

STATEMENT

By Prof. Nelly Vladova Georgieva, PhD, Department of Biotechnology, University of Chemical Technology and Metallurgy, Sofia

Regarding: The materials submitted for participation in a competition for the academic position „Associate Professor” at the Institute of Microbiology, BAS for the needs of the Laboratory “Microbial biochemistry”, Department of General Microbiology, in Professional area 4.3. Biological sciences, scientific specialty “Microbiology/Enzymology”, announced in SG ed. 84 on 04.10.2024 with the only candidate being **Assist. Prof. Yana Gancheva Gocheva, PhD.**

The present statement is prepared on the basis of Order No I-162/26.11.2024 of the Director of the Institute of Microbiology, BAS. Assist. prof. Yana Gancheva Gocheva, PhD is the only applicant who has submitted documents for this competition within the deadline regulated by the law. She has worked at the same Institute in the Department of General Microbiology, Laboratory “Microbial biochemistry” on a full-time position with 15 years of scientific experience in the subject of the announced competition.

The documents and materials submitted by the candidate for the competition are in accordance with the requirements of the Act on the Promotion of Research and Development of the Bulgarian Academy of Sciences, the Regulations for its implementation and the Regulations for the Development of the Academic Staff of the Bulgarian Academy of Sciences and meet the criteria of the Institute of Microbiology for occupying the academic position of "Associate Professor". They also satisfy the recommended criteria for occupying the academic position of "Associate Professor" in Professional area 4.3 Biological Sciences. The documents for the competition are structured in a clear manner and in a way that reflects very well the academic activity of the candidate.

Brief biographical data

Assistant Professor Dr. Yana Gocheva graduated from the Faculty of Biology of Sofia University "St. Kliment Ohridski" with an Master's degree in 1993, majoring in "Biotechnological Processes". During the period 1997 - 2001, she was a doctoral student at the Department of "General and Applied Microbiology" of the Faculty of Biology, Sofia University "St. Kliment Ohridski" and defended her dissertation for the "Doctor", scientific major "Microbiology" on the topic: "Research on the influence of Ca²⁺ binding proteins on

the differentiation of *Streptomyces hygroscopicus* 155" with scientific supervisor Assoc. Prof. Iskra Ivanova, PhD. After a competition held in 2016, she currently holds the academic position of Assistant Professor in the Department of General Microbiology, Laboratory of Microbial Biochemistry. Assistant Professor Dr. Yana Gocheva is a participant in 5 research projects, of which 3 national projects funded by the Bulgarian National Science Foundation, 1 international project funded by the European Space Agency and 1 internal project funded by the Institute of Microbiology. In her research activities, she uses a rich methodological arsenal, and along with well-known and widely applied microbiological, physiological and biochemical methods, she also masters some of the most modern approaches for molecular and enzymological analyses.

Main scientific indicators

In this competition, Assis. Prof. Dr. Yana Gocheva participated with 29 scientific publications after the "PhD" degree with a total impact factor of 41.502 and H - index 7. Publications with IF and/or SJR are 20, book chapters - 1. The distribution by quartiles is as follows: in Q1 - 5 publications, in Q2 - 6 publications, in Q3 - 3 publications, in Q4 - 6 publications. The results of the scientific developments have been presented at national and international scientific forums. The report on the fulfillment of the minimum national requirements for scientific field 4 and professional field 4.3 Biological Sciences shows a sum of points that fully cover these criteria, and they are as follows:

Indicators of A: Dissertation thesis 50 p. (min. 50)

Indicators of B: habilitation paper 145 p. (min. 100)

Indicators of G: scientific papers 220 p. (min. 220)

Indicators of D: cited papers 224 p. (min. 60)

The citations of the publications are from world-renowned databases of scientific information (Web of Science and Scopus) and 112 citations without self-citations are presented, totaling 224 p. The data shows that the scientific assets of Assis. Prof. Yana Gocheva exceed the minimum national requirements, as well as the additional requirements of the Institute of Microbiology, BAS.

Scientific contributions

The published scientific results presented in the competition fall fully within the scope of the announced competition. The scientific contributions reflected in the research work of Asst. Prof. Dr. Yana Gocheva can be summarized in the following areas:

1. Study of temperature and oxidative stress in filamentous fungi isolated from Antarctica and the role of enzymes such as catalase and superoxide dismutase.

New knowledge has been gained regarding the mechanisms of adaptation of filamentous fungi from Antarctica to low temperature stress and their potential as producers of enzymes with unique characteristics.

2. Studies on lactic acid bacteria and their antibacterial activities

The metabolic activities of lactic acid bacteria and their specific flavor-forming characteristics have been studied as a prerequisite for their use in functional foods.

3. Research on new enzymes and their potential applications from various bacterial and fungal producers

A new recombinant enzyme malate quinone oxidoreductase has been constructed and purified with application in the creation of biosensors for monitoring and controlling fermentation in wine production. New knowledge of theoretical and applied importance in the study of the enzyme sialidase (EC3.2.1.18) in bacteria and fungi has been obtained.

For the first time, a sialidase enzyme from the non-pathogenic saprophyte *Oerskovia paurometabola* 129 has been demonstrated, isolated, purified and characterized. For the first time, data on the inhibitory effect of extracts from *Rosa damascena* and *Origanum vulgare* ssp *hirtum* and natural compounds on bacterial sialidases obtained from *Vibrio cholerae* non-O1, *Arthrobacter nicotianae* and *Oerskovia paurometabola* have been obtained, with theoretical and applied significance in the development of new antimicrobial therapies and prevention of various diseases. New information of theoretical importance has been obtained about the distribution of the enzyme sialidase in a previously unexplored taxonomic group of microorganisms such as filamentous fungi. For the first time, the effect of catabolite repression and the mechanisms of regulation of enzyme synthesis in filamentous fungi have been studied. For the first time, increased sialidase activity as a result of oxidative stress has been demonstrated in a filamentous fungus.

A promising strain *P. griseofulvum* P29 was selected and the cultivation parameters for the synthesis of the enzyme sialidase were optimized. A protocol for the purification of the enzyme sialidase produced by the Antarctic strain *Penicillium griseofulvum* P29 was created.

For the first time, the possibility of microbiological degradation of cellulose waste and its transformation into a valuable resource under conditions of Earth gravity and microgravity (space station model) by mixed bacterial communities and pure cultures isolated from different ecological niches has been compared.

New information of theoretical importance has been obtained regarding the microbiome of reptiles from the territory of Bulgaria.

Conclusion

The scientific works included for evaluation in this competition are distinguished by originality, accuracy and relevance and fully correspond to the scientific field and scientific direction of this competition. The results obtained and the scientific contributions of Asst. Prof. Yana Gocheva, PhD, reflecting her long-term research experience, reveal opportunities and prospects for new research on current problems. The outlined aspects for future work, continuation of the developed topic, also make a good impression.

All formal requirements specified in the Act on the Development of the Academic Staff in the Republic of Bulgaria, as well as the Regulations for its implementation, have been met, as the scientometric data of Assis. Prof. Yana Gocheva, PhD exceed the minimum national and additional requirements of the Act on the Development of the Academic Staff in the Republic of Bulgaria and the relevant regulations of the Institute of Microbiology for holding the academic position of "Associate Professor" in the Professional field 4.3 of Biological Sciences.

The presented convincing evidence of scientific activity and the analysis of the scientific results give me reason to give a positive assessment to the only candidate in the competition, Assis. Prof. Yana Gocheva, PhD. I strongly recommend that the Scientific Jury and the Scientific Council of the Institute of Microbiology, BAS elect **Assis. Prof. Yana Gocheva, PhD** as Associate Professor in the Professional field 4.3 Biological Sciences, scientific specialty "Microbiology/Enzymology".

15.01.2025

Signature:.....

/prof. Nelly Georgieva, PhD/