

OPINION

from Associate professor Maria Gerginova, "Stefan Angelov" Institute of Microbiology, BAS

Regarding the procedure for the competition for the academic position of "Associate professor", in the professional field 4.3. Biological Sciences, scientific specialty Microbiology/Enzymology, for the needs of the "General Microbiology" Department, "Microbial Biochemistry" Laboratory, announced in the State Gazette No. 84/4.10.2024.

Candidate for participation in the competition: Dr. Yana Gancheva Gocheva

Basis for the opinion: Order of the Director of the Institute of Microbiology "Stefan Angelov" BAS, Prof. Penka Petrova (I-162/26.11.2024) and the decision of the first meeting of the Scientific Jury.

Information about the contest

Dr. Yana Gocheva participates as the only candidate in this competition. She is currently an assistant professor in the Laboratory of Microbial Biochemistry, Department of General Microbiology.

The documents presented by Dr. Yana Gocheva are in accordance with the requirements of the Law on Academic Staff Development in the Republic of Bulgaria (ADASRB) and the Regulations for its implementation, as well as the Regulations on the Implementation of the Academic Staff of the Bulgarian Academy of Sciences and IMicB, BAS for the appointment in the academic position of "Associate Professor". All this allows me to declare the procedure as lawful.

Brief information about the candidate

Senior Assistant Professor Gocheva graduated from Sofia University "St. Kliment Ohridski", Faculty of Biology, in professional trends "Biotechnological Processes" in 1993. In 2001, she received the scientific and educational degree Doctor in the scientific specialty "Microbiology", based on a defended dissertation on the topic: "Research on the role of calcium-binding proteins in the differentiation of *Streptomyces hygroscopicus* 155" at Sofia University "St. Kliment Ohridski", Faculty of Biology, Department of "General and Applied Microbiology". Her experience in the specialty is over 15 years, as she joined the Institute of Microbiology, Bulgarian Academy of Sciences, initially in the "Mycology" section. Since 2016, Dr. Yana Gocheva has been an assistant professor in the "Microbial Biochemistry" laboratory, Department of "General Microbiology", Institute of Microbiology, BAS. During the period 2003-2007, she has won and conducted 2 postdoctoral specializations at GTP Technology, Labège, France, and Ben Gurion University, Department of "Natural Sciences", Beersheba, Israel.

Fulfillment of the requirements for occupying the academic position "Associate Professor"

Requirements under ADASRB

When comparing the presented scientific-metric indicators by the assistant professor Gocheva with the Minimum National Criteria for the Scientific Degree "Associate Professor" according to ADASRB, the following number of points is established:

- **Criterion "A"** - Successfully defended a dissertation for the scientific degree of PhD
- 50 points (required 50)
- **Criterion "B"** - Habilitation work or scientific publications referenced and indexed in WoS/Scopus: - 125 points (required 100). In this criterion, 6 publications are included, of which three are in Q1 journals, one in Q2, and two in Q3.
- **Criterion "C"** - 255 points (required 220)
Five articles (9-11, 13, 11) SJR – Q1
Two articles (15 and 20) SJR – Q2
One article (8) SJR – Q3
Five articles (7, 14, 16-18) SJR Q4
Book Chapter (21)
- **Criterion "D"** - The presented list of citations includes 112 titles. Total: 224 points (60 required).

Given the requirements of the ADASRB, I consider it necessary to note that Senior Assistant Professor Gocheva fulfills and repeatedly exceeds, by indicator D, the minimum national requirements for acquiring the scientific degree of Associate Professor in the professional field 4.3 Biological Sciences.

Fulfillment of the additional requirements of the Institute of Microbiology "Stefan Angelov", BAS

The review of the competition documents showed that Dr. Yana Gocheva fulfills all the indicators provided by the ADASRB, as well as the additional criteria for growth of academic staff according to the Regulations for the Implementation of the Academic Staff of IMicB-BAS.

Dr. Gocheva has presented 29 scientific papers (excluding those for PhD). Part of the papers (21) have been published in refereed and indexed journals, and in 7 of them, Dr. Gocheva is the first author (if required-5). The total IF of the publications is 37.589, and the h-index of the candidate is 7, if required-5. The total number of citations of the publications is 195 in the Scopus and Web of Science systems, which shows that the results published by the candidate are widely accepted in the scientific community.

The candidate's active project involvement is excellent. She is a participant in 5 projects, 3 of which are national, 1 funded by the European Space Agency. Dr. Gocheva's ability to prepare projects and her successful collaborations with numerous Bulgarian and international scientific organizations are crucial for the advancement of the department's research programs.

Main directions in research work

The submitted research papers fully cover the topic of this competition. The general scientific activity of Dr. Gocheva is characterized by topicality, use, and introduction of appropriate, modern analytical, microbiological, molecular-genetic, and biochemical methods of work. The scientific and applied research of the head assistant Dr. Gocheva, is focused in the following scientific areas:

Biodiversity of microorganisms in different ecosystems.

- Dr. Yana Gocheva is one of the first members of the IMicB team working on projects related to the isolation and identification of filamentous fungi from Antarctica. *Penicillium*, *Aspergillus*, *Mucor*, *Cladosporium*, *Alternaria*, *Verticillium*, and *Botrytis* species were isolated in the course of the research. Studies on cold-adapted filamentous fungi are a source for the discovery of new enzymes and secondary metabolites with wide applications in biotechnology and food technology.
- Lactic acid bacteria have been isolated from boza and tested for their antibacterial activity. *Lactococcus lactis* subsp. *lactis* 14 strain was evaluated as the most promising one.
- Gene-specific PCR assays for the presence of the technologically important lactococcal genes for citrate permease (*cytP*), membrane proteinase (*prtP*), nisin synthetase (*nisA/Z*), and prophage integrase (*int*) were performed in collection cultures. The gene-specific PCR techniques enabled the rapid and efficient selection of lactococcal strains with high potential in the development of starters for lactic acid products.

Isolation and characterization of enzymes produced by bacteria and micromycetes.

- Micromycetes isolated from low-positive-temperature environments were studied for antioxidant protection during hypothermic stress.
- Malate quinone oxidoreductase, a novel recombinant enzyme, has been developed and characterized for use in biosensors for monitoring and controlling fermentation in winemaking.
- The enzyme sialidase was isolated and characterized in the non-pathogenic saprophyte *Oerskovia paurometabola* 129. The effect of natural products on bacterial sialidase activity was investigated and determined.

Dr. Gocheva's contributions succeed in uniting fundamental and applied science. As the most significant contribution of an original nature, I will highlight her participation in the development of the study of the enzyme sialidase in filamentous fungi. The Antarctic strain *Penicillium griseofulvum* P29 was selected as the most promising producer of the sialidase enzyme. Increased sialidase activity as a result of oxidative stress was demonstrated for the first time on the subject filamentous fungi.

The studies presented by Dr. Gocheva are up-to-date, original, and directly related to the goals and development of modern microbiology. The obtained results reveal opportunities and

prospects for new research on topics related to metabolic characteristics of microorganisms and the discovery of new biomolecules with innovative biotechnological applications. From here we logically follow the clearly and precisely formulated future research of Dr. Gocheva related to the isolation and characterization of bacteria and fungi producing the enzyme phytase.

Conclusion

On the basis of the above-mentioned scientific contributions, the overall documentation of the competition, and the undoubted qualities of the works submitted for the competition, I give a positive evaluation for the participation of Dr. Yana Gocheva in the competition. I confidently support and propose to the scientific jury and the SC of the Institute of Microbiology at the Bulgarian Academy of Sciences to vote positively for the academic position of "Associate Professor" to Dr. Yana Gocheva in the professional field 4.3. Biological Sciences, specialty Microbiology/Enzymology.

14.01.2025

Signature:.....

Sofia

/Assoc. Prof. M. Gerginova/