Universitat Autònoma de Barcelona

2022/2023

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

Andreu Salvat Saladrigas

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, Animal Biology and Microbiology.

It is also appropriate to study this subject with other subjects of the first semester of the second year 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 relationshhip 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

The contents of the subject are:

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 (Diplomones, Retortamoniads, Parabasalid and Oximonids). Symbiotic relationships and pathological importance.

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

Archeplastides Groups of interest Biotechnological applications.

Haptophytes. Cocolitophores, importance in marine phytoplankton.

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

Rizharis. Cercozoa (Chloracniophytes and Cercomonidides). Foraminifera and Radiolaria. Ecological and evolutionary importance.

Amebozoa. Ameboid fungi and lobose amoebae, ecology and pathology.

Opistoconts. Coanozoa and Microsporidia. Economic importance

Methodology

Teaching methodology and training activities:

The methodological approach of this subject aims to facilitate the active participation and construction of the learning process by the student, through different methodological strategies. In this sense, the sessions of this subject will be divided into master classes or lectures and seminars, which are programmed in an integrated way so that the student must relate throughout the course the content and the activities programmed to achieve the indicated competencies.

- Lectures: The student must acquire the scientific-technical knowledge of this subject by attending these classes, where explanations will be interspersed by the teachers with activities in the classroom and flipped classes, and complementing them with the personal study. At the beginning of the course, the student have a detailed calendar of the topics that will be dealt with throughout the course, as well as the bibliography that must be consulted to prepare each class and for the personal study. Before each session, the students will have at their disposal the materials to be worked on.

In the sessions of flipped classes, prior to each session, the students will have at their disposal a video of the topic to be discussed in each session, which they have to view before attending the session. Each session will begin with a small activity on the video (assessable). After this activity, different activities will be worked on to highlight the importance of each group of protists treated in the topic that corresponds to the session. These activities can be solved individually, in groups or as a whole, depending on the activity and can also be evaluable.

- Seminars: The seminar sessions will be carried out in small groups. Current and real problems related to protists and the environment and / or society and public health will be addressed, with the aim of giving students a space for reflection and self-learning. As a complement to the seminars, questionsrelated to the subject will be raised that can be discussed by students and professors in the virtual campus forum.

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

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

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			
Reading	8	0.32	2, 3, 5, 4, 1
Resolution of problems for the seminars	9	0.36	2, 3, 5, 4, 1
Study and self-learning assay	28	1.12	2, 3, 5, 4, 1

Assessment

The assessment of the subject will be individual and continuous:

Assessment of the master classes (70% of the global mark):

- There will be two partial tests. A mark of al least 5 out of 10 is required to successfully pass the partial test. The overall of both partial test has a total weight of at least 50% on the global mark

There will be a Re-assessment for students who failed one or both partial exams anf for students who wish to improve the mark of one or both partial exams (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. To participate in recovery, students must have previously been evaluated in a set of activities, the weight of which is equivalent to a minimum of two-thirds of the total grade for the subject.

- Continuous assessable activities throughout the different master classes: the set of evidence collected during the master classes will have a total weight of 20% (maximum) on the global mark.

Evaluation of the seminars (30% of the overall mark): The follow-up of the different seminar sessions will be evaluated, as well as the presentation of the final works (content, capacity for synthesis, rigor in expression, quality of documentary sources and adaptation to the established time), 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
Partials and continuous assessment activities throughout the course	70%	5	0.2	2, 3, 5, 4, 1
Troubleshooting seminars	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.
- ALBERTS B, BRAY D, HOPKIN K, JOHNSON A, LEWIS J, RAFF M, ROBERTS K, WALTER P. 2006. Introducción a la Biología Celular. 2ª Edición. Ed. Editorial Médica Panamericana.
- BOLD, H.C. et al. 1989. Morfología de las plantas y los hongos. Ed. Omega.
- BRUSCA, R. C. & BRUSCA, G. J. 2003. Invertebrados. 2º Edición. Ed. McGraw-Hill.
- CARRIÓN, J. S. 2003. Evolución vegetal. Ed. DM.
- HAUSMANN, K. HULSMANN N., RADEK R. 2003. Protistology. 3rd edition. Ed. E. Schweizerbart'sche Buchhandlung.
- HICKMAN, C.P., ROBERTS, L.S., KEENS, L., LARSON, A., L'ANSON, M., EISENHOUR, D.J. 2009. Principios integrales de Zoología. 14º edición. Ed. Interamericana.
- HISTÒRIA NATURAL dels Països Catalans. Vol. 4. Ed. Enciclopèdia Catalana.
- HISTÒRIA NATURAL dels Països Catalans. Vol. 8. Ed. Enciclopèdia Catalana.
- IZCO, J. et al. 2004. Botánica. Ed. McGraw-Hill-Interamericana.
- MARGULIS, L., CORLISS, J.O., MELKONIAN, M, CHAPMAN, D.J. 1990. Handbook of Protoctista. Ed. Jones & Barlett Publishers.
- 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.
- NABORS, W. 2006. Tratado de Botánica. Ed. Pearson.
- 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.

On-line books:

- Handbook of the Protists: https://mirades.uab.cat/ebs/items/show/152980

Websites:

http://tolweb.org/tree
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

Software

No specific software is used in this subject.