<table>
<tr><td>講義ユニット名
Title of Lecture</td><td colspan="2">Immunology</td><td>所属科目名
Title of Course</td><td>Biological Responses</td></tr>
<tr><td rowspan="2">講義ユニット責任者
Responsible Instructor</td><td>KANNO MASAMOTO</td><td>所属
Affiliation</td><td colspan="2">Immunology (内線　Ext. Number 5175)</td></tr>
<tr><td></td><td>メール
E-mail</td><td colspan="2"></td></tr>
<tr><td rowspan="2">講義ユニットコーディネーター
Lecture Coordinator</td><td>KANNO MASAMOTO</td><td>所属
Affiliation</td><td colspan="2">Immunology (内線　Ext. Number 5175)</td></tr>
<tr><td></td><td>メール
E-mail</td><td colspan="2"></td></tr>
<tr><td>授業方法
Lesson Style</td><td colspan="4">Lecture-centered course, scheduled to provide PDF-handouts via Bb9 system. (May include discussions on “Case-Study”, if time permits.) Experiment-centered practical training and onsite training.</td></tr>
<tr><td>概要
Overview</td><td colspan="4">(1) Study the conceptual changes of the immune system, (2) Understand the immune responses from the initiation and recognition to its terminal response, (3) In the parasitology course, students will study the morphology, life history, clinical symptoms, laboratory diagnosis methods, treatment methods, and other relevant knowledge.</td></tr>
<tr><td>講義ユニットの到達目標
Academic Goals</td><td colspan="4">“Immunology” (Kanno)
Give a conceptual changes in immune system (from biophylaxis to self-nonself desicrimination then to a new theory of 21st century immunologya).
Give an outline of pathogen-sensing systems of the innate immune system.
Explain nonspecific defense mechanisms of living organisms.
Give an outline of the Complement system, NK-cell, and Innate Lymphoid Cell system of the innate immune system.
Explain the roles of the immune system, a specific defense mechanism.
Explain humoral and cell-mediated immune responses.
Explain the characteristics (specificity, diversity, tolerance, and memory) of the immune system.
Explain tissues and cells that are involved in immune responses.
Explain the establishment and failure of the immunological tolerance.
Explain the difference between innate and acquired immunity.
Explain the differences in structures and antigen presentation pathways between MHC class I and class II molecules.
Explain the structures and reaction patterns of immunoglobulins and T cell antigen receptors.
Explain the generation of diversity on immunoglobulins and T cell antigen receptor</td></tr>
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	genes locus and its gene rearrangement. Explain the regulation of B-cell and T-cell development and leukemia. Give an outline of major histocompatibility antigens (MHC) and antigen presentation system. Give an outline of the establishment of immunological tolerance. Give an outline of regulations on antigen receptor signal pathway. Explain the characteristics of representative cytokines and chemokines. Explain biological responses mediated by Th1, Th2, Th17 and Treg cells. Give an outline of the mucosal immunity system. Explain the immune responses to viruses, microbes, fungi and parasites. Give an outline of primary immunodeficiency syndrome and acquired immune deficiency syndrome (AIDS etc). Give an outline of immune tolerance and the autoimmune disease. Give an outline of the allergies (hypersensitivities) from Type I to IV. Give an outline of cellular mechanisms in cancer immunology. Explain biological responses (infection immunity) to pathogens. Explain the avoidance (resistance) of the immune system from pathogens. Give an outline of transplantation immunology and rejection response. Give an outline of bacteriological diagnosis and serological-diagnosis. Give an outline of agents that can control the immune system. Explain the development of a vaccine. Give an outline of the principle and method of flow cytometry. “Parasitology” (Inoue) Explain the classification and morphological characteristics of parasites and helminthes. Explain the life history, infection routes and infection epidemiological significance of parasites. Explain the characteristics of biological defense mechanisms of parasite-infected hosts. Explain the aggravation of opportunistic parasitic diseases and parasitic diseases. Explain major parasitic diseases of different organs. Explain zoonotic parasitic diseases. Give an outline of the diagnosis, treatment, and prevention of parasitic diseases. Explain major parasitic diseases (ascariasis, anisakiasis, and trematodiasis). Explain major protozoan infections (malaria, toxoplasmosis, and amebic dysentery). Give an outline of cryptosporidiosis, giardiasis, and echinococcosis.

講義日程 Class Schedule	See the attached schedule.
出席の取り扱い Class Attendance Policy	Attendance is taken using the Student Attendance Management System. A student whose attendance is less than a 50% of all the classes is not eligible for taking any makeup exams.
評価項目 Evaluation Item	Achievement level of goals (basic understanding and application of knowledge). Students must at least meet the requirements for “core curriculum-level understanding” and “a level high enough to pass CBT for Senior students.”
評価法 Evaluation Method	Examination is basically a written examination. The grading will be evaluated not only based on the examination but also positive attitude in classes. For details, ask the instructor in charge.
履修上のアドバイス Advice for Taking the Lecture	
推奨参考書 Recommended Reference Books	(Immunology) Textbook: Murphy K, Travers P, Walport M. eds. *Janeway’s Immuno Biology* 8th ed. Garland Science; 2012. (Use the most updated revision because this book is revised every two to three years.) Reference: Abbas AK, Lichtman AH, Pillai S. eds. *Cellular and Molecular Immunology* 7th edition. Elsevier; 2012 (Parasitology) Yoshida Y. *Zusetsu Jintai Kiseichugaku (Illustrated Human Parasitology)*. Nanzando Nakabayashi T, Sato, Araki, Tsuji. *Igaku Yoten Sosho Kiseichubyogaku (Clinical Parasitology)*. Kinpodo