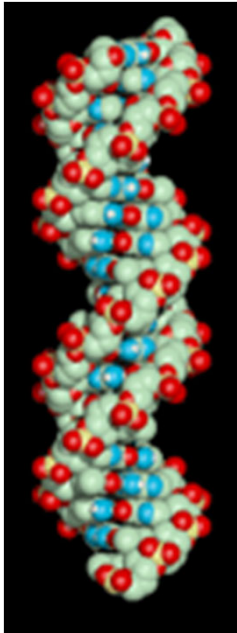
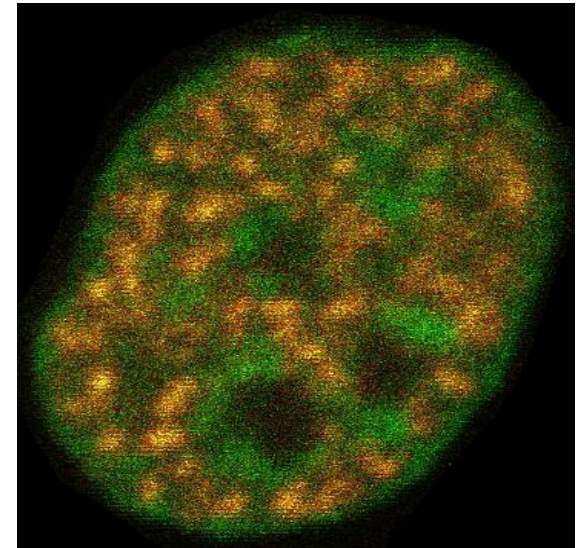


Biology I

Life at the cellular level



depositphotos

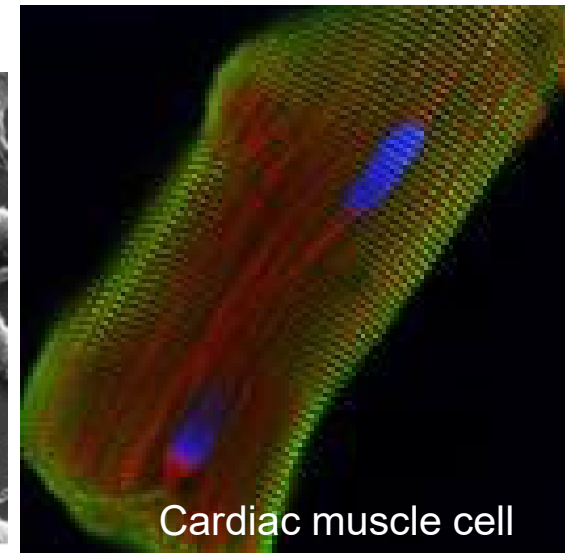
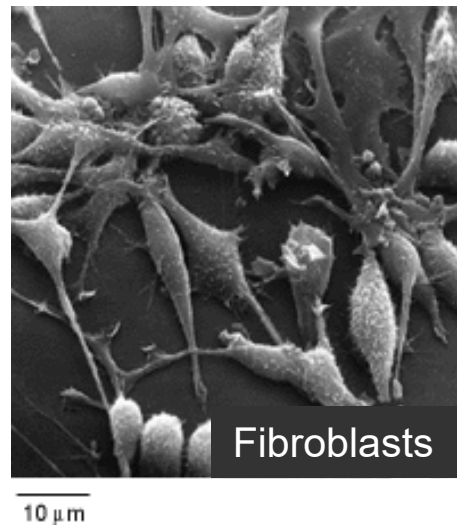
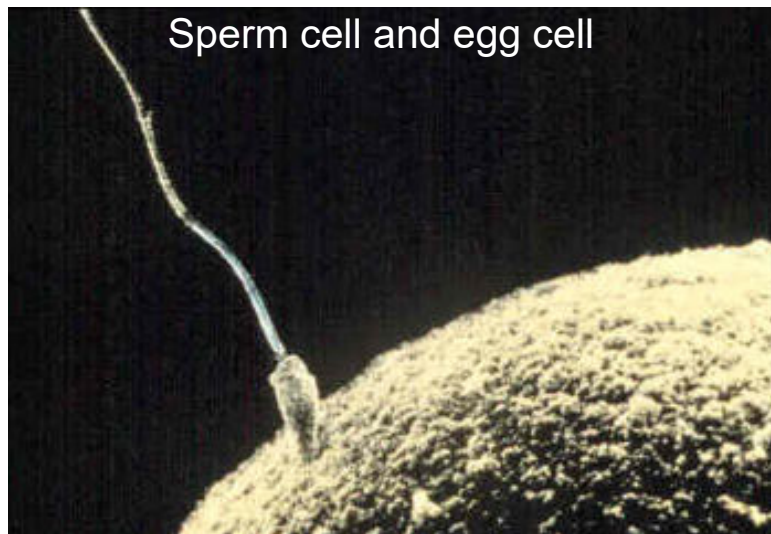
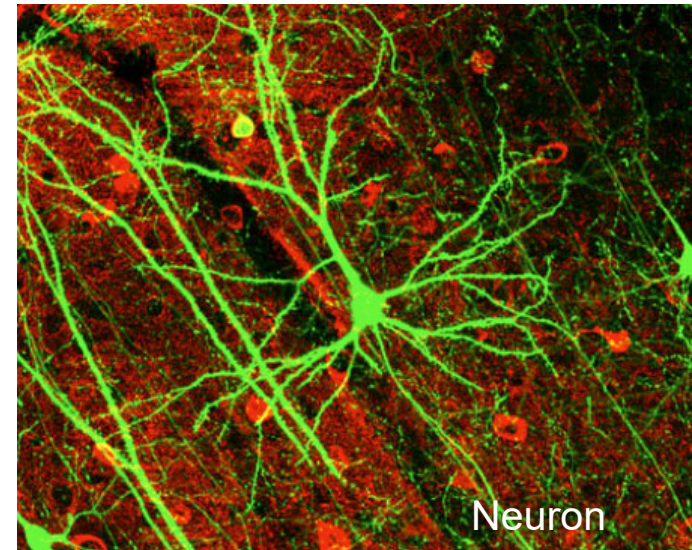
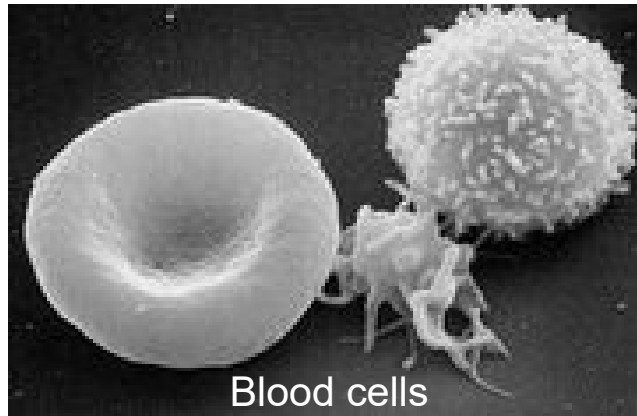


Laboratory of Biology, School of Medicine
University of Patras

Zoi Lygerou, Professor, Director



Our bodies contain 40 trillion cells

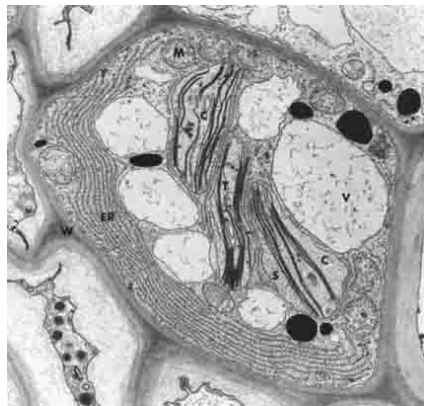
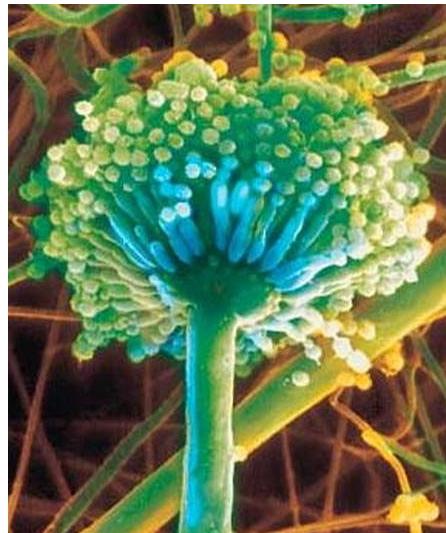
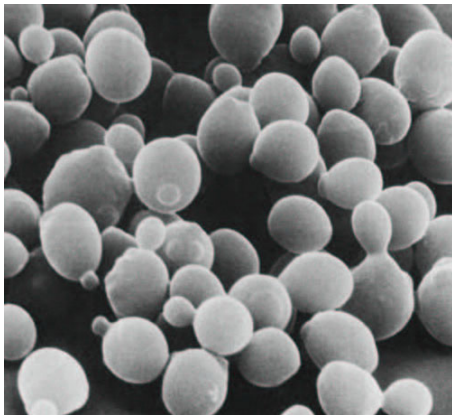
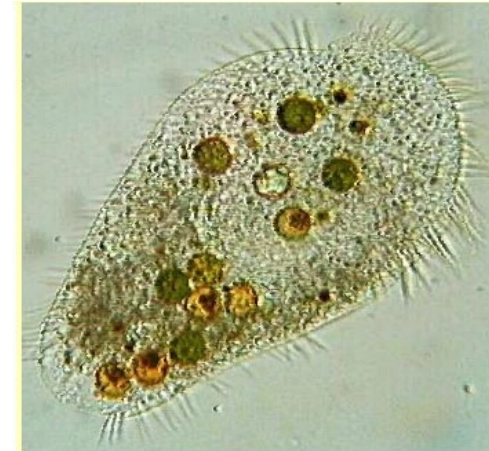
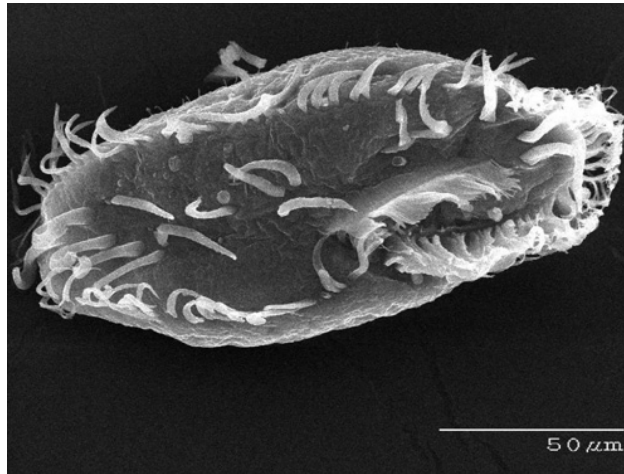


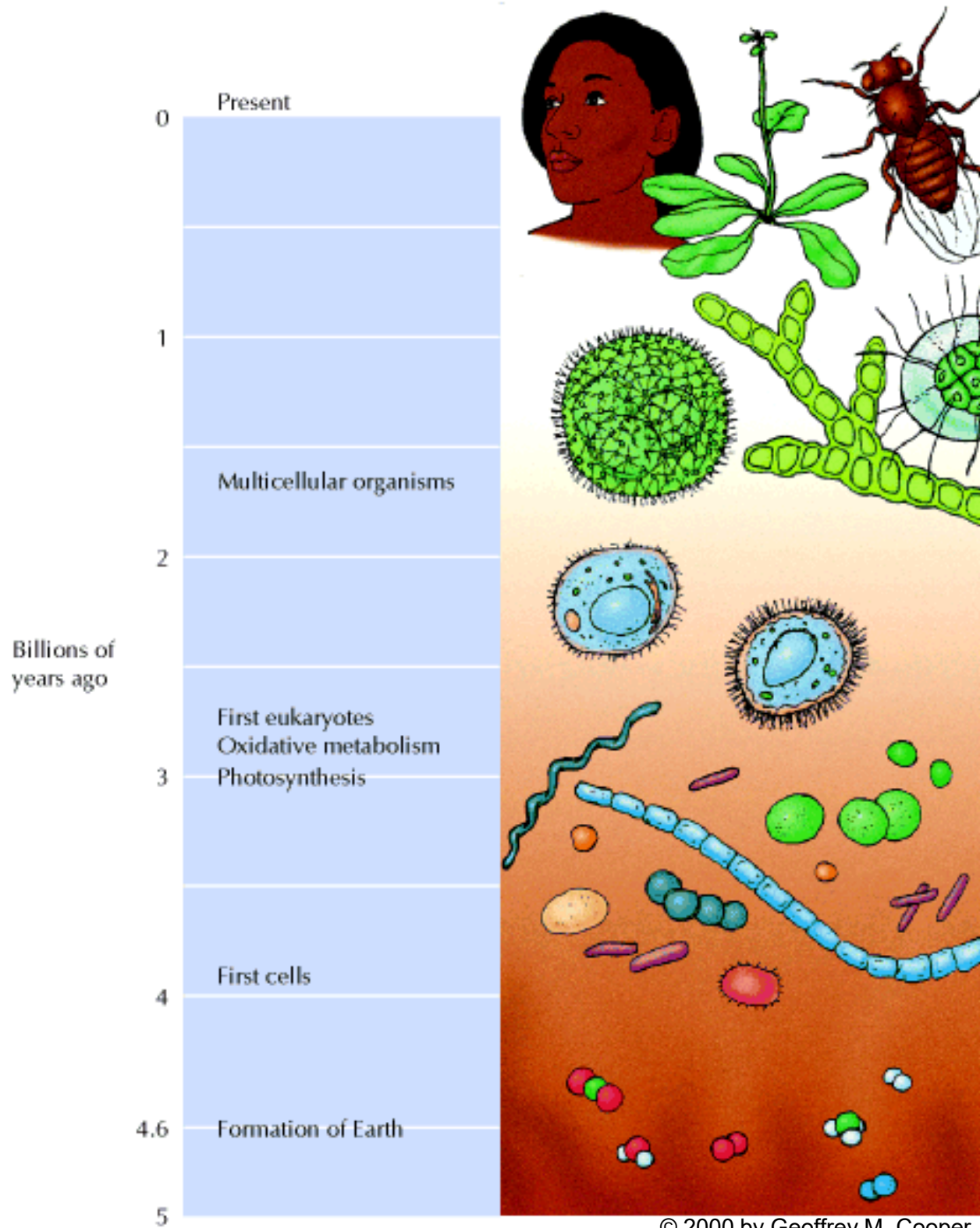
There are hundreds of different cell types in the human body

All cells originate from a single first cell.

They have the same (or almost the same) genetic material

There are millions of different cells on Earth...





All living organisms descend from the first cell, which appeared on Earth four billion years ago

All cells share the same basic structure and function

Knowledge

How do cells function?

How do defects in cell function lead to disease?

How do we know? (How do we investigate biological systems?)

Practical skills

Microscopy, subcellular fractionation

Bioinformatics

Transferable skills

How to read and take notes

How to examine existing knowledge critically. How to evaluate information.

How to synthesize knowledge

How to write a literature review. Originality and plagiarism.

How to study critically

Academic integrity

Independent initiative

Laboratory of Biology

Zoi Lygerou, Professor, Laboratory Director (EMBL, Crick)



Vasilis Roukos, Associate Professor (NIH, IMB)



Giannis Drosos, Assistant Professor (St. Jude)



Andriana Kotini, PhD, Adjunct Lecturer (Mount Sinai, USA)



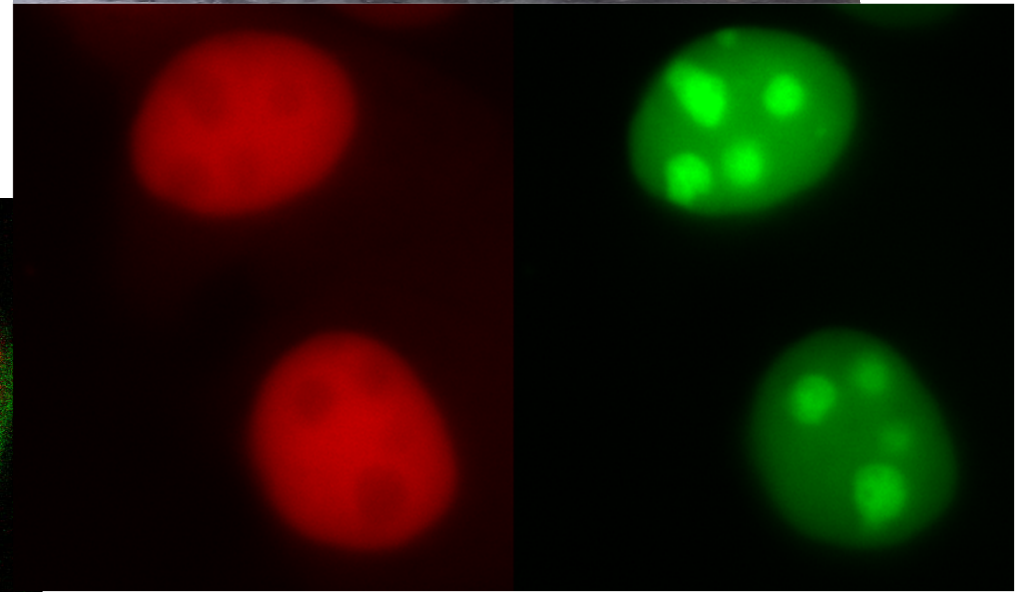
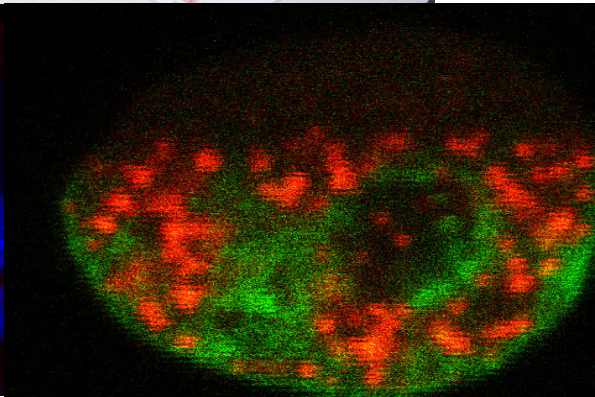
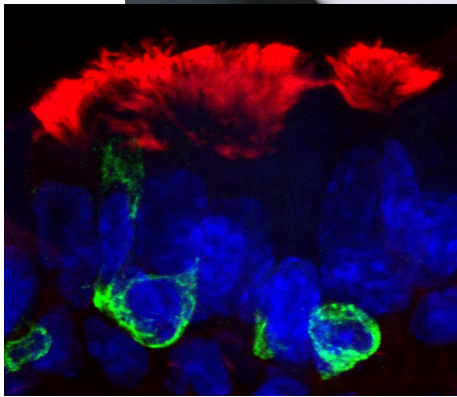
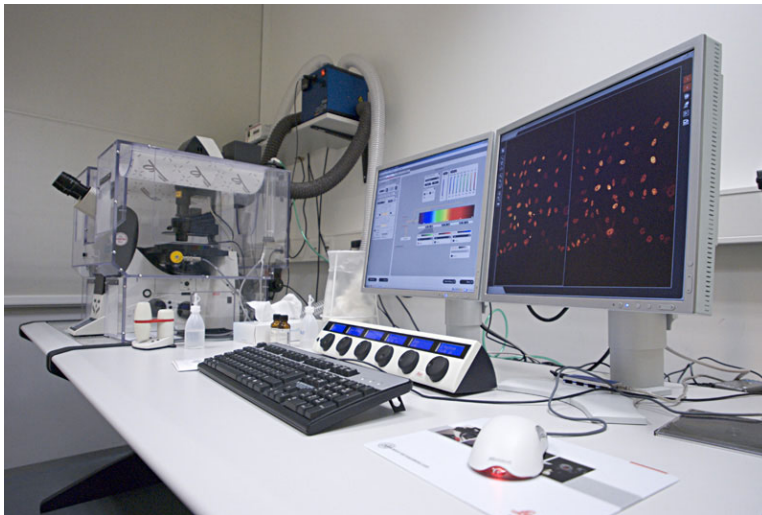
Eleni Sakkoula, PhD, Laboratory Teaching Staff



Takis Karachalios, PhD, Laboratory Technical Staff



3rd floor, Preclinical Building East wing



Biology I

A. Lectures: Tuesday 14:00–15:00, Wednesday 16:00–18:00

Attendance: Academic

Content: Course material presented by instructors

Assessment: Final examination, 75% of the course grade

B. Tutorials: Monday 09:00–12:00

Attendance: Compulsory

Monday

Content: Discussion of topics covered in lectures and clinical applications, with active student participation

Preparation: Study the corresponding chapter covered in lectures

C. Laboratory sessions: Tuesday 09:00–12:00

Attendance: Compulsory; two groups

Content: Practical laboratory exercises supervised by instructors

Preparation: Read the laboratory manual before the session

Assessment: Short quiz or assignment. Together with the small-group teaching assignment, this contributes 25% of the course grade

D. Small-group teaching: Tuesday 1/12, 09:00 – 12:00

Attendance: Compulsory

Content: Analysis of a selected topic with active student participation

Preparation: Read the study guide and corresponding chapter

Assessment: Literature review assignment, included in the laboratory grade

Beware of plagiarism and uncritical AI use!

Course Schedule

Date	Time	Content	Tutor	Lectures	Tutorials	Laboratories	Team	Room
29-Sep	14:00-15:00	Structure and Function of the Eukaryotic Cell	ZL	1h				Classroom E2, Building E of the Clinical Operations Department
30-Sep	16:00-18:00	Structure and Function of the Eukaryotic Cell	ZL	2h				Classroom E2, Building E of the Clinical Operations Department
5-Oct								
6-Oct	14:00-15:00	Proteins: From Structure to Function	ZL	1h				Classroom E2, Building E of the Clinical Operations Department
7-Oct	16:00-17:00	Proteins: From Structure to Function	ZL	1h				Classroom E2, Building E of the Clinical Operations Department
7-Oct	17:00-18:00	DNA: the carrier of genetic information	YD	1h				Classroom E2, Building E of the Clinical Operations Department
12-Oct	09:00-12:00	Tutorial 1: Introduction to Cells	ZL		3h			Classroom E2, Building E of the Clinical Operations Department
13-Oct	14:00-15:00	Structure and Organization of the Eukaryotic Chromosome	YD	1h				Classroom E2, Building E of the Clinical Operations Department
14-Oct	16:00-18:00	Structure and Organization of the Eukaryotic Chromosome	YD	2h				Classroom E2, Building E of the Clinical Operations Department
19-Oct								
20-Oct	14:00-15:00	From DNA to Proteins	YD	1h				Classroom E2, Building E of the Clinical Operations Department
21-Oct	16:00-18:00	From DNA to Proteins	YD	2h				Classroom E2, Building E of the Clinical Operations Department
26-Oct	09:00-11:00	Regulation of Gene Expression	YD	2h				Classroom E2, Building E of the Clinical Operations Department
27-Oct	14:00-15:00	Regulation of Gene Expression	YD	1h				Classroom E2, Building E of the Clinical Operations Department
28-Oct								
2-Nov	09:00-12:00	Tutorial 2: Gene Regulation	YD		3h			Classroom E2, Building E of the Clinical Operations Department
3-Nov	09:00-12:00	Laboratory: Bioinformatics 1	YD			3h	A	Computer Lab, 1st floor of the Preclinical Building
3-Nov	14:00-15:00	Cell Communication	ZL	1h				Classroom E2, Building E of the Clinical Operations Department
4-Nov	16:00-18:00	Cell Communication (Antonarakis day)	ZL	2h				Classroom E2, Building E of the Clinical Operations Department
9-Nov	09:00-11:00	Cell Communication	ZL	2h				Classroom E2, Building E of the Clinical Operations Department
10-Nov	09:00-12:00	Laboratory: Bioinformatics 2	YD			3h	B	Computer Lab, 1st floor of the Preclinical Building

eclass - Documents

<https://eclass.upatras.gr/courses/MEDEN104/>

Contact

eClass

eclass.upatras.gr

Courses → Medicine → MEDEN → Biology I (MEDEN104)



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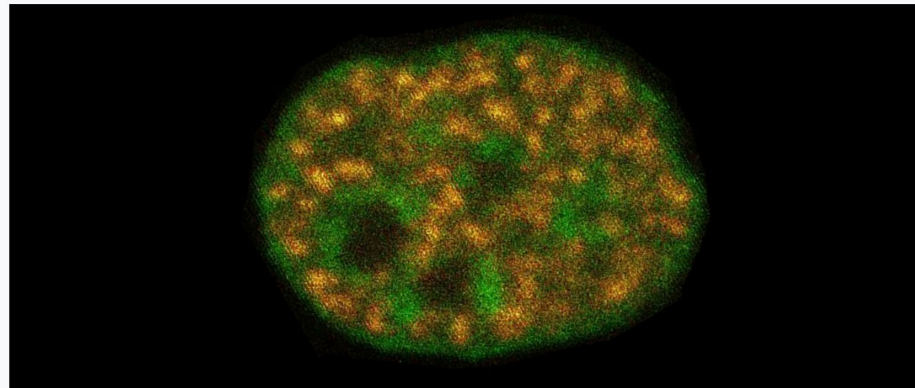
Portfolio > Biology I

Biology I

MEDEN104 - Zoi Lygerou, Vasilis Roukos, Ioannis Drossos



Course Description



Welcome to the eClass site for **Biology I**, a first-year course of the School of Medicine, University of Patras.

Under "**Documents**", you will find the course schedule and syllabus, lecture and tutorial presentations, as well as material for the laboratory sessions and Small Group Teaching.

Under "**Assignments**", you will be able to upload the assignments given to you as part of the laboratory sessions and Small Group Teaching activities.

Course Administration

Agenda

September 2026						
Sun...	Mo...	Tue...	We...	Thu...	Frid...	Sat...
30	31	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	1	2	3

● Due day ● Course event ● System event
● Personal event

Active Tools

- Agenda
- Announcements
- Assignments
- Chat
- Documents
- Links
- Messages

Inactive Tools

Email

lygerou@upatras.gr

esakk@upatras.gr



INSTRUCTOR

Active Tools

- Agenda
- Announcements
- Assignments
- Chat
- Documents 4
- Links**
- Messages

Inactive Tools

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Biology I

MEDEN104 - Zoi Lygerou, Vasilis Roukos, Ioannis Drossos

Course Administration

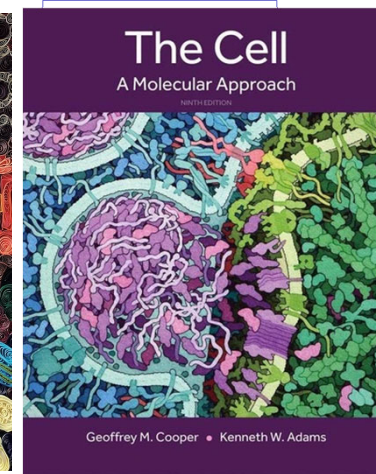
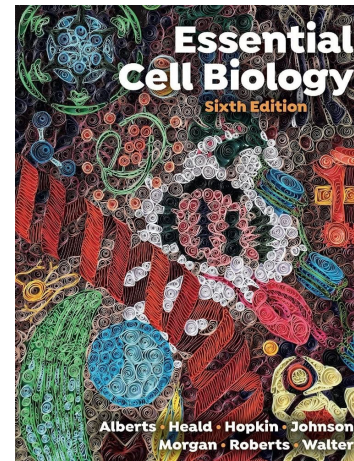
Links

Link modified

Γενικοί σύνδεσμοι		
Introduction to cell structure		
Watch it before tomorrow's lesson		
Introduction to transcription-translation		
Watch before tomorrow's lecture		
Introduction to DNA Replication		

Course syllabus

Topic	Alberts chapters (or equivalent Cooper chapters)
Introduction to molecular cell biology; proteins	Chs. 1, 4 ZL
Structure and function of DNA and chromosomes	Ch. 5 GD
From DNA to proteins	Ch. 7 GD
Gene regulation	Ch. 8 GD
DNA replication	Ch. 6 VR
DNA repair and genome editing	Ch. 6 VR
Intracellular compartments	Ch. 15 ZL
Cell communication	Ch. 16 ZL
Cytoskeleton	Ch. 17 AK
Cell division and meiosis Control of cell number	Chs. 18, 19 VR
From cells to tissues: stem cells and tissue regeneration	Ch. 20 AK



Textbooks

- **Essential Cell Biology (B. Alberts, D. Bray et al.)**
- **The Cell: A Molecular Approach (G. M. Cooper and R. E. Hausman)**

Other textbooks

- **Biology (Campbell, Reece et al.)**
- **Recombinant DNA (J. D. Watson et al.)**
- **Molecular Biology of the Gene (J. D. Watson et al.)**
- **Campbell Essential Biology (Simon et al.), among others**

Next class

Today, at 16:00

Tomorrow, Wednesday 30/9, at 16:00

Lecture by ZL, Chapter 1

Preparation

1. On the course eClass page, examine the image on the home page and answer:

What does it show? Which cells and subcellular structures can you identify? Which microscopy method was used? What are heterochromatin, the nucleolus and replication foci?

2. On the course eClass page, under Links (on the left), watch the animation Inner Life of a Cell (music version) *if you are keen to learn more, watch the full narrated version*

Some animations

<https://www.youtube.com/watch?v=7Hk9jct2ozY>

https://www.wehi.edu.au/wehi-tv/dna-break-repair-by-homologous-recombination/?utm_source=chatgpt.com

https://www.youtube.com/watch?v=wJyUtbn0O5Y&list=PLb2pcm6vvX6g_OBlqS4bATMZRRRC8MLpDy