Clinical Immunology and Immunopathology

Module Description/Overview

This specialized course aims at informing and updating the students about immune system function and pathology including but not limited to increasing their awareness regarding different immune responses towards microorganisms and foreign bodies together with associated disturbances in the immune system that results in disease formation.

The Course also aims at acquiring the skills that enable the student to properly understand the basic concepts of immunomodulation , order and interpret immune related diagnostic tests with proper referral and recommendation for proper treatment according to immune status together with further needed investigation for immune related diseases assessment and proper treatment

Module Learning Objectives

1) Studying and analyzing medical aspects of immune disturbances
2) Discriminating and evaluating factors affecting immune function
3) Studying the interaction between immune evasion strategies and immunotherapeutic targets
4) Evaluation and management of autoimmune diseases and immune related disorders

Module Intended Learning Outcomes

Upon successful completion of this module, students will be able to:

A- Knowledge and understanding: (remembering and understanding)

A1- Compare between physiology and pathology of the immune system.

A2- Define tests used to assess immune cells number and function

A3- Classify different techniques used for immune cells and molecules assessment

A4- Explain Types and Mechanisms of tolerance

A5- Illustrate importance of immunological tolerance in cancer, autoimmunity and transplantation

A6- List immunoprivileged sites and explain mechanisms of tolerance on this sites

A7-Discuss induction of tolerance and how to apply it

A8- Classify different immunological based disorders .

A9-Discuss types of hypersensitivity and their mechanisms

A10-Identify causes and genetic factors predisposing to autoimmune diseases

A11-Identify transplantation related antigens.

A12-Differentiate between types of immune responses to transplantation

A13-Recall different types and mechanisms of Immunodeficiency.

A14-Define different nutritional and metabolic elements affecting immune system

A15-Appraise the interplay between nutrition and immune system

A16- Demonstrate the effect of environmental factors on immune response .

A17-Illustrate the interplay between microorganisms and immune response.

A18-Identify non environmental non infectious factors affecting immune function.

A19-Describe different psychological disorders and its relation to the immunity

A20-Recognize age related effects on immune system and its relation to clinical status

A21-Identify different tumor antigens.

A22- Differentiate between types of immune responses to tumors

A23- explain immune evasion strategies for microorganisms and tumors.

A24-Classify immunotherapeutic targets and methodologies.

A25-Identify Properties and types of Stem cells.

A26-Describe the determinants of individual response to medicines and demonstrate an understanding of how genetics alters therapeutic response to medicines.

B- Intellectual Skills: (Application, Analysis, Synthesis, Evaluation)

B1- Formulate the algorithm of different immunological disorders

B2- Interpret results of different immunological investigations

B3- Correlate clinical data with lab results

B4-Design new strategies for immunotherapeutic targeted treatment protocols.

C- Professional Skills: (Practical Skills)

C1- Perform lab safety and good work practice rules

C2- Carry out basic immunological procedures

C3- Perform advanced immunological procedures

C4- Research international databases for ……. .

C5- Conduct online consultation with field experts.

D- General Skills: (Attitudes and Communication Skills)

D1- Show self confidence in presenting due work.

D2- Valuing the guidelines and regulations.

D3- Respect medical ethics.

D4- Accept criticism and others' opinions.

D5- Appreciate team work and work efficiently within a team.

Module Resources

Required Module Textbooks and Materials

Abbas, A. K., Lichtman, A. H., & Pillai, S. (2021). *Cellular and molecular immunology*. Elsevier Health Sciences.

The immune system in health and disease by: Janeway and Travers Immuno-biology,7th edition.

- Roitt's Essential Immunology

Optional Module Textbooks and Materials

1- Rezaei, N. (2020). Cancer Immunology: Bench to Bedside Immunotherapy of Cancers.

2- Best, DH and Swensen, JJ (2012) *Molecular genetics & personalized medicine*. Human press

3- Traidl-Hoffmann, C. (2022). *Allergic Diseases–From Basic Mechanisms to Comprehensive Management and Prevention*. Springer Nature.

4- Hays, P. (2021). Advancing Healthcare Through Personalized Medicine. Springer Nature.

5- Jain, K. K. (2021). Textbook of Personalized Medicine.

6- Sam-Yellowe, T. Y., & Sam-Yellowe, T. Y. (2021). *Immunology: Overview and Laboratory Manual*. Springer.

Assignments and Grading Scheme

Grading System

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Grading Policy

Grades can be based on the following:

Practical presentations and assignments	20%
Exams	60%
Class attendance/participation	20%
Total Points	

Module Policies

Late Assignments

It is essential that papers and other assignments be completed and submitted on time. Once the due date is past, without notice and justification, the submission is not accepted.

Classroom Protocol

This is a blended learning module, which means that students are expected to attend some in-class lectures and do other online assignments as well as laboratory work. They cannot pass the in-class sessions under any circumstances if they miss more than five classes, they lose the attendance part of grades. They are expected to treat the instructor and other students with respect. During class, students are obliged to not disrupt class by making noise and/or leaving and re-entering during class. Those who violate these minimal expectations will be asked to leave and counted as absent. They are expected to have read and thought about the assigned material before they come to class. Active class participation is mostly expected, which counts for 20% of the grade.

Disability

Teachers with disabilities should have a confidential appointment to discuss their need for accommodations. Establishing reasonable accommodations should be considered on a case-by case basis.

Important Dates to Remember

Module Schedule

Week	Topics, Readings, Assignments and Deadlines