Immunotechnology, KIM015
Studyguidelines 2009

Department of Immunotechnology
Lund University

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Course litterature

1) Janeways Immunobiology
   Authors: K Murphy, P Travers, M Walport
   Edition: 7ed
   ISBN 0-8153-4123-7
2) Hand-outs / lecture notes
3) Laboratory manuals

Reading Guidelines – 2009 + 7th edition

Section: Fundamental Immunology

Lectures: Immune system – introduction and summary
To be able to describe and outline
- the overall infrastructure and components of the immune system
- how the immune systems reacts to protect us against infectious agents and foreign substances.
- how the immune system can be utilized within biotechnological and biomedical applications and technologies

To read 1) Book: Chap. 1 / Chap. 2 / Chap. 10. pp. 421-424. 442-449.
2) Handouts

Lecture: A) The cells and organs of the immune system
To be able to describe and outline
- the lymphatic system and its various organs, and how these directs the immune recations depending on where the antigen was encountered.
- the development of the key players of the immune system, including B cells, T cells, and antigen presenting cells (APCs).
- the interplay between the various cells and organs of the immune system.

To read 1) Chap. 1 / Chap. 7 section 7.1
2) Handouts

Lecture: B) Antibodies, T cell receptor and MC
To be able to describe and outline
- the structure of antibodies, T cell receptors and major histocompatability molecules (MHC) on a genetic levels as well as a molecular level
- how the structure of these 3 molecules reflects their biological functions / properties

To read 1) Chap. 3 / Chap. 4 / Chap 5. / Chap 6. pp 227-244.
2) Handouts

Lecture: C) Antigen presentation and activation of T cells
To be able to describe and outline
- when, where and how antigens are presented to the adaptive immune system, focusing on T cells
- when, where and how T cells are activated and controlled

To read 1) Chap.1. sect. 1.19-20 / Chap. 3. sections 3.17-19 / Chap.5 sections 5.1-2, 5.4-10, 5.15 / Chap. 8 sections 8.0-4, 8.9, 8.11-19 / Chap. 10 sections 10.16-17
2) Handouts

Lecture: D) B cells and regulation of antibody production
To be able to describe and outline
- when, where and how B cells are activated and controlled (focusing on T cell dependent antigens)
- when, where and how antibodies are produced (and regulated)

To read 1) Chap. 7 sections 7.1, 7.6, 7.23, 7.24, 7.26, 7.27 / Chap. 9. sections 9.1-12 / Chap. 10 sections 10.10, 10.13-15.
2) Handouts

Lecture: E) Effector functions
To be able to describe and outline
- the effector functions that the immune system utilizes to eliminate any foreign antigens that have been recognized
To read 1) Chap. 2 / Chap. 4 pp. 160-166 / Chap. 8 pp. 323-325, 349-373. / Chap. 9 pp. 400-409. / Chap. 10 pp. 420-424, 439-442.
2) Handouts

Section: Technologies / Applications / Specific conditions

Lectures: **Antisera**
Hybridoma technology
Recombinant antibodies
Phage display I and II
Cell-based immunological techniques
Flow cytometry
Kinetic analysis
Antibody-based microarrays
Allergy/autoimmunity
Antibodies for cancer therapy
Large scale production of ....
Novel immunochemical detection technologies
Competitive vs non-competitive immuno assays
Immunoblot / immuno chromatography
Precipitation / agglutination analysis
Vaccination
To be able to describe and outline
- the theory behind the described technologies and how the immune system can be utilized to design, improve and explore these technologies for various applications
To read 1) Appendix 1 An immunologists toolbox (incl. only those technologies that are described during the course)
Chap. 15 sections 15.19-30
Allergy/Autoimmunity to be included
2) Handouts

Reading Guidelines – 2008 + 6th edition

Immunobiology: The immune system in health and disease.

CA Janeway et al.

6:e upplagan. 2005.
+ handouts and laboratory manual

A) Cells and organs of the immune system

Litteratur:
All chapter 1.
In chapter 7, you will find additional facts about the cells and organs of the immune system.

B) Antibodies, T cell receptors, and MHC molecules – structure and function

Chap. 3

Chap. 4

Chap. 5 sid 183-197

Chap. 6 sid 212-227.

C) Presentation of antigen and activation of T cells

Chap. 1 sid. 26-30

Chap 3.12-13

Chap. 5 introduction, 5.1,5.4-5, 5.8, 5.12-13, 5.15

Chap. 8.1-13

D) B cells and Regulation of Antibody production

Chap, 7.1-7.3, 7.17, 7.26-7.30,

Chap 8.6 , 9.1 - 9.11 , 10.10, 10.22-10.26

E) Effectorfunctions

Chap. 2: 55-75, 76-95

Chap 4: 156-158.

Chap 8: 319-320, 339-361.

Chap 9. 387-405.

Chap 10: 409-410, 429-430, 438.