

REPORT

by Prof. Dr. Velizar Kostadinov Gochev,

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of the materials submitted for the competition for appointment to an Associate Professor's academic position at the "Stephan Angelov" Institute of Microbiology at Bulgarian Academy of Sciences

in higher education area 4. Natural sciences, mathematics and informatics, professional field 4.3 Biological sciences (Microbiology – microbial biodegradation of toxic pollutants into environment)

1. General presentation of the materials submitted

By Order № I – 69/30.05.2022 г. of the Director of "Stephan Angelov" Institute of Microbiology at Bulgarian Academy of Sciences (IMicB) I was appointed as a member of the scientific jury of a competition for the appointment to the academic position of "Associate Professor" in higher education area 4. Natural sciences, mathematics and informatics, professional field 4.3 Biological sciences (Microbiology – microbial biodegradation of toxic pollutants into environment) announced for the needs of the Department General microbiology at the laboratory of Microbial genetics. The only candidate in the competition for the appointment to the academic position of "Associate Professor", announced in the State Gazette № 29 of April 12th, 2022 and on the web site of IMicB is Chief Assist. Prof. Dr. Maria Gerginova Gerginova, from the same department.

The complete set of materials submitted by Dr. Gerginova, in electronic form is in accordance with the Regulation on the Implementation of the Academic Staff Development Act in the Republic of Bulgaria (RIASDARB) and the Regulations of the IMicB on the Implementation of the Academic Staff Development Act in the Republic of Bulgaria.

The content of the applied documents and the manner of their organization allow me to categorically define the procedure as lawful.

2. Short biography of the candidate

Dr. Gerginova graduated from the Faculty of Biology at the "St. Kliment Ohridski" University of Sofia, acquiring higher education with a Master's degree in Biotechnological processes. In 2003, after successfully defending a dissertation, the Higher Attestation

Commission awarded her the educational and scientific degree “doctor” in the scientific specialty 01.06.12 Microbiology.

Professional career of Dr. Gerginova started in 1993 as a specialist at section “Biosynthesis of organic acids”, followed by the position of researcher at section Microbial genetics and in 2011 she successfully acquiring the academic position of Chief Assist. Prof. in the same section.

The creative biography of the candidate is entirely in the field of microbiology, in particular microbial biodegradation of xenobiotics and fully covers the scope of the announced competition. The entire creative path of Chief Assist. Prof. Dr. Gerginova is tightly related to the IMicB and the main academic unit Department of General microbiology, Laboratory of Microbial genetics, which stated the need for announcement of competition for an academic position of “Associate professor”.

3. General characteristics of the candidate's activities

The applicant has enclosed a list of total 41 materials, calculating a total impact factor of 23.454 and personal h-index 9. Eighteen of the listed scientific publications are submitted for the present competition. Two of the publications included in the total list are excluded, because they were used earlier for acquiring the doctor’s degree. The rest of the publication will be taken into account for overall assessment of the candidate’s research activity. Following the requirements of Regulation on the Implementation of the Academic Staff Development Act in the Republic of Bulgaria, I consider it is necessary firstly to point out that Chief. Assist. Prof. Dr. Gerginova fulfills and exceeds, mainly according to indicator D, the minimum national requirements for acquisition of reaching the academic position of “Associate professor” in higher education area 4. Natural sciences, mathematics and informatics, professional field 4.3 Biological sciences.

№	Група показатели	Минимален брой точки	Изпълнение от кандидата
1	A (indicator 1)	50	50
2	B (indicator 2)	-	-
3	V (indicators 3 or 4)	100	100
4	G (sum of indicators from 5 to 10)	220	239
5	D(sum of points in indicator 11)	60	578
6	E (sum of points in indicator 12 to the end)	-	-

Group of indicators A: Indicator 1 Dissertation thesis for acquiring educational and scientific degree “doctor” – requirement of RIASDARB – 50 points, implementation by the candidate – 50 points.

Group V indicators (Sum of indicators 3 or 4): Indicator 3 Habilitation thesis – monograph or Indicator 4 Scientific publications that are published in journals referred and indexed in the world scientific databases Scopus and Web of Sciences – requirements of RIASDARB – 100 points, implementation by the candidate – 100 points.

To fulfill the requirements of the indicator Dr. Gerginova submitted 5 publications, as follows: 1 belonging to Q₁, 3 belonging to Q₂ and 1 belonging to Q₃.

Group of indicators G (sum of indicators from 5 to 10) - requirement of RIASDARB – 220 points, implementation by the candidate – 256 points.

Indicator 7 Scientific publications that are published in journals referred and indexed in the world scientific databases Scopus and Web of Sciences.

To fulfill the requirements of the indicator Dr. Gerginova submitted 13 original scientific publications, as follows: 1 belonging to Q₁, 8 belonging to Q₂; 2 belonging to Q₃ and 2 belonging to Q₄.

Group of indicators D (Sum of points in indicator 11) - requirement of RIASDARB – 60 points, implementation by the candidate – 578 points.

An important attestate for scientific achievements of researchers is the number of positive citations of their publications. Dr. Gerginova applies list of 289 positive citations in database of Scopus and Web of science which means that the results published by the candidate are widely accepted by the scientific community working on the problems of microbial biodegradation of xenobiotics.

I accept the author’s contribution list and categorized the contributions as original and fundamental with possible practical application in complex schemes for biotechnological purification of waste waters contaminated by phenols and other contaminants.

The analyses of the research activities of Dr. Gerganova allows me to underline the following major contributions:

- ✓ Complex biokinetic models type *Haldane* with the highest fit to the rates of biodegradation of phenols, hydroxyl substituted phenols and toxic aromatic compounds 2,6-dinitrophenol, α -methylstyrene and acetophenone. A strategy for managing the degradation of toxic compounds based on a fuzzy model is also proposed.

- ✓ Key enzymes such as phenolhydroxylase and catechol-1,2-dioxygenase of the *ortho*-mechanism of the 3-oxoadipate pathway for the assimilation of phenolic compounds have been proven at selected yeast and filamentous fungal strains belonging to *A. glaucus*, *A.maritima* and *T.versicolor*.
- ✓ Original oligonucleotide primers suitable for PCR amplification of genes encoding enzymes with phenolhydroxylase and catechol-1,2-dioxygenase activity in filamentous fungi were created.
- ✓ Genes encoding enzymes with phenolhydroxylase and catechol-1,2-dioxygenase activity were sequenced for the first time in strains belonging to species *A.galucus*.
- ✓ It is detected for the first time that *A.glaucus* AL1 demonstrated high phenolhydroxylase activity in the process of assimilation of naphthalene and atracene as a sole carbon source in the growth medium.

I believe that the presence of a clearly defined research topic with an original contribution character and its multiplication in scientific research projects is a mandatory condition for holding the academic position of an "Associate professor". Chief. Assist. Prof. Dr. Gerginova is a participant in 12 research projects, 10 of which are in the field of microbial biodegradation of pollutants, which clearly shows the durability of her scientific interest in this important research problem and her ability to work in a team.

The analysis of the research activity of the candidate for "associate professor" reveals the Chief. Assist. Prof. Dr. Gerginova as a scientist with a clearly defined research topic and a recognizable image in the scientific community, working on important scientific problems related to the microbial biodegradation of xenobiotics.

CONCLUSION

The documents and materials presented by Chief. Assist. Prof. Dr. Maria Gerginova Gerginova meet all the national and institutional requirements. The candidate's works have original scientific and applied contributions that have received international recognition. After getting acquainted with the materials and scientific output presented in the competition, performing analysis of their importance and the scientific and applied contributions contained therein, I find it justifiable to give my positive assessment and to recommend to the Scientific

Jury to prepare a report with a proposal to the Scientific Council of the IMicB for the appointment of Chief. Assist. Prof. Dr. Maria Gerginova Gerginova, to the academic position of "Associate Professor" at the IMicB in higher education area 4. Natural sciences, mathematics and informatics, professional field 4.3 Biological sciences (Microbiology – microbial biodegradation of toxic pollutants into environment).

10.08.2022

Reviewer:

(Prof. Dr. V. Gochev)