Study program: MASTER IN BIOLOGY – Reproductive Biology

Study level: Master's studies

Course title: REPRODUCTIVE ENDOCRINOLOGY

Course code: DMB017

Teacher: Tatjana Kostic PhD, Full Professor; Nebojša Andrić PhD, Assistant Professor

Course status: obligatory

ECTS: 6

Requirements: basic medical or animal physiology

Course objectives

The aim of this course is to study the fundamental mechanisms of the reproductive endocrinology and the interconnectedness of different signaling pathways that control reproduction.

Learning outcomes

After successfully completing the course, students should be able to desribe the mechanisms of neuroendocrine control of reproductive axis, reproductive signaling molecules, as well as the endocrine function of the reproductive system at different ages.

Syllabus

Theoretical instruction

Signaling in reproduction. Neuroendocrinology of reproduction. Gonadotropins, prolactin and their receptors. Sinthesis and metabolism of steroid hormones. Neuroendocrine basis of pyberty. Endocrine regulation of the ovarian function. Endocrine regulation of the testicular function. Endocrinology of pregnancy, labour and lactation. Endocrine basis of puberty. Stress and reproduction. Circadian clock in reproductive physiology.

Other forms of teaching (Practical laboratory)

Experimental animals and experimental models (hypogonadal-hypogonadism, androgenization, aging, psychophysical stress, blockade of different receptors (androgen, estrogen, adrenergic, glucocorticoid)). The experimental surgical procedures (castration, ovariectomy, pinealectomy). The reproductive organs of the female and male rats. Oestrus cycle of female rats. Isolation and purification of testicular Leydig cells and investigation of their's functionality. Analysis of transcriptional profiles of specific markers of spermatozoids and Leydig cells. Isolation and functional analysis of the ovarian granulosa cells from Cre-/Cre+; *Cyp11a1,Insr/Igf1r* knock-out mice. Measurement of cAMP in Leydig and granulosa cells - GloSensor-HEK293. RIA analyses of testosterone and estradiol. Radio-receptor analyses of androgen and estrogen receptors.

Literature

(1) Yen & Jaffe. *Reproductive Endocrinology, Physiology, Pathophysiology and Clinical Management*. Elsevier 2014.
(2) Chedrese PJ. *Reproductive Endocrinology: A molecular approach*. Springer 2009
(3) Jonson M.H. *Essential reproduction.* Blackwell 2007.
(4) Review papers from the field of reproductive endocrinology.

Weekly teaching load

Lectures: 2	Teaching laboratory:	Other forms of teaching: 4	**Research activities**	Other:

Teaching methods

Lectures, consultations, Other forms of teaching (laboratory exercises, participation in the planning and performing of the experiments, as well as in the analysis of results).

Evaluation of knowledge (maximum score 100)

Pre-exam obligation	Points	**Final exam**	Points
Student engagement in lectures		Written exam	
Seminar		Oral exam	70
Tests			
Practical laboratory	30		