

# **R E P O R T**

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Subject: Documentation submitted in the competition for the academic position of "Associate Professor" in the professional field 4.3. Biological Sciences, specialty Microbiology, announced in Government newspaper no. 12 of 12.02.2021 for the needs of the Laboratory "Cell Microbiology", Department of "General Microbiology", Institute of Microbiology "Stefan Angeloff", BAS

**Candidate: Assist. Prof. Dr. Tsvetelina Paunova-Krasteva**

I am included in the Scientific Jury according to order I-30 / 29.03.2021 of the Director of the Institute of Microbiology (IMicB), Bulgarian Academy of Sciences (BAS). 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**

Assist. Prof. Paunova-Krasteva received the degree "Master of Microbiology and Microbiological Control" in the Department of General and Industrial Microbiology, Faculty of Biology, Sofia University "St. Kliment Ohridski " in 2005. In the same year she started working at IMicB and all her further career passed in this institute through all scientific steps (specialist, assistant, assistant professor). Her career development was accompanied by a big number of specializations (in Belgium, the Netherlands, Austria, Germany, Italy, Poland, Greece and France) that reveal her desire for scientific growth and methodological improvement. He received an educational and scientific degree "Doctor of Microbiology" on June 22, 2015. Since 2020 she was appointed as a head of the laboratory "Cellular Microbiology". Evidence for the candidate scientific recognition from the scientific community are the received grants: for mobility of a young scientist, under the Erasmus + Program, from the World Federation of Scientists, management of the most successful doctoral project, 2019, award for high scientific achievements in dissertations, 2015, for a young Bulgarian microbiologist of the Stephan Angeloff Foundation in 2014, best poster at a national congress, 2014.

## 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 (reflected in document 14-indicators)*

The candidate has submitted a list of 30 publications, nineteen of which are in journals with Impact Factor, two are in proceedings of international congresses and three are book chapters, one of which is in international edition, the rest are in journals without Impact Factor. Her works have been published in such prestigious international journals as the European Journal of Pharmaceutical Sciences (IF 3.6), Biofouling (IF 2.3), Engineering in Life Sciences (IF 2.4), Microbiology (IF 2.6). Seven of the presented publications are included in the list "B" of the habilitation reference according to the Law on Habilitation, six of them are with index Q2 (Table 1).

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

Group of criteria	Content	Required points for associated professor	Assist. Prof. Tsvetelina Paunova-Krasteva points
A	Index 1	50	
Б	Index 2	-	
B	Indexes 3 or 4	100	<b>120</b>
Г	Sum of the indexes from 5 to 10	200 (220 according BAS)	<b>264</b>
Д	Index 11	50	<b>180 (66 x 2; 48 x 1)</b>
E	Sum of the indexes from 12 to 18	-	<b>338</b>

АМОНГ the twenty-three publications included in List D, thirteen are in international journals with an Impact Factor and/or Shimago Index and three are book chapters. The number of citations found (excluding self-citations of all authors) in publications referred in Scopus is 66, an additional 48 are found in other publications. Despite the fact that there is no requirement for points in criteria E for the scientific degree "Associated Professor", the candidate collects a significant number of 338 points thanks to her impressive participation in 19 international and national projects. As can be seen from Table. 1, the indicators of the candidate for all criteria exceed the ones required by the Law for the Development of the Academic Staff of the Republic of Bulgaria.

*Specific requirements of IMiKB (reflected in the document 15-publikacii)*

The candidate fulfills all the specific requirements of IMiKB, BAS (Table 2) as among the listed 24 publications, 18 are in journals with IF and three are chapters from books. Her active project participation is impressive. Among the six weighty international projects with her participation,

she is the leader of the Bulgarian team in two, and she led three of 13 national projects implemented. The research work of the candidate is presented at an unusually high number of conferences and congresses abroad and in Bulgaria - among 62, 16 are oral and 46 are poster presentations. Her contribution is emphasized by the fact that she is first author in half of them. Her participation in organizing committees of five scientific events, two of which are international, is recognition of her organizational qualities.

**Table. 2. Additional criteria of IMicB, BAS for "Associated professor"**

<b>Academic degree</b>	<b>Number of publications in IF journals, monographs, chapters of monographs, proceedings of international forums published in full text, patents</b>	<b>citations*</b>	<b>IF*</b>	<b>H-index*</b>	<b>Additional requirements**</b>
<i>Associated Professor</i>	<i>20 (without included in doctor degree) First or corresponding author in five of them</i>	<i>100</i>	<i>20</i>	<i>5</i>	<i>Participation in 3 projects</i>
<b>Assist. Prof. Tsvetelina Paunova-Krasteva</b>	<b>A total of 21 publications (excluding those included for "doctor") in 5 of them first/ corresponding author</b>	<b>111</b>	<b>22,091</b>	<b>6</b>	<b>Participation in 19 projects, leader for five of them</b>

### **Main directions in the research work and the most important contributions**

According to the presented publications, the main object of the candidate's research is bacterial films which resistance to the host's defense mechanisms and antibiotic therapy is a common reason for chronic and persistent infections. This determines the scientific weight of her research on the structure of biofilms, the dynamics of their development and the factors that influence their formation. The scientific efforts of the candidate are concentrated in three main directions, namely: The research developments of the candidate are concentrated in three main areas, namely: Bacterial biofilms - development, structural and functional characteristics, inhibition; phenotypic variations in microorganisms; cellular interactions between pro- and eukaryotes, structural-functional studies.

The most important groups of scientific contributions of the candidate are:

- Original scientific data on the effect of secretory metabolic products on biofilm formation in *E. coli* strains have been obtained.
- Original data were obtained on the biofilm formation of 42 strains of *P. aeruginosa* in patients with cystic fibrosis. Changes in the phenotypic characteristics of the strains before and after inhalation treatment with tobramycin were observed.

- High potential for destruction of mature biofilms by cationic polymer micelles has been established. Biofilm destructive activity and bactericidal action of newly synthesized polymer micelles loaded with silver nanoparticles have been demonstrated.

### **Personal impressions**

I know Assist. Prof. Dr. Paunova-Krasteva since her assignment in the Institute of Microbiology, BAS. I have excellent impressions of the candidate as an ambitious and scientific young scientist, whose dedication to science impress young colleagues from the laboratory she lead. The persistent work in the field of biofilms, initiated by the former head of the laboratory Assoc. Prof. Stoitsova and continued by Dr. Paunova-Krasteva determined the original scientific appearance and authority of the laboratory. Assoc. Prof. Paunova-Krasteva has significant scientific erudition and experience in the field in which she works, because of this reason she is a desirable partner in international, national and internal institute collaborations. Along with the scientific work, the candidate actively participates in the training of students. She is a supervisor of two graduates from Sofia University and is a mentor in the program "Student Practice". For more than five years she has been a lecturer in two master's and one bachelor's courses at Sofia University.

### **CONCLUSION**

Based on the materials presented in the competition and the analysis of their significance, I believe that the scientific and metric indicators of Assist. Prof. Paunova-Krasteva not only meet the quantitative criteria for holding the academic position "Associated Professor", enshrined in the Law for the Development of the Academic Staff in the Republic of Bulgaria (ZRASRB) and the Regulations to it, as well as the Additional criteria of IMicB-BAS, but also exceed them. She is a promising young scientist with a leading contribution in the field of microbial biofilms and international recognition, highly trained, a very ambitious and dedicated researcher. Based on the above, I confidently support her candidacy and recommend to the Scientific Jury to propose to the Scientific Council at IMicB, BAS to elect Assist. Prof. Paunova-Krasteva for "Associated Professor" in professional field 4.3. Biological sciences, specialty Microbiology.

May 26, 2021  
Sofia

Report by:  
(Prof. M. Kamburova, DSc)