

Protistology

Code: 101024
ECTS Credits: 3

Degree	Type	Year	Semester
2500502 Microbiology	OB	2	1

Contact

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Use of Languages

Principal working language: catalan (cat)
Some groups entirely in English: No
Some groups entirely in Catalan: No
Some groups entirely in Spanish: No

Teachers

Ramon Pérez Obiol

Prerequisites

There is no official prerequisite, but it is advisable for students to review the general concepts of cell biology studied in the previous course. It is also recommended to bear in mind the generic differences between the "prokaryotes - eukaryotic" and "plant - animal" dichotomies studied in subjects of the previous year, such as Cell Biology and Animal Histology, Plant Biology and Animal Biology.

It is also appropriate to have a good knowledge of the subjects studied during the first semester of the degree of Microbiology, such as Molecular Biology of Eukaryotes or Physiology and Microbiological Metabolism.

Objectives and Contextualisation

This compulsory subject is a brief introduction to the knowledge of the protists, an eclectic and slightly artificial term, historically used to group a large diversity of groups that share the fact of being eukaryotes and unicellular (at least not reaching a complexity pluricellular).

As it is an introductory subject, it only establishes the bases to generate an overview of the characteristics of the main groups and their phylogenetic interrelations, as well as with other groups of prokaryotes and eukaryotes. Also of basic form they will give notions of the paper of these organisms in the nature and their relations with the human being.

Objectives of the subject:

1. Identify the different structures that make up the protists, paying special attention to the exclusive parts of the forms of unicellular eukaryotes.
2. Understand the diversity of the protists, distinguishing the characteristics that define the different groups.
3. Understand and interpret the phylogenetic hypotheses that relate the protists to each other as well as with the rest of prokaryotes and eukaryotic organisms.

4. Understand the role of the different groups of protists in the different ecosystems, as well as the different habits and vital strategies.
5. Be aware of the relationship between protists and human beings.

Competences

- Know and interpret microbial diversity, the physiology and metabolism of microorganisms and the genetic bases that govern their vital functions.
- Obtain, select and manage information.

Learning Outcomes

1. Evaluate the role of microorganisms in important industrial processes and as producers of key compounds for the development of our societies and the improvement of quality of life
2. Identify the role of the different microbial groups in the environment and in the cycles of the elements, and their environmental implications
3. Obtain, select and manage information.
4. Recognise the diversity of the microbial world and identify the different groups it is composed of.
5. Recognise the role of microorganisms as agents of disease or toxicological problems in human beings, animals and plants.

Content

Origin and evolution of eukaryotes. Endosymbiosis Chloroplast and mitochondrial evolution.

Main phylogenetic groups that study protistology. Diversity.

Excavates: Discicrystals (Euglenoids, Quinetoplastids and Percozous) and Metamonadals (Diplomonas, Retortamonads, Parabasalid and Oximonids). Symbiotic relationships and pathological importance.

Haptophytes. Coccolithophores, importance in marine phytoplankton.

Heteroconts. Diatoms, ecological importance. Chrysophices. Opalines and Oomycetes.

Alveolates: Dinoflagellates, Apicomplexes and Ciliates. Ecology, outcrops, pathologies.

Archplastids. Groups of interest Biotechnological applications.

Rhizaria: Cercozoa (Chlorocniophytes and Cercomonidides). Foraminifera and Radiolaria. Ecological and evolutionary importance.

Amoebozoa: Ameboid fungi and lobose amoebae, ecology and pathology.

Opisthokonts. Coanozoa and Microsporidia. Economic importance

Methodology

Teaching methodology and training activities:

The subject of Protistology consists on two types of teaching, lectures and seminars, programmed in an integrated way in order to help students to relate the content and activities programmed throughout the course.

- Lectures: The student must acquire the scientific and technical knowledge of this subject by attending these classes and complementing them with the personal study of the topics explained. At the beginning of the

course, students will be given a detailed calendar of topics that will be dealt with throughout the course, as well as the bibliography that they will have to consult to prepare each theoretical class and for the personal study of the theoretical contents of the subject.

- Seminars: They will deal with matters related to the subject that will allow the student to reflect and work personally on the topics covered. As a complement to the seminars, issues related to the subject will be discussed that may be discussed by students and teachers in the virtual campus forum

Additional information

For a good follow-up of the subject, the student will have additional material in the Virtual Campus of the subject.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Lectures	5	0.2	2, 3, 5, 4, 1
Seminars	20	0.8	2, 3, 5, 4, 1
Type: Autonomous			
Preparation of oral presentation	9	0.36	2, 3, 5, 4, 1
Reading	8	0.32	2, 3, 5, 4, 1
Study	28	1.12	2, 3, 5, 4, 1

Assessment

The assessment of the subject will be individual and continuous:

- Assessment of the master classes (80%): There will be two partial tests (40% each). Neither of them exceeding 50% of the overall grade. A mark of at least 5 out of 10 is required to successfully pass the partial test.

Re-assessment: Students who failed one or both partial exams can reassess them. The student must previously have submitted a minimum of two-thirds of the course-assessment items. Therefore, students will obtain the "Not assessable" qualification when the assessment activities carried out have a weighting of less than 67% in the final grade. Likewise, students who wish to improve the grade of one or both partial exams can be re-assessed. Be aware that in this case, previous mark will be lost. In the re-assessment, a mark of at least 4 of each partial test is mandatory to be able to make the average.

- Assessment of the autonomous seminars and activities (20%): We will evaluate both the work that must be presented (content, capacity for synthesis, rigor in the expression, quality of documentary sources and timing) and the participation and attendance at all seminars.

It is mandatory to have a mark of at least 4 in each part (theory and seminars).

Not assessable

Students will obtain the "Not assessable" qualification when the assessment activities carried out have a weighting of less than 67% in the final mark.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Individual tests throughout the course	80%	5	0.2	2, 3, 5, 4, 1
Seminars carried out by students	20%	0	0	3

Bibliography

Books:

- ALBERTS B, JOHNSON A, LEWIS J, RAFF M, ROBERTS K, WALTER P. 2008. Molecular Biology of the Cell. 5th Edition. Ed. Garland Science.
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- MARGULIS, L., CHAPMAN, M. J. 2009. Kingdoms & domains: an illustrated guide to the phyla of life on earth. Ed. Elsevier, Academic Press.
- MAUSETH, J. D. 1998. Botany. An Introduction to Plant Biology, 2/e. Multimedia enhanced edition. Ed. Jones & Bartlett Publ.
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- RAVEN, P.H., EVERT, R.F. & EICHHORN, S.E. 1991-1992. Biología de las plantas. Vols. 1 i 2. Ed. Reverté.
- SCAGEL, R.F. et al. 1987. El Reino Vegetal. Ed. Omega.
- SLEIGH, M. 1989. Protozoa and other Protists. Ed. Edward Arnold.
- SIMPSON, M.G. 2006. Plant Systematics. Ed. Elsevier, Academic Press.
- STRASBURGER, E. et al. 2004. Tratado de Botànica. Ed. Omega.

Websites:

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- <http://www.unex.es/botanica/LHB>
- <http://blogs.uab.cat/herbari>
- <http://www.protist.org.uk>
- <http://megasun.bch.umontreal.ca/protists/protists.html>
- <http://www.bch.umontreal.ca/protists/otherprodbs.html>
- <http://www.nhm.ac.uk/jdsml/research-curation/research/projects/protistvideo>
- <http://www.nhm.ac.uk/research-curation/research/projects/euk-extreme>
- <http://www.dpd.cdc.gov>