week in advance.

### 【授業外学修（予習・復習）等】

For some students, the subject will already be familiar, but the English vocabulary will be new. For others, the biological concepts will be new. Thus, outside work may involve a balance of reading about biology and acquisition of specialized biological vocabulary. I may provide some optional homework problems to help you focus on the key concepts.

### 【その他（オフィスアワー等）】

Office hours: Mondays, 10:00-12:00. I am often in my office, and you are free to drop in--I can always find 5 or 10 minutes to talk about biology.

### 【主要授業科目（学部・学科名）】