

STATEMENT

by Daniela Marinova Nikolova, PhD

Professor at Sofia University "St. Kliment Ohridski", Faculty of Biology

Regarding the competition for the academic position „Associate Professor"

at Plovdiv University "Paisii Hilendarski"

in: field of higher education 4. Natural Sciences, Mathematics, and Informatics,

professional area 4.3. Biological Sciences (Zoology - Vertebrate Zoology)

In the competition for "Associate Professor", announced in the State Gazette, issue 98 of 19.11.2024 and on the website of Plovdiv University "Paisii Hilendarski" for the needs of the Department of Zoology at the Faculty of Biology, the candidate is Chief Assistant Vessela Ilieva Mitkovska, PhD from the Department of Zoology, Faculty of Biology of Plovdiv University.

1. General presentation of the procedure and the candidate

By order № PD-22-440 of 18.02.2025 of the Rector of Plovdiv University "Paisii Hilendarski" (PU) I have been appointed as a member of the scientific jury of a competition for the academic position of "Associate Professor" at PU in the field of higher education 4. Natural Sciences, Mathematics, and Informatics, professional area 4.3. Biological Sciences (Zoology - Vertebrate Zoology), announced for the needs of the Department of Zoology at the Faculty of Biology of PU. Only one candidate has submitted documents for participation in the announced competition: Chief Assistant, Vessela Ilieva Mitkovska, PhD from the Department of Zoology, Faculty of Biology of PU. All the required documents have been precisely prepared and submitted.

In the current competition, Dr. Mitkovska participated with 22 scientific papers - 21 scientific publications and 1 collective monograph, which were not used in the procedures for acquiring the educational and scientific degree of "Doctor" and for occupying the academic position of "Chief Assistant". In the publications submitted, Dr. Mitkovska is most often in first, second, or third place, which confirms her leading role in scientific research. The majority of the publications are in specialized scientific journals indexed in WoS or Scopus such as *Ecotoxicology and Environmental Safety*, *Environmental Science and Pollution Research*, *Journal of Medical Virology*, *Problems of Infectious and Parasitic Diseases*, *Acta Zoologica*

Bulgarica. The prestigious nature of the journals in which Dr. Mitkovska was published is proof of their significance.

The fulfilment of the minimum national requirements for indicators for holding the position of "Associate Professor" is as follows: The indicator from group "A" is fulfilled (50 points); The indicators from group "B" bring the candidate 120 points, out of the required 100. This includes 6 publications indexed in WoS or Scopus with the following quartiles: two with Q1, two with Q2, and two with Q3.

According to group "Г" (Г 7), Chief Assist. Mitkovska has presented works for 242 points out of the required 200, distributed as follows: two publications with Q1, seven with Q3, and six with Q4 quartiles. The collective monograph presented under indicator "Г 8" brings 15 points.

According to indicator "D" the candidate has 100 points, out of the required 50. Out of 50 citations, 38 are in journals in Scopus or WoS. The high citation rate of her scientific papers in prestigious scientific journals such as *Ecotoxicology and Environmental Safety*, *Environmental Geochemistry and Health*, *Science of the Total Environment*, *Chemosphere*, and *Toxicology Research* is further proof of the significance of her scientific research, as well as the relevance of the field in which she works.

Brief biographical data about the candidate. Dr. Mitkovska graduated from the „Paisii Hilendarski“ University in 1999 as a Master of Science in Biology, specializing in Genetics and Microbiology. Since 2003, she has been working at the University of Plovdiv, where she worked as a biologist, and then as an assistant until the defence of her dissertation in the Department of Zoology. In 2014, she obtained the educational and scientific degree of Doctor, and the following year she took up the academic position of Chief Assist. in Vertebrate Zoology. Thus, out of 13 years and 9 months of teaching experience under a basic employment contract at the University, 9 years and 9 months were as a Chief Assistant. As such, Dr. Mitkovska delivers lectures, conducts laboratory and field exercises, trains graduate students, and develops scientific activity in vertebrate zoology, which outlines her as an active scientist and lecturer.

2. General characteristics of the candidate's activities

Evaluation of the candidate's educational and pedagogical activity. Chief Assistant Mitkovska is highly engaged in teaching, delivering a variety of lecture courses and exercises

for students across different specialities at both the bachelor's and master's levels at the Faculty of Biology, University of Plovdiv. Her work is crucial for helping students develop essential and specialized knowledge in the field of zoology. Dr. Mitkovska teaches courses in *Vertebrate Zoology*, *Animal Diversity*, and *Medical Zoology*. She has successfully supervised seven graduate students. Additionally, Chief Assist. Mitkovska is a co-author of two study guides for students in the field and speciality of the announced competition – “Guide to Exercises and Tests in Vertebrate Zoology” and “Genetic Foundations of Behavior”. At Plovdiv University, Chief Assistant Mitkovska has significant administrative experience. She has served on accreditation committees for Biological Sciences (area 4.3) and Biotechnologies (5.11), as well as committees, focused on improving the quality of education within the Faculty of Biology. Furthermore, she is a member of the Academic Council of Plovdiv University “P. Hilendarski.”

Evaluation of the candidate's scientific and applied scientific activities. Dr. Mitkovska's scientific contributions presented for the competition can be categorized into three main areas: 1. Biomarkers for assessing the environmental genotoxic and cytotoxic potential in different zoomonitor species; 2. The role of vertebrates as vectors and reservoirs of viral zoonoses and blood parasites; 3. Other studies focused on species-specific characteristics in mammals.

The first area involves investigating different zoomonitor species and identifying new sensitive molecular-genetic biomarkers to evaluate the cytogenotoxic effects of the environment. This area covers the majority of the work of Chief Assist. Mitkovska, as well as the collective monograph. Some biomarkers used have been studied in nature, and others in laboratory environments. The studies reveal original contributions to both scientific-applied and fundamental sciences, and methodological contributions. Thus, the comet assay method was first employed in Bulgaria for biomonitoring purposes, to assess DNA damage expressed through single- and double-strand breaks and alkali labile sites. This molecular genetic biomarker has been applied to the study of natural populations of zoomonitor species of small rodents of the genera *Apodemus*, *Mus*, and *Microtus* to assess *in situ* the genotoxic potential of the environment in areas with varying degrees of anthropogenic contamination. The method's effectiveness has been demonstrated even at low levels of genotoxins in the environment under chronic pollution conditions. A combined approach of two molecular genetic biomarkers (micronucleus frequency and DNA damage) was introduced, based on which the importance of molecular genetic markers for early, adequate, and predictive assessment of environmental genotoxic stress and mutagenic potential has been proven. Since the patterns of bioaccumulation and distribution of xenobiotics in the tissues and organs of small mammals are

similar to those in humans, this determines their use in predicting the ecological risk and extrapolating the obtained results to humans. By assessing the differential genotoxic response caused by chronic industrial and agrochemical contamination of surface waters in natural populations of the Marsh frog *Pelophylax ridibundus*, the vulnerability of amphibians inhabiting heavy metal-contaminated wetlands to genotoxic stress due to their lower tolerance to environmental genotoxins has been proven. DNA damage has been detected in the honey bee *Apis mellifera* spermatozoa for the first time worldwide, which is of great practical importance for biomonitoring, ecological risk assessment, biodiversity conservation, and honey bee protection. In this regard, for the first time worldwide, a protocol for sperm comet analysis of honey bees has been applied, adapted and published as well. The second area includes scientific research providing up-to-date data on dangerous viruses and newly discovered blood parasites in our country. Key objects in these studies are various species of rodents and amphibians, which are vectors and reservoirs of various zoonoses. Among the main contributions in this area, it can be noted that for the first time in our country, viral RNA of the extremely dangerous hantaviruses for humans, causing severe hemorrhagic fever with renal syndrome, was isolated from rodents and the so-called "hot spots" with a high risk of infection with hantaviruses for the human population (Smolyan, Smilyan, Batak, Velingrad and Peshtera) were identified. In addition, the important role of the Eastern Mediterranean house mice as a reservoir of trypanosome infection is confirmed. The third area concerns mainly cytogenetic (karyological) and reproductive characteristics in some mammal species. In this regard, the standard karyotypes of two rare species of the Bulgarian mammalian fauna – the Harvest mouse *Micromys minutus* and the Western wide-toothed field mouse *Apodemus epimelas* – have been described and cytogenetic characterization of the karyotypes has been performed.

Chief Assistant Mitkovska has actively participated in numerous national and international forums, as highlighted in the competition materials. These include prestigious events such as the *EurBee Congress of Apidology*, the *International Congress on Bee Science*, the *International Agricultural, Biological & Life Science Conference*, and the *Rodens et Spatium - International Conference on Rodent Biology*. Additionally, she plays an important role in organizing scientific conferences at the Faculty of Biology at the University of Plovdiv. Notable events include the *Balkan Scientific Conference on Biology* and the *International Conference on Zoology and Zoonoses*, which she has contributed to in various years. Her involvement in the scientific forums enhances her reputation for research achievements and activity. The professional skills of Chief Assistant Mitkovska are further validated by her

project work. She has participated in 11 scientific projects and programs primarily funded by the Scientific Research Fund at the Ministry of Education and Science, the Scientific Research Fund at the University of Plovdiv "P. Hilendarski," and the OP "Environment," all of which have contributed to significant scientific research.

CONCLUSION

The documents and materials presented by Chief Assist. Vessela Mitkovska meets all the requirements of the Act on the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for the Implementation, and the relevant Regulations of the University of Plovdiv "Paisii Hilendarski". The candidate in the competition has presented a sufficient number of scientific papers published after the materials used in the obtaining of educational and scientific degree "Doctor" as well as the academic position "Chief Assistant". The candidate's work includes original scientific and applied contributions, many of which have been published in scientific journals and books by international academic publishing houses. Her scientific and teaching qualifications are indisputable. The results achieved by Dr. Vessela Mitkovska in educational and scientific activities fully comply with the minimum national and additional requirements of the Faculty of Biology of the University of Plovdiv "Paisii Hilendarski".

After reviewing the materials and scientific papers presented in the competition, analyzing their significance, and the original scientific-applied, fundamental, and methodological contributions contained therein, I find it reasonable to give my positive assessment and to recommend to the esteemed Scientific Jury to prepare a report-proposal to the Faculty Council of the Faculty of Biology, for the election of Chief Assist. Vessela Ilieva Mitkovska, PhD to the academic position of "Associate Professor" at the "Paisii Hilendarski" University in the field of higher education 4. Natural Sciences, Mathematics, and Informatics, professional area 4.3. Biological Sciences (Zoology - Vertebrate Zoology).

24.03.2025

Prepared the statement:

Prof. Daniela Nikolova