

**To**  
**The Chairperson of Scientific Jury determined by**  
**order № I-83/01.07.2020 of the Director of Institute of**  
**Microbiology “Stefan Angelov” - BAS**

## **R E V I E W**

By: Prof. Radostina Ivaylova Alexandrova, MSc, PhD, Leader of a work group in Pathology Department, Institute of Experimental Morphology, Pathology and Anthropology with Museum – Bulgarian Academy of Sciences, Part time lecturer in Sofia University “St. Kliment Ohridski”, Faculty of Biology; Lecturer in PhD School of Bulgarian Academy of Sciences; Member of the Scientific Jury determined by order № I – 83/01.07.2020 by the Director of the Institute of Microbiology “Stefan Angelov” – Bulgarian Academy of Sciences (IMICB-BAS).

Regarding: competition for the for the occupation of the Academic position “Associate Professor” in the Department of Infectious Microbiology, Institute of Microbiology “Stefan Angelov” - BAS, in the field of “Natural Sciences, Mathematics and Informatics”, Professional field 4.3 “Biological sciences”, specialty “Microbiology”.

### **General presentation of the documents in the contest**

In the competition announced in the State Gazette No. 47 of 22.05.2020 for the academic position of "Associate Professor" for the needs of the Department of Infectious Microbiology at IMICB-BAS, only one candidate submitted documents – Assistant Professor Maya Margaritova Zaharieva, MSc, PhD, from the same Department. The set of all necessary documents precisely prepared by the candidate was provided to me in electronic variant.

### **Biographical data about the candidate**

Maya Zaharieva was born on July 26, 1975. In 1993 she graduated from German high school "Goethe" in Burgas, in the period 1993-1995 she studied German philology at the Faculty of

German and Scandinavian Studies at Sofia University "St. Kliment Ohridski ", and in 2001 she completed her higher education at the Faculty of Pharmacy of the Medical University in Sofia as a MSc in pharmacy.

In 2002 Maya Zaharieva obtained PhD degree in the scientific specialty "Pharmacology (including pharmacokinetics and chemotherapy)" on the basis of a defended dissertation entitled "Investigation of the pharmacodynamic effects of erufosine on malignant and normal hematopoietic cells" with supervisor Prof. M. Karaivanova, MD, PhD, DSc. In the period 2002 - 2012 M. Zaharieva worked as a master pharmacist in various pharmacies, from 01.11.2007 to 31.10.2008 she was a research associate at the Faculty of Pharmacy of the Medical University in Sofia, and from 01.02.2012 to 11.07 .2012 lecturer (assistant) in pharmacology at the Medical Faculty of Sofia University "St. Kl. Ohridski ". In July 2012 M. Zaharieva was appointed as an assistant in the Department of Infectious Microbiology at the Institute of Microbiology "Stefan Angelov" - BAS, where two years later she was elected and held the academic position of Assistant Professor.

For two years (November 1, 2008 - October 31, 2010) Dr Maya Zaharieva specialized in the German Center for Cancer Research in Heidelberg, Germany, under the program for young scientists of the Alexander von Humboldt Foundation. She specialized twice for two months at the Institute of Agriculture and Fish Farming in Merelbeke, Belgium, during which she acquired skills in applying modern molecular biological / molecular genetic methods for identifying pathogens in food samples. For 21 months she worked in the company "Sytonet - Sofia" Ltd., where she participated in the establishment of a laboratory for isolation and cryopreservation of human hepatocytes. Thanks to her excellent language knowledge (German at a professional level; English) she has worked as a translator of technical literature from and into German.

The candidate Dr. Maya Zaharieva is a member of the Union of Humboldtians in Bulgaria, the Union of Scientists and the Union of Pharmacists in Bulgaria.

### **Project activity**

Dr. Maya Zaharieva is a leader / consultant or participant of/in 14 research projects, namely: leader / consultant of 4 projects funded by the National Science Fund at the Ministry of Education and Science (NSF, project leader), Program for support of young scientists at the Bulgarian Academy of Sciences (project leader and consultant), as well as a grant for the establishment of a laboratory "In vitro cytotoxicity and signal transduction" under a program of the Alexander von Humboldt Foundation; She is a participant in 8 projects, funded by the

NSF, an infrastructure project under the Operational Program "Science and Education for Smart Growth" and programs for funding research at the Medical University - Sofia and Sofia University "St. Kliment Ohridski", as well as in two national scientific programs "Healthy foods for strong bioeconomy and quality of life ", 2018-2022; and "Innovative low-toxic biologically active substances for precision medicine - BioActiveMed ", 2018-2022).

### **Teaching / Educational activity**

Dr. Maya Zaharieva has conducted a total of 315 academic hours of pharmacology training course in the Medical Faculty of Sofia University "St. Kl. Ohridski". She is a co-supervisor of three diploma theses of students in the Department of Pharmacology, Pharmacotherapy and Toxicology at the Faculty of Pharmacy at the Medical University in Sofia. The candidate is a co-author of two chapters in the Manual of Pharmacotherapy (Editor-in-Chief Assoc. Prof. Dr. Spiro Konstantinov, Softtrade Publishing House, 2011).

### **Publishing activity**

The candidate Dr. Maya Zaharieva is the author of 4 publications in connection with the preparation of her dissertation and 27 articles after the acquisition of PhD degree. She is also a co-author of two chapters in a manual for students. A list of 57 participations in 36 scientific forums, held at home and abroad, is presented. According to a report made on July 17, 2020 in Scopus, 23 of the publications were cited a total of 279 times. The total impact factor of the candidate is 45,724 and the H factor is 9.

### **Professional awards**

The high professionalism of Dr. Maya Zaharieva has been noticed in the academic community, which is evidenced by the grants won by the Alexander von Humboldt Foundation and the two awards for best poster presentation at scientific forums. Dr. Maya Zaharieva is a co-author of an article ranked on the prestigious second place in the "top 25" for the first 4 months of 2012 of the journal "Cancer Letters" of the well known publishing house "Elsevier"

**Compliance of the candidate with the minimum national requirements and additional criteria of the Institute of Microbiology – BAS for occupation of the academic position “Associate Professor”**

The analysis of the materials submitted by the candidate Assistant Professor Dr Maya Zaharieva shows that she not only covers but significantly exceeds the national criteria for holding the academic position "Associate Professor" as well as specific requirements of the Stefan Angelov Institute of Microbiology - BAS. The data are summarized in Tables 1 and 2.

Table 1. Minimum national requirements for occupation of the academic position “Associate Professor”

<b>Groups of indicators</b>	<b>Indicators</b>	<b>Required points</b>	<b>Results (Points) achieved by M.Zaharieva</b>
<b>A</b>	1.PhD Thesis	50	50
<b>B</b>	-	-	-
<b>C</b>	Habilitation work - scientific publications in peer reviewed journals indexed in world-famous databases with scientific information (Web of Science and Scopus)	100	225  ( 11 publications in total: 6 in Q1, 4 in Q3 journals and one book chapter accepted for publication)
<b>D</b>	Scientific publications	200	317
	Indicator 7. Scientific publications in peer reviewed journals indexed in world-famous databases with scientific information (Web of Science and Scopus).		242 (12 publications: 3 in Q1 journals, 7 in Q2 journals, 1 in Q3 and 1 in Q4 journals)
	Indicator 8. Published book chapter or collective monograph		75 5 chapters in books published by Elsevier (two - 2014, 2017), InTech (2014), Faber Publishing House (2018), Humboldt Union in Serbia

			(2013)
<b>E</b>	11. Citations in scientific publications, monographs, collective volumes and patents, referenced and indexed in world-famous databases with scientific information (Web of Science and Scopus).	50	470  (List of 235 citations in journals indexed in the Web of Science and / or Scopus)

**Table. 2. Additional requirements / criteria for occupation of scientific position  
“Associate Professor” at the Institute of Microbiology "Stefan Angelov" – BAS**

<b>Scientific degree or academic position</b>	<b>Number of publications in journals with IF, monographs, chapters of monographs, proceedings of international forums, full-text publications, patents.</b>	<b>Citations*</b>	<b>IF*</b>	<b>H-factor*</b>	<b>Additional requirements /criteria</b>
<b>Requirements for Associate Professor</b>	20 - excluding those associated with the PhD thesis, in 5 of them 1 <sup>st</sup> or corresponding author	100	20	5	Participation in 3 projects
<b>Indicators of Assist. Prof. Maya Zaharieva</b>	27 articles (first author in 7 of them), as follows: 21 with JCR-IF (first author in 5 of them), 6	235  (According to a reference in Scopus, made on 17.07.20)	45.724	9  (According to a reference in Scopus)	Participation / Leadership in / of 14 projects: Leader of 3 projects, consultant of 1 project,

	chapters in books (first author in two of them)				participant in 8 projects and two national research programs
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**\*for the entire scientific career**

### **Main scientific directions and contributions**

Professional interests of Dr. Maya Zaharieva are in the fields of experimental pharmacology and infectious microbiology and are focused on evaluating cytotoxic, antitumor and antimicrobial activity of natural products (of microbial or plant origin) and synthetic compounds, as well as studies on the mechanism of their action. A large part of her efforts are focused on searching for potential anticancer agents suitable for malignancies which pathogenesis is thought to be associated with bacterial infections.

The original scientific contributions of Dr. M. Zaharieva's include valuable information about potential antitumor activity and signal transduction of third-generation alkylphosphocholines (erufosine) and a series of triterpene saponins isolated from the plant *Gypsophila trichotoma* L. Antibacterial activity of erufosine and extracts from plants *Graptopetalum paraguayense* and *Geigeria alata* against pathogenic strains of bacteria, including metacillin resistant strains of *Staphylococcus aureus* has been proven for the first time. The antibacterial effect of new compounds isolated microalgae against pathogenic strains of *Escherichia coli*, *Pseudomonas aeruginosa*, *Salmonella typhimurium*, *Staphylococcus aureus* and *Streptococcus pyogenes* has been demonstrated for the first time as well as the antibacterial properties of the human neutrophil peptide alpha-defensin 2. Original data regarding toxicological profile (acute toxicity / *in vitro* cytotoxicity) of some plant extracts and saponins that are of interest as potential antitumor agents have been obtained. Information revealing the promising cytocompatibility of eye prosthesis materials needed for their possible future application in medical practice has been provided. The contributions in the field of mathematical modeling of the proliferation of cancer cells and the metabolic activity of bacteria, obtained with software created for the first time in Bulgaria (in the MAPLE platform), deserve a special attention. The program has been introduced and has been successfully implemented for more than 3 years in the Department of Infectious Microbiology of IMIC-BAS.

Dr. Maya Zaharieva has contributed to the improvement of the infrastructure of the Department of Infectious Microbiology at IMIC-BAS and the introduction of new scientific directions, to the enrichment of the used methods / techniques and model systems. With her

help, a laboratory "Cytotoxicity and signal transduction" at this Department was established and put into operation.

### **Personal impressions from the candidate**

I have known Maya Zaharieva since 2015 when I met her at a scientific forum held in Sofia, where the poster she presented was awarded. Before that I had heard about the new laboratory organized by her at IMIC-BAS. We work in neighboring institutes, which often meets us and gives us the opportunity to communicate, albeit for a short time. Maya Zaharieva has always impressed me with her high professionalism and sense of responsibility, she has left me with the impression of a correct and reliable colleague. The documents presented here reveal the image of an erudite, hard-working, purposeful and persistent scientist, filled with the noble ambition to always give the best of herself; she is an expert in the fields of experimental pharmacology and infectious microbiology, well known at home and abroad, whose organizational skills, scientific achievements and successes are a pride for Bulgarian scientific community. I do believe that the academic growth of Dr. M. Zaharieva will open new doors and opportunities for her, will allow her to continue following her own path in science, to pass on her knowledge and experience to young colleagues ( for which she can undoubtedly serve as an excellent example of successful professional career at home), to contribute to the more pronounced presence of Bulgaria in the European and world scientific map and, more importantly - to contribute to solving important biomedical and societal challenges such as cancer and infectious diseases.

### **Conclusion**

The materials presented by Dr. Maya Zaharieva in connection with the competition show that she fully meets and significantly exceeds the mandatory and specific conditions and scientometric criteria for holding the academic position "Associate Professor".

With her expert and organizational skills, teaching experience and ability for team working, with her biomedical background and excellent language knowledge, with her perfectionism, ability to find original solutions to challenges and to keep asking scientific questions and seeking answers, Dr. Maya Zaharieva has long established herself as a respected researcher at home and abroad. Such highly qualified, inspired and inspiring scientists are undoubtedly part of our national treasure, a guarantee for the successful future development of the country and the world, an inspiring example for future generations of scientists.

This gives me reason to convincingly propose to the Scientific Jury and the esteemed Scientific Council of the Institute of Microbiology "Stefan Angelov" at BAS to choose Assistant Professor Maya Margaritova Zaharieva, MSc, PhD, as ASSOCIATE PROFESSOR in the professional field 4.3 Biological Sciences (specialty "Microbiology"), announced for the needs of the Department of Infectious Microbiology at the same Institute.

11.09.2020.

Sofia

Prof. Radostina Alexandrova, PhD