

OPINION

by Prof. Iskra Vitanova Ivanova, D.Sc.

on the materials submitted for participation in a competition for the academic position of “Professor” at the Acad. Roumen Tsanev Institute of Molecular Biology – Bulgarian Academy of Sciences

in Higher Education Area 4. Natural Sciences, Mathematics and Informatics, Professional Field 4.3 Biological Sciences, Scientific Specialty Molecular Genetics

By Order No. 85-OB/22.04.2026 and on the basis of Orders No. 53-OB/10.03.2026 and No. 81-OB/17.04.2026 of the Director of the Institute of Molecular Biology – BAS, and Minutes No. 1/22.04.2026 of the Scientific Jury, I was appointed a member of the Scientific Jury responsible for preparing an opinion on the materials submitted for participation in the competition for the academic position of Professor in Professional Field 4.3 Biological Sciences, Scientific Specialty Molecular Genetics, announced in State Gazette, issue No. 16 of 10.02.2026, with a single candidate, Assoc. Prof. Dr. Galina Simeonova Radeva.

General description of the materials submitted for the competition

The materials submitted by the sole candidate, Assoc. Prof. Dr. Radeva, fully satisfy the requirements of the competition and provide the specific evidence required under the evaluation criteria. They also present the candidate’s overall academic output through lists of publications and citations, descriptions of scientific contributions, curriculum vitae, and other supporting materials. The submitted documentation is exceptionally well organized and highly detailed and includes digital copies of the publications related to this competition, as well as their abstracts in Bulgarian and English.

For participation in the competition for the academic position of Professor, scientific publications have been submitted that were not used for obtaining the educational and scientific degree “Doctor” or the academic positions of Chief Assistant and Associate Professor.

The scientific works are distributed as follows: the habilitation report summarizes the main scientific achievements described in the scientific works with which the candidate participates in the announced competition for Professor. The report includes 22 publications required to fulfill the indicators from Group B as well as the indicators from Group G.

The scientific works of Assoc. Prof. Dr. Galina Radeva may be classified according to the criteria for the minimum national requirements under the Academic Staff Development Act and its Regulations, as follows:

1. Criterion A – an abstract of a dissertation submitted for the educational and scientific degree “Doctor” – (50 points);
2. Criterion B – Habilitation thesis – scientific publications in journals that are refereed and indexed in internationally recognized databases of scientific information – includes 6 publications (125 points);
3. Criterion G – includes 14 publications in journals that are refereed and indexed in internationally recognized scientific information databases (Web of Science and Scopus), classified in categories Q1–Q4. Total number of points under Group G indicators – 278 points;
4. Criterion D – includes citations in scientific journals, monographs, collective volumes and patents, refereed and indexed in internationally recognized scientific information databases (Web of Science and Scopus) – 420 points;
5. Criterion E – includes supervision of 2 successfully defended PhD students (total 50 points). Assoc. Prof. Radeva has participated in 7 national projects (70 points), participated in 1 international project (20 points), led 5 national projects (100 points), led 2 international projects (100 points), and attracted funding under 4 projects (66 points), for a total of 406 points under Criterion E.

Assoc. Prof. Galina Radeva significantly exceeds the minimum requirements, having achieved 1,279 points compared to the required 600 points. Evidence is provided for participation in 49 Bulgarian and international scientific forums.

Overview of the candidate’s scientific and applied scientific contributions

The contributions presented in the materials submitted for participation in the competition for the academic position of Professor are in the field of environmental microbiology and may be grouped into several areas:

1. Taxonomic diversity and composition of microbial communities in anthropogenically affected soils and agricultural lands (publications B4_1, B4_2, B4_3, B4_6):

- Contributions related to the identification of metal-resistant bacterial strains that may serve as biofertilizers for soil remediation;
- 265 sequences of the 16S rRNA gene identified in Bulgarian soils contaminated with heavy metals have been deposited in the GenBank database;
- The bacterial phyla Proteobacteria, Acidobacteriota and Actinobacteriota are key groups in soils contaminated with radionuclides and heavy metals, and contamination leads to significant changes in the taxonomic composition and structure of microbial communities and selection of

resistant taxa. This contribution is of a fundamental nature and is important for Bulgarian soils contaminated with radionuclides and heavy metals;

- Representatives of the genus *Nitrososphaera* are key ammonia oxidizers in soils contaminated with uranium and heavy metals. The presence of the *amoA* gene (encoding ammonia monooxygenase) has been confirmed. This contribution is of fundamental importance for clarifying the nitrification process in archaea.

2. Functional potential of soil microorganisms in anthropogenically affected soils and agricultural lands (publications B4_3, B4_4, G7_1, G7_2, G7_5, G7_6, G8_1):

- The functions of bacterial communities have been predicted and metabolic pathways associated with efflux pumps involved in cellular detoxification from heavy metals in heavily contaminated soils have been identified;

- It has been demonstrated that bacterial communities alter their functional profiles by showing preferences for utilizing carbohydrates, polymers, polyols and amino acids in uncontaminated and slightly contaminated soils, whereas in contaminated soils they preferentially utilize carboxylic acids;

- It has been demonstrated that dehydrogenases, beta-glucosidase and alkaline phosphatase are the enzymes most sensitive to heavy-metal concentrations and environmental changes. These enzymes are reliable indicators of soil health.

3. Influence of abiotic factors on the diversity of microbial communities (publications B4_5, G7_3, G7_4, G7_5, G7_13, G7_14):

- It has been demonstrated that specific environmental factors—organic matter, nitrate ions, soil moisture and soil texture—modify the toxic effects of heavy metals on soil microbial communities and shape the specific microbiome.

4. Group G includes six scientific papers related to the effects of the fungicide Quadris® on soil microbial communities (publications G7_7, G7_8, G7_9, G7_10, G7_11, G7_12):

- It has been established that the use of the fungicide Quadris® affects the formation of the soil resistome through the selection of resistance to aminoglycoside antibiotics in soil bacterial communities and alters their functional profiles and enzymatic activities.

A large proportion of Dr. Radeva's scientific articles have been published in prestigious international journals (e.g., Q1 – Water, Air & Soil Pollution, Archaea, Toxics, Ecotoxicology and Environmental Safety, Environmental Science and Pollution Research; Q2 – Plant, Soil and Environment, Archives of Microbiology, etc.).

Critical remarks and recommendations

I have no critical remarks regarding the materials submitted by Assoc. Prof. Dr. Galina Radeva.

Teaching and educational activity

Assoc. Prof. Radeva has conducted practical classes in the discipline “Introduction to Molecular Biology and Computational Molecular Biology” in the Master’s degree program at Sofia University “St. Kliment Ohridski”.

Following her habilitation as Associate Professor, she has supervised 10 successfully graduated diploma students at the Faculty of Biology of Sofia University.

Conclusion

The documents and materials submitted by Assoc. Prof. Dr. Radeva comply with all requirements of the Academic Staff Development Act in the Republic of Bulgaria, the Regulations for its implementation, and the Regulations of the Institute of Molecular Biology at the Bulgarian Academy of Sciences.

The achieved scientific and applied scientific contributions are of a high professional level, as confirmed by the list of publications with her participation in journals indexed in the international database Scopus and by the citation impact of the results.

The candidate is an established scientist in the field of molecular ecology, possessing the ability to address current scientific problems, penetrate their essence, and present innovative ideas.

Based on everything stated above, I unequivocally support the candidacy of Assoc. Prof. Dr. Galina Radeva and strongly recommend that the members of the esteemed Scientific Jury, established pursuant to Orders No. 53-OB/10.03.2026 and No. 85-OB/22.04.2026 of the Director of the Institute of Molecular Biology, elect her to the academic position of Professor and vote positively for her appointment to the academic position of Professor in Higher Education Area 4. Natural Sciences, Mathematics and Informatics, Professional Field 4.3 Biological Sciences, Specialty Molecular Genetics.

Sofia, 12.06.2026

Reviewer:

/ Prof. Iskra Ivanova /