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O P I N I O N

of Stoyan Stefanov Stoyanov,
Assoc. Prof. at the Institute of Biodiversity and Ecosystem Research (Bulgarian Academy of Sciences), Department of Plant and Fungal Diversity and Resources,

Member of a scientific jury, appointed by Order No 65/04.10.2024 of the Director of Institute of Biodiversity and Ecosystem Research (BAS), on the basis of Art. 4 and Art. 25 of Development of Academic Staff in the Republic of Bulgaria Act (DASRBA), Art. 57 of the Regulations on the Implementation of the DASRBA, Art. 11(4) of the Rules on the Conditions and Procedure for Acquiring Science Degrees and Holding Academic Positions of Bulgarian Academy of Sciences, Art. 13 (2, point 25) of the Rules on the Conditions and Procedure for Acquiring Science Degrees and Holding Academic Positions of Institute of Biodiversity and Ecosystem Research, Decision of Scientific Council of the Institute of Biodiversity and Ecosystem Research (Protocol No 29/20.09.2024, point 7) and announcement in State Gazette No 66/06.08.2024 (page 121).

About: Competition for the academic position "Docent" in the field of higher education ***4. Natural sciences***, professional field ***4.3. Biological Sciences***, scientific specialty ***"Botany"***, for research group "Resource Assessment and Monitoring of Rare Medicinal and Aromatic Plants" of the section "Applied Botany", Department "Plant and Fungal Diversity and Resources" of the Institute of Biodiversity and Ecosystem Research.

Within the period stipulated by the DASRBA, documents for the competition were submitted by one candidate – Dr. **Boryana Zdravkova Sidjimova**. The submitted documents and scientific production meet the requirements of the DASRBA and are admitted for evaluation in the competition for the holding academic position "Docent". The first meeting of the scientific jury was held on 16 October 2024 and at it the chairman and reviewers were elected, in accordance with the regulatory framework.

1. Professional background. Boryana Sidjimova graduated with a master's degree in Botany (specialization Medicinal Plants) in 2002 at the Faculty of Biology of Sofia University "St. Kliment Ohridski". In the period 2004–2007 she is a full-time PhD student at the Institute of Botany (BAS). In 2008 she defended her PhD thesis on the topic "Biological and Phytochemical investigation of species from genus *Galanthus* L. (snowdrop) in Bulgaria" and acquires the educational and scientific degree "Doctor" in the scientific specialty Botany. Boryana Sidjimova began her professional career in 2001 as a biologist at the Institute of Botany (BAS), later she was a full-time PhD student and again a biologist at the same institute until 2010. After 2010, she held the positions of biologist and chief assistant at the newly formed Institute of Biodiversity and Ecosystem Research.

Boryana Sidjimova has an excellent scientific and scientific-applied qualification in the field of phytochemical studies, resource assessment of medicinal plants, monitoring of rare and endangered species, cultivation and primary processing of medicinal plants, incl. techniques and methods of hydroponic cultivation of medicinal plants. She participated in the development of Management Plans for protected territories and zones as an expert on medicinal plants. Boryana Sidjimova also has extensive teaching experience as a part-time assistant at the Department of Botany at the Faculty of Biology of Sofia University "St. Kliment Ohridski" and over the years she has completed over 1900 teaching hours. She has 19 years, 10 months and 27 days of work experience in the specialty.

2. Analysis of scientometric indicators. The publications of Dr. Boryana Sidjimova according to indicators B and Г, presented for the competition for "Docent", are 23 in number. Of these, 22 articles are referenced and indexed in world-renowned databases with scientific information, and in one of them the candidate is an independent author, and in five she is the first author. Four articles are in quartile **Q1** (one without IF), also four are in quartile **Q2**, eight are in quartile **Q3** and one in quartile **Q4** (but without IF). The rest of the articles are Impact Rank only (SJR). A book chapter is also submitted to the scientific reviews.

These publications outline the main scientific field in which the candidate has worked, namely phytochemical research with an emphasis on amaryllis alkaloids, which is a natural continuation of her dissertation work related to the phytochemical study of the genus *Galanthus*.

According to group B indicators (B3-B4), the candidate has 110 points out of the required 100 points. This group included 7 articles, of which two are in the **Q1** quartile (one without IF), one is in the **Q2** quartile, three are in the **Q3** quartile, and one is in the **Q4** quartile (without IF). In three of the articles the candidate is the first author and in one she is the independent author. The articles in this group are clearly thematically related to research on amaryllis plants – *Galanthus*, *Hippeastrum* and *Narcissus*.

According to group Г indicators (Г7-Г8), the candidate has 250 points out of the required 220 points. This group includes 16 articles that are in journals, referenced and indexed in world-renowned databases of scientific information (Web of Science and Scopus), outside the habilitation work. In two of these publications, the candidate is the first author. They are in the following categories – two in quartile **Q1**, three in quartile **Q2**, five in quartile **Q3** and six articles are with **SJR** only. These articles reflect the candidate's experience in other areas of botanical science, such as resource assessment and monitoring of medicinal plants, metabolic profile research, reproductive potential research in various plant groups, taxonomy, etc.

According to group Д indicators, the candidate scores 84 points at required 60. Regarding the impact of scientific productions in the specialized scientific literature, Boryana Sidjimova presented a bibliographic reference for established 42 citations. All citations are in journals referenced by Scopus and/or Web of Science, which earns the candidate 84 points according to indicator Д.

Indicators, according to the criteria of Institute of Biodiversity and Ecosystem Research. Boryana Sidjimova has submitted a list of **23 articles** (out of the required 20), **15 of which are in IF journals** (out of the required 10). The requirement for a minimum of 20 citations, of which 10 are in specialized international journals with an impact factor, is also covered**. Of the 42 citations presented, 35 are in IF journals**. *Remark*: In the Statement of conformity, it is indicated that all 42 citations are in journals with an impact factor, but seven are only in journals with an SJR. An error made does not affect the fulfillment of the Institute of Biodiversity and Ecosystem Research criteria of a minimum of 10 citations in journals with an impact factor.

3. Scientific and scientific-applied contributions. In the Statement of the contributions in the scientific works under indicator **B4**, the main scientific field in which the candidate worked is phytochemical and biosystematic study of species from the subgen. Amaryllidoideae

of the family Amaryllidaceae including alkaloid composition, chemotaxonomic studies and biological activity.

Among the contributions in this group of articles, the following more important ones can be highlighted – for the first time interspecific comparisons of the alkaloid content were carried out for *Galanthus nivalis* and *G. elwesii* from sympatric populations, five new alkaloids are reported for the genus *Galanthus*, and a study was conducted on the alkaloid composition in individual organs of *G. elwesii* and *G. nivalis* – roots, bulbs, leaves and flowers **[B_1]***; 70 alkaloids of galantamine, lycorine, homolicorin, tazetin, haemantamine, narcyclazine, and tyramine type were identified in a large-scale study on the alkaloid composition of 25 populations of Bulgarian origin from *G. elwesii* and 7 and from *G. nivalis*, intraspecific variation in alkaloid profiles has been found with respect to major alkaloid types (chemotypes) **[B_2]**; *Hippeastrum papilio* is introduced for the first time as a new source of galantamine for the pharmaceutical industry, mainly containing the alkaloid galantamine **[B_5]**; data on the seasonal dynamics of alkaloid accumulation in roots, bulbs, leaves and flowers in *Narcissus cv. Hawera* are presented for the first time **[B_6];** 17 new currently unidentified alkaloids (out of 73 alkaloids) were identified in samples from *G. nivalis* and *G. elwesii* **[B_7]**.

In the articles on indicator **B4** can be highlighted the contributions to the **taxonomy** in the family Amaryllidaceae, including comparative morphological, anatomical-morphological and embryological studies – the available information on the genus *Galanthus* in Bulgaria was systematized and a revision of all herbarium specimens was made **[B_4]**; for the first time a comparative-anatomical study of species of the genus *Galanthus* in Bulgaria was carried out in order to find taxonomically significant characters between the species; it was found that the plants identified in some sources as *Galanthus gracilis* are most probably a form of *G. elwesii*; no morphologically discrete characters have been identified by which *Galanthus gracilis* can be distinguished from *G. elwesii*; the embryological characteristics of *Galanthus elwesii*, *G. nivalis* and those identified as *G. gracilis* plants are identical **[B_3].**

The contributions of Boryana Sidjimova's scientific works according to indicator **Г7** are also significant – it was found was the content of three steroidal saponins in 16 populations of *Tribulus terrestris* **[Г_19]**; a comparative analysis of bioactive alkaloid fractions was conducted and 29 alkaloids were identified in alkaloid fractions of *Narcissus cv. Hawera* **[Г_14]**; autotetraploidization in *Hippeastrum papilio* plants was found to lead to an increase in

galantamine and hemantamine content in the leaves of the plant, compared to diploid plants, as well as to differences in the metabolic profile. **[Г_18]**.

* The number of the corresponding article in the Copies of Research Papers folder is indicated in square brackets.

4. Conclusion. Based on the above-mentioned assessment of the scientific research and scientific applied activities and meeting the required national minimum score for indicators A, B, Г and Д, as well as meeting the Criteria of the Institute of Biodiversity and Ecosystem Research for "Docent", I give my **positive vote** for holding of Academic Positions "Docent" in the field of higher education *4. Natural sciences*, professional field *4.3. Biological Sciences*, scientific specialty *"Botany"*, for research group "Resource Assessment and Monitoring of Rare Medicinal and Aromatic Plants", of the section "Applied Botany", Department "Plant and Fungal Diversity and Resources" of the Institute of Biodiversity and Ecosystem Research of Dr. Boryana Zdravkova Sidjimova and recommend the other members of the scientific jury to support her candidature.

20.11.2024 Jury Member:

Sofia (Assoc. Prof. Stoyan Stoyanov)