

**Assessment tools for certification
in the discipline / internship "Immunology"
for students of the educational program
Specialist in the specialty/direction of training 31.05.01 General medicine,
direction (profile) General medicine,
form of study is full-time
for the 2023-2024 academic year**

Intermediate certification is carried out in the form of a credit.

Intermediate certification includes the following types of tasks: testing, interview.

Examples of test tasks

Verifiable indicators of competence achievement: GPC-4.1.2., GPC-4.1.3., PC-1.1.1., PC-1.1.2.

1. Specify the anatomical formation in which T-lymphocytes quantitatively predominate

- A) tonsillar follicles
- B) Peyer's plaques in the small intestine
- C) periarterial coupling in the spleen
- D) bone marrow
- D. germinal (germinal) centers of lymph nodes

2. What characterizes immunogenicity?

- A) depends on the possibility of native antigens to be presented in combination with MHC
- B) is not a property of haptens
- C) is usually a property of its own antigens, such as the tissues of the internal environment of the eye
- D) appears only in antigens of a protein nature

3. Specify the immunoglobulin consisting of five subunits

- A) IgE
- B) IgG
- C) IgM
- D) IgA

4. Select a non-existent complement activation path

- A) lectin
- B) alternative
- C) Classic
- D) cytokine

5. Which effector lymphocytes are directed against intracellularly located pathogens?

- A) B-cells
- B) Thymocytes
- C) CD8+T cells
- D) plasma cells

6. Non-specific factors of body protection include

- A) complement and phagocytosis system
- B) interferon and lymphokines
- C) bactericidal substances of tissues, hydrolytic enzymes
- D) all of the above

7. What is the role of CD4 + cells in antitumor immunity?

- A) induction of cell death
- B) phagocytosis
- C) cytokine production for the effective development of CTL
- D) cytokine production for tumor development

8. What is meant by thymus involution?

- A) the proliferation of parenchyma due to an increase in the mass of the cortical substance
- B) the proliferation of parenchyma due to an increase in the mass of brain matter
- C) reduction of parenchyma due to the replacement of adipose tissue primarily of brain matter
- D) reduction of parenchyma due to the replacement of the cortical substance with adipose tissue in the first place

9. Antigenic determinants are understood as

- A) substances that cause the formation of an immune response
- B) part of the antigen structure responsible for specific interaction with antibody molecules
- C) substances binding to the H-chain of immunoglobulins
- D) all of the above is incorrect

Questions for intermediate certification

1.	The subject and tasks of immunology. The main aspects of fundamental immunology. The main directions in the development of immunology.	GPC-4.1.2

2.	The structure and principle of functioning of the immune system.	GPC-4.1.2
3.	Central organs of the immune system. Thymus. Building. Functions. Maturation of lymphocytes in the thymus. Secretory function.	GPC-4.1.2
4.	Peripheral organs of the immune system. The spleen. Building. Functions.	GPC-4.1.2
5.	Antigens. Structure, properties, biological role. The concept of antigenic determinants and epitopes.	GPC-4.1.3
6.	Innate immunity. Components of innate immunity: physical, chemical, biological barriers.	GPC-4.1.3
7.	Phagocytosis cells and their markers. Stages and mechanisms of phagocytosis.	GPC-4.1.3
8.	Processing and presentation of antigens to T cells. The main stages. Features of antigens.	OPK-4.1.3, GPC-4.1.3
9.	The main histocompatibility complex (MHC). Presentation of endogenous and exogenous antigens. Functions of MHC class I and II molecules, interaction with CD8 ⁺ or CD4 ⁺ cells, respectively.	GPC-4.1.2, GPC-4.1.3
10.	The processes of activation of T-lymphocytes and the choice of an immune response (CD8 ⁺ - or CD4 ⁺ -dependent).	OPK-4.1.2, OPK-4.1.3
11.	Cellular (T) link of immunity. CD4 ⁺ -dependent immune response. Factors determining the choice of Th1- or Th2-option. Implementation of the Th1 pathway of the immune response. Biological role. Mechanisms.	GPC-4.1.3
12.	Mechanisms of activation and differentiation of B-lymphocytes. B-cell receptor (BCR), molecular components, functions.	GPC-4.1.2

13.	Immunoglobulins. Chemical structure and organization of the immunoglobulin molecule. Types of chains. The principle of the domain structure of antibodies.	OPK-4.1.3, GPC-4.1.3
14.	Physical, chemical and biochemical properties of immunoglobulins. Forms of existence of antibodies in the body.	GPC-4.1.3, GPC-4.1.3
15.	Principles and methods of serological diagnostics.	GPC-4.2.4
16.	Natural immunological tolerance, mechanisms and types. Artificial tolerance, causes and conditions of formation. The importance of immunological tolerance for humans.	GPC-4.1.3
17.	General ideas about the complement system. Composition and main functions. Methods of determination.	
18.	Complement system. Classical and alternative ways of complement activation. Clinical significance.	GPC-4.1.2
19.	The cytokine system. Basic concepts. Types of cytokines. The main properties of cytokines. Structure and types of cytokine receptors. Interaction of cytokines with specific receptors.	GPC-4.1.2
20.	Functional classification of cytokines. Cytokine regulation of specific and nonspecific immunity. The concept of the cytokine network, its relationship with other organs and tissues.	GPC-4.1.3
21.	Immunological factors of antibacterial immunity. Mechanisms of escape from immune elimination.	GPC-4.1.3, GPC-4.3.2
22.	Immunological factors of antiviral immunity. Mechanisms of escape from immune elimination.	GPC-4.1.3, GPC-4.3.2
23.	Immunological factors of anthelmintic, antifungal immunity, antichlamydia and antimycoplasma immunity. Mechanisms of escape from immune elimination.	GPC-4.1.3, GPC-4.3.2, PC-1.1.2

24.	Immunobiotechnology. The concept of vaccination. History of development. Goals and objectives of vaccination. Requirements for vaccines.	PC-5.1.1, PC -5.1.3, PC -5.1.6, PC -5.1.8, PC -5.2.2, PC -5.2.3, PC -5.3.1, PC -5.3.2.
25.	The role of the immune system in antitumor protection. Mechanisms of tumor escape from immune surveillance.	GPC-4.1.2
26.	Oncomarkers, types, requirements for ideal oncomarkers, clinical significance. Immunotherapy of tumors.	GPC-4.1.3, GPC-4.3.3
27.	Immunological relationships in the "mother-father" and "mother-fetus" systems.	GPC-4.3.3
28.	Immunological factors in the development of infertility. Approaches to the treatment of infertility caused by immune mechanisms.	GPC-4.3.2
29.	Age-related features of the immune system. The main forms of human immunopathology.	GPC-4.2.2, GPC-4.2.3
30.	Allergic reactions. Classification of Gell&Coombs.	PC-1.3.1, PC-1.3.2, PC-1.3.3
31.	Basic concepts of autoimmunity. Classification of autoimmune diseases. Hypotheses of development. Principles of immunological diagnosis and treatment.	GPC-4.2.2, GPC-4.2.4, GPC-4.3.2, PC-1.1.2
32.	Primary immunodeficiency conditions. Concept, classification. Formation of marker syndromes. Principles of treatment.	GPC-4.2.4, PC-1.1.1, PC-1.1.2, PC-1.2.1
33.	Secondary immunodeficiency conditions. Concept, classification. Features of environmental, infectious, post-traumatic.	GPC-4.2.4, PC-1.1.1

		PC-1.1.2 PC-1.2.1
34.	Immunotropic agents. Classification. Mechanism of action. Scope of clinical application.	GPC-4.3.3 PC-1.3.6

The full fund of evaluation funds for the discipline is available in EIOS VolgSMU by link:

<https://elearning.volgmed.ru/course/view?id=4737>

Considered at the meeting of the department of Immunology and allergology "31"
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Head of the Department



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