

STATEMENT OF OPINION

by **Detelina Stoyanova Belkinova, PhD,**
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Regarding the Materials Provided for the Participation in a Competition for Academic Degree
‘Professor’ in the Field of Higher Education: 4. Natural Sciences, Mathematics, and
Informatics
Professional Field: 4.3. Biological Sciences (Phycology)

In the competition for ‘Professor’ announced in the State Gazette, issue 98 of 19 November 2024 and on the website of *Paisii Hilendarski* University of Plovdiv, as the **only candidate** for the needs of the Department of Botany and Biological Education participated **Assoc. Prof. Ivanka Ivanova Teneva-Dzhambazova, PhD** from the same Department.

1. GENERAL PRESENTATION OF THE PROCEDURE AND THE CANDIDATE

The set of materials submitted for my opinion for the academic position of ‘Professor’ includes a complete set of documents required by the Regulations for the Development of the Academic Staff of the University of Plovdiv (RDASUP).

Brief Biographical Data of the Candidate

Ivanka Teneva studied at the Faculty of Biology of Plovdiv University, where she was awarded a Master's degree with the qualification *Teacher of Biology and Chemistry* (1990-1995) and a PhD in Botany (2004-2007). She specialised in Genomic Analysis, Immunology and Autoimmune Diseases at the prestigious Lund University, Lund, Sweden (EU Postdoc-2007).

Dr. Ivanka Teneva started her work experience as a chemistry teacher at Prof. Dr. Asen Zlatarov Language High School, the town of Haskovo (1995-1998). Subsequently, she passed through the positions of Expert and Senior Expert in Chemistry at the Regional Inspectorate of the Ministry of Education and Science, the town of Haskovo, Bulgaria. Her work as a research assistant in the international laboratories of the Centre for Environmental Research in the city of Leipzig, Germany (2001-2003) and at Lund University, Sweden (2005-2007) contributed for her professional growth in research activities. Since 2007 she has been appointed at *Paisii Hilendarski* University of Plovdiv, as a 1st-rank Research Assistant, Assistant Professor and Chief Assistant Professor of Botany. Since 2013 she has been on the academic position of Associate Professor in Botany. At present Teneva PhD has over 11 years of experience as an Associate Professor and over 16 years of teaching experience.

The main area of her scientific interests coincides entirely with the topic of the announced competition in Phycology. This is research on blue-green algae (division Cyanoprokaryota). Through active project work, she has conducted extensive and in-depth studies on the taxonomy, phylogeny, metabolic diversity, allelopathic activity, and distribution of this taxonomic group in Bulgaria. She is a reviewer on the editorial board of national and reputed international journals.

Assessment of Competition Materials for Compliance with Minimum National and Additional Faculty Requirements

Assoc. Teneva is the author of 46 scientific papers. The presented list includes the abstract of her dissertation and 2 scientific articles on the topic of the dissertation, as well as 20 publications related to previous habilitation. A declaration by the candidate on the originality of the results and contributions is attached to the competition materials. I support this statement as I ***have not found any plagiarism*** in the course of my review.

The submitted materials with which Assoc. Teneva participates in the current competition for the election ‘Professor’ are 18 scientific publications, 2 book chapters, 4 textbooks and 4 manuals.

All publications are in publications that are refereed and indexed in the Web of Science (WoS) and/or Scopus databases. The articles are collective works, in 14 of them she is the lead author, and in the remaining 4, her personal contribution is significant.

In the attached Reference for Compliance with the Minimum National Requirements for the Academic Position of Professor, the scientific works are correctly grouped by indicators:

For A1 Indicator (minimum 50 pts under the national requirements) – gained 50 pts

She has acquired Educational Qualification PhD in the Scientific Major *Botany*, after defending her dissertation on: *Taxonomy, Phylogeny and Toxic Potential of Some Species of Blue-Green Algae (Cyanoprokaryota)*.

For Group B Indicators ((minimum 100 pts under the national requirements) – gained 130 pts:

➤ **B4 Indicator:** There are 6 scientific publications, as an equivalent of a habilitation thesis, which are entirely on the subject of the announced competition – Phycology. Two publications are in Q1 Journals (*Plants, Chemosphere*) and 4 are in Q2 journals.

For Group G Indicators (minimum 200 pts under the national requirements) – gained 234 pts:

➤ **G7 Indicator:** There are 12 scientific publications, 4 of them in Q1 Journals (*Heliyon, International Journal of Molecular Sciences, Plants, Algal Research*), 1 in Q2 Journal, 2 in Q3 Journals, 2 in Q4 Journals, and 3 publications in a SJR edition, without IF – **gained 204 pts;**

➤ **G8 Indicator:** published 2 book chapters – **gained 30 pts.**

For D11 Indicator, citations (minimum 100 pts under the national requirements) – gained 398 pts.

For Group E Indicators ((minimum 150 pts under the national requirements) – gained 380.9 pts:

➤ **E13 Indicator:** Co-supervision of 2 successfully defended PhD students – **gained 50 pts;**

➤ **E14 Indicator:** Participation in 3 national projects – **gained 30 pts;**

➤ **E15 Indicator:** Participation in 2 national projects – **gained 40 pts;**

➤ **E16 Indicator:** Supervision of 3 national projects – **gained 60 pts;**

➤ **E17 Indicator:** Supervision of the Bulgarian team in an international scientific project – **gained 50 pts;**

➤ **E18 Indicator:** Raised funds on projects supervised by the candidate – **gained 67 pts;**

➤ **E19 Indicator:** 4 published university textbooks (author of 1 and co-author of 3 textbooks) – **gained 57.1 pts;**

➤ **E20 Indicator:** 4 published university reference books – **gained 26.8 pts.**

It is evident from the attached reference that the scientific output of Assoc. Prof. Teneva *in all indicators exceeds the minimum national requirements* for Professional Field 4.3 Biological sciences. The minimum number of 600 points for the academic position of ‘Professor’ has been exceeded almost twice and **1192.9 points** have been achieved. She participated in the competition with excellent scientometric indicators: the h-index is 12 and total IF: 40.602.

The additional requirements of the Faculty of Biology have also been *reached and exceeded*. In the years following his habilitation, Assoc. Teneva actively worked to raise the prestige of the Faculty of Biology (FB). She gained considerable administrative experience through her participation in responsible committees at the faculty level: for the appraisal of lecturers in the FB, for the conduct of state examinations and thesis defences. She is a member of the Editorial Board of the scientific journal called ‘*Journal of BioScience and Biotechnology*’ published by the Faculty of Biology and of the Ethics Committee of the FB. She has devoted significant time and efforts as a member of the Accreditation Committees of: Professional Field 4.3. Biological Sciences (twice in 2018 and 2024), Professional Field 5.11 Biotechnology (2023) and PhD program *Botany* (2022).

Recognition of the authority she has among colleagues is her election as a member of the Control Council of University of Plovdiv and the Faculty Council of the FB.

2. GENERAL CHARACTERISTICS OF THE CANDIDATE'S ACTIVITY

The presented Self-Assessment of the Contributions reflects fully and objectively the results of the overall activity of the candidate in research, scientific and applied and teaching activities. Of these, I will evaluate only those results/contributions that lack co-authorship, as required by Article 2(12) of the Procedures for the Development of Academic Staff of the University of Plovdiv.

Assessment of the Educational and Teaching Activity

First, I would like to note that Assoc. Prof. Teneva has a solid theoretical background as a teacher, acquired during her studies in the pedagogical major 'Biology and Chemistry'. She gained extensive experience and broad competences as a teacher in secondary education and as a lecturer in higher education. Her affinity for instruction is evidenced by her extremely heavy annual tutoring load. Only in the Bachelor's Educational Qualification Degree of the Faculty of Biology for the last five years, Assoc. Prof. Teneva averages of over 700 academic hours per academic year, which exceeds 2 times the annual norm for academic work (300 academic hours). She introduces innovative methods of instruction and testing of knowledge in various disciplines such as phycology, mycology, plant systematics, medical toxicology, bioresources, etc., in different majors of the Bachelor's and Master's Educational Qualification Degrees of the Faculty of Biology, and the affiliates of the University of Plovdiv in the town of Smolyan and the town of Kardzhali. All lecture courses are developed at a high methodological level, incorporating contemporary issues in the respective field.

Assoc. Prof. Teneva has developed 17 new syllabi for these lecture courses. She skillfully transmits her knowledge and experience to her young colleagues. Under her supervision, two PhD students and three graduates successfully defended their theses in the field of phycology. She is an independent author of a textbook on Phycology, co-author of three textbooks on Pharmaceutical Botany (Parts I and II) and four textbooks on Mycology, for students of different majors of the Bachelor's Educational Qualification Degree. The instruction content of these reference books is original and reflects the specificities of the training in the respective majors.

Assessment of the Scientific and the Applied Science Activities

In her scientific activity Assoc. Prof. Teneva develops a wide range of problems that arise from intensive project activity – she has participated in 3 national and 2 international projects; she has led 3 national and Bulgarian teams of 1 international project. The results of these developments have been promoted at 18 scientific forums, of which 11 are international.

My overall assessment of the scientific developments of Assoc. Prof. Teneva is that they are of a high professional level, with a variety of topics and interdisciplinary character. They are the product of authorial teams with in-depth competences in their respective fields, but the personal Assoc. Prof. Teneva's contribution is significant and recognizable. The results of the candidate's research have a wide international resonance. They have 199 citations in journals that have been refereed and indexed in Scopus and WoS, which exceeds this indicator four times.

I would pay special attention on the following **original scientific contributions on thematic fields**:

➤ To the taxonomy of Cyanoprokaryota section:

- A significant contribution is the selection of the outer membrane efflux protein (OMER) Psb27 and the photosystem II proteins CP43 and CP47 as new molecular genetic markers for elucidating phylogenetic relationships in cyanobacteria at the genus and species level [G7-9, G7-12].

➤ To the comparative genomic analysis of cyanobacterial strains:

- The comparative genomic analysis of strains with confirmed species representation identified genes with unknown and known functions. [G7-7; G7-10]
- **For identification of biological activity in the Cyanoprokaryota section:**
 - The chemical composition and biological activity of polysaccharides and secondary metabolites in *Anabaena laxa* and *Phormidesmis molle* were studied. It was found that the extract of *A. laxa* has the highest phenolic content and antioxidant activity. [G7-6]
 - With respect to *Phormidium papyraceum* it was found that, the extract of strain PACC 8600: 1/ is a rich natural source of biologically active components that can modulate the immunophenotype of major immune cell types; 2/ has antibacterial activity against Gram-negative and Gram-positive strains; 3/ contains at least 112 components, some of which are known to have antitumor, antioxidant, antifungal, antiviral, anti-inflammatory, and other properties. [B4-3]
 - The biological activity (antioxidant and toxic potential) of *Fischerella major* extracts was analysed for the first time. Production of: 1/ 45 components with different biological activities; 2/ cyanotoxins (microcystins and saxitoxins) with potentially harmful effects on the environment was found. [B4-5]
 - A novel approach was developed for rapid screening of antibacterial activity and immunomodulatory properties of cyanobacterial extracts. [B4-3]
- **To the phytochemical screening and biological activity of extracts of higher plants:**
 - The biological activity (cytotoxic, antitumor, antibacterial) of extracts from different aerial parts of *Marrubium friwaldskyanum* (*Lamiaceae* family) was studied. [G7-1]
 - Strong cytotoxic effect and antitumor activity of *Betonica bulgarica* (*Lamiaceae* family) inflorescence extract against human cervical adenocarcinoma was found. [G7-5]
- **For studying the feasibility of a vaccine against Grass Pollen Allergens Group I.**
 - A peptide has been designed as a vaccine against grass pollen allergy. [G7-2]

I would also like to highlight the following **contributions of scientific and applied importance:**

- The use of outer membrane efflux protein (OMER) as a marker in phylogenetic analyses of cyanobacteria has been validated. [G7-12]
- The cyanobacterial species *Anabaena laxa* and *Phormidesmis molle* have been identified as valuable resources for the isolation of immunomodulators and antioxidants, with possible applications in dietetics and medicine. [G7-6]
- The specific antitumor effect of *Betonica bulgarica* extracts makes them a potential source of medicinal products for the prevention and treatment of certain types of tumours. [G7-5]
- An immunogenic peptide designed as a vaccine against grass pollen allergy can be used to treat patients with grass pollen allergy after further clinical trials. [G7-2]

3. CRITICAL REMARKS AND RECOMMENDATIONS

I have no critical remarks, as the works and materials of the competition were made with thoroughness. I have known Assoc. Prof. Teneva since she joined the Department in 2007. From our many years of our teamwork, I can confidently state that she is a dedicated instructor and a competent researcher. As a colleague she is responsive and fair.

Undoubtedly, a current trend of modern phycological research worldwide is that new species and strains are being sought among algae as sources of industrial raw materials for various economic sectors. In this regard, I would recommend Assoc. Prof. Teneva to continue research on the metabolic diversity of microalgae, as in this respect the Plovdiv Algal Collection provides a rich experimental base.

CONCLUSION

The documents and materials submitted by Assoc. Prof. Ivanka Teneva-Dzhambazova, PhD meet all the requirements of the Academic Staff Development Act in the Republic of Bulgaria (ASDA), the Implementing Regulations of ASDA, and the Regulations of *Paisii Hilendarski* University of Plovdiv.

The main field of the research work of Assoc. Prof. Teneva-Dzhambazova, PhD is clearly outlined and corresponds to the theme of the competition. She is an established specialist in the field of phycology, with significant original results and contributions that have been cited and internationally recognised. Her professional experience is significant and effectively communicated through the textbooks, reference books, and successful graduate and postgraduate students she has developed. Teneva-Dzhambazova, PhD's scientometric indicators significantly exceed the minimum national indicators and additional requirements of the Biology Department for selection as a 'Professor'.

The analysis of the competition materials and all the above facts give me the grounds to give my convinced POSITIVE assessment and to recommend to the Honourable Scientific Jury to prepare a report-proposal to the Faculty Council of the Faculty of Biology for the election of Assoc. Prof. Ivanka Ivanova Taneva-Dzhambazova, PhD to the academic position of 'Professor' at Paisii Hilendarski University of Plovdiv in: Field of Higher Education 4. Natural Sciences, Mathematics, and Informatics, Professional Field 4.3. Biological Sciences (Phycology).

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The Statement of Opinion was prepared by:

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