



## OPINION

Regarding the competition for "associate professor" in the field of higher education: 6. Agrarian Sciences and Veterinary Medicine; professional field: 6.2 Plant Protection; scientific specialty: "Plant Protection", announced in the State Gazette No. 69 of August 16, 2024.

With candidate chief assistant professor Mariana Krasimirova Petkova PhD from the Department of "Microbiology and Environmental Biotechnologies" at the Agricultural University of Plovdiv

The opinion was prepared by associate professor Milena Georgieva Petrova-Dimova PhD, Agricultural University - Plovdiv, Faculty of Plant Protection and Agroecology, Department of Phytopathology, I have been appointed as a member of the scientific jury, according to order No. RD 16-1186/ 22.10.2024 of the Rector of the Agricultural University of Plovdiv

### 1. Brief presentation of the candidate.

Mariana Krasimirova Petkova was born on November 11, 1971 in the city of Plovdiv. She graduated in 1997 with a degree in Plant Protection from the Faculty of Plant Protection and Agroecology at the Agricultural University of Plovdiv, now the Agricultural University of Plovdiv. In 2002, she obtained her PhD degree from the Department of Pesticide Biochemistry at Kobe University, Japan. From 2003 to 2006, she worked as a post-doctoral fellow at the University of Osaka, Japan, in the Department of Protein Biochemistry. Since 2010, she has been an assistant professor, and since 2011, a senior assistant professor at the Department of Genetics and Breeding, and later (2014) a senior assistant professor at the Department of Microbiology and Environmental Biotechnologies at the Agricultural University of Plovdiv. She introduced the discipline "Molecular Methods for Analysis in Plant Protection" for the master's course in "Integrated Plant Protection". The candidate's scientific research activity is related to work on international projects, and the scientific experimental activity - with bachelor's and master's graduates.

### 2. General description of the scientific output.

In the competition for "associate professor" Mariana Krasimirova Petkova PhD participated with a total output of 43 scientific works, grouped as follows:

- Scientific publications in the nomenclature specialty - 43, of which:
  - Publications related to the doctoral dissertation - 2, which are not subject to consideration;
  - Publications with an impact factor - 20
  - Publications in peer-reviewed and refereed scientific journals - 14;
  - Publications in conference proceedings - 7;

The personal participation of Mariana Petkova PhD in the 41 works that I accept for preparation of an opinion is as follows: one article is independent, in 18 - is the first, in 9 - is the second, and in the remaining 13 - is the third and subsequent author. This speaks of her leading function in the articles and her successful teamwork. The publications are presented in journals with an impact factor and impact rank with the following distribution of quartiles: Q1 - 3 issues, Q2 - 7 issues, Q3 - 3 issues and Q4 - 7 issues with the total IF = 34.824. All this gives me reason to believe that the candidate is a generator of scientific ideas that are successfully implemented in the conducted research.

### 3. Teaching activities.

Chief Assistant Mariana Petkova PhD gives lectures and exercises to full-time and part-time students of the Bachelor's and Master's degree programs in the Department of Microbiology and Environmental Biotechnology. During the period 2014-2024, she has performed a total of 4348.3 hours. On an annual basis, the volume of study work is an average of 434.83 hours, which covers the regulatory requirements for the number of hours at full load.

Teaching activities are supplemented by the supervision of 8 successfully defended graduates from bachelor's and master's courses. The candidate is a coordinator under the Erasmus+ program for the selection of students for study abroad and a course supervisor for students from the bachelor's course in the specialties "Plant Protection" and "EEA".

She has developed a curriculum for the discipline "Molecular Methods for Analysis in Plant Protection" for the master's course in "Integrated Plant Protection" for full-time students of the "Master" program at the Faculty of Plant Protection and Agroecology.

#### 4. Research activities.

Areas of publication.

The research activities of the chief asst. Petkova is focused on three main areas:

1. Molecular identification, biochemical characterization and in vitro study of the antimicrobial activity of beneficial microorganisms (lactic acid bacteria, yeasts, entomopathogenic fungi of the genus *Beauveria*) against phytopathogens and enemies.
2. Study of the influence of the studied beneficial microorganisms on the growth and development of plants with the aim of their application as biofertilizers in agriculture.
3. Application of next-generation sequencing to study the microbiome of different soils and compost.

In all areas, the candidate has made original contributions, which she presents in the reference. I accept all of them.

Of the formulated scientific and applied contributions, I would like to note the following:

- A unique collection of lactic acid bacteria has been created, which can be used in the biological fight against phytopathogens.
- A collection of strains of endophytic beneficial microorganisms has been created for future use in plant breeding.

Both collections have been deposited in the gene bank as intellectual property of the Agricultural University, Plovdiv. The isolated microorganisms will be used for application in biocontrol and as biostimulants.

- Molecular identification of 23 isolates of entomopathogenic fungi from the g. *Beauveria* has been made, some of which have a proven bio-insecticidal effect on the green grasshopper (*Tettigonia viridissima*).

From the review of the scientific production and the formulated contributions, I can express the opinion that Asst. Prof. Petkova has developed and established herself as a good specialist with high professional training and skills in the field of molecular biology and microbiology.

Citation and referencing of scientific production.

The positive assessment of the work of Asst. Prof. Petkova is complemented by the noted citations of her publications by other researchers. Proof of the significance of the results are the 121 citations presented, of which in journals with an impact factor - 86, in peer-reviewed journals without an impact factor - 33 and 2 citations in doctoral dissertations.

Participation in scientific projects.

Although participation in projects is not required for awarding the academic position of "Associate Professor", Asst. Prof. Petkova PhD has presented 12 projects - 7 research, 3 international and 2 scientific and educational.

5. Comments and recommendations.

I have no comments. I would recommend that the candidate continue her in-depth research in the field of biocontrol and publish in established scientific publications.

6. Conclusion.

Based on the analysis of the candidate's pedagogical, scientific and applied scientific activities, I believe that chief assistant professor Mariana Krasimirova Petkova PhD meets the requirements of the DASRB, RADRB and the Regulations of the Agrarian University for its application. The materials presented are of sufficient volume and meet the scientometric requirements for holding the academic position. The scientific research is up-to-date, at a modern level and the results thereof give the candidate reason to present a significant number of scientific and applied scientific contributions and achievements in the field of molecular biology, microbiology and biocontrol.

All this gives me reason to evaluate the candidate's overall activity POSITIVELY.

I would like to propose that the esteemed Scientific Jury also vote positively, and that the Faculty Council of the Faculty of Plant Protection and Agroecology at the Agrarian University - Plovdiv elect Asst. Prof. Mariana Krasimirova Petkova PhD as "Associate Professor" in the scientific specialty Plant Protection.

11.12.2024

City Plovdiv

Prepared the opinion:

  
(Assoc. Prof. Milena Dimova)