



## EXPERT OPINION

**By:** Assoc. Prof. Dr. Trayana Spassova Nedeva, Faculty of Biology, Sofia University “St. Kliment Ohridski”, member of the scientific jury appointed by order No I-70 / 30.05.2022 of the Director of the Stephan Angeloff Institute of Microbiology – BAS, Prof. Penka Petrova, Dr. Habil.

**Re:** The materials submitted for participation in a competition for the academic position Associate Professor at the Institute of Microbiology - BAS in Higher Education area 4. Natural sciences, mathematics and informatics; Professional area 4.3. Biological sciences, Microbiology – New functional food

The competition for the academic position Associate Professor in HE area 4. Natural sciences, mathematics and informatics, Professional area 4.3. Biological Sciences, Microbiology – new functional foods has been launched for the needs of the Department of General Microbiology, Laboratory of Microbial Genetics at the Institute of Microbiology – BAS in SG No 29/12.04.2022. Assist. Prof. Dr. GALINA DINKOVA STOYANCHEVA is the only applicant that has submitted documents for this competition within the deadline regulated by the law. She currently works at a permanent position in the same laboratory.

### 1. General presentation of the procedure and the applicant

The documents for the competition were provided by a technical assistant of the Institute of Microbiology - BAS. They are prepared in compliance with the requirements of the Act for the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for its implementation, and the Regulations for the conditions and the order for acquiring scientific degrees and holding academic positions in the Stephan Angeloff Institute of Microbiology – BAS. They also meet the recommended criteria for holding the academic position of Associate Professor in Professional area 4.3. Biological sciences. There are no signals for plagiarism. The documentation for the competition is well structured and allows the scientific and applied/scientific activity of the applicant to be followed towards predefined quantitative and qualitative indicators.

Assist. Prof. Dr. Galina Stoyancheva graduated from Sofia University "St. Kl. Ohridski", Faculty of Biology in 1999 and was awarded a Master degree in Biotechnological Processes, with specialization in Genetic and Cellular Engineering. She defended her PhD thesis “Combined approach for molecular-taxonomic characteristic of lactobacilli” in 2006 at the Stephan Angeloff Institute of Microbiology – BAS, where (in the laboratory of Microbial genetics) she has been working since 1998. During her professional career, she held the positions of a Specialist (1998-2000), Research Associate (2000 – 2007), and Chief Assistant Professor (2007 – at present). During the period 2007-2008, she conducted a specialization in the laboratory of General and Food Microbiology, at the Department of Science and Food, University of Verona, Italy with the

financial support of a FEMS scholarship and performed research activities related to lactic acid bacteria investigation.

Assist. Prof. Dr. Galina Stoyancheva has presented 30 papers as a scientific production. It has a total IF of 27.49, h-index 7 (Scopus), and is distributed as follows: 24 research papers in peer-reviewed and indexed journals (WoS/Scopus), a total of 6 research papers in reviewed journals, book chapters, oral presentations in proceedings of international scientific forums (published in full text) not referred to and indexed in WoS/Scopus, and a PhD thesis. According to WoS/Scopus research databases, the presented papers are cited 162 times, and in other databases - 141 times.

Twenty-eight publications are presented in the competition for the academic position of Associate Professor. Among them, 22 research papers in international peer-reviewed and indexed journals, distributed by quartiles as follows: Q1 – 2 pcs., Q2 - 10 pcs., Q3 - 3 pcs. and Q4 – 6 pcs. One research paper in a reviewed journal, 2 book chapters, and 3 oral presentations in proceedings of international scientific forums (published in full text) are also presented, which are not referred to and indexed in WoS/Scopus. The reference in Scopus/Web of Science and other databases shows that the publications are cited 119 and 115 times, respectively.

The results of the research activity were reported at 23 international and 7 national scientific forums, all presented for participation in the competition.

Assist. Prof. Dr. Galina Stoyancheva took part in 17 research projects (12 national and 5 international), being a leader of 4 of them (3 national and 1 international). They reflect her scientific and applied scientific activity in the professional area of the competition.

## **2. General assessment of the applicant activity**

### **2.1. Assessment of scientific and applied scientific activities**

#### ***Scientific papers***

The reference for compliance with the minimal state requirements in accordance with Art. 2b of the Act for the Development of the Academic Staff in the Republic of Bulgaria for HE area 4. Natural Sciences, Mathematics and, Informatics, Professional area 4.3. Biological Sciences, and the regulations of BAS indicates that the applicant research achievements fully fit the stipulated criteria, as follows:

- ✓ Indicators of group A: PhD thesis - **50 p.**;
- ✓ Indicators of group C: C4 habilitation work - scientific publications in journals that are referenced and indexed in research database (WoS/Scopus) - **109 p.** (minimum requirement 100 p.);
- ✓ Indicators of group D: research articles in international peer-reviewed and indexed journals - **288 т.** (minimum requirement 220 p.);
- ✓ Indicators of group E: cited papers – **600 p.** (minimum requirement 60 p.).

#### ***Scientific and applied research contribution***

The applicant's contributions are in the intersection between microbiology and human health. They provide information of innovative and confirmative character related to microbial diversity in various habitats, taxonomic identification and evaluation of the physiological and biochemical characteristics of representatives of kingdoms *Bacteria* and *Fungi* in view of their potential for practical application to solve important problems such as antibiotic resistance, needs for alternatives to antibiotics as therapeutic agents, creation of new functional foods with probiotic characteristics and free of chemically synthesized preservatives. These contributions can be grouped as achievements of scientific, applied scientific and methodical significance, as follows:

### Major scientific contributions:

- ✓ Thirty strains of g. *Lactobacillus*, isolated from clinical specimens, have been identified, and bacteriocin genes in 3 of them - identified and sequenced. They are shown to produce an active substance of protein nature and exhibit antimicrobial activity against Gram-positive and Gram-negative bacteria. [1] (*confirmative*);
- ✓ The probiotic characteristics of 10 lactobacilli strains, isolated from clinical vaginal specimens, have been studied and a synergistic antimicrobial effect of the simultaneous synthesis of hydrogen peroxide and lactic acid has been proven. [6] (*confirmative*);
- ✓ The microbiota of home-made and commercial dairy products has been studied and 21 pure cultures of LAB and 6 yeast strains have been isolated, identified and genotyped; conclusions about the efficacy of microbiological control as an indicator of food quality and safety have been drawn. [5] (*confirmative*);
- ✓ The plasmid profiles of 20 Bulgarian industrial strains *Streptococcus thermophilus* have been studied and their group affiliation according to DNA homology has been determined; the genetic diversity of *S. thermophilus* phages has been revealed on the basis of their restriction profiles [9, 13] (*confirmative*);
- ✓ *Lactococcus lactis* HV219, a bacteriocin HV219 producer, has been isolated and its physicochemical characteristics have been studied; its antimicrobial activity against Gram-positive and Gram-negative bacteria has been demonstrated; [7] (*original*);
- ✓ *Microbacterium* sp. LB1 strain has been isolated that shows a potential to be used as a biological agent for excessive algae growth in contaminated waters. [8] (*original*);
- ✓ A comprehensive study on the biodiversity of filamentous fungi, inhabiting various materials from historical monuments in Egypt was conducted and a species identification was carried out through a sequence analysis of various taxonomic markers. [4] (*original*);
- ✓ A database has been created from sequence analyzes of over 250 filamentous fungal strains, isolated from a variety of natural habitats and possessing valuable biotechnological characteristics [11, 12, 14-22] (*confirmative*);
- ✓ Molecularly-biological examination and complete sequencing and characterization of five catalase genes from an Antarctic strain *Penicillium griseofulvum* P29 have been performed and the importance of temperature as a factor regulating the expression of catalase genes in filamentous fungi has been revealed [3] (*original*).

### Major applied research and methodological contributions:

- ✓ New sets of primers have been created, targeting 2 bacteriocin operons; the presence of an operon for the bacteriocin gaseicin has been described in the genome of *Lactobacillus crispatus*. Specific primers have been arranged for proving the presence of the gene for the bacteriocin helveticin and its potential as a phylogenetic marker has been evaluated. [1, 2] (*original*);
- ✓ A nutrient medium has been constructed for optimal production of the bacteriocin HV219 from the *Lactococcus lactis* HV219 strain. [7] (*original*);
- ✓ The results from the taxonomic investigation of filamentous fungi inhabiting artifacts from the world cultural heritage, possess the potential to be used in the development of appropriate conservation methods. [4] (*original*);
- ✓ A set of new primers have been created for *Penicillium griseofulvum* catalase genes, which allows for the identification of catalases, induced by low temperature, and the development of new approaches for the production of temperature-sensitive catalase. [3] (*original*).

## **2.2 Assessment of educational and pedagogical activity**

The educational and pedagogical activities of Assist. Prof. Dr. Galina Stoyancheva comprises mentorship of students along the educational programme “Students internship”.

## **3. Assessment of the applicant's personal contributions**

The presented by Assist. Prof. Dr. Galina Stoyancheva research papers and accompanying documentation demonstrate a convincing personal contribution to the experimental development, analysis, interpretation, and publication of the scientific results.

The author's reference for the research work and scientific contribution presents in details the scientific, applied scientific, and methodological achievements of the applicant. I have known Dr. Stoyancheva since her student time. As her former tutor, I am convinced that she possesses all the professional qualities: scientific competence in microbiology, molecular biology, genetic and cell engineering, bioinformatics; innovation spirit and excellent potential for teamwork; collegiality and ethics to hold the academic position "Associate Professor" of the Stephan Angeloff Institute of Microbiology – BAS.

## **4. Critical remarks and recommendations**

I have no remarks or recommendations to the presented materials and documentation.

## **5. Conclusion**

All formal requirements specified in the Act for the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for its implementation, and the Regulations for the conditions and the order for acquiring scientific degrees and holding academic positions in the Stephan Angeloff Institute of Microbiology – BAS have been fulfilled. Convincing and sufficient evidence for scientific and applied scientific activity of high quality are presented. The critical analysis of their significance allows me to confirm the positive assessment, presented above and to strongly recommend to the esteemed scientific jury, appointed by order No I-70 / 30.05.2022 of the Director of the Stephan Angeloff Institute of Microbiology – BAS to issue a report-proposal for the election of Assist. Prof. Dr. GALINA DINKOVA STOYANCHEVA for the academic position Associate Professor in HE area 4. Natural sciences, mathematics and informatics, Professional area 4.3. Biological Sciences, Microbiology – New functional foods.

11.08.2022

Sofia

Expert opinion author:

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