

OPINION

**by Prof. Teodora Atanasova Staykova, PhD
at Plovdiv University "Paisii Hilendarski", Faculty of Biology,
Department of Developmental Biology
Member of the scientific jury,
according to the order of the Director of the Institute of Oceanology at the BAS
No. 58 of 01.03.2024**

regarding the materials submitted for participation in the competition to occupy the academic position "Associate professor" in the Institute of Oceanology at the BAS

in Area of Higher Education: 4. Natural Sciences, Mathematics and Informatics,
Professional Field: 4.3 Biological Sciences, Scientific speciality: "Ecology and protection of ecosystems", Scientific direction "Ecology and molecular taxonomy of marine organisms"

In the competition for "Associate professor", announced in the State Gazette, No. 1 of 02/01/2024 and on the website of the Institute of Oceanology at the BAS, Varna, for the needs of the Institute, as the only candidate participates Chief Assistant Dr. Nina Stoycheva Djembekova from the "Biology and Ecology of the Sea" section in the Institute of Oceanology - BAS.

1. General presentation of the procedure and the candidate.

The presented by Chef assistant Nina Stoycheva Dzembekova, a set of materials is in accordance with the Regulations of ZRASRB, art. 53 and 54 and the Regulations for the conditions and procedure for acquiring educational and scientific degrees and for holding academic positions at the Institute of Oceanology - BAS (PURPONSZAD IO-BAS), art. 53 (4), including all necessary documents for participation in the competition: a set of administrative documents; lists of scientific works and the works themselves; list of established citations; documents for scientific research activity; a certificate of meeting the minimum national requirements for holding the academic position "associate professor" and evidence thereof; summaries of peer-reviewed publications and self-assessment of contributions; certificate of work experience, etc. For participation in the competition for the academic position of "associate professor", 27 works were submitted, which were not used for the acquisition of the ONS "doctor" and the academic position of "assistant". Of these, 22 are scientific publications with IF and/or SJR and are published in refereed and indexed journals in the Web of Science and Scopus databases. Evidence of 264 citations, participation in 20 research projects, 13 of which are international, and participation in 14 scientific forums is also attached.

Nina Stoycheva Dzembekova was born on June 17, 1980. In 2003 she obtained a bachelor's degree, and a year later a master's degree in "Ecology and environmental protection" at the Technical University in Varna. In 2018 obtained a PhD in Hydrobiology. In 2016 started working as an ecologist at the Institute of Oceanology - Varna, in the period of 2016-2018 she worked as an assistant, and from 2019 - as chef assistant at the Institute. Dr. Dzembekova has participated in numerous training courses to increase her professional qualification.

Prepared by Dr. Dzembekova's documents for participation in the competition for the academic position "associate professor" in Professional Field 4.3 Biological Sciences prove that she meets the minimum national requirements.

My personal impressions of the candidate are based on professional communication with her and show that Chief Assistant Dzembekova is a responsible, communicative, proactive and fair colleague, with expertise in the field of ecology, ecosystem protection and molecular taxonomy of marine organisms.

2. General characteristics of the activity of candidate

Scientific activity

Chief Assistant Nina Dzembekova carries out research activities in the field of ecology, distribution and biodiversity of phytoplankton species, population genetics of economically valuable fish species, ecological monitoring of the marine environment. Some of her scientific developments were selected as "the most significant scientific achievement of IO-BAS" for 2017, 2018, 2019, 2022 years. In her research work, Dr. Dzembekova uses a wide range of different methods - morphological, biochemical-genetic and molecular-genetic (including genomic sequencing).

Based on the presented documentation, I can define the contributions of her research as scientific and scientific-applied.

As **original scientific contributions**, I would indicate:

- The establishment of molecular genetic markers for a more precise distinction of species in the genus *Pseudo-nitzschia* and the registration of new ones for the Black Sea in view of the cryptic biodiversity existing in the genus and the difficulty of distinguishing toxic from harmless species through microscopic analysis, as well as the study of their blooms in the Black Sea Basin (Publications 6.3.1-1, 5).
- The establishment of new phytoplankton species in surface sediments from the Black Sea by DNA metabarcoding and the demonstration of the great potential of this method for the assessment of phytoplankton biodiversity in sediments (Publication 6.3.1-2).
- Establishing a relationship between the number and spatial distribution of phytoplankton species in the Black Sea and phycotoxins, which makes it possible to assess the real toxigenic potential of Black Sea isolates and to build a statistically based hypothesis about the species producing them. (Publications 6.3.1-7).
- The establishment of a relationship between the different cyst morphotypes of *Scrippsiella acuminata* and some environmental parameters, such as salinity, temperature and biogens, by applying different statistical approaches (Publications 6.3.1-6; 6.3.3-1).
- The study of the Black Sea microbiome by metagenomic analysis and the establishment of heterogeneity in the distribution of different *Synechococcus* phylotypes by ecological niches (Publications 6.3.1-4, 6.3.2-1, 2).
- The establishment of specific population-genetic characteristics for economically valuable fish species as a basis for their conservation and effective management of their stocks (Publications 6.3.2-5, 6, 7, 8, 9; 6.3.3-3).
- The discovery of new species of marine benthic diatoms in the study of diatom biodiversity in the Antarctic (Publications 6.3.2-10, 11, 12, 13).
- The detection of different types of resistance genes in the Black Sea, which proves the presence of multiresistant bacteria in different areas, including at depth, which is important given the increasing global threat to human health (Publications 6.3.2-3, 4).

Scientific contribution to the work of Dr. N. Dzembekova is also the preparation of a list of invasive and potentially invasive foreign species in the Mediterranean and the Black Sea and the identification of the species with the greatest invasive potential, which is of key importance as an early warning system and undertaking effective invasive species management measures (Publication 6.3.2-14)

As **scientific and applied contributions**, I would indicate:

- The parallel application of different methods for monitoring the marine environment in the study of phytoplankton biodiversity, including that of potentially toxic species in the Black Sea, where it was found that the simultaneous application of morphological and molecular methods increases the potential for a more reliable

taxonomic assessment of phytoplankton biodiversity (Publications 6.1.2-1; 6.3.1-3; 6.3.2-15; 6.3.3-2; 6.4-1.)

Expert activity

Chief Assistant Nina Dzembekova, is a professional in the field of ecology and taxonomy of marine organisms. In support of this opinion of mine is its participation in the updating of the "Strategic Program for Scientific Research and Innovation in the Black Sea", presented to the European Parliament in 2023. (Publication 6.4-2), as well as the candidate's participation in 20 research projects, 13 of which are international.

In conclusion, I could confirm that the outstanding contributions in the publication materials of Dr. Dzembekova are indisputable and define her as a professional who works in a team, using modern research methods in the field of phytoplankton biodiversity in the Black Sea, taxonomy and ecology of potentially toxic and blooming species. Categorical proof of the scientific significance of the candidate's work is the presented 264 citations in journals, which are indexed and referenced in WoS and Scopus, as well as the high h-index 10 (Scopus).

Those deposited by Chief Assistant Nina Dzembekova documents show that she fully meets the minimum national requirements for holding the academic position of "Associate Professor" in PF 4.3 Biological Sciences, according to ZRASRB, and the number of points for the individual groups of indicators is as follows:

Group of indicators A. Indicator 1 (min. 50 p.) – 50 points

The candidate has obtained a doctorate in the scientific specialty "Hydrobiology" in 2018 based on a defended thesis on "Molecular Taxonomy and Ecology of Potentially Toxic Phytoplankton Species in the Black Sea".

Group of indicators B. Indicator 4 (min. 100 p.) – 132 points

A total of 7 publications, referenced and indexed in the Web of Science and Scopus databases with quartiles are presented as follows: 3 publications with Q1 quartile (75 points), 1 publication with Q2 quartile (20 points), 1 publication in a journal with quartile Q3 (15 points), 1 publication in journal with quartile Q4 (12 points) and 1 publication in a journal with SJR (10 points).

Group of indicators G. Indicator 7 (min. 220 p.) – 267 points

A total of 15 publications are presented, which are referenced and indexed in world-renowned databases of scientific information (Web of Science and Scopus), beyond those according to indicator 4. Of them: 3 are in journals with quartile Q1 (75 points), 6 are in journals with quartile Q2 (120 points), 4 are in journals with quartile Q3 (60 points), 1 is in journal with quartile Q4 (12 points). Also presented is 1 publication in an international author collective, including more than 30 authors, as well as 3 publications in journals that are not referenced and indexed in world-renowned scientific information databases (Web of Science and Scopus), which are not scored.

Group of indicators D. Indicator 11 (min. 60 p.) – 528 points

Evidence is presented for 264 citations in scientific publications, referenced and indexed in world-renowned databases of scientific information (Web of Science and Scopus).

The total sum of points for the indicators from the separate groups A, B, G and D is 977, which makes Dr. Nina Dzembekova exceeds the required minimum for holding the academic position "associate professor" in PF 4.3 Biological Sciences.

3. Critical notes and recommendations

I have no critical notes and recommendations for the candidate.

CONCLUSION

The documents and materials presented by Chief Assistant Nina Stoycheva Djembekova, PhD, meets all 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 and the Regulations on the Conditions and Procedures for Acquiring Educational and Scientific Degrees and for Holding Academic Positions at the Institute of Oceanology - BAS.

The candidate in the competition has submitted a significant number of scientific works published after the materials used in the defense of the ONS "doctor" and the occupation of the academic position "Chief Assistant". The materials submitted for the competition include original scientific and scientific-applied contributions, which have received international recognition through their publication in journals with high scientometric indicators. The scientific research and expert activity of the candidate is indisputable.

The achievements of Chief Assistant Nina Djembekova, results fully correspond to the minimum national requirements of ZRASRB and the requirements of PURPONSZAD of IO-BAS.

After my acquaintance with the materials and scientific works presented in the competition, and the analysis of their significance and the scientific and scientific-applied contributions contained in them, I find it reasonable to give my positive assessment and to recommend the Scientific Jury to prepare a report-proposal to the Scientific council of the Institute of Oceanology of the BAS, Varna, for the election of Chief Assistant Nina Stoycheva Djembekova, PhD, to the academic position of "Associate Professor" at the Institute of Oceanology in: Area of higher education 4. Natural sciences, mathematics and informatics, Professional Field 4.3 Biological sciences, scientific specialty "Ecology and protection of ecosystems", scientific direction: "Ecology and molecular taxonomy of marine organisms".

17.04.2024

Prepared the opinion: Заличен на основание
ЗЗЛД

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