

Molecular Bases and Disease Mechanisms

Code: 102658
ECTS Credits: 3

2025/2026

Degree	Type	Year
Veterinary Medicine	OT	5

Contact

Name: Anna Maria Bassols Teixido

Email: anna.bassols@uab.cat

Teachers

Maria Fatima Bosch Tubert

Marcel Jimenez Farrerons

Fernando de Mora Pérez

Carlos Alberto Saura Antolin

Veronica Jimenez Cenzano

Teaching groups languages

You can view this information at the [end](#) of this document.

Prerequisites

There are no prerequisites for taking this course. However, it is recommended to revise the contents of Biochemistry, Physiology and Pathology

Objectives and Contextualisation

The general objective is that the student understands the molecular mechanisms of the disease, that is, which are the underlying biochemical and physiological processes, whose imbalance leads to the appearance of certain pathologies.

Currently, biomedical research is focused on the unraveling of the molecular mechanisms that cause the disease. It is from this molecular knowledge that new therapeutic strategies can be identified, to design new drugs against known molecular targets and to establish effective prevention mechanisms.

In this context, the veterinarian plays an important role and can not stand aside, as it has the clinical basis necessary to know the applicability of the research.

This subject intends to complement essential basic knowledge for the comprehensive understanding of pathological processes.

The subject focuses on diseases of great importance in human medicine due to their great impact, and which are the subject of very active basic research, both in our environment and in the international arena. The final objective is to bring the veterinarian closer to Human Medicine in order to enhance his/her role in Biomedical Research Centers, Pharmaceutical Industries, Animal Facilities, Tissue Banks, etc. and open new professional opportunities

Competences

- Apply scientific method to professional practice, including medicine
- Demonstrate knowledge and understanding of structural and functional disorders of the animal organism.

Learning Outcomes

1. Apply scientific method to professional practice, including medicine
2. Explain the molecular and physiological bases of the pathologies of greatest interest in experimental animals.

Content

LECTURE TOPICS

- 1) Cancer
- 2) Hereditary diseases of the musculo-skeletal system
- 3) Metabolic diseases (Type I and II diabetes, obesity)
- 4) Hereditary storage diseases (mucopolysaccharidosis)
- 5) Cardiovascular diseases
- 6) Diseases of the central nervous system (Alzheimer's disease)
- 7) Digestive diseases
- 8) Respiratory diseases

SEMINARS

Students must prepare and perform an oral presentation of the molecular and physiological basis of a disease not included in the lectures. After the presentation, questions will be asked to the student for discussion.

PRACTICAL WORK

There is no practical laboratory work.

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Seminars	4	0.16	2
Sessions at the computer room	1	0.04	1, 2
Theoretical lectures	21	0.84	2
Type: Supervised			
Preparation of self-learning presentation	14	0.56	2
Type: Autonomous			
Study and bibliographic searches	33	1.32	2

The methodology used in this subject combines theoretical lectures where the teacher exposes the most relevant concepts and practical sessions at the computer room.

The student is supposed to perform the following activities:

- Lectures with ICT support explaining the basic concepts of the topic. Activities will be developed in the computer room.

- Sessions at the computer's room to deal with topics related to physiology
 - Self-learning work, in groups, to prepare the presentation and discussion of the topic.

they must include multimedia material and ICT support and are followed by a discussion of the topic with participation of the teacher.

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.

Assessment

Continuous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
-------	-----------	-------	------	-------------------

Oral presentation	30	1	0.04	1, 2
Test 1	35	0.5	0.02	2
Test 2	35	0.5	0.02	1, 2

The evaluation system is organized in three tests. The final qualification is obtained from the sum of the qualifications of the three tests.

Test 1. Theory

- Assessment system: short questions. Duration: 1 hour
- Weight in the global rating: 35%.

Test 2. Interpretation of data

- Evaluation system: resolution of cases, exercises, problems. Duration: 1 hour
- Weight in the global rating: 35%.

According to the regulations of the Faculty of Veterinary Medicine and in accordance with the European Higher Education Area.

Test 3. Self learning work:

- Assessment system: The oral and written presentation of the work will be evaluated.
- Weight in the global rating: 30%.

Self-learning work is mandatory. Therefore, the student who does not give a presentation will not be able to obtain the final qualification.

One student will be "non-assessable" if he/she has taken less than 15% of the assessment modules.

In this subject, the single assessment system is not foreseen.

For this course, the use of Artificial Intelligence (AI) technologies is allowed exclusively in support tasks, such as bibliographic or information research, proofreading or translations. The student must clearly identify which parts have been generated with this technology, specify the tools used and include a critical reflection on how these have influenced the process and the final result of the activity. The non-transparency of the use of AI in this assessable activity will be considered a lack of academic honesty and may lead to a partial or total penalty in the grade of the activity, or higher penalties in serious cases.

Bibliography

- The Biology of Cancer. Robert A. Weinberg. 3rd edition. WW Norton and Co. 2023
- The Biology of Cancer. Robert A. Weinberg. 2nd edition. Garland Science; 2014.
- The Molecular Biology of Cancer. Stella Pelengaris; Michael Khan. *Wiley-Blackwell*. ISBN: 978-1-4051-1814-9, 978-1-282-13918-3, 978-1-4443-0908-9.
<https://ebookcentral.proquest.com/lib/uab/reader.action?docID=428083>
- Principles of Neural Sciences (2012) [Eric R. Kandel](#), [James H. Schwartz](#), [Thomas M. Jessell](#), [Steven A. Siegelbaum](#), [A. J. Hudspeth](#).
- Textbook of Clinical Gastroenterology and Hepatology, Second Edition Editor(s): C. J. Hawkey, Jaime Bosch, Joel E. Richter, Guadalupe Garcia-Tsao, Francis K. L. Chan (2009)
<http://onlinelibrary.wiley.com/book/10.1002/9781118321386> (one-line catalog UAB)
- Textbook of Gastroenterology Editor(s): Tadataka Yamada (2012)
<http://onlinelibrary.wiley.com/book/10.1002/9781444303254> (one-line catalog UAB)
- Research and review articles contributed by the professors

Software

No special software used

Groups and Languages

Please note that this information is provisional until 30 November 2025. You can check it through this [link](#). To consult the language you will need to enter the CODE of the subject.

Name	Group	Language	Semester	Turn
(SEM) Seminars	1	Catalan/Spanish	first semester	morning-mixed
(TE) Theory	1	Catalan/Spanish	first semester	morning-mixed