STATEMENT OF OPINION

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Subject: competition for the academic position of "Professor" in the field of higher education 4. Natural Sciences, Mathematics and Informatics, professional field 4.3. Biological Sciences, scientific specialty "Molecular Genetics", for the needs of the Department of "Regulation of Gene Activity" at the Institute of Molecular Biology (IMB) – BAS.

General Section

The sole candidate in the announced competition is Assoc. Prof. Dr. Galina Simeonova Radeva from the Department of "Regulation of Gene Activity" at the Institute of Molecular Biology "Acad. R. Tsanev" – BAS.

The review of the submitted documents demonstrates that the procedure for opening and announcing the competition has been followed and is in compliance with the requirements of the Academic Staff Development Act of the Republic of Bulgaria (ZRASRB). The candidate fulfils and considerably exceeds the minimum national requirements for the academic position of "Professor" in accordance with the regulations for the application of ZRASRB at BAS and IMB-BAS.

According to the Summary Statement submitted, Assoc. Prof. Radeva has accumulated a total of 1,279 points against the required 600 (640 under the elevated BAS requirements). Under indicator B4 (habilitation work), the candidate presents 6 publications earning 125 points against the required 100, including 3 publications in Q1 journals. Under indicator G, 15 scientific publications and 1 book chapter are presented, yielding 278 points against the required 220. Under indicator D, 420 points from citations are recorded against the required 120, and under indicator E – 406 points, encompassing the supervision of 2 successfully defended doctoral students, participation in and leadership of a total of 14 national and international projects, and attracted funding exceeding BGN 330,000.

Biographical Overview

Assoc. Prof. Dr. Galina Simeonova Radeva graduated from the Faculty of Biology of Sofia University "St. Kliment Ohridski" in 1984 with a specialisation in "General and Industrial Microbiology with Virology". She has been employed at the Institute of Molecular Biology – BAS since 1984, initially working in the field of molecular genetics of symbiotic nitrogen-fixing microorganisms. In 1995 she defended a doctoral dissertation entitled "Molecular-genetic characterisation of bacteria of the genus Rhizobium and construction of strains with enhanced symbiotic activity" and was awarded the educational and scientific degree of "Doctor". In 2010 she completed her habilitation and was appointed "Associate Professor" at IMB-BAS. Since 2015 she has been a member of the Department of "Regulation of Gene

Activity", where she established her own research group in the field of environmental microbiology.

Assoc. Prof. Radeva has undertaken research placements at numerous leading European institutions – the University of Helsinki (Finland), the University of Bayreuth (Germany), UMIST in Manchester (United Kingdom), and the Institute of Radiochemistry at the Forschungszentrum Rossendorf (Dresden, Germany). She held a postdoctoral fellowship at Helmholtz-Zentrum Dresden-Rossendorf (1999–2000) and received fellowships from the European Science Foundation and the Wellcome Trust. She has an excellent command of English, French, and Russian.

Scientometric Indicators

Assoc. Prof. Radeva enters the competition with 22 publications fulfilling the indicators of groups B and G. Their distribution by quartile is: Q1 – 5, Q2 – 7, Q3 – 5, Q4 – 3, plus 1 book chapter. The publications appear in reputable international journals such as Toxics (IF 4.1), Ecotoxicology and Environmental Safety (IF 2.762), Environmental Science and Pollution Research (IF 2.741), Archives of Microbiology (IF 2.552), and Plant, Soil and Environment (IF 2.6).

Particularly impressive is the citation record – a total of 210 citations in indexed publications, yielding 420 points against the required 120. Publication G7_1 (Kenarova, Radeva et al., 2014, Ecotoxicology and Environmental Safety) has been cited 101 times, and B4_1 (Radeva et al., 2013, Water, Air & Soil Pollution) – 26 times. These figures attest to substantial international recognition of the scientific results. Furthermore, 265 novel nucleotide sequences of the 16S rRNA gene, identified in Bulgarian soils, have been deposited in the GenBank database.

Assessment of the Principal Scientific Contributions

The scientific research of Assoc. Prof. Radeva is focused on three interrelated areas within environmental microbiology:

1. Taxonomic diversity and structure of microbial communities in anthropogenically impacted soils

In this series of studies (B4_1, B4_2, B4_3, B4_6), the bacterial, archaeal, and fungal communities of soils contaminated with radionuclides (uranium) and heavy metals (Cu, Zn, Pb, Cd, As) from sites in Bukhovo, Sliven, Senokos, Eleshnitsa, the Zlatitsa-Pirdop Valley, and the area surrounding the KCM 2000 plant in Plovdiv have been examined in detail. Complementary molecular-genetic approaches were applied – construction of 16S rDNA clone libraries and metagenomic analysis by amplicon sequencing on the Illumina MiSeq platform.

For the first time, specific bioindicator bacterial taxa associated with different degrees of contamination in Bulgarian soils were identified, and 265 original sequences were deposited in GenBank. It was established that the phyla Proteobacteria, Acidobacteriota, and Actinobacteriota are key drivers in heavy-metal-contaminated soils, and that the structure of microbial communities changes substantially depending on the level and type of contamination.

The presence of representatives of the genus Nitrososphaera (Crenarchaeota) – key ammonia oxidisers – was documented, with confirmed presence of the amoA gene.

2. Functional potential of soil microbial communities

Outstanding among these works are the studies employing the metagenomic bioinformatics tool PICRUSt2, through which 26 enzymes and proteins involved in heavy metal detoxification and efflux were annotated (B4_3). In parallel, functional profiling using the Biolog EcoPlate™ system demonstrates that contamination leads to specific changes in preferred carbon sources and reduces the metabolic activity of bacterial communities (G7_1, G7_5, G7_6, G8_1). Dehydrogenases, beta-glucosidase, and alkaline phosphatase were identified as reliable indicators of soil health under heavy metal stress (B4_4, G7_2).

3. Influence of abiotic factors and pesticides on microbial communities

The third research area investigates the relationships between abiotic soil parameters (pH, organic matter, nitrate ions, texture, moisture) and the structure of microbial communities (B4_5, G7_3, G7_4, G7_13, G7_14). Particularly valuable is the series of six publications on the effects of the fungicide Quadris® (azoxystrobin), which demonstrates that it not only alters the functional profiles and enzymatic activities of soil bacterial communities, but also drives selection for resistance to aminoglycoside antibiotics – a finding of direct relevance to public health and sustainable agriculture (G7_7 – G7_12).

The publications submitted for the competition are distinguished by high scientific quality and originality. The research is timely and socially significant in light of growing global concern about soil contamination and soil health. The scientific contributions are simultaneously fundamental and applied in nature, with clear potential for use in bioremediation, agroecology, and monitoring of contaminated ecosystems.

<u>Assessment of Additional Indicators</u>

Project activity:

The project activity of Assoc. Prof. Radeva is exceptionally rich. She has led 5 national projects funded by the National Science Fund (NSF) and has led the Bulgarian team in 2 international bilateral cooperation projects with the Academy of Sciences of the Czech Republic. She has participated in a total of 14 projects. Funding attracted through projects she has led exceeds BGN 330,000. She is currently leading the active project KP-06-N91/2/2025, funded by NSF, focused on the soil microbiome in forest ecosystems.

Teaching and mentoring activities:

Assoc. Prof. Radeva has supervised two successfully defended doctoral students (Mihaela Aleksova, 2020, and Radina Nikolova, 2025) and 13 diploma students from the Faculty of Biology of Sofia University "St. Kliment Ohridski". She has taught in the master's programme "Bio- and Medical Informatics" at Sofia University and conducts training in bioinformatic methods for young scientists at IMB-BAS.

Administrative activities:

Since 2014, Assoc. Prof. Radeva has served as Chair of the Scientific Council of IMB-BAS and as a member of the Scientific Council of IFRG-BAS. She is also the responsible officer for the supervision and safety of work with GMOs.

CONCLUSION

The analysis of the submitted materials convinces me that Assoc. Prof. Dr. Galina Simeonova Radeva is an established scientist with extensive research experience, an independently developed scientific direction, and a significant international contribution to the field of environmental microbiology. Her research group is arguably the only one in Bulgaria systematically investigating the biodiversity and functions of microbial communities in anthropogenically impacted soils, making her an indispensable expert in this field.

Assoc. Prof. Radeva exceeds the national requirements for the academic position of "Professor" by a considerable margin – with a total of 1,279 points against the required 640 under the elevated BAS requirements. Her scientific contributions are original, current, and of clear applied value. Her extensive project activity, successfully supervised doctoral students, and active involvement in academic governance complement the profile of an outstanding researcher and mentor.

Based on my personal impressions, which stem from our collaboration in administrative terms – as part of the IMB management team – and in scientific terms – as colleagues who have worked together on research tasks within the national programme "BioActivMed" of the Ministry of Education and Science – I can conclude that Assoc. Prof. Radeva is a specialist of a very high calibre, who combines the ability to work within and lead a team, to train younger colleagues, and to collaborate with and support more experienced ones.

I am fully convinced that Assoc. Prof. Dr. Galina Simeonova Radeva fully meets the requirements of ZRASRB and PPZRASRB of IMB-BAS for the academic position of "Professor" in professional field 4.3. Biological Sciences, scientific specialty "Molecular Genetics".

I vote "IN FAVOUR" and wish the candidate continued success in her future scientific endeavours.

Date: 01. 06. 2026

/Prof. Dr. Iva Ugrinova/