



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 ПД 38-468 / 22.07.2024 of the Rector of Sofia University “St. Kliment Ohridski”, Prof. Dr. Georgi Valchev.

Re: The materials submitted for participation in a competition for the academic position Associate Professor of Sofia University “St. Kliment Ohridski” in Higher Education area 4. Natural sciences, mathematics and, informatics; Professional area 4.3. Biological sciences, Microbiology – General microbiology and phytopathogenic bacteria.

The competition for the academic position Associate Professor in HE area 4. Natural sciences, mathematics and informatics, Professional area 4.3. Biological Sciences, Microbiology – General microbiology and phytopathogenic bacteria has been launched for the needs of the Department of General and Industrial Microbiology at the Faculty of Biology of Sofia University “St. Kliment Ohridski” in SG No 55/28.06.2024. Assist. Prof. Dr. YOANA KRASIMIROVA KIZHEVA 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 department.

1. General presentation of the procedure and the applicant

The documents for the competition are available online on the website of the Faculty of Biology, Sofia University (<https://www.biofac-unisofia.com/index.php/s/y8j3jPgYzFCt42t>). 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 Sofia University “St. Kl. Ohridski”. They also meet the recommended criteria for holding the academic position of Associate Professor in Professional area 4.3. Biological sciences. The competition dossier complies with the requirements of the Law and contains information on the applicant’s teaching, research, applied, and administrative activities in terms of qualitative and quantitative indicators.

Yoana Kizheva is a graduate of Sofia University "St. Kl. Ohridski", Faculty of Biology, where she obtained a Bachelor's degree "Teacher of Biology and Chemistry" (2007) and a Master's degree in "Microbiology and Microbiological Control" (2010). As a full-time Ph.D. student at the same institution, she defended her Ph.D. thesis, intitled "Phytopathogenic bacteria of the genus *Xanthomonas* on *Solanum lycopersicum*" in 2014 at the Department of General and Industrial Microbiology, where she started and developed her academic career. She is currently holding the position of Senior Assistant Professor. During the period 2017-2019, she has participated in four training programs. She is currently a member of a COST Action dedicated to plant-microbe interactions for crop improvement.

Assist. Prof. Dr. Kizheva has presented a list of 23 papers as total scientific output. It has a total IF 31.485, *h*-index (Scopus) 7 and distribution as follows: 21 research papers in peer-reviewed and indexed in world-known databases with scientific information (Scopus and Web of Science) journals and 2 publications in journals that are not indexed. According to the Scopus/Web

of Science database, the presented papers have been cited 82/109 times, and in other databases - 136 times.

In the competition for the academic position of Associate Professor, 18 scientific papers were submitted, published in international peer-reviewed and indexed journals, distributed by quartiles as follows. Q3 - 7 pcs. and Q4 - 3 pcs. with IF 30.503; *h*-index (Scopus) 7. The reference in Scopus and other databases at the time of expert opinion preparation shows that these papers have 111 and 141 citations, respectively. The research results have been presented at 19 international and 21 national scientific forums and 2 workshops with posters and oral presentations. Of these, a total of 34 are eligible for participation in the competition. In the period related to the competition, Assist. Prof. Dr. Kizheva participated in 13 scientific and educational projects (12 national and 1 international). They reflect both the research and applied scientific activity in the professional field of the competition and her educational engagements.

Assist. Prof. Dr. Kizheva conducts active reviewing and scientific-popularization activity.

2. Overall assessment of the applicant's performance

2.1. Assessment of educational and pedagogical activity

The overall educational and pedagogical activity of Assist. Prof. Dr. Kizheva encompasses both "Bachelor" and "Master" educational degrees. On average, the total and auditory teaching work load in the last 3 years correspond to 671 and 431 academic hours, respectively. It includes lecture courses at the Master's degree level for the MP "Microbiology and Microbiological Control" and the MP "Cosmetic Science and Home Care Formulations" (at the Faculty of Chemistry and Pharmacy-SU). Regarding the practical classes, Assist. Prof. Dr. Kizheva performs practical training in 6 disciplines in "Bachelor" and 9 disciplines in "Master" degree programs. Twenty-two graduates have successfully defended their thesis under her supervision, all during the period related to the competition.

2.2. 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, 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 peer-reviewed and indexed in internationally recognized research database (Web of Science or Scopus) - **100 p.**
- ✓ Indicators of group D: research articles in international peer-reviewed and indexed journals - **221 p.** (minimum requirement 200 p.)
- ✓ Indicators of group E: cited papers – **222 p.** (minimum requirement 50 p.)

Scientific and applied research contribution

The main contributions of the applicant are focused on the study of the biodiversity and distribution of phytopathogenic bacteria, their relationships with different host plants and modern approaches for potential biocontrol of the phytopathogenic diseases caused by them. In addition to the main subject of the competition, the applicant presents research on the biology of different bacteria (opportunistic pathogens and such with biotechnological potential), including their application as model systems for testing chemical substances with pharmacological potential.

These contributions can be grouped as achievements of scientific, applied, and methodological significance. In the expert opinion, the original contributions are the only listed.

Original scientific and applied contributions:

- ✓ An original approach to studying the intraspecific diversity of *X. vesicatoria* and *X. gardneri* Bulgarian populations and their typing has been established. The universality of the approach has been validated on 100 bacterial isolates [15].
- ✓ The species *X. euvesicatoria* has been determined as the causal agent of tomato bacterial spot disease by molecular genetic methods and its genetic heterogeneity has been demonstrated. [2, 12, 15].
- ✓ New plant hosts of *X. euvesicatoria* and *Curtobacterium flaccumfaciens* have been determined - a research ground for the development of effective measures (preventive and for treatment) to control tomato plant bacterioses. [1, 12];
- ✓ The dynamics of the species and racial composition of Bulgarian tomato and pepper plants and the pathotype of the phytopathogenic bacteria causing bacterial spot disease were studied over 17 years. [11];
- ✓ Putative pathogenic strains of *Curtobacterium flaccumfaciens* have been characterized, and the role of the tomato and pepper plants as alternative hosts has been demonstrated. [11];
- ✓ The potential of bacteriophages from Bulgarian natural habitats to kill phytopathogenic *X. Euvesicatoria* (*in vivo*), *X. vesicatoria*, and *X. gardneri* has been revealed. [5, 7, 8, 10];
- ✓ Lactic Acid Bacteria (LAB) of g. *Lactobacillus* have been found in the GIT of the garden snail *C. aspersum*. The presence of specific representatives of LAB in fermented vegetable foods and rye doughs has been demonstrated. [13, 17, 18];
- ✓ The diversity of opportunistic human pathogenic bacteria isolated from plants has been elucidated, and a laboratory collection has been established [9];
- ✓ The prevalence of genetically determined antibiotic resistance and virulence among enterococci isolated from foods has been proved. [4];
- ✓ The antibacterial activity of *E. verrucose* hemocyanin structural subunits has been determined t [14].

Original methodological contributions:

- ✓ An alternative approach for species identification of the representatives of g. *Xanthomonas* with high discriminability based on RFLP of the ITS region in the ribosomal operon has been established. The method has been validated on 262 isolates. [16];
- ✓ The basic steps in a genetic transformation procedure for *X. euvesicatoria* have been developed to obtain GFP-traceable transformants for monitoring the bacteria behavior during host invasion [6];
- ✓ A molecular genetic approach has been developed for the rapid, targeted detection and quantification of bacteriophage BsXeu269p/3. The approach has been validated on natural and laboratory samples by qPCR [7];
- ✓ A common diagnostic algorithm for rapid identification of newly isolated strains of LAB has been optimized [3, 13, 17, 18].

Contribution to academic education:

Review publication No. 5, which comments on phage therapy and phage control approaches, possesses the potential of a teaching manual on the subject. The methodological advances implemented by the applicant have been applied directly to the training of B.Sc. and M.Sc. students by developing original procedures for bacteriophage cultivation, quantification, preparation of phage suspensions for TEM, and isolation of phage DNA.

2.3. Assessment of administrative activity

Assist. Prof. Dr. Kizheva is a member of the Council of two Bachelor's Degree Programs (Bio-management and Sustainable Development, until 2024 and Molecular Biology from 07. 2024) and of three administrative committees in the faculty of Biology. He is the Scientific Secretary of the Department of General and Industrial Microbiology and administers the Ph.D. activities of the Department.

3. Assessment of the applicant's personal contributions

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

The author's reference to the scientific contribution presents an overview of the applicant's scientific, applied, and methodological achievements. Applying the knowledge and skills acquired during the research activities in the training process presents evidence of the successful integration of science and training. I have known Dr. Kizheva since her student time. As her former tutor and current colleague, I am convinced that she possesses all the professional qualities: scientific competence and teaching experience, high work efficiency, and purposefulness to realize her complex efforts in research and education, holding the academic position of "Associate Professor" of Sofia University.

4. Critical remarks and recommendations

I have no remarks or recommendations to the presented materials and documentation, research and, teaching activity.

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 Sofia University "St. Kl. Ohridski" have been fulfilled. Convincing and sufficient evidence for scientific, applied scientific, and educational/pedagogical 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 ПД 38-468 / 22.07.2024 of the Rector of Sofia University "St. Kl. Ohridski" to issue a report-proposal to the Faculty Council of the Faculty of Biology at Sofia University "St. Kl. Ohridski" for the election of Assist. Prof. Dr. YOANA KRASIMIROVA KIZHEVA for the academic position Associate Professor in HE area 4. Natural sciences, mathematics and informatics, Professional area 4.3. Biological Sciences, Microbiology - General microbiology and phytopathogenic bacteria.

15.10.2024
Sofia

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