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STATEMENT

by Dr. Hristo Angelov Dimitrov
Associate Professor at the Department of Zoology
Faculty of Biology, Plovdiv University "Paisii Hilendarski"

Regarding: Competition for the academic position of "Professor" in the professional field 4.3. Biological Sciences, scientific specialty "Ecology and ecosystem conservation," announced by IBER–BAS, Official Gazette No. 45/3.06.2025

1. **General presentation of the procedure and the candidate**

The competition was announced for the needs of the Department of "Ecosystem Research, Ecological Risk and Conservation Biology," Section "Community Ecology and Conservation Biology." The sole applicant is Dr. Mihaela Nikolova Nedyalkova, Associate Professor in the Section "Biomonitoring and Ecological Risk" at the Department of "Ecosystem Research, Ecological Risk and Conservation Biology," IBER–BAS. The submitted documents comply with the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria (LDASRB) and its regulations, as well as with the internal rules of BAS and IBER–BAS for the award of scientific degrees and academic positions. The applicant presents a total of 26 scientific papers and three book chapters in the fields of ecotoxicology, factorial and physiological ecology, and population ecology. A smaller part of her work is faunistic studies or deals with zoonotic diseases.

In the competition, the candidate presents a total of 26 scientific papers and 3 chapters from books in the fields of ecotoxicology, factorial ecology, physiological ecology, and population ecology. A smaller part of the work deals with faunistic issues and zoonotic diseases. Nineteen (73%) of them have an impact factor ranging from 0.233 to 4.1. Seven of the articles have only SJR. Two of the articles are in quartile Q1, three are in Q2, thirteen are in Q3, one is in Q4, and seven have only SJR. The articles have been published in authoritative scientific journals, including Toxics, Veterinary Science, Environmental Sustainability, and Acta Protozoologica, among others. Of the 26 articles submitted for the competition, the candidate is the first author in 7 of them (27%) and the second author in 8 (31%), indicating that Dr. Nedyalkova has made a significant contribution and played a leading role in more than half of the scientific studies. Dr. Nedyalkova's scientific research has been recognized by the international scientific community, as reflected in a total of 214 citations. Of these, 136 (64%) citations are in Scopus or WoS journals, and 78 citations are in publications without

IF/SJR. The candidate's scientometric indicators meet and even exceed the minimum requirements set out in Article 26 of the Law on the Development of Academic Staff in the Republic of Bulgaria and the Regulations on the Conditions and Procedures for Acquiring Academic Degrees and Titles and for Occupying Academic Positions at the Bulgarian Academy of Sciences (2018): Indicator A: 50/50 pts, Indicator B: 142/100 pts, Indicator C: 287/220 pts, Indicator D: 272/100 pts and Indicator E: 208/150 pts.

The candidate's scientific output is accompanied by impressive project activity and active participation in national and international scientific research forums. Dr. Nedyalkova has participated in 14 scientific projects, including one international project.

All of the above scientometric indicators prove two important conclusions: 1. Dr. Nedyalkova is a renowned specialist in the field of ecotoxicology and physiological ecology of mammals and has a diverse, rich scientific activity that fully meets the requirements for the position of "Professor"; 2. She is a researcher who has established herself nationally and internationally through her work, as evidenced by the numerous projects and citations of her scientific papers. Her expertise is highly regarded among the Bulgarian and international scientific community, as evidenced by the number and quality of scientific projects in which she participates or leads. The overall impression from the documentation submitted for the competition, following a detailed analysis, is that Dr. Nedyalkova's scientific activity as a whole can be characterized as diverse and meeting the necessary scientometric indicators.

2. Assessment of the candidate's scientific and applied scientific activity

The main areas of the candidate's scientific research activity are ecotoxicology, factorial ecology, faunistic, population, and zoonotic studies of small mammals. The candidate's main scientific contributions can be summarized in the following areas: ecotoxicology, factorial ecology (response to ionizing/non-ionizing radiation), faunistic, population, and zoonotic studies on small mammals.

- **<u>In the field of ecotoxicology:</u>**

- ✓ ***Fundamental***

• The cytogenotoxic and immunotoxic effects of heavy metals such as cadmium and lead and their synergistic action in mammals have been confirmed. It has been proven that subchronic cadmium intoxication leads to the highest levels of lipid peroxidation in the kidneys, revealing its highly nephrotoxic effect. Lead and a combination of lead and cadmium activate antioxidant mechanisms by increasing glutathione, which limits oxidative stress.

• In chronic cadmium exposure, modified clinoptilolite reduces metal bioaccumulation by up to 45%, demonstrating effective detoxification. However, its effect on the immune system and leukopoiesis is limited, requiring further research.

- ✓ ***Scientific and applied***

• The safety and absence of acute or chronic toxicity of oral administration of natural clinoptilolite extracted from the Eastern Rhodopes has been proven due to its high potential as an enterosorbent of heavy metals, contributing to better physiological condition and growth of animals.

- ➢ **<u>In the field of factorial ecology - Biological response of the organism to the effects of ionizing and non-ionizing radiation in the environment</u>**

- ✓ ***Fundamental***

• For the first time, a systematic study of the cytogenetic effects of UV radiation on small mammals has been conducted, demonstrating a clear dose-dependence in the occurrence of micronuclei and chromosomal abnormalities. This approach represents a significant contribution to radiobiology, as it expands the tools for assessing the combined effects of UV radiation.

• Long-term studies on total β-activity show a significant decline in radioactivity over 20 years, as well as differences depending on altitude. The results confirm that small rodents are reliable bioindicators for radiological monitoring in high-mountain ecosystems.

- ✓ ***Scientific and applied***

• Prolonged exposure to low-frequency electromagnetic fields induces genetic damage, but the application of resveratrol has been shown to inhibit it. It demonstrates a more substantial radioprotective effect than Mangifera indica extract, which opens up new possibilities for its application in preventing damage caused by chronic radiation exposure.

- ➢ **<u>Role of small mammals in the transmission of zoonotic diseases</u>**

- ✓ ***Fundamental***

• High seroprevalence of Lyssavirus-specific antibodies has been established in bats from Cat Ba Island, proving the active circulation of viruses from the Lyssavirus genus. This is the first documented evidence of serological markers of the virus in bats in Vietnam and is important for the early detection of zoonotic threats.

• The results of the study on the intestinal microbiome of small rodents from Rila show no DNA of the African swine fever virus. This confirms that wild rodents do not play a significant role in the epidemiology of the disease.

• The analysis of pathogens in small mammals expands our knowledge of their reservoir potential and role in ecosystems. These results support the development of more accurate strategies for the prevention and control of zoonotic infections.

- **Faunistic and population studies**

- ***Fundamental***

• The species composition of the terrestrial fauna on Tsibar Island and in the Ibisha Reserve on the Danube has been documented for the first time. The confirmed presence of raccoon dogs confirms the successful spread of this invasive species in Bulgaria and Europe.

• Studies in the Rila and Lozen Mountains reveal functional relationships between the abundance of small rodents and habitat factors such as vegetation, diet, and microhabitat. This indicates that habitat selection is an adaptive process and is crucial to the spatial distribution of species.

3. Summary comment and personal impressions

The analysis of Dr. Mihaela Nedyalkova's professional development shows that she has established herself as a researcher with a clearly defined profile and high qualifications, fully corresponding to and matching the subject matter of the announced competition for "Professor." Her active publishing activity in terms of volume, content, and quality meets the requirements for the position. I consider the candidate's scientific research activity to be highly comprehensive. She addresses important issues in ecotoxicology, including the detoxification of organisms, the influence of radioactive radiation, zoonoses, and faunistic aspects, and examines them from multiple angles. I have personal impressions of Dr. M. Nedyalkova. She works actively, purposefully, and constructively. I believe that she has found her own niche in zoological research and is persistently striving to expand it by participating in scientific projects and collaborating with foreign scientists.

CONCLUSION: After reviewing the materials and scientific works submitted for the competition, analyzing their significance and the scientific and applied scientific contributions they contain, I find it reasonable to give my positive assessment and recommend that the Scientific Jury prepare a report-proposal to the Scientific Council of the Institute of Bulgarian Language, BAS, for the election of Assoc. Prof. Dr. Mihaela Nikolova Nedyalkova to the academic position of "Professor" at the IBES, BAS in the professional field 4.3 Biological Sciences, scientific specialty "Zoology."

Sofia, 23.09.2025 Assoc. Prof. Dr. Hristo Dimitrov