

R E P O R T

by Prof. Margarita Kambourova, DSc,

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of the materials submitted for participation in the competition
for the academic position "**Professor**" announced in the Government newspaper issue
40/14.05.2021 and on the website of **Plovdiv University** "Paisii Hilendarski" for the needs of the
Department of Microbiology at the Faculty of Biology

Higher education field **4. Natural sciences, mathematics and computer science**

Professional direction **4.3. Biological sciences**

The only candidate: **Assoc. Prof. Dr. Sonya Kostadinova Trifonova** from the Department of
Microbiology, Faculty of Biology, University of Plovdiv

I am included in the Scientific Jury for the election of "Professor" by an order of the
Rector of Plovdiv University "Paisii Hilendarski" P33-4296 / 10.08.2021. As a member of the
Jury, I declare that I do not have common articles with the only candidate in the submitted list of
publications.

Brief outline of the candidate's career

Dr. Trifonova graduated with honors as a "Master of Biology, Biology Teacher" at the Faculty of
Chemistry and Biology of Plovdiv University (PU) "Paisii Hilendarski" in 1988. In the same year
she started working at the University of Plovdiv and her entire further career passed through all
scientific positions (specialist, assistant, chief assistant, associated professor) in PU. She received
an educational and scientific degree "Doctor of Biology" in 1992. Since 2003 she has held the
scientific position of "Associated Professor" in the scientific specialty "Microbiology" at the
Department of Biochemistry and Microbiology, Biological Faculty (BF), PU. Her career has been
accompanied by holding a number of administrative positions such as a Head of the Department
of Biochemistry and Microbiology (2007-2011), Deputy Dean of the Faculty of Law of the
University of Plovdiv (2011-2015) and Dean of the Faculty of Biology (since 2015).

Description of the presented scientific papers and scientometric indicators

*Requirements of the Law for the Development of the Academic Staff of the Republic of Bulgaria
(ZRASRB)*

The candidate has submitted a list and copies of 37 scientific papers, among which one
monograph, three textbooks / manuals, 18 papers in journals with Impact factor / Impact rank, 12

in journals without Impact factor, three published in full text in national congresses books. Her works have found a place in such prestigious international journals as the Journal of Basic Microbiology and Engineering of Life Sciences. A monograph published in 2021 is included in the list of the habilitation reference "C" according to ZRASRB (Table 1).

Table. 1. Minimal national criteria for the scientific degree "Associated Professor"

Group of criteria	Content	Required points for associated professor	Assist. Prof. Sonia Kostadinova Trifonova points
A	Index 1	50	50
B	Index 2	-	-
C	Indexes 3 or 4	100	100
D	Sum of the indexes from 5 to 10	200 (220 according BAS)	256
E	Index 11	50	202
F	Sum of the indexes from 12 to 18	-	248
Total sum		600	856

Among the publications with an Impact Factor included in List D, two are in journals with Q2, eight with Q3 and eight with Q4. The number of citations (List E) found in Scopus (excluding self-citations of all authors) is 101, 93 among them being named "Kostadinova". The collected 248 points in indicator "F" are from the scientific management of two doctoral students and co-management of one, the participation in three projects (including the management of 1) and the attracted funds for them. The report on her research activity issued by the University of Plovdiv shows a significantly broader project activity, covering a total of 11 projects and programs, including a project under the Operational Program for Smart Growth; a project funded by the Financial Mechanism of the European Economic Area; National program BioActiveMed. She is a leader of a national project funded by the NSF, participates in 7 projects of PU, funded by NSF, three of which are led by her. As can be seen from the results reflected in Table. 1, the indicators of the candidate on all criteria exceed the ones required under ZRASRB.

Additional requirements for "Professor" of the Faculty of Biology, University of Plovdiv

The candidate exceeds all the specific requirements of BF, PU (Table 2). One textbook is required, however the candidate participates in the competition with two textbooks and one manual (in one textbook she is the sole author). Assoc. Prof. Trifonova's attraction to teaching was manifested

even during her university education, when she worked as a high school biology teacher and then continued as a University lecturer for more than 32 years. The presented report on the educational activity shows its annual classroom employment for 17 years not only in BF of PU, but also in the branches of PU in Smolyan and Kardzhali. The extremely busy horarium includes both lectures (14,011 hours) and exercises (1,633 hours) for Bachelor's and Master's degrees. Along with the discipline Microbiology / Microbiology and Virology, she teaches students from several specialties in BF in other related disciplines such as Ecology of Microorganisms, Bioremediation, Microbial Metabolism, Biotransformations. Her creative attitude to the learning process is demonstrated also in her authorship / co-authorship in two textbooks and a guide in the field of microbiology, published after the concurs for the scientific position "Associated Professor". Impressive is the significant administrative and organizational experience gained over the years, including a Dean of BF, which is a recognition of her organizational qualities.

Table. 2. Additional criteria of BF of PU for "professor"

Scientific degree or academic position	<i>Professor</i>	<i>Assoc. Prof. Trifonova</i>
Author / co-author of a textbook in the respective field	<i>1</i>	<i>3</i>
Supervisor of successfully defended PhD students	<i>2</i>	<i>3</i>
Teaching experience (years)	<i>10</i>	<i>32</i>
Leading of national / international projects	<i>1</i>	<i>1</i>
Organizational / administrative experience in certain activities	<i>1</i>	<i>14 years as a Head of department, Deputy Dean or Dean</i>

Main directions in the research work and the most important contributions

Three main directions are outlined in the scientific work of Assoc. Prof. S. Trifonova, in which she achieves important scientific and applied contributions, namely:

1. Bacterial synthesis of enzymes - screening for producers, optimization of the biosynthetic process, purification and characterization of enzymes. I evaluate the next ones as the most important:

- High levels of phospholipase C biosynthesis, short fermentation process and comparative stability of enzymes in *B. cereus* and *B. thuringensis* species have been established.
- For the first time, the synthesis of phosphatidylinositol-specific phospholipase C has been established in the genus *B. sphaericus*.

- Alkaline phosphatase has been isolated and characterized in the species *E. coli* for the first time.
2. Microbial pathogenesis - causes of urogenital infections, virulence factors, mechanisms of microbial pathogenesis. Main achievements:
- Resistance of various clinical strains of *E. coli* to widely used antibiotics and its possible plasmid coding has been established.
 - The inhibitory effect of plant extracts and lactic acid bacteria on the biofilm formation of clinical isolates *E. coli* has been proven.
3. Microbial ecology - influence of the anthropogenic factor on the microbial communities in the dams; metagenomic analysis of microbial diversity in the Maritsa River basin; bioremediation of waters contaminated with heavy metals. As main achievements in the field I define:
- For the first time in Bulgaria the impact of aqua farms and the settlement on the shores of two dams on biodiversity has been traced. There is a lack of pathogens as a result of self-purification of water systems.
 - For the first time, bacterial diversity in wetlands along the Maritsa River was characterized by a metagenomic analysis. The changes in the composition of microbial communities as a result of long-term agricultural use have been demonstrated. A correlation between the structure of microbial communities and their ability to form a biofilm was found.
 - Heavy metals from aqueous solutions have been removed by immobilized biomass

CONCLUSION

Based on the materials presented in the competition and the analysis of their significance, I believe that the scientific-metric indicators of Assoc. Prof. Trifonova exceed the national quantitative criteria for the academic position "Professor", as well as the Additional requirements of BF, PU. She is an established scientist with an international recognition in the field of synthesis of microbial enzymes, ecology of microorganisms and microbial pathogenesis. Her scientific activity is accompanied by an active teaching and publishing. Based on the above, I confidently support her candidature and recommend to the scientific jury to propose to the Scientific Council of Faculty of Biology, Plovdiv University "Paisii Hilendarski" to elect Assoc. Prof. Trifonova as a "Professor" in the professional field 4.3. Biological sciences, specialty Microbiology.

October 19, 2021
Sofia

Reviewer:
(Prof. M. Kambourova, DSc)