

2022 Akita University Faculty of Medicine Syllabus

Category	: 基礎医学 IV
Course Title	: (Immunity and host defense)
Eligible Students	: grade 2 Related Course
Code	: 71563017
Schedule	: week 17 ~ week 25
Credits	: 1

1. Lead Instructor

Satoshi Ishii (Professor, Department of Immunology, 6089, Office Hour: 8:30-17:00)

2. Instructors

Satoshi Ishii (Professor, Department of Immunology, 6089, Office Hour: 8:30-17:00)

Shigeharu Ueki (Professor, Department of General Medical Practice and Laboratory Diagnostic Medicine, 6209, Office Hour: 8:30-17:00)

Daisuke Yasuda (Lecturer, Department of Immunology, 6090, Office Hour: 8:30-17:00)

Chihiro Furumizu (Assistant Professor, Department of Immunology, 6090, Office Hour: 8:30-17:00)

3. Course Description Outline(Course Objectives)

Describe the structure and function of the immune system, how it develops and how the immune cells interact with other cells in the body as well as with pathogens.

Understand the major autoimmune diseases, congenital and acquired immunodeficiency syndromes (acquired immune deficiency syndrome (AIDS)).

Explain how the immune system can be manipulated by grafts and cancer cell.

Understand the life cycle and pathogenicity of parasites.

免疫系の機構を分子レベルで理解し、病原体に対する免疫反応、主な自己免疫疾患、先天性及び後天性免疫不全症候群 (acquired immune deficiency syndrome (AIDS)) と癌細胞と移植片に対する免疫系の反応を理解する。

寄生虫の基本的性状、病原性とそれによって生じる病態を理解する。

4. Textbook/Reference Books

The lecture will be conducted according to the textbook. Be sure to prepare for the lecture so that you can understand the content well.

「エッセンシャル免疫学 第3版、笹月健彦監訳、メディカル・サイエンス・インターナショナル: "The Immune System 4th Edition (by Peter Parham) "の日本語訳」

また、「Janeway 's 免疫生物学 原書第9版、笹月健彦監訳、南江堂: "Janeway 's Immunobiology 9th Edition " の日本語訳」 may be used as a supplementary material.

5. Assessment

Comprehensive examination and attendance.

統一試験、出席により行う。

6. Out of Class Study/Message

The lecture will be given according to the designated textbook.

To prepare the textbook by the first day of the class and students are required to read assigned it.

Students are expected to review the textbook after the lecture.

指定した教科書に沿って講義を行う。

講義初日までに指定した教科書を用意し、予習をすること。

講義後は復習を行うこと。

Topics and Contents of class, Course Objectives						
	Class Date	Period	Class Format	Topics and Contents of class, Course Objectives	Instructors	Class Room
1	8 / 30 (Tue)	1-2	Lecture	Theme: Elements of the Immune System and their Roles in Defense Explain the characteristics of the immune system (specificity, diversity, tolerance, memory) in the defense mechanism. Describe the tissues and cells involved in the immune response. Establishment and breakdown of the immunological self. Explain the difference between innate and acquired immunity.	Satoshi Ishii	基礎棟第2講義室
2	8 / 30 (Tue)	3-10	Lecture	Theme: Innate Immunity Explain the biological defense mechanism by innate immunity.	Satoshi Ishii	基礎棟第2講義室
3	9 / 6 (Tue)	1-4	Lecture	Theme: Antibody Structure and the Generation of B-Cell Diversity Explain the structure and reaction modes of immunoglobulins. Explain the mechanism of diversity acquisition based on the structure and genetic rearrangement of immunoglobulin genes.	Satoshi Ishii	基礎棟第2講義室
4	9 / 6 (Tue)	5-8	Lecture	Theme: Antigen Recognition by T Lymphocytes Explain the basic structure of major histocompatibility complex (MHC) class I and class II, and the differences in antigen presentation pathways. Explain the structure of T-cell antigen receptors and their reaction modes. Explain the mechanism of diversity acquisition based on the structure and genetic rearrangement of the T cell antigen receptor gene. Explain the characteristics of immune responses to viruses, bacteria, fungi, and parasites.	Satoshi Ishii	基礎棟第2講義室
5	9 / 6 (Tue)	9-10	Lecture	Theme: The Development of B Lymphocytes Explain the mechanism of diversity acquisition based on the structure and genetic rearrangement of immunoglobulin genes. Outline the establishment of mechanisms for discrimination between self and non-self and immunological tolerance.	Satoshi Ishii	基礎棟第2講義室
6	9 / 13 (Tue)	1-2	Lecture	Theme: The Development of B Lymphocytes Explain the mechanism of diversity acquisition based on the structure and genetic rearrangement of immunoglobulin genes. Outline the establishment of mechanisms for discrimination between self and non-self and immunological tolerance.	Satoshi Ishii	基礎棟第2講義室
7	9 / 13 (Tue)	3-6	Lecture	Theme: The Development of T Lymphocytes Explain the mechanism of diversity acquisition based on the structure and genetic rearrangement of T-cell antigen receptor genes. Outline the establishment of mechanisms for discrimination between self and non-self and immunological tolerance.	Satoshi Ishii	基礎棟第2講義室

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8	9 / 13 (Tue)	7-8	Lecture	<p>Theme: T Cell-Mediated Immunity</p> <p>Outline the regulatory mechanisms that enhance or diminish the signals from antigen receptors.</p> <p>Describe the characteristics of representative cytokines and chemokines.</p> <p>Explain the defense responses of helper T cells (Th1 cells, Th2 cells, Th17 cells), cytotoxic T lymphocyte (CTL), and regulatory T cells (Treg).</p> <p>Explain the characteristics of immune responses to viruses, bacteria, fungi, and parasites.</p>	Daisuke Yasuda	基礎棟第2講義室
9	9 / 13 (Tue)	9-10	Lecture	<p>Theme: Immunity Mediated by B Cells and Antibodies</p> <p>Outline the regulatory mechanisms that enhance or diminish the signals from antigen receptors.</p> <p>Describe the characteristics of representative cytokines and chemokines.</p> <p>Describe the characteristics of immune responses to viruses, bacteria, fungi, and parasites.</p>	Daisuke Yasuda	基礎棟第2講義室
10	9 / 20 (Tue)	1-2	Lecture	<p>Theme: Immunity Mediated by B Cells and Antibodies</p> <p>Outline the regulatory mechanisms that enhance or diminish the signals from antigen receptors.</p> <p>Describe the characteristics of representative cytokines and chemokines.</p> <p>Describe the characteristics of immune responses to viruses, bacteria, fungi, and parasites.</p>	Daisuke Yasuda	基礎棟第2講義室
11	9 / 20 (Tue)	3-4	Lecture	Theme: Formative assessment	Satoshi Ishii	基礎棟第2講義室
12	9 / 20 (Tue)	5-8	Lecture	<p>Theme: Immunological Memory and Vaccination</p> <p>Explain immune memory in biological defense mechanisms.</p>	Chihiro Furumizu	基礎棟第2講義室
13	9 / 20 (Tue)	9-10	Lecture	<p>Theme: Fails of the Body's Defenses</p> <p>Outline primary immunodeficiency diseases and acquired immunodeficiency syndrome (AIDS).</p>	Satoshi Ishii	基礎棟第2講義室
14	9 / 27 (Tue)	1-2	Lecture	<p>Theme: Ige-Mediated Immunity and Allergy</p> <p>Outline the mechanism of allergy development (Coombs classification).</p>	Shigeharu Ueki	基礎棟第2講義室
15	9 / 27 (Tue)	3-4	Lecture	<p>Theme: Fails of the Body's Defenses</p> <p>Outline primary immunodeficiency diseases and acquired immunodeficiency syndrome (AIDS).</p>	Satoshi Ishii	基礎棟第2講義室
16	9 / 27 (Tue)	5-8	Lecture	<p>Theme: Transplantation of Tissues and Organs</p> <p>Explain the pathophysiology of rejection and graft-versus-host disease after organ transplantation.</p> <p>Explain the types of immunomodulators and their mechanisms of action.</p>	Satoshi Ishii	基礎棟第2講義室
17	9 / 27 (Tue)	9-10	Lecture	<p>Theme: Disruption of Healthy Tissue by the Adaptive Immune Response</p> <p>Outline the mechanisms that maintain immune tolerance and the development of autoimmune diseases due to its disruption.</p>	Satoshi Ishii	基礎棟第2講義室

Topics and Contents of class, Course Objectives						
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18	10 / 24 (Mon)	1-10	Lecture	<p>Theme: Parasitology</p> <p>Explain the classification and morphological characteristics of protozoa and helminths.</p> <p>Explain the life history of parasites, their infection pathways and their significance in epidemiology of infection.</p> <p>Explain the characteristics of biological defense of the host infected with parasites.</p> <p>Describe the major parasitic diseases of various organs and systems.</p> <p>Outline the diagnosis, treatment and prevention of parasitic diseases.</p>		基礎棟第 2 講義室