



DEPARTMENT OF MEDICINE, HUDDINGE

H7F6062, Lipid and Lipoprotein Metabolism: Basal Aspects and Clinical Significance, 1.5 credits (hec)

Lipid och lipoprotein metabolism: basala aspekter och klinisk relevans, 1,5

högskolepoäng

Third-cycle level / Forskarnivå

Approval

This syllabus was approved by the The Committee for Doctoral Education on 2025-02-18, and is valid from autumn semester 2025.

Responsible department

Department of Medicine, Huddinge, Faculty of Medicine

Prerequisite courses, or equivalent

No prerequisite courses, or equivalent, demanded for this course.

Purpose & Intended learning outcomes

Purpose

This week-long course offers a dynamic learning experience in the field of lipid metabolism research. Blended learning with self-study and subsequent lectures, group seminars or discussions (flipped classroom), students will progressively deepen their understanding of both basic and clinical aspects of lipid metabolism. The course aims to provide a comprehensive knowledge of lipid och lipoprotein metabolism in order for the students to be able to apply established models and methods in their own research.

Intended learning outcomes

Upon successful completion of this course, students will be able to:

1. Comprehensively explain the intricate processes of lipid and lipoprotein metabolism.
2. Critically analyze diseases associated with lipid metabolism disorders

3. Evaluate current and emerging approaches for preventing and treating lipid disorders.
4. Analyze promising new therapies in development, including gene-based and targeted molecular approaches.
5. Suggest which advanced models and laboratory methods could be used in lipid metabolism research.

Course content

The course provides a comprehensive exploration of lipid and lipoprotein metabolism, offering an in-depth examination of fundamental and advanced scientific concepts. Participants will investigate the world of lipid classes, metabolic pathways, and regulatory mechanisms, encompassing detailed studies of lipoprotein structures, cholesterol metabolism, and enzymatic processes. The curriculum covers critical areas including lipoprotein receptor functions, cholesterol biosynthesis, cellular homeostasis, and the complex interactions between various metabolic components. Students will explore genetic disorders of lipid metabolism, analyzing conditions such as familial hypercholesterolemia and the molecular mechanisms underlying lipid-related diseases. The course extensively examines the roles of key enzymes like lipoprotein lipase, hepatic lipase, and their regulatory pathways, while also addressing the impact of dietary interventions on metabolic processes. Participants will gain insights into clinical conditions including atherosclerosis, obesity, diabetes, and gallstone disease, understanding the relationships between lipid metabolism and these health challenges.

Forms of teaching and learning

The course is comprised by self-studies, lectures, group seminars, and clinical case group discussions.

Language of instruction

The course is given in English

Grading scale

Pass (G) /Fail (U)

Compulsory components & forms of assessment

Compulsory components

All lectures and the work done as a group are compulsory and will be a significant basis for the written examination. A missed lecture or a missed group work must be compensated in accordance with instructions of the organizers.

Forms of assessment

The intended learning outcomes of the course will be assessed by a written examination on the last day of the course.

Course literature

All information presented at the lectures (oral and handouts) are part of the course material. Furthermore, scientific articles will also be recommended and distributed to the students