

STATEMENT

By Prof. Dr. Habil. Rossitza Konakchieva, SU "St. Kl. Ohridski", elected as a Member of the Scientific Jury, appointed by order No. RD-38-279/07.06.2022 of the Rector of SU "St. Kliment Ohridski"

on the competition for an academic position of "Associated Professor" in the field of Higher education 4. Natural sciences, mathematics and informatics, professional direction 4.3. Biological Sciences (Biochemistry), announced in the Official Gazette, no. 30/15.04.2022 from SU "St. Kl. Ohridski"

General

In the competition for the academic position "Associated Professor" in 4.3 Biological Sciences (Biochemistry), one candidate appeared - Doctor KIRILKA STEFANOVA MLADENOVA, chief assistant in the Chair "Biochemistry" of the Faculty of Biology, SU "St. Kliment Ohridski". The presented materials are in accordance with the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria (ZRASRB), the Regulations for the Implementation of the ZRASRB, the Regulations for the Terms and Procedures for Acquiring Scientific Degrees and Holding Academic Positions at SU "St. Kliment Ohridski". The documentation for the competition is compiled orderly and reflects in a comprehensive volume the scientific research, project and teaching activities of the candidate.

Research profile of the candidate

The scientific-research activity of the Assistant Professor Mladenova fully corresponds to the scientific specialization of the habilitation competition - biochemistry and its borderline biophysicochemistry, cellular and molecular biology.

The main scientific direction in which original scientific contributions of the candidate can be outlined relate to comprehensive studies in different model systems on the retinal pigment epithelium protein bestrophin-1 (hBest1). The importance of these studies is related to the established role of gene mutations in hBest1 in the development of currently incurable visual disability, incl. and other neurodegenerative diseases such as Alzheimer's and Parkinson's. Dr. Mladenova is part of a scientific team led by Professor Yordan Dumanov, with high professionalism and scientific focus on the full biochemical and physicochemical characterization of the hBest1 protein. K. Mladenova's contributions are related to the development of model systems for stable expression of the hBest1 gene in MDCK II cell line, isolation, purification and subsequent characterization of the functional protein. The results make it possible to investigate the secondary structure of hBest1 and the role of Ca²⁺ ions in the formation of a functional protein by highly informative modern methods, incl. Fourier transform infrared spectroscopy (FTIR). Part of the research is related to studying the interactions of protein with lipids by means of model

membrane systems and determining its influence on cells. For this purpose, Langmuir monolayers were used which allow to establish the morphology and important physicochemical characteristics of pure hBest1 as well as in mixed hBest1/lipid monolayers with/without the participation of Ca²⁺, Glu and GABA (publications 1, 2, 6, 7, 15 and 16).

Other scientific research of the candidate is linked with successful studies of the biological properties and biocompatibility in cellular models of nanoparticles and other carriers based on conjugates between DNA and synthetic polymers (publications 5, 11, 12 and 14). The candidate has contributions as a co-author in research on biologically active substances incl. secretory enzymes isolated and purified from Vipera ammodytes meridionalis snake venom (publications 3, 8 and 9), as well as in-vitro toxicological studies of biologically active plant extracts (publications 4 and 10). Most results are published in high impact factor journals and have good citations.

Assessment of the applicant's compliance with the mandatory conditions and mandatory quantitative criteria and science metric indicators

In the competition, Dr. Mladenova presented 17 scientific publications outside the list of publications for the acquisition of her PhD degree with a total impact factor of 44.356, as well as citing 41 participations in national and international scientific forums. Attached is a reference to three other scientific papers with a total impact factor of 21,601 that were not included in the competition, as well as eight scientific publications in journals without an impact factor and full-text conference reports. This overall scientific production of the candidate characterizes her as an active and promising young scientist distinguished by high professional qualities. According to the presented reference, the publications included in the competition were cited a total of 37 times, of which - 31 in Scopus and Web of Science and 6 outside these databases. Dr. Mladenova participated in the development of a total of 12 thematic scientific projects related to the study of the transmembrane protein hBest1, vipoxin and its components, plant extracts, probiotics and biological properties of nanoparticles. She was the leader of two projects funded by the Scientific Research Institute of the SU, and for one of them she was awarded a scientific award. She was the supervisor of two successfully completed diploma theses.

In summary, the presented indicators according to ZRASRB and PPZRASRB, by area 4. Natural sciences, mathematics and informatics Professional direction 4.3. Biological Sciences, in sub-categories, are as follows:

1. According to group of indicators "A" - 1. Successfully defended dissertation for the award of the ONS "Doctor" - (50 points out of the required 50 points)
2. By group of indicators "B.4" - Habilitation work or scientific publications in publications that are referenced and indexed in world-famous databases with scientific information (Web of Science and Scopus). Apart from the scientific works included in the dissertation work, 5 publications with a total impact factor of 11.913 are presented, of which with rank Q1 – 2 publications; Q2 – 1 pc.; Q3 – 2 items, as well as one chapter of a book (6 volumes); (106 items out of required 100 items). In three of them, the candidate is the first author, in one second, which testifies to her active participation and contribution in the development of the problem.

3. According to group of indicators "D" - Scientific publications outside the habilitation work in publications that are referenced and indexed in world-famous databases, 10 publications are presented, of which with rank Q1 - 5 nos.; Q2 – 3 pcs.; Q3 – 1 pc.; Q4 – 2 pcs. (224 items out of required 200 items)

4. By group of indicators "D" - Citations in scientific publications, monographs, collective volumes and patents, referenced and indexed in world-famous databases with scientific information - 31 citations and 6 others (68 items out of the required 50 items)

I accept as fulfilled the minimum national requirements under Art. 2b of ZRASRB, for the scientific field and professional direction 4.3 Biological Sciences (Biochemistry).

Teaching activity

Assistant Professor Kirilka Mladenova, Ph.D., has a high teaching workload: Conducting practical classes/exercises in Biocatalysis for Bachelors - specialty Molecular Biology, specialty Biotechnologies; Basics of Biochemistry for Bachelors - specialty Optometry (to the Faculty of Physics), Biochemistry for MSc students - specialty Pharmacy (to the Faculty of Chemistry and Pharmacy); Biochemistry for MSc students - specialty Optometry (to the Faculty of Physics); Biochemistry for MSc students - special Medical Physics (to the Faculty of Physics); in Cell Polarization for MSc students - Specialty Cell Biology (elective) and Pathology and Specialty Biochemistry; Assigned lectures in Biochemistry for Bachelors – specialty Agrobiotechnologies; Biochemistry for Bachelors - specialty Biology (Z.O.); summer study practice in Biochemistry for Bachelors - specialty Molecular Biology

Under the scientific guidance of Dr. Mladenova, two MSc theses at the Department of Biochemistry were successfully defended.

In conclusion,

The current application fulfills the mandatory conditions and scientometric criteria for occupying the academic position "Associate Professor".

Given the stated opinion about the candidate's professional research and teaching activity, which outlines a rich and qualitative scientific production and a significant volume of teaching and teaching activity, I strongly recommend to the Honorable members of the Scientific Jury appointed by order No. RD-38-279/07.06. 2022 of the Rector of SU "St. Kliment Ohridski" to propose to the Faculty Council of the Faculty of Biology, chap. Assistant Professor KIRILKA STEFANOVA MLADENOVA, Ph.D., to be elected to the academic position of "docent" in Professional field 4.3. Biological Sciences (Biochemistry).

Prof Dr Habil Rossitza Konakchieva

12.08.2022