

Doctoral School: **Biology Doctoral School**
Doctoral Program: Neuroscience and Human Biology

Subject code: **BIO/7/52**

Subject title: **Neuroendocrinology L**

Teacher and Neptun code: **Dr. Kovács Krisztina (DO23V6)**

Credits: 4

Class hours: 2 hours/week, lecture

Aims of the course

The aim of the lecture is the description of hormonal substances produced by the nervous system and their effects.

Contents of the course

1. Introduction to neuroendocrinology

Neurosecretory neurons, morphological basis of neurosecretion, neuroendocrine regulation

2. Neuroendocrine regulation of the anterior lobe of the pituitary gland

Portal circulation of the pituitary gland, regulation of ACTH, LH, FSH, GH, TSH, prolactin

3. Hormones of the posterior lobe of the pituitary gland and their regulation

Vasopressin and oxytocin secretion, neurosecretory coupling

4. The hypothalamic-pituitary-adrenal axis

ACTH, glucocorticoids, mineralocorticoids, nuclear receptors

5. The hypothalamic-pituitary-gonadal axis

Hypothalamic control of LH and FSH secretion by the pulse generator, sex steroids, endocrine disruptor compounds

6. The hypothalamic-pituitary-thyroid axis

TRH secretion, synthesis and conversion of thyroid hormones, thyroid hormone receptors

7. Regulation of growth hormone secretion

Synthesis, secretion and effects of GHRH and somatostatin. Peripheral targets of growth hormone

8. Regulation of prolactin secretion

Hypothalamic factors influencing prolactin secretion

9. Intermediary lobe of the pituitary gland and neuroendocrine aspects

The role of interstitial peptides in physiological regulation

10. Nervous system regulation of hypothalamic areas

Afferent and efferent connections of the hypothalamus. Neuroendocrine immunology Neuroendocrine abnormalities in psychiatric disorders

11. Complex neuroendocrine regulation of stress response and adaptation

The concept and types of stress, the coordination of neuroendocrine and autonomic stress response

12. Neuroendocrine regulation of metabolism

Orexigenic and anorexigenic neuropeptides, humoral regulation of food intake, adipose tissue hormones

13. Neuroendocrinology of reproduction, childbirth and offspring care

Cycle regulation, contraception, lactation, attachment, maternal behavior regulation

14. Summary, consultation and written exam

Requirements

Submit a written case report study during the term.

Written exam, essay questions.

Literature

lecture slides are available

