

## **OPINION**

**by Assoc. Prof. Dr. Irina Ilieva Pashalieva, MD, Ph.D.**

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**Faculty of Medicine, Medical University - Varna**

**Regarding:** a procedure for occupying the academic position "professor" in the field of higher education 4. Natural sciences, mathematics and informatics, professional direction 4.3 Biological sciences, speciality Physiology for the needs of the Department "Physiology and Pathophysiology", Sector of Physiology, Faculty "Medicine" of Medical University "Prof. Dr. P. Stoyanov" - Varna, announced in the State Gazette, No. 102 of 23.12.2022.

By Order No. R-109-131/22.02.2023 of the Rector of the Medical University - Varna, I have been designated as a member of the Scientific Jury. According to Protocol No. 1/06.03.2023 of the first meeting of the Scientific Jury, I am appointed to prepare an opinion on the procedure. One candidate participated in the competition - Assoc. Prof. Dr. Margarita Stefanova Velikova, MD, Ph.D.

The candidate has presented all necessary documents for participation in the competition, according to the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria, the Rules for its Application and the Rules for the Development of the Academic Staff of the Medical University of Varna.

### **Professional Development**

Dr. Margarita Velikova obtained the educational and qualification degree "Master" in specialty "Medicine" at MU-Varna in 1988; from 1991 she started working as an assistant professor in the Department of Physiology. In 1996 she majored in "Physiology"; in 2010 successfully defended a dissertation on the topic "Behavioral responses induced by vasoactive intestinal peptide introduced into the hippocampus of rats with an experimental model of depression" and obtained the educational and scientific degree "Doctor" in the scientific specialty "Animal and human physiology". Dr. Velikova successively passed through the academic positions of "assistant", "senior assistant" and "chief assistant". In the period 2010-2012, she was an administrative assistant in the Department of Physiology. In 2012, after winning a competition, she held the academic position of "associate professor" at the Department of Physiology and Pathophysiology, MU-Varna. In the period 2012-2019, she was Head of the Sector of Physiology; from 2016 - a group coordinator of the third course of medical students. From 2018 to the present, she is Head of the Department of Physiology and Pathophysiology.

### Research activity

The scientific work of Assoc. Prof. Dr. M. Velikova, can be described as up to date, with international recognition, and with research data being published in prestigious medical journals. She presented in the competition **53** scientific publications, **32** of which were published in journals indexed in Web of Science and Scopus databases and **21** articles published in peer-reviewed journals. 10 articles are included as an equivalent number of a habilitation work (group B4. - 174 points). Of these, 1 article was published in a journal with in quartile Q1; 4 articles in Q2; 3 articles in Q3; 2 articles in Q4. The total impact factor of the journals in which these articles were published is **12.068**. In addition, there are **14** publications in foreign scientific journals (12 of them indexed in WOS and Scopus), and **39** in scientific journals in Bulgaria (20 of them indexed in WOS and Scopus) (group G7 – 349 points). In this group, 2 articles are in quartile Q1; 7 in Q2; 9 in Q3; 2 in Q4. **21** publications were published in journals with an impact factor (IF), and **9** publications in journals with an impact rank (SJR). There are 23 full-text publications in scientific journals and collections beyond the minimum scientometric requirements for holding the AD "professor", 2 of which are referenced in WOS. The number of participations in scientific forums presented in the competition is **55**. The total number of citations in scientific journals, indexed in WOS and Scopus databases is **116** (group D11 - 232 points); the total impact factor of the journals in which the candidate has publications is **57.754**.

Assoc. Prof. M. Velikova is a supervisor and co-supervisor of two doctoral students (group E13 - 75 points), participates in national and educational scientific projects (group E14 - 30 points) and in the writing of teaching aids (group E20 - 54.66 points), (total for group E - 159.66 points). From the data presented in the academic reference, it can be seen that the scientific production of Dr. M. Velikova fully corresponds, and in some groups of indicators significantly exceeds the criteria of the Ministry of Education and Culture for the occupation of AD "professor" in MU-Varna (Table 1).

**Table 1. Compliance with the scientometric requirements of PRAS of MU-Varna for occupying the academic position "professor"**

Group of indicators	Minimum scientometric requirements	Data from the academic reference
A	50	50
B	100	174
G	200	349
D	100	232
E	150	159,66
Total points	600	964,66

## Scientific contributions

The main scientific interests of Assoc. professor M. Velikova are in the field of experimental neurophysiology. Together with a team from the Institute of Neurobiology at the Bulgarian Academy of Sciences, she actively participated in the research on the role of neuropeptides and endocannabinoids in the regulation of brain processes and in some behavioral reactions (exploratory and motor activity, anxiety, pain, learning, memory). Mastering the skills of working with a complex stereotaxic technique on a rats with bilateral olfactory bulbectomy (OBX) as a model of depression and conducting behavioral tests on experimental animals enabled her to achieve substantial scientific results. The relevance of the studied problems is supported by the fact that neuropeptides and endocannabinoid system (ECS), as regulators of physiological processes, have a significance in the field of physiology, pathophysiology, and medical practice. The obtained data on the involvement of neuropeptides and ECS in the pathogenesis of socially significant diseases such as depression, Alzheimer's disease, Parkinson's disease, mood and anxiety disorders increase the interest in their potential application as therapeutic agents. The following original scientific contributions stand out in these studies:

**I.** Contributions of neurophysiological studies on the involvement of the brain endocannabinoid system (ECS), renin-angiotensin system (RAS) and brain vasoactive intestinal peptide (VIP) in the mechanisms of the depressive-like state induced by bilateral olfactory bulbectomy (OBH) of rats.

**II.** Contributions related to the study of the lateralization of behavioral responses of brain structures (hippocampus) involved in the depressive-like state upon administration of neuropeptides (VIP, Ang II) and their receptor antagonists.

**III.** Studies related to the modulation of the activity of the hippocampal renin-angiotensin system (RAS) and the established effects on behavioral responses in rats are of a contributing nature.

**IV.** Contributions related to the study of the effects of hormones of the hypothalamic-pituitary-thyroid (HHT) hormone axis on hemostasis and fibrinolysis in rats.

**V.** Contributions related to the assessment of the mental health of medical students and the reactivity of the human organism to stress.

For the first time studies have been conducted on the involvement of the hippocampal neuropeptides Ang II, VIP and their receptors in behavioral responses in rats with the OBX model; new data have been provided on hemispheric asymmetry in the behavioral responses of rats with a depressive-like state, after microinjection of Ang II, VIP and their receptor antagonists into the CA1 hippocampal area. For the first time, the effects of inhibition of hippocampal AT1 receptors (uni- and/or bilateral) on exploratory activity, anxiety-like state, learning and memory in rats have been investigated and an asymmetry in behavioral responses has been demonstrated. Data are

provided about the modulatory effects of endocannabinoid CB1 ligands (acute and subchronic administration) on some behavioral reactions in rats with olfactory bulbectomy.

The research work carried out by Prof. M. Velikova significantly contributes to revealing the physiological role of neuropeptides, endocannabinoids and their receptors in the control of behavioral reactions and provides new data to clarify their potential involvement in the pathophysiological mechanisms of the depressive state. The obtained results enrich our knowledge and support the overall understanding of the role of neuropeptides and ECS in brain functions, as well as in the development of neurological and psychiatric disorders.

### **Teaching and administrative activity**

Assoc. Prof. M. Velikova has 33 years of experience in the specialty and over 31 years of teaching experience in the Department of Physiology, and subsequently - Sector of Physiology at the Faculty of Medicine, MU-Varna. Her academic workload over the past five years has been very high (an average of 619 academic hours/year). Dr. M. Velikova has developed curricula for training students from the specialties "Medicine" - English-language (EL) training and pharmacy (EL), "Dental Medicine" - Bulgarian-language (BL) and EL training, and for the preparation of doctoral students in the "Human Physiology" doctoral program; gives lecture courses in physiology for students of the specialties "Medicine" (EL), "Dental medicine" (EL, BL), "Pharmacy" (BL), "Nurse", "Midwifery", etc. In addition, she conducted practical exercises for students from the specialties "Medicine" and "Dental Medicine" (EL, BL), Pharmacy (BL), "Nurse", "Midwife", etc.

Assoc. Prof. M. Velikova is a scientific supervisor of three doctoral students in the doctoral programs "Physiology" and "Pathophysiology", two of whom obtained the degree "Doctor"; as well as a supervisor of two foreign graduates to obtain "Master" degree in specialty "Public Health" and a supervisor of two specialists in physiology. She is an author and co-author in the writing of 8 study aids for students of medicine, dentistry and pharmacy for Bulgarian and English language programs.

### **Expert activity**

Assoc. Prof. M. Velikova actively participates in scientific projects as a researcher (three projects) and chief researcher (one project). In two of the projects, scientific cooperation was carried out between MU-Varna and Institute of neurobiology, Bulgarian academy of sciences; another one was of MU-Pleven. She was also a reviewer of four scientific projects of research teams from MU-Varna, MU-Plovdiv and MU-Pleven and a reviewer of scientific articles for journals (Scripta Scientifica medica, Archives of Depression and Anxiety, Acta Neurobiologiae Experimentalis), the latter with an impact factor, referenced in WOS and Scopus. In 2019, she participated in teaching mobility in the "Erasmus+" program at the University of Messina, Italy. Assoc. Prof. M. Velikova is a member of international and national scientific and professional organizations, councils and commissions, among them: Bulgarian Medical Union, Bulgarian Society of Physiological Sciences, Federation of European Physiological Societies (FEPS), Union

of Scientists - Varna, Program Board of the Faculty of Medicine, MU-Varna. She is also a member of the examination committee for holding colloquiums of physiology majors, at MU-Varna and of the state examination committee in physiology.

### **Conclusion**

The materials and evidences presented by Dr. Velikova for participation in the competition reveal her active and valuable research activity, as well as educational and teaching work, significantly exceeding the minimum scientometric requirements for occupying the academic position "professor". Assoc. Prof. M. Velikova is a teacher with a rich professional biography, excellent training and many years of experience, she is also highly respected by colleagues and students; her scientific activity is appreciated at home and abroad. Dr. Velikova contributes significantly to the career development of the assistants from the Department of physiology and pathophysiology. With her research work she developed a fruitful and long-term cooperation of MU- Varna with the Institute of Neurobiology, BAS, as well as with other medical universities. The quality and volume of her scientific production, as well as her active participation in teaching physiology to students in English- and Bulgarian-language programs, her great administrative and expert commitment, her precision and high standards in all activities give me reason to give a **positive assessment** and confidently propose to the respected members of the Scientific Jury Assoc. Prof. Dr. Margarita Stefanova Velikova, MD, Ph.D to be elected to occupy the academic position "professor" in the field of higher education 4. Natural sciences, mathematics and informatics, professional direction 4.3 "Biological sciences", specialty "Physiology" for the needs of the Department of Physiology and Pathophysiology, Sector "Physiology", MU-Varna.

21.04.2023

  
/Assoc. Prof. Irina Pashalieva, MD, Ph.D/