Opinion

From: Prof. Iva Ugrinova, PhD - Institute of Molecular Biology, BAS

Subject: Competition for Associate Professor published in the State Gazette, issue 48/07.06.2024

General part:

The only candidate who submitted documents for the competition is Chief Assistant Dr. Boyko Stoykov Neov, from the research group "Molecular-Evolutionary Research" of the "Biodiversity and Ecology of Parasites" Section, Department of "Animal Diversity and Resources" at the Institute of Biodiversity and Ecosystem Research (IBER) – BAS.

The review of the documents shows that the procedure for announcing the competition complies with the requirements of the Law for the Development of the Academic Staff in the Republic of Bulgaria (ZRASRB). In the detailed report on meeting the minimum standards under indicator B, six publications are presented, guaranteeing the required 100 points, with the candidate achieving **125** points. For indicator G, 18 publications are provided, which ensures**345** points with the required 220. The candidate's participation in one book chapter is added to this group of indicators, contributing 15 points. For indicator D, **277** points are calculated from citations with the required 60 points; for indicator E, the candidate collects **70** points. However, this indicator is not counted in the competition for Associate Professor.

Biographical Information:

Chief Assistant Dr. Boyko Neov completed his higher education in Sofia at Sofia University "St. Kliment Ohridski," Faculty of Biology, where he obtained a bachelor's degree in molecular biology and a master's degree in animal and human physiology. During his master's studies, Neov began working as a biologist at the Institute of Biophysics and Biomedical Engineering, and in 2012, he started a PhD at the Institute of Biology and Immunology of Reproduction (BAS), scientific specialty 04.02.01. His career continued as Chief Assistant in the Molecular-Evolutionary Research Laboratory at the Institute of Biodiversity and Ecosystem Research, where he works today.

Scientometric Indicators:

The candidate appears in the competition with 24 works and one book chapter. Most works describe original scientific results published in reputable international journals with an impact factor. Under group indicator B, the candidate presents three publications with a Q1 rank and an IF of 7.106, one publication with a Q2 rank and an IF of 3.7, one publication with a Q3 rank and an IF of 1.316, and one publication without a rank and IF, but in a journal with SJR. Under group indicator G, six publications with a Q1 rank, four with a Q2 rank, three with a Q3 rank, and three without a rank and IF, but in journals with SJR, are presented. With these scientific achievements, Dr. Boyko Stoykov Neov not only meets but significantly exceeds the minimum IBER (BAS) requirements for "Associate

Professor." Twenty of Dr. Neov's works are published in impact factor journals, with a total impact factor close to 40 (39.159). The high value of the published results is evidenced by the journal titles and international recognition – according to Web of Knowledge, they have been cited over 277 times without self-citations. The candidate's h-index for the presented articles is 9. In six of the 24 articles with which Dr. Neov participates in the competition, he is the lead (first or last) researcher (25%), reflecting his contribution to the research.

Evaluation of the Main Scientific Contributions:

The main original results in Dr. Neov's works, based on the provided materials (using the numbering from the list of scientific publications), can be categorized into three main thematic areas:

1. Molecular-Genetic Research on the Taxonomy, Phylogeny, and Identification of Parasites and Other Pathogenic Organisms.

These studies are described in six original scientific publications (Nos. 3-8 from the attached list) and represent the candidate's habilitation work. Considerable scientific research has been carried out, contributing to expanding knowledge in parasitology, virology, and taxonomy of pathogenic organisms. Studies on the taxonomy of the trematode Aphalloides coelomicola contribute to a better understanding of the systematic position of this species, revealing its relationship with the family Cryptogonimidae and showing phylogenetic relationships between different parasite families.

Important contributions have also been made in studies of honey bee pathogens. These demonstrate the high prevalence of Nosema ceramic and various RNA viruses and highlight the importance of the mite Varroa destructor as a vector for the spread of these pathogens. This research has a direct practical benefit for beekeeping, especially concerning the spread of bee diseases in Bulgaria.

The third part of the research on bat lyssaviruses examines the genetic diversity of these viruses in Europe, highlighting their phylogeography and potential to evolve as emerging pathogens. This is particularly important because viruses have the potential to cause zoonotic infections.

Overall, these studies demonstrate strong molecular genetic knowledge with contributions to the phylogeny, evolution, and identification of pathogenic organisms, making them significant scientific achievements in their respective fields.

2. Molecular-Genetic Research on the Origin and Evolution of Domestic Animals and Their Wild Relatives. Extensive research has been conducted on the origin and evolution of domestic animals and their wild relatives to preserve genetic diversity and support efforts to conserve endangered breeds.

a. Studies on the genetic diversity of Bulgarian autochthonous cattle reveal the presence of several haplogroups (T1, T2, and T3), which emphasize the connections of Bulgarian breeds with populations from South-Eastern Europe, Africa, and the Middle East. These data are important for future breeding programs and the conservation of genetic diversity (Publications 9-12).

b.Studies on ancient dogs from different historical periods provide valuable information on clades A and B distribution, demonstrating similarities with dogs from the Italian peninsula and other Balkan populations. The research is essential to understanding the hybridization between dogs and wolves (publication 14).

c. The Eastern Balkan pig, as an ancient autochthonous breed, shows fascinating genetic diversity, with both Asian and European haplotypes being found. This suggests the historical exchange of animals and specific adaptations to local conditions (publication 15).

d. Studies of Bulgarian horse breeds demonstrate significant genetic differences between breeds and a wide variety of haplogroups, reflecting the complex history of horse breeding and migration in the region (Publications 18, 22, 24, and 25).

e. The study of Jacob sheep provides essential information about the absence of pathological mutations associated with human diseases, making the breed a suitable model for studying genetic diseases (publication 23).

f. Studies on subfossil samples of European bison reveal that the bison of the Balkan region formed a distinct population, providing new data on the evolution and distribution of the species (publication 21). These studies significantly contribute to the knowledge of domestic and wild animals' genetic and evolutionary diversity, highlighting the importance of molecular genetic analyses in understanding their origins, migrations, and adaptations.

3.Contributions Related to the Study of Bee Populations, Their Genetic Structure, and the Causes of Increased Mortality in Populations. Various topics related to bees' genetics, ecology, and health are covered, representing significant contributions to multiple aspects of their study.

a. Methods for bee genotyping:

The book chapter (Publication 27) reviews basic genotyping methods such as allozyme analysis, microsatellite analysis, mitochondrial genetic markers, and PCR-RFLP. These methods allow detailed studies of the genetic structure of bee populations, which is of utmost importance for understanding their origin, genetic diversity, and adaptations. Special attention is paid to bees in Europe and Bulgaria, emphasizing the importance of regional research.

b. Studies on the bacterial communities associated with bees:

Studying the bee microbiome reveals the diversity of bacteria inhabiting bees. Sequencing of the 16S ribosomal RNA gene showed that the microbiome was dominated by several genera of bacteria, with significant differences observed between highland and lowland hives. These data are essential for understanding the microbiome's role in bee populations' health and resilience (publication 26).

c. Survivability of bee populations and the role of pollinators:

The reviews (publications 13, 16, 17, 19, 20) examine bee mortality and the factors that cause it, including biotic and abiotic factors such as climate change, biodiversity loss, and pesticide use. Bees play a crucial role in agriculture, but stressors such as transportation, invasive pathogens, and pesticides threaten their populations. Although no direct effect of GMOs on bee mortality has been found, the possibility of reducing their food base due to improved weed control in fields with transgenic crops has been noted.

These studies significantly contribute to the understanding of the genetics, ecology, and factors that influence the health of bee populations and are of great importance for the sustainable development of agriculture.

Conclusion:

The brief analysis of the materials presented by Boyko Neov demonstrates the high scientific value and originality of the topics developed. I do not have personal impressions as I do not know the candidate personally. Dr. Neov's research highlights the importance of molecular-genetic approaches in understanding biological diversity and evolutionary processes. They provide new, significant knowledge that supports the scientific understanding of natural populations and pathogens and their application in agriculture, biodiversity conservation, and sustainable development. These data can serve as a basis for future programs for the conservation and management of genetic resources in wild and domestic species, as well as for more effective addressing of issues related to the health of bee and animal populations.

I consider Dr. Neov to be a good scientist, who deserves to hold the position of "Associate Professor" at the Institute of Biodiversity and Ecosystem Research – BAS, and I strongly recommend that the esteemed Scientific Committee vote positively for Dr. Boyko Stoykov Neov's appointment to the position of "Associate Professor" at the Institute of Biodiversity and Ecosystem Research – BAS.

02.10.2024

(Prof. Iva Ugrinova)