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The Chairperson of Scientific Jury determined by order № 20/2802.2022 of the Director of Institute of Neurobiology ±Bulgarian Academy of Sciences

R E V I E W

By: Prof. Radostina Ivaylova Alexandrova, MSc, PhD, leader of a work group in Pathology Department, Institute of Experimental Morphology, Pathology and Anthropology with Museum ±Bulgarian Academy of Sciences, Part time lecturer in Sofia University, Member of the Scientific Jury determined by order № 20/28.02.2022 by the Director of the Institute of Neurobiology ±Bulgarian Academy of Sciences (INBAS).

Regarding: competition for the occupation of the Academic position of Associate Professor in the Department of Synaptic signaling and communication, Institute of Neurobiology - BAS, Natural Sciences, Mathematics and Informatics, Professional field 4.3 Biological sciences, specialty Animal and Human Physiology.

General presentation of the documents in the contest

In the competition announced in the State Gazette No. 107 of 16.12.2021 academic position of "Associate Professor" for the needs of the Institute of Neurobiology BAS, only one candidate submitted documents ± Assistant Professor Maria Ivanova Lazarova MSc, PhD from the same Department. The set of all necessary documents precisely prepared by the candidate was provided to me in electronic variant and as hard copy as well.

Biographical data about the candidate

Maria Lazarova was born on January 18, 1975 in the town of Pazardzhik, where in 1993 she completed her secondary education with a profile in Biology at the Konstantin Velichkov

Mathematical High School. In 1995 she graduated from the Faculty of Biology Sofia University "St. Kliment Ohridski" with a degree in 'Molecular Biology' and a specialization in 'Animal and Human Physiology'. In the same year Maria Lazarova entered as a specialist biologist at the Institute of Physiology of the Bulgarian Academy of Sciences (now the Institute of Neurobiology), where she consistently passed the next steps of her academic development as a Research associate III degree (1999-2001), Research associate II degree (2001-2008), Research associate I degree (2008-2015) and Assistant (2015-2019).

In 2018 Maria Lazarova obtained PhD degree in the scientific specialty "Human and Animal Physiology" on the basis of a defended dissertation entitled "Neuromodulatory and protective effects of vasoactive intestinal peptide" with supervisor Prof. Reni Kalfin, PhD. Since 2019 Maria Lazarova has been an Assistant Professor at INB - BAS. She specialized at the Institute of Experimental Medicine of the Hungarian Academy of Sciences (1 month in 2004) and at the Thracian University in Edirne, Turkey (1 week in 2018).

Since 2016 Maria Lazarova has been a member of the Bulgarian Society of Physiological Sciences, and since 2018 of the Bulgarian Peptide Society. She is an associate editor of the

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in the international scientific information database Scopus (quartile Q1, impact factor for 2021 - 4,472).

Project activity

Dr. Maria Lazarova has participated in the working teams of 8 research projects funded by the National Science Fund of the Ministry of Education and Science Bulgaria (5 projects, she was a principal investigator of one of them for one year), Southwest Neofit Rilski University (1 project), a program for bilateral cooperation between BAS and related organizations abroad (project with the University of Tel Aviv, Israel). She participates in the international scientific program "Innovative low-toxic biologically active substances for precision medicine BioActiveMed" (2018-2022), funded by the Ministry of Education.

Teaching / Educational activity

The candidate in the competition Dr. Maria Lazarova actively supports the training of colleagues, undergraduate and PhD students at INBAS, which contributes to their professional development. The teaching experience acquired is an excellent prerequisite for her growth as a supervisor of doctoral students.

Publishing activity

The candidate Dr. Maria Lazarova is the author of 26 publications (including 5 with quartile Q1, 6 with quartile Q2, 6 with quartile Q3 and 5 with quartile Q4), in 9 of which she is the first author. Five of the publications are related to her PhD thesis with 3 of them she participated in the competition for the academic position of Assistant Professor and 16 were presented for the competition for "Associate Professor". The scientific publications of Dr. Maria Lazarova have been cited more than 60 times. The total impact factor of the data is 42.49 and the H index is 6.

'U 0DULD /DJDURYD LV DPRQJ WKH DXWKRUV RI D SDWHQV B1 and validity 25.09.2038, owned by the Southwestern University "Neofit Rilski" in Blagoevgrad and the Institute of Neurobiology- BAS. The title of the patent is: "Adamantan derivative with antiviral and anti-Parkinsonian activity".

Participation in scientific forums

The research activity of Dr. Maria Lazarova has been promoted through more than 80 participations in scientific forums in the country and abroad.

Professional awards

Dr. Maria Lazarova is a participant (1 year principal investigator and 2 years participant) in the working team, awarded the First Prize by the National Science Fund in Bulgaria for the implementation of a research project on "Effects of vasoactive intestinal peptide (VIP) in models of Parkinson's disease: Effects on the dopaminergic neurotransmitter system and on the antioxidant defense" (Project No. 1502/07.2006).

Compliance of the candidate with the minimum national requirements and criteria of the Institute of Neurobiology - BAS for occupation of the academic position of Associate Professor

The analysis of the materials submitted by the candidate for the position of Associate Professor Dr. Maria Lazarova shows that she completely covers the national criteria as well as criteria of the Institute of Neurobiology - BAS for holding the academic position "Associate Professor." The data are summarized in Table 1.

Table 1 Minimum national requirements and criteria of the Institute of Neurobiology for occupation of the academic position Associate 3 U R I H V V R U ´

| Groups of indicators | Indicators | Required points | Results (Points) achieved by M. Lazarova |
|----------------------|--|-----------------|--|
| : | 1. PhD Thesis | 50 | 50 |
| ; | - | - | - |
| < | Habilitation work-scientific publications in peer reviewed journals indexed in world famous databases with scientific information (Web of Science and Scopus) | 100 | 100 (4 publications in Q1 journals) |
| = | Scientific publications | 200 | 223 |
| | Indicator 7. Scientific publications in peer reviewed journals indexed in world famous databases with scientific information (Web of Science and Scopus) | | 198 (12 publications 6 in Q2 journals, 2 in Q3 journals and 4 in Q4 journals) |
| | Indicator 9 An invention, patent or utility model for which an official document has been duly issued | | 25 Invention with registration number 6731 B1, valid until 25.09.2038 |
| > | 11. Citations in scientific publications, monographs, collective volumes and patents, referenced and indexed in world famous databases with scientific information (Web of Science and Scopus) | 60 | 70 (List of 35 citations in journals indexed in the Web of Science and / or Scopus) |
| ? | - | - | - |

Main scientific directions and contributions

The professional interests of Dr. Maria Lazarova are in the field of physiology, neurobiology, experimental medicine and experimental pharmacology, and are focused on testing the neuromodulatory and protective actions of neuropeptides and the effects of natural and synthetic molecules in experimental models of socially significant diseases such as Parkinson's disease and Alzheimer's disease.

The contributions from the research activity of Dr. Maria Lazarova are in 3 main directions:

1. In vivo studies on peptidergic regulation of cholinergic neurotransmission in rat brain. For the first time, neuromodulatory effects of the neuropeptide somatostatin (SS) on the release of acetylcholine (ACH) in rat striatum and hippocampus have been established. Original data have been obtained on the mechanisms by which SS stimulates the release of ACH from neostriatum (TX-dependent mechanisms) and the role of "stratoplayers" in them (somatostatin receptors on glutamatergic nerve endings, glutamate receptors on dendritic branches of cholinergic neurons). Based on the obtained results, a reasonable assumption is made about the regulatory role of AMPA glutamate receptors in the cholinergic neurotransmitter system in the hippocampus and striatum.
2. In vitro studies on peptidergic regulation of smooth muscle contractile activity. The first in vitro studies on the effect of ghrelin on the smooth muscle activity of the urinary bladder and in particular on its suppressive effect on the contractile activity of the detrusor were performed. The inhibition has been found to occur when ghrelin is co-administered with angiotensin II, but not with ghrelin alone. The acquired knowledge confirms the interaction between the signaling pathways of the peptides and led to the hypothesis of the presence of ghrelin receptors in the bladder, different from those in the digestive system in terms of intracellular transduction mechanism.
3. Neurobiological studies of molecules of natural or synthetic nature on experimental models of socially significant diseases. New knowledge about the potential neuroprotective effect of natural (bioantioxidants: lipoic acid, lipoic acid and mirtaniline, melatonin) or synthetic (neurotensin analogues and amantadine analogue) molecules on neurodegenerative processes in the 6-hydroxydopamine (6-OHDA)-based experimental model of Parkinson's disease has been provided. New data have also been obtained on the effects of substances of natural (lipoic acid and snail extracts) or synthetic (4 new galantamine analogues) origin on neurodegenerative processes in a scopoline experimental model of Alzheimer's dementia.

The obtained original data are the result of successful national and international cooperation and the innovative interdisciplinary studies conducted on its basis. Some of the tested FRPSRXQGV KDYH VKRZQ SURPLVLQJ DFWLYLW\ D SDV antiparkinsonian activity of an adamantane derivative has been registered.

Personal impressions from the candidate

I have known Maria Lazarova since she joined the Institute of Physiology (now the Institute of Neurobiology). The spatial proximity between our two working groups (located in the same building) allowed me to follow closely her growth as a scientist. Maria Lazarova has a sense of responsibility and is a trained specialist who participates in the development and introduction of new methods and experimental models. This requires initiative, perseverance, patience and endurance qualities that she undoubtedly possesses. In relations with colleagues she is kind and correct, which makes her a desirable partner in the implementation of various research tasks and projects. My impression of her is that she is a balanced and modest person, firmly on the ground, but with a vivid imagination and bold dreams. The documents presented in connection with the competition reveal the image of a well-organized, hardworking and purposeful scientist, filled with the noble ambition to always do the best. Dr Lazarova is a proven expert in physiology, neurobiology and experimental medicine and pharmacology.

CONCLUSION

The materials presented by the Assistant Professor Dr. Maria Ivanova Lazarova in connection with the competition show that she fully meets the mandatory and specific conditions and criteria for holding the academic position of "Associate Professor".

With her excellent professional training and organizational skills, with her well-defined scientific profile and proven ability to work in interdisciplinary, including international teams, with her diligence and perseverance, with her ability to analyze and summarize, Dr. Maria Lazarova has established herself as a respected researcher. Her vision for the future development of the topic she is working on convincingly reveals to us the image of a well established and motivated specialist who will continue to give the best in one of the most relevant areas of modern medicine- neurobiology and neurodegenerative diseases. Taking the academic position of "Associate Professor" by Dr. Maria Lazarova will not only support her

personal professional growth, but will give her the opportunity to reach her full potential and contribute to the better performance of Bulgarian science in Europe and the world.

This gives me reason to convincingly propose to the Scientific Jury and the esteemed Scientific Council of the Institute of Neurobiology at BAS to choose Assistant Professor Maria Ivanova Lazarova MSc, PhD, as ASSOCIATE PROFESSOR in the Department of Biological Sciences (and Human Physiology), announced for the needs of the Department of synaptic signaling and communication at the same institute.

24.04.2022

Sofia

Prof. Radostina Alexandrova MSc, PhD