

Immunopathology

Code: 100754
 ECTS Credits: 3

Degree	Type	Year	Semester
2500250 Biology	OT	4	0

Contact

Name: Silvia Vidal Alcorisa
 Email: Silvia.Vidal@uab.cat

Use of Languages

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

Prerequisites

It is necessary to have achieved sufficient knowledge in: Cell Biology, Biochemistry, Genetics, Physiology and Biochemistry.

Objectives and Contextualisation

1. To know in general terms the role of the immune system in the following pathological processes:
 - a. Infections
 - b. Allergies and mechanisms of hypersensitivity.
 - c. Autoimmune diseases
 - d. Immunodeficiencies
 - e. Neoplasms and paraneoplastic diseases
 - f. Transplant
2. To know and understand the diagnostic tests and studies that have a role in the diagnosis of immunopathological diseases.
3. Understand the mechanisms of action of immunotherapy (vaccines, immunosuppressive drugs, etc.).

Competences

- Be able to analyse and synthesise
- Carry out functional tests and determine, assess and interpret vital parameters.
- Design and carry out biodiagnoses and identify and use bioindicators.
- Develop critical thinking and reasoning and communicate ideas effectively, both in the mother tongue and in other languages.
- Obtain information, design experiments and interpret biological results.

Learning Outcomes

1. Be able to analyse and synthesise.
2. Design and perform immune-system molecular and cellular experiments, both on basic aspects and on applications to infectious or immune-system diseases, and interpret the findings.

3. Develop critical thinking and reasoning and communicate ideas effectively, both in the mother tongue and in other languages.
4. Identify and use cell markers in the identification of immune-system pathologies.
5. Interpret and correlate essential parameters both in normal situations and in response to infections or immune-system pathologies.

Content

Immunopathology: the immune system as the cause of disease, main mechanisms.

Block 1: Immune system and disease

1 - Immune response to infectious diseases I. Generalities of the immune response to infections. Viral infections.

Seminar 1: AIDS: the epidemic. The human immunodeficiency virus: HIV. Mechanisms of HIV infection.

Natural history of HIV infection. The immune response to HIV. Prospects for a vaccine.

2 - Immune response to infectious diseases II. Immune Response to Bacterial Infection. Emerging infections.

3 - Inflammation. Concept Cellular and molecular bases of inflammation. Receptors and soluble factors.

Mechanisms and process.

Seminar 2: Tuberculosis

4. Hypersensitivity types 1,2,3 and 4.

5. Alergia. Concept of allergy, atopy. Basic mechanisms. Main allergic diseases, diagnosis of allergic diseases.

6 - Tolerance. Concepts of tolerance to their own antigens. General mechanisms. Tolerance T. Tolerance B.

Antigens abducted. Breach of tolerance and illness.

7 - Autoimmunity. Concept Epidemiology and classification. Main diseases. Etiology Mechanism of injury.

Hypothesis of the multiple control points.

Seminar 3: Diabetes

8- Immunodeficiencies. Definition Immunopathology. Types of immunodeficiencies. SCID. Cell immunity deficiencies. Deficiencies humoral immunity. Deficiencies of natural immunity. Other immunodeficiencies.

Seminar 4: Approaches to the diagnosis of immunodeficiencies and discussion of paradigmatic cases.

Block 2: The immune response in special clinical situations

9 - Transplant. Type of transplant. Immune bases of the transplantation of organs, tissues and cells. Clinical demonstrations of rejection. Non-specific immunosuppressive treatments. Specific immunosuppressive treatments. Immune Tolerance to the Transplant. Main forms of clinical transplant. Seminar immunopathology 3: The problem of histocompatibility and its treatment in the typing laboratory.

10 - Tumor Immunology. Cancer, origin and terminology. Malignant transformation Oncogens and cancer induction. Tumors of the immune system. Tumor antigens. The tumors prevent the immune response. Cancer immunotherapy.

Block 3: Immune-based therapies

11 - Immunotherapy. General concepts Cytokines and anti-cytokines. Cell therapies, from transfusion to advanced therapies.

12- Vaccines. History the vaccination. Types of vaccines

Block 4: Theoretical-practical seminars

Seminar 5: The laboratory of diagnostic immunology. The diagnostic process. The properties of the tests, The catalog. Quality and accreditations.

Methodology

This subject is based on the concepts, abilities and attitudes acquired in the immunology subject previously studied.

The methodology combines:

- 1) Master classes in which questions will be answered to answer for the whole class in ad hoc individual questionnaires, thus encouraging participation and constituting an element of continuous evaluation.
- 2) Seminars where they will be discussed, on previously distributed material topics that are given to a group learning and dialoguing. Some seminars will consist of discussing paradigmatic clinical cases. At the end of the seminar, a questionnaire will be submitted answering the questions that have been addressed during the seminar.

3) Practices - A group presentation of the immunopathology of a disease (to choose from: multiple sclerosis, systemic Lupus Erythematosis, psoriasis, inflammatory bowel disease) will explain the causes, mechanisms and treatments

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Classes	15	0.6	3, 4, 5, 1
Practice and seminars	10	0.4	3, 2, 4, 5, 1
Type: Supervised			
Immunopathology of a disease (group presentation)	6	0.24	3, 2, 4, 5, 1
Type: Autonomous			
Study	35	1.4	3, 2, 4, 5, 1

Assessment

The evaluation of the subject will be individual and continued through the following tests:

Final Exam: A final exam will be scheduled in which there will be 20 questions about the theoretical classes and 10 questions of the seminars. This represents 60% and 30% of the final mark respectively. This will add the evaluation of the work presented in class, which will represent the remaining 10%

Final evaluation:

1) students who have obtained a minimum of 4,5 (over 9) in the final exam, will have passed the subject. Below this note it will be given as NOT APPROVED.

2) Students who have not passed one passed in the final assessment will have the right to submit to a recovery exam

Non-submission to any of the tests must be justified

To participate in the recovery, the students must have been previously evaluated in a series of activities whose weight equals to a minimum of two thirds of the total grade of the subject. Therefore, the students will obtain the "Non-evaluable" qualification when the evaluation activities carried out have a weighting of less than 67% in the final grade.

Attendance at seminars or practical sessions is mandatory. The students will obtain the "Non-evaluable" qualification when the absence exceeds 20% of the programmed sessions.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Test of seminars	30%	4	0.16	3, 2, 4, 5, 1
evaluation of presentation	10%	1	0.04	3, 2, 4, 5, 1
test of classes	60%	4	0.16	2, 4, 5, 1

Bibliography

Janeway's Immunobiology by K Murphy. Ltd/Garland Science, NY & London, 8th ed (2011)

Kuby Immunology (with web support) by T.J. Kindt, R.A. Goldsby, B.A. Osborne. W.H. Freeman Co., 6th ed (2006)

Roitt's Essential Immunology, by [Peter Delves](#), [Seamus Martin](#), [Dennis Burton](#), [Ivan Roitt](#), Wiley-Blackwell Ed., 12th ed (2011)

Inmunobiología de Janeway: K Murphy, P. Travers, M. Walport, Mc Graw Hill, 7^a ed, (2008).

Introducción a la Inmunología Humana de L. Faimboim, J. Geffner. Ed Medica Panamericana, 7^a ed (2011).

Inmunología, Biología y Patología del Sistema Inmunitario de JR Regueiro, C López Larrea, S González Rodríguez, E Martínez Naves. Ed Médica Panamericana, 4^a ed, 2011.

Diccionari d'immunologia de TERMCAT, Centre de Terminologia, Ed Masson, Barcelona, 2005

Autoantibodies, Second Edition. 2nd ed. Ed. M.E. Gershwin, Y Shoenfeld, M Eric Gershwin, Y. Shoenfeld, and Pier-Luigi Meroni. Elsevier Science, 2007.

Primary Immunodeficiency Diseases. Ed. Nima Rezaei, Asghar Aghamohammadi, and Luigi D. Notarangelo. Springer, 2008.

Primary Immunodeficiency Diseases Ochs, Hans D. 2/e C. 2nd ed. Oxford University Press, USA, 2006.

Clinical Immunology: Principles and Practice: Expert Consult: Online and Print (Rich, Clinical Immunology) by Robert R. Rich MD, Thomas A. Fleisher MD, William T. Shearer MD PhD and Harry W. Schroeder II MD PhD, 2008.

Therapeutic Immunology. 2nd ed. Ed. K. Frank Austen, Steven J. Burakoff, and Fred S. Rosen. Wiley-Blackwell, 2001.

Lecture Notes in Immunology. Ian Todd, Wiley Blackwell, 2010. Immunología Celular y Molecular A. Abbas. 6^a edició (2008) Ed. Elsevier (en castellà). Immunobiology. Ch. Janeway. 7^a edició (2007). Ed Garland Science
Really Essential Medical Immunology, 2nd Edition. Arthur Rabson, Ivan Roitt, Peter Delves. 2004, Wiley

Fundamental Immunology. WE. Paul. 6a edició (2008). Ed. Lippincot Williams & Wilkins (per consultes en profunditat)

També es recomanen els apartats dedicats a la Immunología dels textes de Medicina: Medicina Interna. Farreras. 16a edició (2008). Ed. Elsevier

Internet

Classes d'immunologia Unitat Docent Badalona: Harrison's online, part dedicada al sistema immunitària.
<http://www.accessmedicine.com/content.aspx?aid=2858331>. (Ordenadors biblioteca UAB)

Text del departament d'Immunología, Universitat de Córdoba, España,
<http://www.uco.es/grupos/immunologia-molecular/immunologia> (access lliure)

<http://www.roitt.com> - Figures, qüestionaris de auto-aprenentatge,

<http://www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=imm> - És el text d'Immunobiology de Janeway, accessible per consultes, en anglès

<http://www.new-science-press.com/browse/immunity> - Molts capítols d'aquest text són de lliure accés. Molt bons gràfics, i entrevistes amb algun dels immunòlegs més coneguts i creatius del moment. Molt recomanable.

<http://pathmicro.med.sc.edu/book/immunol-sta.htm> - Text on line pels estudiants d'immunología de la Escola de Medicina de la Universitat de South Carolina

Videos on line

<http://labs.idi.harvard.edu/vonandrian/index.html>