

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



Hamadan University of Medical Sciences and Health Services
Educational Deputy of the University
Center for Studies and Development of Medical Sciences Education

Lesson Plan: Theory of Comparative Immunology

Dear Colleagues,

As the teaching-learning process is one that cannot achieve its objectives without planning, it is essential to develop a lesson plan at the beginning of the educational process (as a roadmap and guide for instructors and students). Therefore, it is requested that esteemed instructors exercise utmost care in completing the lesson plan.

Course and Instructor Information (All fields must be completed)

- **Course Title:** Comparative Immunology
- **Instructor's Full Name:** Dr. Mohsen Rostegari Pouyani
- **Course Coordinator's Full Name:** Dr. Mohsen Rostegari Pouyani
- **Head of Department's Full Name:** Dr. Mehdi Behzad
- **Type and Number of Credits:** Theoretical — 1 credit
- **Student Major and Level:** Medical Immunology – Master's Degree
- **Academic Semester:** First Semester Second Semester
- **Venue:** Classroom, Faculty of Medicine

Comparative Immunology – Lesson Plan

Session	Topic	Behavioral Objectives	Learning Domain	Teaching Method	Duration	Teaching Aids	Evaluation Method
1	Structure and	1. Student should be	1. Cognitive (Knowledge)	Lecture –	2 hours (Theoretic	Video projecto	Q&A

	Function of the Immune System in Unicellular Organisms	able to name taxonomic levels of living organisms. 2. Explain the importance of the immune system in different organisms. 3. Describe the function of the immune system in unicellular organisms. 4. Compare defense mechanisms in several unicellular organisms.	 2. Cognitive (Understanding) 3. Cognitive (Understanding) 4. Cognitive (Evaluation)	Discussion	al)	r	
2	Structure and Function of the Immune System in Multicellular Organisms and Invertebrates	1. Name major phagocytic cells in multicellular organisms. 2. Explain the immune system structure in invertebrates from an evolutionary perspective	1. Cognitive (Knowledge) 2. Cognitive (Understanding) 3a. Cognitive (Knowledge) 3b. Cognitive (Understanding) 4a. Cognitive (Knowledge) 4b. Cognitive (Understanding)	Lecture – Discussion	2 hours (Theoretical)	Video projector	Q&A

		<p>e.
 3a. Name major immune receptors (phagocytic and cellular cytotoxicity systems) in several invertebrates, and 3b. Explain ligand recognition in them.</p> <p>
 4a. Identify effector molecules involved in phagocytosis in several invertebrates, and 4b. Explain their function.</p>					
3	Structure and Function of the Immune System in Vertebrates (Fish and Amphibians)	<p>1a. Describe immune tissues and organs in fish and amphibians, 1b. Compare them.
 2a. Describe innate immunity (cells, receptors, molecules) in fish and amphibians, 2b.</p>	<p>1a. Cognitive (Understanding)
 1b. Cognitive (Evaluation)
 2a. Cognitive (Understanding)
 2b. Cognitive (Evaluation)
 3a. Cognitive (Understanding)
 3b. Cognitive (Evaluation)</p>	Lecture – Discussion	2 hours (Theoretical)	Video projector	Q&A

		Compare them. 3a. Describe adaptive immunity (humoral and cellular) in fish and amphibians, 3b. Compare them.					
4	Structure and Function of the Immune System in Vertebrates (Reptiles)	1. Describe immune tissues and organs in reptiles. 2. Describe innate immunity (cells, receptors, molecules) in reptiles. 3. Describe adaptive immunity (humoral and cellular) in reptiles.	1. Cognitive (Understanding) 2. Cognitive (Understanding) 3. Cognitive (Understanding)	Lecture – Discussion	2 hours (Theoretical)	Video projector	Q&A
5	Structure and Function of the Immune System in Vertebrates (Birds)	1. Describe immune tissues and organs in birds. 2. Describe innate immunity (cells, receptors, molecules) in birds.	1. Cognitive (Understanding) 2. Cognitive (Understanding) 3. Cognitive (Understanding)	Lecture – Discussion	2 hours (Theoretical)	Video projector	Q&A

		 3. Describe adaptive immunity (humoral and cellular) in birds.					
6	Structure and Function of the Immune System in Vertebrates (Mammals)	1. Describe immune tissues and organs in mammals. 2a. Identify innate immunity components (cells, receptors, molecules), 2b. Evaluate them, 2c. Explain their function. 3. Describe adaptive immunity (humoral and cellular) in mammals.	1. Cognitive (Knowledge, Understanding) 2a. Cognitive (Knowledge) 2b. Cognitive (Evaluation) 2c. Cognitive (Understanding)	Lecture – Discussion	2 hours (Theoretical)	Video projector	Q&A
7	Evolution of the Immune System	1. Compare similarities and differences in innate immunity across life forms. 2. Compare similarities and differences	1. Cognitive (Evaluation) 2. Cognitive (Evaluation) 3. Cognitive (Evaluation) 4. Cognitive (Understanding)	Lecture – Discussion	2 hours (Theoretical)	Video projector	Q&A

		<p>in adaptive immunity (humoral) across life forms.</p> <p>
 3. Compare similarities and differences in adaptive immunity (cellular) across life forms.</p> <p>
 4. Discuss and predict the evolution of immune responses to cancer cells within the human body at different cancer stages and across future generations.</p>					
8	Importance of Comparative Immunology Studies	<p>1. Explain the importance of comparative immunology in the evolution of pathogens.</p> <p>
 2. Explain the importance of</p>	<p>1. Cognitive (Understanding)
 2. Cognitive (Understanding)</p>	Lecture – Discussion	2 hours (Theoretical)	Video projector	

		comparative immunology in zoonotic diseases.					
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Grading Scheme

Evaluation Type	Date	Evaluation Tool	Points (out of total)
Quiz			
Project Presentation			
Midterm Exam			
Final Exam		Essay Test	20
Other			
Total			20

References

1. *Advances in Comparative Immunology*, Edvin L. Cooper, Springer International Publishing, Latest Edition.
2. Related articles from reputable journals.