

OPINION
by Prof. Iliya Nikolov Iliev, PhD,
University of Plovdiv “Paisii Hilendarski”

member of the scientific jury, according to the order of the rector of Plovdiv University No. RD-21-332 / 15.02.2023 regarding the materials submitted for participating in the competition for occupying the academic position “Associated Professor” in University of Plovdiv “Paisii Hilendarski”,

in Area of higher education: 4. Natural Sciences, Mathematics and Informatics
Professional Field: 4. 3. Biological Sciences
scientific specialty Microbiology – Microbial pathogenesis, for Department of Biochemistry & Microbiology in Plovdiv University “Paisij Hilendarski”

In the competition for "associate professor", announced in the Government Journal no. 92 of 18.11.2022 and on the website of the University of Plovdiv "Paisiy Hilendarski", as the only candidate participating Chief Assistant Professor Mariana Ivanova Markhova-Koseva from the Department of "Biochemistry and Microbiology" of the Paisii Hilendarski University of Plovdiv.

1. General presentation of the procedure and the candidate

The one presented to me by Ch. Mariana Ivanova Murhova - Koseva, assistant professor, PhD, set of materials (in electronic form) is in accordance with the ZRASRB and the Regulations for the development of the academic staff of the University of Plovdiv "Paisiy Hilendarski" and includes all the necessary documents for participation in the competition.

Those presented by Chief assistant professor Mariana Marhova, PhD, materials for participation in the competition for the academic position "associate professor" include 35 scientific publications and one monograph, which were not used to acquire the ONS "doctor" and the academic positions "principal assistant" and "associate professor" . One monograph is included in the submitted materials for participation in the competition for the academic position of "associate professor"; 15 publications in publications with an impact factor or impact rank, which are referenced and indexed in the scientific information databases - Web of Science and Scopus; 15 publications in refereed publications without impact factor or impact rank; 5 publications in peer-reviewed scientific conference proceedings; 1 textbook; 1 guide, which are the result of the candidate's scientific activity after taking the academic position of "associate professor".

Chief assistant Dr. Marianna Ivanova Marhova was born on 29.08. 1963. She graduated from Plovdiv University "Paisii Hilendarski" (master's degree) in 1985. During the period 1986-1990, she was a doctoral student at the Institute of Biochemistry and Physiology of Mi-

croorganisms, Academy of Sciences of the USSR, Pushchino. Since 1993 she is an assistant in microbiology in the department of "Biochemistry and Microbiology", and since 1997 is a senior assistant in the Department of Biochemistry and Microbiology. The work experience of the candidate in the specialty is 31 years, mainly as a teacher at Plovdiv University "Paisii Hilendarski".

Presented by Chief Assistant M. Marhova's scientific activities fully correspond to the minimum national requirements for PN 4. 3. Biological sciences.

According to criterion A (min. 50 points) – 50 points

In 1990, he obtained a doctorate from the National Academy of Sciences in the scientific specialty "Biochemistry". on the topic "Inhibition of neomycin phosphotransferase II gene expression in *Nicotiana tabacum* cells using antisense constructs of this gene".

According to criterion B (min. 100 points) – 100 points

A monographic work is presented - Drug resistance and virulence in uropathogens from Enterobacterales. Research in the period 1997 - 2021. Marhova, M. (2023) "Paisiy Hilendarski" University Publishing House, Plovdiv, ISBN 978-619-202-828-2, which was not used for the acquisition of the educational and scientific degree "doctor".

According to criterion D (min. 200 points) – 211 points

They include 15 publications in publications that are referenced and indexed in world-renowned scientific information databases (Web of Science and Scopus), which are in categories Q2 – 2 publications, Q3 – publications, Q4 – 8 publications.

According to criterion D (min. 100 points) – 132 points

It includes 66 citations in scientific publications, monographs, collective volumes and patents, referenced and indexed in world-renowned databases of scientific information (Web of Science and Scopus).

According to criterion E (min. 150 points) – 248 points

Chief Associate Professor Mariana Marhova is the co-supervisor of one successfully defended doctoral student and supervisor of 23 graduate students, has participated in eight national projects and one international project. He is a co-author of a textbook or teaching aid, which are used in the university network for teaching students in the Faculty of Biology of PU «Paisiy Hilendarski».

Chief Assistant Mrhova fulfills all minimum national criteria with a total of 617 points.

2. General characteristics of the applicant's activity

Chief Assistant. Dr. Mariana Marhova has many years of experience as a university teacher and shares her knowledge and skills in conducting research in the department “” Bio-chemistry and microbiology”and Biological faculty.

Scientific and scientific-applied results

The main scientific interests of the candidate are in the field of "Microbial pathogenesis", and the materials presented in the monograph and 17 publications refer to them in the presented monograph "Drug resistance and virulence in uropathogens from Enterobacterales. Research in the period 1997 - 2021" includes results of own research and summaries about uropathogens from the Enterobacterales order, conducted in the period 1997 - 2021. The candidate systematized 9 scientific contributions in this scientific direction, of which they can be identified as the most - the following are essential:

- For the first time in the country, a representative, large-scale and original study of the etiological structure of urogenital infections in outpatients in the city of Plovdiv was conducted, covering a 24-year period, and an etiological map of urinary tract infections in southern Bulgaria was compiled in correlation with BulStar and NCZPB data.
- An advanced experimental protocol was developed for the evaluation of serum resistance of Enterobacterales isolates, which could easily be applied in clinical practice in the diagnosis of urinary infections.
- The possibilities of competitive modulation of biofilm growth of uropathogenic E. coli strains by potentially probiotic Lactobacillus strains - isolates from vaginal samples and dairy products - have been proven.

The second scientific direction in which Dr. Mrhova works is in the field of ecology of microorganisms. This direction includes materials divided into two groups:

- survey of the microbiological status and sanitary condition of several of the large dams in Bulgaria - Kardjali Dam, Dospat Dam, Batak Dam, Tsankov Kamak Dam and assessment of ecosystems in protected wetlands in southern Bulgaria
- studies of enzyme production and optimization of the cultivation of strains with potential for application in bioremediation and biotechnological productions and studies of the condition and qualities of soils in an urban environment and the creation of sustainable models for bio-remediation and their management.

Dr. Marhova systematized 5 contributions, the most important of which I can point out:

- For the first time in Bulgaria, the applicability of microbiological indicators as indicators of quality in the ecological assessment of complex dams has been proven, as a classification system adapted for the country has been developed to assess water quality according to the number of sanitary indicators, the total number of

heterotrophic microorganisms (TVC), Escherichia coli, faecal coliforms (FC) and faecal streptococci (FS).

- For the first time, the ecological potential of economically significant dams has been determined, according to the information available in the Basin Directorates (DB) and the direct monitoring carried out in the water bodies' water area.

Teaching activity

Chief assistant Mariana Marhova has extensive professional experience as a microbiology teacher at the Faculty of Biology of Plovdiv University. She is the main author of the curriculum of the disciplines "Microbial Genetics" and "Microbial Pathogenesis" and conducts the lecture course and practical classes on them in all specialties of the Faculty of Biology. The academic work of the candidate is also related to the delivery of lecture courses and laboratory exercises (practical exercises) for master's degree students from the Faculty of Biology. She independently developed lecture courses, practical classes and the curricula of the disciplines Genetics of Industrial Microorganisms, Genetic Construction of Industrial Microorganisms, Medical Microbiology, Clinical Microbiology, Biology of Infectious Diseases, Immunobiopreparations, Infection and Sterility in the master's programs conducted in the department.

Dr. Marhova is the co-author of a textbook and a guide intended for students of the "Bachelor's" and "Master's" specializations at the Faculty of Biology of the "Paisiy Hilendarski" University of Plovdiv:

1. Denev I., Spasieva S., Stefanov D., Daskalova E., Gevezova-Kazakova M., Mrhova M., Kostadinova S., Biological Membranes, 2016, Izd. PU, ISBN-ISBN 978-619-202- 111-5
2. Kostadinova S., Gochev V., Mrhova M., Girova T., Georgiev D., Iliev I. Guide to microbiology. 2017, PU ISBN 978-619-202-240-2

All presented teaching aids have an original character and are written in a high scientific style with the necessary pedagogical precision. This shows the desire of Dr. Marhova to establish himself as a demanding university teacher and to educate students in the spirit of modern biological science.

In her teaching career, chief assistant Mariana Marhova was the supervisor of 23 successfully defended diplomas from the Bachelor's and Master's degree programs and co-supervisor of one successfully defended doctoral student in the scientific specialty "Microbiology".

Personal impressions:

I know Chief assistant Mariana Marhova for a long time and I have witnessed her consistent growth as a university teacher and scientist with deep knowledge and experience in the field of microbial genetics and microbial pathogenesis. After 2004 is the main lecturer in the discipline "Immunology" for students from various specialties of the OCS "Bachelor". Over the years, she has shown the ability to organize the education of graduates and has established herself as an organizer of the learning process of students from the department's master's programs.

These qualities of hers are the basis of my conviction that she fully deserves to be selected as an associate professor at the Faculty of Biology of the "Paisii Hilendarski" PU, supported by her scientific achievements in the field of microbiological science.

CONCLUSION

The documents and materials presented by Chief Assistant Professor Mariana Ivanova Marhova-Koseva, PhD, meet all the requirements of the Law on the Development of the Academic Staff of the Republic of Bulgaria and the Specific Additional Requirements of the University of Plovdiv, and the publications and scientific activities fully cover the minimum national requirements for holding the academic position. docent". The candidate's works contain original scientific and applied contributions that have received an international response through their publication in journals and scientific collections issued by international academic publishing houses and their citation by other authors. Undoubtedly, one should also add the very active teaching activity of Dr. Mrhova in the three degrees of student training at the Faculty of Biology. Based on all this, I give my positive assessment and support without hesitation the candidacy of Chief assistant professor Mariana Ivanova Marhova-Koseva, PhD, for the occupation of the academic position "Associate Professor" at Plovdiv University "Paisiy Hilendarski" in the field of higher education 4. Natural sciences, mathematics and informatics, professional direction 4.3. Biological Sciences (Microbiology – Microbial Pathogenesis).

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Plovdiv

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Prof. Iliya Iliev, PhD