

REVIEW

By Prof. Ivan Georgiev Ivanov, D.Sc., Member of the Bulgarian Academy of Sciences
Evaluation of candidates for Full Professor position in the Area of higher education: 4.
Natural sciences, Mathematics and Informatics; Professional field 4.3. Biological Sciences;
Scientific specialty "Molecular Genetics

1. General part

The competition for Full Professor position in the Area of higher education: 4. Natural sciences, Mathematics and Informatics; Professional field 4.3. Biological Sciences; Scientific specialty "Molecular Genetics" is announced for the needs of Department "Gene regulations" of the IMB in State Gazette No 16/10.02.2026. The only candidate is Assoc. Prof. Dr. Galina Simeonova Radeva from the same Department. The documents survey shows that they are prepared according to the Law on Development of the Academic Staff in the Republic of Bulgaria (LDASRB), the Regulations for its application and the internal regulations of the IMB.

2. Brief biographical information

Assoc. Prof. Dr. Galina Simeonova Radeva was born on 14.03.1961. She is a graduate of the Faculty of Biology of Sofia University "St. Kl. Ohridski", graduating in 1984 with a master's degree in "Molecular and Functional Biology", specialty "General and Industrial Microbiology, with Virology". After graduation, G. Radeva was appointed as a biologist, and subsequently occupied the positions research associate III - I degrees, and associate professor (since 2010). She defended her PhD thesis in 1995.

During her professional development, Dr. Radeva has specialized in a number of research centers and laboratories such as: the Institute of Radiochemistry in Dresden; University of Manchester, UK; University of Bayreuth, Germany; University of Helsinki, Finland; All-Russian Institute of Microbiology in St. Petersburg, etc.

Dr. G. Radeva speaks fluently English, French and Russian, and has necessary computer skills to carry out an independent research. She has supervised 2 PhD and 13 MS students and she has chaired the IMB Scientific Council since 2014. She is a member of General Assembly of BAS, the Union of the Bulgarian Scientists, the Bulgarian Peptide Society, etc.

3. Scientific achievements

3.1. Overview of Dr. Radeva's scientific papers

Assoc. Prof. Galina Radeva is the author of a total of 61 scientific papers, of which 46 in refereed journals, 9 - in non-refereed and 6 - full-text reports published in proceedings of scientific congresses and conferences. She has 49 participations in national and international scientific events. In this competition she has presented 21 papers with a total IF 24.806, which have been cited 210 times. Their distribution by quartiles is as follows: Q1 – 5 pcs., Q2 – 7 pcs., Q3 – 5 pcs. and Q4 – 4 pcs. In 19 of them she is the lead (first or last) author. Since all publications correspond to the competition topic, I accept them all for review, and I will use in their the numbering proposed by the candidate in her list of papers. The abstracts, as well as the overall research activity described in the articles outside the 21 papers, will be taken into account, but will not be explicitly evaluated.

3.2. Assessment of the candidate's scientific achievements

After her graduation Dr. Galina Radeva was tightly associated with the IMB, where she studied the microbiota of soils contaminated by toxic industrial waste and published numerous significant articles. The 21 of them presented in this competition can be divided

into three thematic groups: a) *Taxonomic diversity and composition of microbial communities in anthropogenically influenced soils and agricultural lands* (B4-1, B4-2, B4-3, B4-6); b) *Functional potential of soil microorganisms in anthropogenically influenced soils and agricultural lands* (B4-3, B4-4, G7-1, G7-2, G7-5, G7-6, G8-1); c) *Influence of abiotic factors on the diversity of microbial communities* (B4-5, G7-3, G7-4, G7-5, G7-13, G7-14).

The soils in Dr. Radeva's studies were carefully selected. They originate from the surroundings of large mining and metallurgical industrial enterprises as well as from tailings dams. Such are the tailings dam "Metalurg" (Buhovo), Sliven mine, Senokos mine, Eleshnitsa mine, Zlatitsa - Pirdop valley and the Topolnitsa river basin, KCM 2000, Plovdiv, etc. They all are contaminated with Cu, Zn, Pb, Cd, As and/or radionuclides.

a) Contributions of scientific papers from thematic group "a" (*Taxonomic diversity and composition of microbial communities in anthropogenically influenced soils and agricultural lands*).

The scientific contributions of G. Radeva related to the taxonomic diversity of microbial communities in industrially contaminated soils are included in four papers (B4-1, B4-2, B4-3, B4-6), which together with two others (B4-4 and B4-5) are presented as a group of papers equivalent to a habilitation thesis. Three of these publications are in quartile Q1 and one in Q3. In all papers, Assoc. Prof. Radeva is a leading (first or last) author. Applying rDNA-based taxonomy and metagenomic analysis, Dr. Radeva studied bacteria, archaea and fungi, and found that bacterial communities are dominated mainly by the divisions *Proteobacteria*, *Acidobacteria*, *Bacteroidetes* and *Actinomycetota*. She revealed also that their distribution was highly dependent on the degree and depth of soil contamination. Particularly high species diversity was found in the soils of KCM 2000, where *Proteobacteria*, *Actinobacteriota*, *Acidobacteriota* and *Firmicutes* were the dominated taxons. Applying the molecular genetic approach known as "16S rRNA gene retrieval" in combination with searching for reference sequences in GenBank, Radeva managed to identify dozens of microorganisms to species and even strain levels. I admire her contributions related to the identification of micromycetes (lower fungi) where she demonstrated that the fungal communities are dominated by *Ascomycota* (classes *Sordariomycetes*, *Eurotiomycetes* and *Dothideomycetes*) in highly contaminated soils, and by *Pezizomycetes* and *Leotiomycetes* in less contaminated ones.

b) Contributions of scientific papers from thematic group "b" (*Functional potential of soil microorganisms in anthropogenically influenced soils and agricultural lands*).

This group of papers (B4-3, B4-4, G7-1, G7-2, G7-5, G7-6, G8-1) aims to predict the possible functional pathways of bacterial communities related to their resistance to heavy metals. In the case of cultivable heterotrophic bacteria, this is achieved by studying their ability to degrade various carbon sources using the established experimental system Biolog EcoPlate™. Thus, Dr. Radeva proves that contamination with radionuclides and heavy metals changes the functional profiles of soil communities, which is accompanied by a decline in their biodiversity, and this in turn reflects high metabolic plasticity, helping the bacterial communities to compensate in case of adverse conditions. To assess soil health in case of contamination with radionuclides and heavy metals, Dr. Radeva determined the activity of key enzymes from various metabolic pathways (dehydrogenase, beta glucosidase, phosphatases (acid and alkaline, arylsulfatase and urease) and proved the negative impact of pollutants on their activity. The most sensitive are dehydrogenases, beta-glucosidase and alkaline phosphatase.

6) Contributions of scientific papers from thematic group "c" (Impact of abiotic factors on the diversity of microbial communities)

In the group "c" articles (B4-5, G7-3, G7-4, G7-5, G7-13, G7-14) Dr. Radeva finds a correlation between certain abiotic factors and the level of heavy metal contamination, as well as the fact that prolonged pollution reduces the number of living bacteria and lowers the dehydrogenases activity. Organic substances and nitrates have been shown to reverse the effect on biodiversity. The increased biodiversity of different ecotypes established through ARDRA indicates for an increased adaptability of the bacterial communities, as well as of their resilience.

4. Scientific projects

Assoc. Prof. Galina Radeva has participated in the development of 14 scientific and educational projects funded by national (11) and international (3) sources. In 5 of them she was the leading scientist, and in 2 (international) she was the head of the Bulgarian team. From 2018 to 2025, her projects have brought a total of 330,893.75 BGN to the IMB.

5. Compliance with the minimum national requirements for holding the academic position of Full Professor

The formal check for compliance with the minimum national requirements for holding the academic Full Professor position according to the LDASRB shows:

- Group A Indicators: 50 points.
 - Group B Indicators: 0 points.
 - Group C Indicators: 125 points.
 - Group D Indicators: 278 points.
 - Group E Indicators: 420 points.
 - Group F Indicators: 406 points.
- TOTAL: 1279 points (640 required)**

These data indicate that Dr. Radeva's merit points exceed more than twice the formal threshold required for holding the academic position of Full Professor in the Professional field 4.3 "Biological Sciences".

Conclusion: The overall evaluation of the scientific achievements and professional qualities of Assoc. Prof. Dr. Galina Radeva shows that she is a prominent researcher in the field of microbial molecular genetics and biology. She is one of the few scientists in Bulgaria profiled in studying of microbial biodiversity in industrially contaminated soils and assessment of their regenerative potential. She is the author of 61 scientific papers with a total IF 44.347. She participate in this competition with 21 papers (IF 24.8) which have been cited 210 times. From the above presented data, it is evident that Dr. Radeva's merit exceeds more than twice the quantitative criteria set by the ZRASRB for occupying the academic position of "Full Professor" in Professional field 4.3 "Biological Sciences" and I strongly recommend that the esteemed Scientific Jury appointed to conduct this competition vote for its award.

Sofia, 25.05.2026

Reviewer:

/Acad. Ivan Ivanov/