

R E V I E W

from: Prof. dr. Anna Naydenova Tolekova, PhD

director of Medical college, Trakia university

subject: competition for “Professor”

field of higher education: 4. Natural sciences, mathematics and informatics

professional direction: 4.3. Biological sciences

scientific specialty: "Physiology",

In the competition for 'professor', announced in SG no. 102/23.12.2022 for the needs of the Department of Physiology and Pathophysiology at the Faculty of Medicine of the Medical University of Varna, documents were submitted by the only candidate, Dr. MARGARITA STEFANOVA VELIKOVA, associate professor at the same department.

1. General presentation of the received materials

The candidate Assoc. Prof. Dr. Margarita Stefanova Velikova presents the complete set of materials, which is in full compliance with the Law on the Development of the Academic Staff in the Republic of Belarus, the Regulations for the Implementation of the Law and the Regulations for the Development of the Academic Staff at the University of Medicine, Varna.

2. Biographical data of the candidate

The candidate graduated with a master's degree in medicine in 1988 at VMI, Varna. She began working as a resident in the tubsanatorium in the city of Omurtag, where she worked until 1990. In 1991, after a successful presentation at a competition, she began her teaching career at the University of Varna. In 1995, she acquired the specialty "Physiology". Since 2006, she has been enrolled in a free doctoral program at the department. In 2010, she successfully defended his doctoral thesis on "Behavioral responses induced by vasoactive intestinal peptide introduced into the hippocampus of rats with an experimental model of depression". In 2012, she held the academic position of "associate professor" in the specialty of physiology at the department, and in 2018 she became the Head of the Department of "Physiology and Pathophysiology".

Velikovaa administered, as coordinator, the Public Health-Master Program training, implemented by MU-Varna and Casa college, Cyprus (2012-15).

3. General characteristics of the applicant's activity

Educational activity

The educational and teaching activity of the candidate covers all three degrees of study - bachelor's, master's and doctoral.

She conducts lecture courses in physiology to students from the three main master's degrees, namely "Medicine" - English-language training; "Dental medicine" - both English- and Bulgarian-language training and "Pharmacy" - Bulgarian-language training. She also participates in the training of doctors by presenting lectures on selected physiological topics. She gives lectures to students from the "Nurse" and "Midwife" specialties.

Develops the physiology curricula of the specialty "Medicine" in English-language education and of "Dental Medicine" in both types of education. I would also like to acknowledge her contribution to the development of PhD programs for PhD students in Human Physiology.

Conducts practical classes for students from "Dental medicine" specialties - English and Bulgarian language training; "Medicine" and Pharmacy - Bulgarian-language training, as well as for the bachelor's degrees "Nursing"; "Midwife" and "Rehabilitator".

Her rich experience as a teacher is reflected in the 8 study manuals she published as a co-author/author for students of medicine, dentistry and pharmacy for English and Bulgarian language courses. She is the supervisor of 3 doctoral students, 2 of whom have defended their degrees.

Research activity

Assoc. Prof. Stefanova's research activity is mainly devoted to current issues related to some neuropeptides. Its subject matter is divided into 3 main research directions:

I. The main experimental neurophysiological studies have focused on three hormonal brain systems, namely the endocannabinoid system, the renin-angiotensin system, and the brain vasoactive intestinal peptide. They are very well represented in the hippocampus, significantly affect brain functions, and are relevant to the development of a depressive-like state modeled by bilateral olfactory bulbectomy in rats. Related to this are studies of the effect of administration of angiotensin II, vasoactive intestinal peptide, and endocannabinoid ligands on the lateralization of behavioral responses of brain structures such as the hippocampus and amygdala that are relevant to the depression model. At the same time, Assoc. Prof. Stefanova also studied the role of the hippocampal renin-angiotensin and brain endocannabinoid systems

on the behavioral reactions of rats. For the first time, it was established that after bulbectomy and the development of a depressive-like state, subchronic stimulation of CB1-type receptors improves memory and learning disorders, while inhibition leads to their deepening. I agree with the applicant's contention that this is evidence for the role of endocannabinoid system activity in behavioral response disorders. The effects of acute and subchronic activation and subchronic inhibition of CB1 receptors on the anxiety-like state, impaired pain sensitivity, motor activity and habituation were differentiated.

The candidate has conducted extensive studies on the function of AT1 receptors located in the hippocampus using the effects of their specific blocker losartan. She reports for the first time that their inhibition has a beneficial effect and suppresses motor activity, while simultaneously reducing anxiety. At the same time, its injection into the CA1 field has a beneficial effect on the resulting learning deficits resulting from the bulbectomy. These data prove the importance of AT1 receptors in the development of the depressive-like state, as well as the possibility provided by the use of their antagonists for the treatment of the disease. In addition to this, Prof. Velikova found that Angiotensin II introduced into the CA1 field of the hippocampus differentially affects only motor activity, but not anxiety.

Also of interest are the studies on the anxiolytic effect of VIP in the changes that occurred in the OVX models of rats. Her results shed further light on a change in the expression of VIP and/or VIP receptors in the hippocampus after bulbectomy.

An original contribution is also the data on the positive effects of the VIP application in the CA1 field on memory capabilities and learning processes. I would also like to note the author's achievements in researching the role of neuropeptides on the lateralization of brain functions. She established for the first time that the introduction of VIP into the left hippocampal CA1 field in OVH rats stimulates motor activity, and when introduced contralaterally, it suppresses it.

Assoc. Prof. Velikova also made a certain contribution to the study of the asymmetry in the effects of Angiotensin II in motor activity. She found that it exerted an effect only when applied in the left CA1 field.

An original contribution is the data on established right-dominant hemispheric asymmetry in VIP effects and left-dominant hemispheric asymmetry in the effects of Angiotensin II on learning and memory processes. The candidate's research extends to other components of the renin-angiotensin system, namely angiotensin IV. It proves that there is also a lateralization of functions regarding its effects.

The entire analysis of the candidate's scientific activity in this direction gives me reason to state that her achievements and contributions significantly enrich the scientific literature regarding the effects of brain neuropeptide systems. This provides new opportunities for the creation of therapeutic strategies for the treatment of one of the most widespread in the modern world socially significant disease, namely depression.

II. The effects of hormones from the hypothalamic-pituitary-thyroid hormone axis on hemostasis and fibrinolysis in rats were monitored.

The author reports original data on the modulation of the activity of some of the plasma factors and cofactors of hemostasis under the influence of hormones from the hypothalamic-pituitary-thyroid axis. These effects influence the triggering mechanism of the Y cascade, while also participating in the regulation of fibrinolysis.

III. An assessment of the mental health of medical students was made on the basis of questionnaire surveys and the reactivity of the human organism to stress.

The change in sociodemographic data and factors related to the new way of life and integration into the academic environment have an impact on the mental health of foreign students. Assoc. Prof. Velikova conducted a thorough study of the factors related to the manifestation of this stress and their impact on the students' mental state. She found a positive correlation between neuroticism and the cardiovascular response to stress.

For the purposes of the competition, Assoc. Prof. Velikova presented 30 publications dedicated to the issues I described in the previous paragraph. All have been published in journals indexed in Sopus and/or Web of science. To them, but beyond the minimum scientometric requirements, 23 publications, presented at various scientific forums, were added.

Objective proof of the quality and significance of Assoc. Prof. Velikova's scientific production is her high citation rate - 116 citations found in Scopus. The criterion for the impact of the citations of Prof. Velikova's publications is the h-index calculated by Scopus - 8.

Additional scientific activity

Assoc. Prof. Velikova participated in the development and implementation of 4 projects, one of which she is the head of. She participated in 55 scientific forums, 11 of them international, 21 with international participation and 23 national.

Scientific metrics

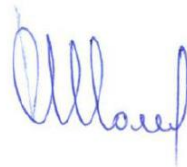
The evidentiary material presented by Assoc. Prof. Velikova in the competition procedure not only meets the required scientific-metric indicators for acquiring the academic position "Professor" (550 points), but also significantly exceeds them (964.66 points).

Conclusion

The candidate has presented publications that clearly outline her contributions in the scientific-theoretical and scientific-applied direction. In her scientific work, there are a number of contributions of an original nature that have received international recognition, a significant part of which has been published in prestigious journals with an impact factor.

Based on the above, I express my convinced opinion that Assoc. Prof. Velikova meets all the requirements of the ZRASRB, the Regulations for the Application of the ZRASRB and the Criteria for occupying academic positions and acquiring scientific degrees at the MU-Varna.

I strongly suggest to the respected members of the Scientific Jury to award the academic position of "PROFESSOR" to DR. Biological sciences, scientific specialty "Physiology" at the Faculty of Medicine, Medical University, Varna.



28. 04. 2023 г.

Проф. д-р Анна Толева, дм