

Subject card

Subject name and code	Neuroendocrinology, PG_00211075						
Field of study	Medical Biology						
Date of commencement of studies	October 2026		Academic year of realisation of subject			2027/2028	
Education level	Bachelor's studies		Subject group			Obligatory subject group in the field of study Subject group related to scientific research in the field of study	
Mode of study	full-time studies		Mode of delivery			at the university	
Year of study	2		Language of instruction			Polish	
Semester of study	4		ECTS credits			1.0	
Learning profile	academic		Assessment form			credit	
Conducting unit	Laboratory of Neurophysiology and Neurochemistry -> Department of Animal and Human Physiology -> Faculty of Biology -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Ziemowit Ciepielewski				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	0.0	15
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	15		2.0		8.0	25
Subject objectives	To learn the basics of the neurohormonal system (cellular, organ and organismal levels). Understanding the role of the neurohormonal system in the systemic regulation of the organism (feedback mechanism). To learn about the role of the neurohormonal system as a basic and essential system in the regulation of various forms of behaviour (gastrointestinal, defence, sexual and exploratory drives). To learn about pathologies and psychopathologies related to and/or resulting from dysfunction of neurohormonal systems.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[BIOLMEDL3_W04] has advanced knowledge of medical biology and its latest developments, and is familiar with and understands issues related to the role of medical biology in human health care	The student is familiar with the professional vocabulary of neuroendocrinology and neurobiology.	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion
	[BIOLMEDL3_K01] is aware of the importance of lifelong learning and keeping up to date with developments in medical biology and related disciplines, and applies this knowledge to the planning and design of professional activities	The student seeks to further his/her knowledge of neuroendocrinology in the broadest sense.	[SK1] oral statement/conversation/ discussion
	[BIOLMEDL3_W02] has an advanced knowledge and understanding of the structure of the animal or human body, processes and functional relationships at the cellular, tissue, organ and organismal levels, as well as physiological and biochemical processes at an advanced level, and the mechanisms of the pathophysiology of diseases, and explains their relationship with behaviour and the organism's	The student knows the structure of the neurohormonal system, neurohormonal axes, and understands basic homeostatic mechanisms. He/she knows the basic mechanisms of regulation of metabolism, water-electrolyte balance and social behaviour, including reproduction and stress response.	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion
	[BIOLMEDL3_W07] has advanced knowledge of methods for assessing health status, as well as the symptoms and causes of selected disorders and pathological changes; understands the basics of a healthy lifestyle and is able to explain and promote them	The student is familiar with the basic symptoms of neuroendocrine diseases and knows the basic principles of prevention of these diseases.	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion
	[BIOLMEDL3_U06] is able to identify problems corresponding to the needs of an individual and a social group and to undertake diagnostic, preventive and educational activities appropriate to the profession of medical biologist	Students will be able to identify basic problems related to the field of neuroendocrinology as well as undertake diagnostic and educational measures.	[SU1] oral statement/conversation/ discussion [SU4] test/exam - oral or written
Subject contents	The internal environment of the body and its role in the regulation of cell and organ reactivity. The concepts of allostasis and homeostasis. Neurohormonal coupling as a basic system of systemic integration. Cellular receptors and modes of signal transduction into the cell (G proteins, cyclic AMP, calcium cascade). Types of ligands in the neurohormonal system. Vasopressin and oxytocin -hormones of the hypothalamus. The hypothalamic-pituitary system. Hypothalamic hormones controlling anterior pituitary lobe function. Hormones of the anterior and posterior lobe of the pituitary. Adrenal medullary function, physiological effects of catecholamines. Activity of the adrenal cortex and the action of its hormones steroid hormones. Role of medullary and adrenal cortex hormones in adaptive responses. Endocrine function of the thyroid gland, parathyroid glands, sex glands, pancreas and pineal gland. Anabolic and catabolic hormones. Involvement of neurohormonal axes in various forms of behaviour. Endogenous opioids. Endocrine disorders (including the effects of over- and under-activity of individual glands) in selected disease entities.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	test	51.0%	100.0%
Recommended reading	Basic literature The lecture is the author's own study of the neurobiology and physiology of stress based on many years of study of the source literature. Literature required for final course credit (passing the exam): 1. Wilkinson M., Brown R.E., 2015 An Introduction to Neuroendocrinology. Cambridge 2. Murray R. K. et al, 2015. Harper's Biochemistry. Wydawnictwo Lekarskie PZWL, Warsaw 3. Solomon E. P., Berg L. R., Martin D. W., Villee C. A., 2012 (reprint). Biology. Oficyna Wydawnicza Multico, W-wa 4. Fink G., Pfaff D., Levine J. Handbook of Neuroendocrinology, 2012, Academic Press, Elsevier. Soreq H., Friedman A., Kaufer D. Stress - From Molecules to Behavior: A Comprehensive Analysis of the Neurobiology of Stress Responses, 2010, Wiley-Blackwell		

	Supplementary literature	1 Melmed S., Polonsky K. S., Larsen P. R., Kronenberg H. M., 2016 Williams Textbook of Endocrinology. Elsevier - Health Sciences Division 2 Nussey S. S., Whitehead S. A., 2013. endocrinology. CRC Press 3. Contrada RJ, Baum A. The Handbook of Stress Science: Biology, Psychology, and Health, 2012, Springer 4. Pfaff D., Joels M. (eds) Hormones, Brain and Behavior, 3rd Edition, 2016, Academic Press, Elsevier. Materials (review papers in English and Polish) provided by the instructor or suggested by students
	eResources addresses	
Example issues/ example questions/ tasks being completed	1. vasopressin and oxytocin 2. growth hormone, prolactin, IGF-1- regulation of secretion and function 3. thyroid axis and thyroid dysfunction 4. hypothalamic-pituitary-adrenal axis. Role in the stress response. 5. stress definition, mechanism, effect on the body 6 Brain-gut axis 7.adrenal diseases.	
Work placement	Not applicable	

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