



Department of Biology

College of Science

University of Salahaddin

Subject: Immunology

Course Book: 3rd Class

Lecturer's name: Fikry Ali Qadir, PhD (Theory)

Mrs. Sonia Elia Ishaq (practical)

Academic Year: 2022/2023

immune system and the essential features of immune responses an introduction to the nature of the cells and molecules involved in the immune response, Phagocytosis, lymphoid organs, cells and receptors, Recognition of pathogens; antigen processing and presentation.

The study of the immune system ultimately provides us with a fascinating insight into the relationship between animals, and the organisms that infect them (not only bacteria & viruses, but also protozoans and parasites). Evolutionary science has demonstrated how the life we see around us is the product of millions and millions of years of development – and part of this process has been the development of the immune system itself, as a consequence of the long and ongoing relationship between the organisms already mentioned. There is a value, and excitement, to discovering how the immune system in different organisms works, merely for its own sake. However, understanding the immune system also gives us the potential to develop therapies that control infectious disease (this includes vaccines, of which a great many have now been developed), cancer, and other diseases resulting from the malfunction of the immune system.

11. Course objective:

The objective of this course is to learn about the Immunity, Types of immunity, Subject and immunology tasks, History and development of immunology, Hematopoiesis-Localization of hematopoiesis, Innate Immunity (Innate immunity-Factor influencing level of innate immunity-Mechanism of innate immunity-Humoral factor-Cellular factor-Mode of intracellular killing), and Acquired Immunity (Acquired Immunity-Active immunity-Passive immunity-Difference between active and passive immunity). Localization of the immune system in the body and Lymphoid Organ [Lymphoid Organ-A/Primary lymphoid tissue (Bone marrow-Bursa of fabricius-Thymus) B-Secondary lymphoid tissue (Lymphatic circulation-Lymph node-Spleen) C/Tertiary lymphoid tissue (Mucosal associated lymphoid tissue-Intraepithelial lymphocyte), Different structure and shape of immunoglobulin (Structure of Ig-Type of Ig-Function of Ig), Properties of the immunogen-Antigen presenting cell-Ag processing pathway, and Immune Response

12. Student's obligation

***Exam policy:**

Student Should take 2 exams during the course There will be no make-up exams for absences students without medical report.

***Classroom polices:**

1- Attendance: You are strongly encouraged to attend class on a regular basis, as participation is important to your understanding of the material. This is your opportunity to ask questions. **You are responsible for obtaining any information you miss due to absence**

2- Lateness: Lateness to class is disruptive

3- Electronic devices: All cell phones are to be turned off at the beginning of class and put away during the entire class.

4-Talking: During class please refrain from side conversations. These can be disruptive to your fellow students and your professor

5- No Disrespectful to both the professor and to your fellow students.

13. Forms of teaching**Face-to-Face (Lectures and PowerPoint)****14. Assessment scheme**

Component	Date	Percent
Exam 1	00/00/2017	50%
Exam 2	00/00/2017	50%
Total		100%

15. Student learning outcome:

After completion of this course, you will be able to:

Define Basic Immunology (Immunology-Hematopoiesis-Localization of hematopoiesis), Innate Immunity (Innate immunity-Factor influencing level of innate immunity-Mechanism of innate immunity-Humoral factor-Cellular factor-Mode of intracellular killing), and Acquired Immunity (Acquired Immunity-Active immunity-Passive immunity-Difference between active and passive immunity).

Localization of the immune system in the body and Lymphoid Organ [Lymphoid Organ- A/Primary lymphoid tissue(Bone marrow-Bursa of fabricius-Thymus) B-Secondary lymphoid tissue (Lymphatic circulation-Lymph node-Spleen) C/Tertiary lymphoid tissue (Mucosal associated lymphoid tissue-Intraepithelial lymphocyte)

Different structure and shape of immunoglobulin (Structure of Ig-Type of Ig-Function of Ig)

Properties of the immunogen-Antigen presenting cell-Ag processing pathway

Mechanism of immune response-Primary and secondary immune response.

16. Course Reading List and References:

- Ivan Roitt, I. Brostoff, J. and Male, D. (2002) Immunology (6th Ed.) Edinburgh, Mosby.
- Parslow, T.G., Stites, D.P., Terr, A.I., Imboden, J.B. (2001) Medical Immunology (10th Ed.) NY, McGraw Hill
- Brooks, G.F., Carroll, K.C., Butel, J.S. & Morse, S.A. (2007) Medical Microbiology (24th Ed.) NY, McGraw Hill.

17. The Topics:**2 hr./week/each group (2 group)**

History of microbiology and immunology	Week 1
Overview of immunology	Week 2
Components of immunity (physical and mechanical)	Week 3
Phagocytosis	Week 4
Complement system	Week 5,6

Interferons and acute phase proteins	Week 7
EXAMINATION	Week 8
NK cells	Week 9
Antigens structures and antigenicity	Week 10
Immunoglobulin	Week 11,12
Immune response and their features	Week 13
Examination	Week 14
18. Practical Topics (If there is any)	
Lab 1/ Introduction to Immunology/ General concepts	Week 1
Lab 2/ Marking, Injecting and bleeding of animals (rabbit)	Week 2
Lab 3/ Bactericidal power of normal serum	Week 3
Lab 4/ Clearance of blood by reticuloendothelial system(Role of innate immunity)	Week 4
Lab 5/ ABO system and compatibility test (cross-matching test)	Week 5
Lab 6/ Preparation of lymphocytes	Week 6
Lab 7/ Enzyme Linked Immunosorbent Assay (ELISA)part one	Week 7
Lab 8/ Enzyme Linked Immunosorbent Assay (ELISA) part two	Week 8
Lab 9/ Immunohistochemistry (IHC) part one	Week 9
Lab 10/Immunohistochemistry (IHC) part two	Week 10
Lab 11/ phagocytosis (NBT)	Week 11
Lab 12/ immunodiffusion (RID)	Week 12
Lab 13 /rheumatoid factor (RF)	Week 13
Lab 14/ examination	Week 14
<p>19. Examinations:</p> <p>1. Compositional (Explain), True or false type of exams, Multiple choices, and Fill the blanks</p> <p>Answer the following:</p> <p>Q1: Define T-dependent Antigen C4b binding protein Diageorge Syndrome Secondary immune response</p> <p>Q2: Fill in the blanks</p> <p>1- Precursor T cells must migrate to thymus where they undergo differentiation into tow type of T cells _____ and _____.</p> <p>2-Chemotactic factor for attracting phagocytic cells to site of inflammation includes _____, _____, and _____.</p> <p>3- Fixation of first complement (C1) needed for immune complex and binding with Ig</p>	

requires _____ and _____ ions.

4- _____ blocks the association of factor-B complement with C3b in alternative pathway.

5- NK cells are capable of killing _____ and _____ cells.

6- IgA has a _____ which made in _____ cells as its passes into secretions.

7- Thymic nurse cells secreted _____, _____, and _____ hormones to promote maturation of T cell in thymus.

Q3: Explain with drawing the early events in Antibody production in lymph node.

Q4: Explain

A- The classical pathway for complement activation.

B- Detoxification reaction in PMN and Macrophage.

20. Extra notes:

I want to be supportive to everyone. This "Course Book" will help you understand how College of Science/Biology Department environment works, what to do first, and who to contact if you need help. I appreciate the participation and sharing from all students related to classroom activities for the first time.

Whenever you have some questions or concerns about virology and the course book, ask any questions you may have about your concern. Sometimes a quick question at time can save a lot of frustration later!

Our discussion goal in the classroom is to be collaborative, not combative. This is important to your success in the course and as a professional. Experience shows that even an innocent remark in the class environment can be easily misconstrued. Please re-think your responses carefully before you react with others in order not to be concenter as personal attacks. Be positive to others and diplomatic with your words. I will try my best to do the same. Be careful when using sarcasm and humor. Without face-to-face communications your joke may be viewed as criticism. Remember you are not competing for grades but sharing information and learning from one another.

The College of Science, Department of Biology, expects that all students exhibit professional behaviour.

21. Peer review

I have read this course book and I see that it is contains the most necessary subjects.....

Dr.Fikry Ali Qadir
