



# BB2446 Immunologi 7,5 hp

Immunology

När kurs inte längre ges har student möjlighet att examineras under ytterligare två läsår.

## Fastställande

Kursplan för BB2446 gäller från och med VT19

## Betygsskala

A, B, C, D, E, FX, F

## Utbildningsnivå

Avancerad nivå

## Huvudområden

Bioteknik

## Särskild behörighet

## Undervisningsspråk

Undervisningsspråk anges i kurstillfällesinformationen i kurs- och programkatalogen.

## Lärandemål

At the end of the course, the student shall be able to:

- Describe the cells and organs of the immune system

- Present the structure and function of key molecules of the immune system such as the immunoglobulins, the major histocompatibility complex, T cell receptors, cytokines and others
- Show detailed understanding of the innate and acquired immunity
- Discuss immunogenicity of different antigens, antigen recognition and antigen processing and presentation
- Explain major processes in immunology such as
  - o T-cell activation, maturation, and differentiation
  - o Generation of the humoral immune response
  - o Cell-mediated immunity
  - o The action and regulation of the complement system
- Show fundamental understanding of various disease conditions such as autoimmunity, allergy, hypersensitive reactions, infectious diseases, and immunodeficiency diseases
- Describe the basis for vaccination and the challenges of transplantation
- Combine the knowledge of each addressed principle and be able to reason and discuss how to design a vaccine.
- In theory design an experiment to produce monoclonal antibodies with desired specificity

## Kursinnehåll

The course immunology intends to give an understanding of the parts and function of the immune system. The course also intends to give insight into different diseases and when the immune system malfunctions.

The course contains:

- Innate and adaptive immunity.
- Development of B-cells and T-cells.
- Clonal selection.
- Generation of diversity of T and B-cells.
- Antigen recognition of T lymphocytes and T-cell-mediated immunity.
- Humoral immunity (mediated by B cells and antibodies).
- MHC (Major Histocompatibility Complex)
- Antibodies (structure and function)

- T-Cell receptors (structure and function)
- Cell communication.
- The complement system
- When the immune system has malfunctioned: Autoimmunity, allergy.
- The body defence against infection.
- What happens when the immune system malfunctions.
- Allergy and allergic diseases.
- Autoimmunity and transplantation.
- How one can manipulate the immune system.

## Kurslitteratur

The Immune System, by Peter Parham, Fourth Edition, Garland Science. Any changes of the course literature will be announced on the course web page at least four weeks prior to the course start

## Examination

- TEN1 - Skriftlig tentamen, 7,5 hp, betygsskala: A, B, C, D, E, FX, F

Examinator beslutar, baserat på rekommendation från KTH:s handläggare av stöd till studenter med funktionsnedsättning, om eventuell anpassad examination för studenter med dokumenterad, varaktig funktionsnedsättning.

Examinator får medge annan examinationsform vid omexamination av enstaka studenter.

## Etiskt förhållningssätt

- Vid grupparbete har alla i gruppen ansvar för gruppens arbete.
- Vid examination ska varje student ärligt redovisa hjälp som erhållits och källor som använts.
- Vid muntlig examination ska varje student kunna redogöra för hela uppgiften och hela lösningen.