Fundamentals of Cell and Molecular Biology

分子細胞生物学基礎

Hideki Shirakawa
Department of Engineering Science, UEC

for on-line lecture, 2020

SUBJECT OF THIS CLASS

- Understand molecular and cellular mechanisms underlying following biological systems and processes.

  – **cancer** がん

  in relation to...

  – **cell cycle** 細胞周期

  – **cell death** 細胞死

  – **stem cells** 幹細胞

  – **immune system** 免疫系

BASIC KEYWORDS

- Precise knowledge about the following basic keywords is required.

  - gene, genome, chromosome
  - gene expression and its regulation
  - extracellular and intracellular signaling
    - signaling molecules
    - cell-surface receptors
    - signal-transduction cascade
  - cytoskeleton, motor proteins

HOW TO STUDY IN THIS CLASS

- Lectures on-line will be given every week via ***Zoom***, according to the schedule of the curriculum (Tuesday, 9:00-10:30).
  - Use UEC cloud account, not UEC account, to log-in.
  - See the syllabus for Meeting ID and password.
- All materials (PDFs and movies) for this class are available at the Web page:
  - http://rainbow.pc.uec.ac.jp/edu/cellmol/index.html
    - User name:
    - Password:
- Students attending to this class are expected to explore the lecture materials *before* the class will start.

REQUIREMENTS FOR CREDIT

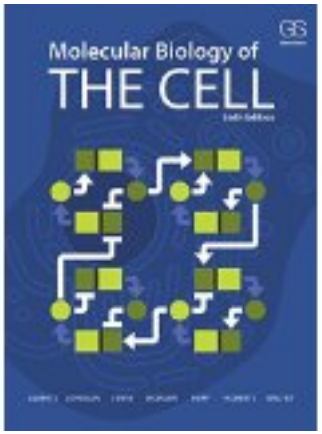
- To attend the class at ≥ 10 weeks
- To submit **an essay** of ***sufficient quality*** at the end of the semester
  - details will be given in August (?)

Alberts • Johnson • Lewis • Morgan • Raff • Roberts • Walter

Molecular Biology of the Cell

Sixth Edition

Chapter 20
Cancer



CHAPTER CONTENTS

CANCER AS A MICROEVOLUTIONARY PROCESS

がん化の過程は細胞の”微小進化”の過程である

CANCER-CRITICAL GENES: HOW THEY ARE FOUND AND WHAT THEY DO

がんの原因になる遺伝子はいかにして発見されたか、それらはどのような働きがある遺伝子か

CANCER PREVENTION AND TREATMENT: PRESENT AND FUTURE

がんの予防と治療：現状と展望

CHAPTER CONTENTS

CANCER AS A MICROEVOLUTIONARY PROCESS

> CELL CYCLE & CELL DEATH

CANCER-CRITICAL GENES: HOW THEY ARE FOUND AND WHAT THEY DO

> STEM CELLS

CANCER PREVENTION AND TREATMENT: PRESENT AND FUTURE

> IMMUNE SYSTEMS