



ЦЕНТЪР ЗА ОБУЧЕНИЕ – БАН

1000 София
ул. „Сердика“ № 4
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Basic Information:

Course Title: **FUNDAMENTAL AND REPRODUCTIVE IMMUNOLOGY**

Lecturer: assoc. prof. Dr Tanya Dimova, Institute of Biology and Immunology of Reproduction

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Total Teaching Hours: 30

Annotation (up to 150 words)

Immunology is a rapidly developing interdisciplinary biological science that studies the immune system and the principles of the body's defense against cells or their products carrying foreign genetic information, as well as modified own cells. From an immunological point of view, the fertilization, implantation and development of a semiallogeneic fetus carrying partly foreign genetic information is a real paradox, still unresolved by reproductive immunology. Contrary to the widely accepted paradigm that the immune system recognizes and reacts against foreign antigens, during pregnancy the maternal immune system accepts and supports the development of the embryo/fetus, despite the fact that half of its genes (inherited from the father) are foreign to it. On the other hand, the fetus develops its own immune system that tolerates maternal tissues. Reproductive immunology is a medical science that studies the interaction with immune regulation of reproductive processes such as gametogenesis and fertilization, implantation and maternal immune tolerance to the fetus, fetal immunity, as well as infertility, recurrent miscarriages, and pregnancy complications resulting from impaired immune regulation.

Course content (brief description by topics or modules)

Topic / Module 1: Immune organs and cells.

Topic / Module 2: Types of immunity. Kinetics of the immune response.

Topic / Module 3: Reproductive immunology – subject, roots and the role of Bulgaria.

Topic / Module 4: Female reproductive system and oogenesis.

Topic / Module 5: Male reproductive system and spermatogenesis.

Topic / Module 6: Sperm maturation – capacitation and acrosome reaction.

Fertilization – molecular and immunological aspects.

Topic / Module 7: Hormonal regulation of the sexual cycle and preparation of the endometrium for implantation and pregnancy. Immunological aspects of decidualization. Implantation and placentation – types. Immunological function of the placenta.

Topic / Module 8: Pregnancy as a paradox and signals for its recognition. In vitro modeling of implantation/placentation.

Topic / Module 9: Immunologically-related infertility. Antisperm and antiovarian antibodies. Cell-mediated immune dysfunction.

Topic / Module 10: Immunocontraception.



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Teaching and assessment methods

The course is a series of lectures on both fundamental and reproductive immunology. Assessment is by exam on the lecture material.

Competencies acquired as a result of training (3–5 points)

Doctoral students will gain advanced knowledge in the field of reproductive immunology, as well as be introduced to the latest research and concepts on the molecular and cellular mechanisms of innate and acquired immunity and how they influence the reproductive process.

Literature:

Immunology, Short Course, Second Edition, Eli Benjamini, Sidney Leskovitz
Compendium of Immunology, Ivan Kehayov, Stanimir Kyurkchiev
History of Reproductive Immunology and the Contribution of Bulgaria, Rayna Georgieva
Immunology of Pregnancy, Gil Mor

Additional information (optional) (e.g., special requirements, laboratory equipment, prior knowledge)

The offered course is intended for doctoral students working in the field of biological sciences with basic knowledge of the structure and function of the immune system.