

## STATEMENT

**REGARDING:** For participation in a competition for the academic position of "Associate Professor" in the field of higher education 4. Natural sciences, mathematics and informatics, professional field 4.3. Biological Sciences, in the scientific specialty "Microbiology", at the Medical College, Trakia University, Stara Zagora, published in the State Gazette no. 13 / 15.02.2022

by Assoc. Prof. Dr. Adriana Georgieva Gushterova  
Department of Biotechnology, Laboratory of Bioremediation and Biofuels, Institute of Microbiology "Stephan Angeloff", BAS, Professional field - 4.3. Biological sciences, specialty: Microbiology,

Based on an order of the Rector of the Trakia University № 1031 / 12.04.2022 and on the grounds of Art. 4 (3), (4) of LDASRB, Art. 5 (3), (4) of PRASTR - Regulations on the development of the Academic Staff in Trakia University, and decision of the Academic council, protocol №25 of 06.04.2022, a scientific jury has been appointed to hold a competition for the academic position of "Associate Professor" in "Microbiology" in a full-time position at the Medical College, Trakia University, Stara Zagora.

As a member of this jury, I declare that I have no common publications, projects or any form of conflict of interests according to the art. 1, paragraphs 3 and 5 of the Law for the Development of Academic Staff in the Republic of Bulgaria (LDASRB) with the only assessed candidate in the competition chief assistant professor Nedelina Stoyanova Kostadinova from the Department of Mycology.

The presented documents are in accordance with the directions published in the Regulations for application of LDASRB.

### **1. BRIEF INFORMATION ABOUT THE CANDIDATES IN THE COMPETITION:**

Chief Assist. Prof. Dr. Nedelina Stoyanova Kostadinova from the Department of Mycology is the only candidate in the competition for the academic position "Associated Professor", announced by the Medical College of the Trakia University, Stara Zagora for the needs of the Department of Microbiology.

She graduated as a Bachelor, majoring in Biology (and Pedagogical Qualification "Biology teacher") at Plovdiv University "Paisii Hilendarski" Plovdiv in the period 2000-2004, with a subsequent master's degree in "Microbial and plant biotechnology" (2004-2006) at the University of Plovdiv "Paisii Hilendarski", followed by a full doctorate (2008 - 2013) at The Stephan Angeloff Institute of microbiology, Bulgarian Academy of Sciences, G. Bonchev Str. 26, Sofia in the Department of Mycology, topic of the dissertation "Cellular response to low-temperature stress in Antarctic fungi", as a chief assistant from 2014 until now in the Department of Mycology.

### **2. IMPLEMENTATION OF THE REQUIREMENTS FOR THE ACADEMIC POSITION "ASSOCIATE PROFESSOR"**

The only candidate for the academic position "Associated Professor" in the competition presents documentation with the implementation of the national requirements of the Law in accordance with the individual indicators, and documentation for the implementation of the

additional requirements for tenure of the position of "Associated Professor" according to the Regulations with included list of in total 33 publications:

- In refereed and indexed editions - 21 and 4 chapters which are in non-refereed journals with scientific review or edited collective volumes
- Publications in international journals referenced and indexed in other databases - 4
- Publications in international journals referenced and indexed in Web of Science and Scopus without impact factor - 2
- Publication in a collection of papers from a national conference - 1
- Published book based on defended dissertation - 1

**Total impact factor: 31.61, h-index 7; Total citations: 189** - Citations in WoS and Scopus - 105, citations in other databases - 84.

Participation in research projects - 24 (National projects - 14, Economic projects- 5, International projects - 5); National project management - 1; Participation in scientific forums - 80 (International scientific forums - 27, National scientific forums - 53).

Since 2015 she has been a part-time lecturer at Sofia University "St. Kliment Ohridski ", Faculty of Biology - exercises in the discipline "Cell Biology" in the Department of Cell biology and developmental biology (for specialties 1st year "Biology", "Biotechnology", "Ecology and Environmental Protection", "Biomangement and Sustainable Development") so far.

### **3. IMPLEMENTATION OF THE MINIMUM NATIONAL REQUIREMENTS ACCORDING TO LDASRB**

From the documents on the competition, it is clear that Ch. Assistant Professor Dr. Nedelina Stoyanova Kostadinova meets and exceeds the minimum national requirements as follows:

#### **According to indicator A - 50 points**

The candidate received the educational and scientific degree "Doctor" in 2013, successfully defending a dissertation in the Department of Mycology on the topic "Cellular response to low temperature stress in Antarctic fungi."

#### **According to indicator 4 in group B - 115 points**

- habilitation thesis - 6 scientific publications in international journals which are referenced and indexed in world-famous databases with scientific information Scopus and Web of Science in the period 2013-2021.

#### **According to indicators 5 - 10 in group D - 322 points**

All scientific papers are co-authored and are in peer-reviewed scientific journals. Published chapters from a collective monograph - 60 points.

#### **According to the indicators from 11 to the end in group D - 210 points**

Citations in scientific journals, monographs, collective volumes and patents, referenced and indexed in world-renowned databases of scientific information (WoS and Scopus)

#### **According to the indicators from 12 to the end in group E - 260.8 points**

Participation in national and international projects and attracted funds from projects - 24 pieces. National project management - 1. Participation in scientific forums - 80 pieces.

**Total points: 957.8**



#### **4. EVALUATION OF THE SCIENTIFIC PAPERS OF THE CANDIDATE, PRESENTED IN THE COMPETITION FOR ASSOCIATE PROFESSOR.**

The main contributions from the activity of Chief Assistant Dr. Nedelina Stoyanova Kostadinova are summarized as a habilitation reference of 7 pages for scientific and scientific-applied contributions in the papers that present well-systematized information about the research. The contributions from the publications are grouped in 3 main research areas fully consistent with the direction of the competition and the scientific institution as follows:

##### ***I. PARTICIPATION OF ANTIOXIDANT PROTECTION IN THE CELL RESPONSE AGAINST LOW TEMPERATURE STRESS AND ENZYME APPLICATION***

- New information has been obtained on the differences in the physiological response of two strains of filamentous fungi belonging to different thermal classes (psychrotolerant *P. commune* 161 and mesophilic *A. glaucus* 363) isolated from Livingston Island, Antarctica.

- Laboratory technology for efficient production of cold-active SOD from *A. glaucus* 363 strain has been developed based on the relationship between low temperature treatment and enhanced antioxidant protection in cells.

- A procedure for purification of cold-active SOD is proposed. The specific activity of the Cu / Zn-CODII isoenzyme is improved by 150%.

##### ***II: TOLERANCE TO HEAVY METALS AND ITS RELATIONSHIP WITH ANTIOXIDANT ENZYME PROTECTION IN FUNGI***

Data received on:

1. the relationship between the tolerance to extremely high concentrations of Cu and Zn ions and the different cellular response in fungi isolated from metal-contaminated soils from the tailings pond Vlaykov Vrah, Bulgaria. Representatives of Ascomycota (82% of all isolates) and others were isolated.

2. the changes in the level of biomarkers for oxidative stress and the activity of the main antioxidant enzymes SOD and CAT.

3. the response of fungi against the combined toxicity of heavy metal mixtures (Cu, Cd, Ni and Zn) and the oxidative stress reported in two strains, *A. fumigatus* 3-2 and *A. fumigatus* G, capable of surviving in highly contaminated soils of the tailings pond near Vlaykov Vrah mine, Bulgaria.

4. The observed tolerance to heavy metals in both model strains of filamentous fungi is a prerequisite for proving their potential to be used in bioremediation processes.

##### ***III: ANTIOXIDANT AND ANTIFUNGAL ACTIVITY OF PLANT EXTRACTS***

- The chemical composition of 6 essential oils of the genus *Rosa*, growing in Bulgaria, Moldova and China, was determined, and their anti-radical and antifungal actions against the fungi *Aspergillus flavus* and *Aspergillus niger* were compared.

- For the first time, the antimicrobial and radical-scavenging activities of extracts and fractions from the roots and aerial parts of *G. urbanum* (urban enchantress) have been studied. The total phenolic content has been determined and new chemical compounds have been isolated.

#### **5. EDUCATIONAL AND METHODOLOGICAL ACTIVITY.**

The candidate has declared active teaching and learning activities in the Department of Cell biology and developmental biology (for specialties 1st year Biology, Biotechnology, Ecology and Environmental Protection, Biomanagement and Sustainable Development) at the Faculty of Biology, Sofia University "St. Kliment Ohridski". A report on the workload from 2015 until now is presented.

Guidance of a graduating student: Bachelor Monika Andreeva, from the New Bulgarian University, topic "Biosynthesis of enzymes from lignolytic fungi".

#### **6. PERSONAL IMPRESSIONS OF THE CANDIDATE.**

I have known chief assistant Nedelina Stoyanova Kostadinova since she started working at the Stephan Angeloff Institute of Microbiology. I have excellent impressions of her research work, of the energy she puts into her work, of her scientific knowledge in the fields of ecology, biotechnology, and molecular biology.

The candidate is a regular member of the section "Microbiology" at the Union of Scientists in Bulgaria and the Federation of European Microbiological Societies. Undoubtedly, her experience from the specializations in France and Spain would contribute to her research and teaching activity.

I am convinced that these qualities will be very useful to her as an associate professor at the Medical College at the Trakia University, Stara Zagora.

#### **7. Critical remarks and recommendations.**

I have no remarks or recommendations to the candidate. All documents are prepared according to the requirements.

#### **Conclusion**

**In terms of volume, content and quality, the presented scientific production and active research and organizational activities, professional and scientific experience of the candidate fully comply with the requirements for holding the academic position of "Associate Professor". I confidently give my positive assessment and I PROPOSE the candidate Chief Assistant Nedelina Stoyanova Kostadinova to take the academic position of "Associate Professor" in the discipline "Microbiology" 4. Natural Sciences, Mathematics and Informatics, professional field 4.3. Biological Sciences, in the specialty "Microbiology" at the Medical College, Trakia University, Stara Zagora**

20.

05.2022  
Sofia

Prof. Dr. Adriana Gushterova