

## SCIENTIFIC OPINION

**By Assoc. Prof. Stanislava Martinova Bogomilova, PhD**

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**Regarding:** the procedure for acquiring the Academic Position " Professor" in a competition, announced in SG vol. 7/23.01.2024, Specialty "Medical Laboratory Assistant", professional direction 7.4 Public Health field of higher education 7. Healthcare and Sports, for the necessities of Training sector "Medical Laboratory Assistant", Medical College – Varna, Medical University "Prof. Dr. Paraskev Stoyanov"-Varna with candidate **Assoc. prof. Emiliya Petrova Georgieva, PhD**

According to Protocol № 83/26.02.2024 г. from the conducted meeting of Academic board of Medical University "Prof. Dr. Paraskev Stoyanov" - Varna and according to Order №P-109-90/21.03.2024 of the Rector of Medical University "Prof. Dr. Paraskev Stoyanov" – Varna, I have been appointed as an internal member of the Scientific Jury, concerning the competition for AP "Professor" in the Specialty "Medical Laboratory Assistant", professional direction 7.4 Public Health field of higher education 7. Healthcare and Sports, for the necessities of Training sector "Medical Laboratory Assistant", Medical College – Varna, Medical University "Prof. Dr. Paraskev Stoyanov"-Varna. After the first meeting of the Scientific Jury, I was appointed to express a scientific opinion on the Protocol №1/04.04.2024.

Assoc. prof. Emiliya Petrova Georgieva, PhD has presented all documents needed, in accordance with The Act on Development of the Academic Staff in the Republic of Bulgaria and the Regulations for its implementation at Medical University "Prof. Dr. Paraskev Stoyanov" - Varna. As a result she was permitted by the Admission Committee for the participation of candidates in competitions for Academic Positions at Medical University "Prof. Dr. Paraskev Stoyanov" - Varna, to participate in the competition, determined with Order № P - 100-198/14.03.2024.

Assoc. prof. Emiliya Petrova Georgieva, PhD was born in 27.01.1976 year in the city of Varna. Her professional development began in 1995 when she graduated as a "professional bachelor" majoring in "Medical Laboratory Technician" at the Medical College, Medical University "Prof. Dr. Paraskev Stoyanov" - Varna, obtained a bachelor's degree in Healthcare Management (2008) and a master's degree in the same specialty (2013) at the Medical

University "Prof. Ph.D. independent preparation at the Department of "Health Care", specialty "Health Care Management", University of Medicine "Prof. Dr. Paraskev Stoyanov" - Varna (2015) and in 2016 defending her dissertation topic "Medical Insurance laboratory services in the general medical practice in north-eastern Bulgaria", acquires a doctorate from the ONS. The candidate submits information on acquiring a specialty in "Public Health" after completing a specialization in the city of Turin, Italy - "Good practices for working with bio-laboratory technologies " (22.05.2023-02.06.2023).

Her professional career began in 1995 at Sveta Marina UMBAL - Varna, where she held the position of "medical laboratory assistant", and in the period 2008-2012 she worked as a medical representative of laboratory equipment, consumables and reagents for scientific activity at "Sofbiolife" - Biomedika OOD, Sofia.

Her teaching development began in the Training Sector "Medical Laboratory Technician", Medical College, Medical University "Prof. Dr. Paraskev Stoyanov" - Varna (2012), where she was appointed as a teacher. Currently, the candidate holds the academic position of "Associate Professor" in the same structure, and from 2021 she is the Deputy Director of the College, "Career Development, Quality and Accreditation" at the Medical College, Medical University "Prof. Dr. P. Stoyanov" - Varna, where she currently works.

The candidate's scientific output is expressed in monographic work - 2, textbooks - 1, teaching aids - 4, studies - 2, scientific publications in Bulgaria and abroad - 100, reports - 58. The list of citations of scientific works that she presents includes 9 citations in refereed, non-refereed editions and in monographs and collective volumes D/10, D/11 and D/12. Associate Professor Emilia Petrova Georgieva, Ph.D. attends and takes part in 48 national and international scientific congresses and conferences. The candidate supervises 5 PhD students, of which 2 have successfully acquired the PhD.

Assoc. Prof. Emilia Petrova Georgieva, Ph.D., is part of the research team of one completed project, a member of one ongoing project and the head of one ongoing project. The candidate is a member of the National Anti-Doping Center, the Bulgarian Association of Health Care Professionals, the Bulgarian Scientific Society for Public Health, the National Association for Prevention and Therapeutic Training.

Assoc. Prof. Emilia Petrova Georgieva, Ph.D. has a 10-year teaching experience, with a study load that fulfills and exceeds the requirements of the RDAS of the Medical University "Prof. Dr. Paraskev Stoyanov" - Varna for occupation of JSC "Professor". Takes part in conducting lectures and exercises for students in the academic disciplines "Trends in laboratory

diagnostics - POCT" and "Clinical laboratory", as well as conducts educational practice "Clinical laboratory" and "Microbiology".

For admission to the waste in a competition for the employment of JSC "Professor" Assoc. Prof. Emilia Petrova Georgieva, Ph.D., presents the following scientific publications and developments:

- Dissertation work – 1
- Monographs – 1 (independent author)
- Publications and reports published in scientific publications, referenced and indexed in the world database with scientific information - 11 reports. She is the author of six of them, for the rest of the reports she is the third or next writer;
- Publications and reports published in non-refereed peer-reviewed journals or published in edited collective volumes – 23. On 13 reports of them she is the first author, on 2 reports is the second author, and the remaining seven she is third and next author;
- Published chapter of a collective monograph - 1
- Full-text publications in scientific journals and anthologies, beyond the minimum scientometric requirements for taking AD "Professor" - 2

The candidate's scientific-research interest is observed in improving the access to laboratory services of the population by modernizing the methods in the medical-diagnostic practice. Laboratory results are reviewed, which provide an opportunity for rapid diagnosis and determination of treatment effectiveness. A large part of the candidate's scientific works are aimed at innovative technologies in laboratory medicine, the introduction of rapid laboratory tests that can be applied in a clinical and home environment, working with mobile and computer systems that ensure the management of a number of diseases.

The global threat humanity has faced in the face of the Covid-19 pandemic has highlighted the need to take adequate and swift decisions to deal with the growing morbidity. Object of the research work of Associate Professor Emilia Petrova Georgieva, Ph.D. are the rapid tests, qPCR systems and mobile applications, the development and use of which are of extreme need for the improvement of medical laboratory diagnostics and the faster response to the SARS-CoV-2 pandemic. On the other hand, the disease often requires the use of antibiotics, to which the body often shows resistance. This also directs the candidate's scientific research interest to the combined effect of a certain type of essential oils from the Lamiaceae family and therapeutic drugs.

The candidate's research and teaching activities can be carried out in the following 5 directions:

1. Introduction of innovative technological solutions to improve time and access to medical laboratory services

2. The role of the medical laboratory technician as part of the interdisciplinary team during the diagnostic and treatment process

3. Laboratory diagnostics as part of an integrated approach in the diagnosis and control of chronic diseases

4. Investigation of the antimicrobial effect of natural products (essential oils) alone and in combination with approved antibacterial dosage forms

5. New approaches in the fight against antimicrobial drug resistance

**Contribution under direction 1 (A1; D8.2; D8.6; D8.11; D8.13 and D8.14).**

The purpose of medical-laboratory diagnostics is to satisfy the needs of the patient and society, which determines the social aspect of health care. The quality of the medical-laboratory services and their maintenance through new standards was examined. Territorial aspects of access and observed trends of existing regional disparities in the distribution of resources in outpatient care are explored. The need for complex management of all types of related activities in the diagnostic process is emphasized - quality planning, organizational and direct work on quality assurance, control, analysis of the causes of errors and taking measures for their prevention and elimination. The benefits of the introduction and application of new methods and ROST tests (point-of-care testing) in laboratory diagnostics, aimed at increasing diagnostic possibilities, have been clarified.

*Contributions under direction 1 are of a theoretical and practical-applied nature.*

**Contribution under direction 2 (D7.10 and D8.1; D8.4; D8.5; D8.7; D8.10; D8.16 and D8.18).**

The role of the medical laboratory technician in the interdisciplinary team, both in our country and in Europe, is defined by assisting other medical specialists in the diagnostic-treatment process by performing various tests prescribed by a doctor. The place of the medical laboratory technician, as part of the health team, which performs specific tasks, respects ethics and professional responsibility, is examined. The level of training of medical laboratory workers was investigated, and whether it corresponds to the modern dynamic situation. The importance of good professional communication in medical practice is highlighted, which is achieved through strict compliance with the established rules of medical ethics. Relationships between nursing staff are explored, raising important issues in daily practice. The need to create an atmosphere of trust, support and empathy in the work process of the medical staff from different sectors and departments in a hospital environment has been investigated. The

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comparative analysis of the global health market showed great dynamics related to the migration of health professionals. This requires working health professionals to meet the dynamic criteria of the market and constantly improve their competences. Numerous regulations and legal restrictions resulting from the specifics of health systems are outlined, which make the labor market of health professionals accessible only to participants with high professional qualifications.

*Contributions under direction 2 are of a theoretical-cognitive nature.*

**Contribution under direction 3 (B3; D8.3; D8.9; D8.12; D8.13; D8.15; D8.17 and D8.22).**

Synergy between different sectors of health care has been found to be essential to achieve better health care efficiency in meeting chronically ill patients with complex needs and multiple problems. The benefits of creating integrated health care teams for chronically polymorbid patients and meeting their changing needs are highlighted. The frequency of chronic diseases, which has an increasing trend, and the importance of laboratory-diagnostic screening for diagnosis and referral to a specialist for additional diagnostic clarification were studied. The basic care necessary for the chronically ill has been analyzed, for the implementation of which patients and their families need specific skills, psychological support and material means. It was found that the patient with a chronic disease increases his ability to perceive new information when he participates in demonstration methods with the participation of medical professionals on the method/algorithm of preparing, placing or measuring necessary laboratory parameters or dosage forms. The COVID-19 pandemic has highlighted the importance of diagnostics and the need to develop rapid tests for the timely control of various infectious agents. Global experience in the use of rapid tests and diagnostic methods for disease control and containment is summarized.

*Contributions under direction 3 are methodological and scientific-applied in nature.*

**Contributions under direction 4 (D7.1; D7.2; D7.3; D7.4; D7.5; D7.6; D7.11; and E -1; E-2).**

A study in the Municipality of Varna among menopausal women showed an increase in the consumption of natural products (Oenotherabiennis oil, Glycine max, Cimicifuga racemose extract, etc.) to control the symptoms of menopause, helping to overcome the hormonal imbalance. A significant improvement in the health status of the respondents was registered and a positive correlation was established between this indicator and the longer period of intake of natural products. The study of the antimicrobial activity of the alcoholic mouthwash with essential oils (propolis and peppermint oil) by the agar diffusion method showed the highest

antimicrobial activity of the chlorhexidine-chlorobutanol combination and suppressed the natural microbiome. Our study shows that the tested essential oils of *Thymus vulgaris* possess strong antimicrobial properties and may in the future represent a new source of natural antiseptics with applications in the pharmaceutical industry. In our study, thyme oil for internal use showed higher antimicrobial activity than the topical form. The minimum bactericidal concentration (MBC) against *S. aureus*, *E. coli* and *C. Albicans* was evaluated. In the assay, we determined the MBC of oregano oil (external) against *S. aureus*, *E. coli* and *C. Albicans*. The observed antimicrobial activity of oregano oil for internal use showed higher activity than the external form. The results of MIC and MBC determination of thyme and oregano oils show that *E. coli*, *S. aureus* and *C. albicans* have high sensitivity and can be used in therapeutic practice, and some of them possibly in combination with other antimicrobial agents.

*The contributions under direction 4 are of a scientific and practical-applied nature.*

**Contributions under direction 5 (D7.7; D7.8; D7.9 and D8.19; D8.20; D8.21).**

Antimicrobial drug resistance necessitated the search for new dosage forms. The combination of established antibiotics and essential oils from the family Lamiacea increases the interest in studying a potential synergistic effect between them. The simultaneous application of a two-component system could lead to a multi-target action in the microbial cell, since the two active units attack different parts of it. Methanol and ethanol solutions of metronidazole derivatives show antimicrobial activity against *S. aureus* and *C. Albicans*. There is evidence that infection with EBV as well as other infectious agents is associated with a higher risk of hepatocellular and gastric cancer as well as autoimmune diseases. After primary infection, EBV virus remains latent in B-lymphocytes, whereas lytic infection occurs primarily in epithelial cells and may persist for months with persistent release of virus in saliva and nasopharyngeal secretions. Consequently, unnecessary and prolonged use of antimicrobials adversely affects patient outcomes, while inappropriate antibiotic therapy increases antibiotic resistance. An increasing number of laboratory studies support the use of rapid laboratory tests in routine diagnostics. Controlled trials have shown benefit in using procalcitonin (PCT) algorithms to guide decisions to initiate and/or discontinue antibiotic therapy. Benzocaine is well known as an anesthetic and its additional role as an antimicrobial agent led us to search the OECD QSAR Toolbox for the likely microbial metabolites and their mechanism of action.

*The contributions under direction 5 are of a theoretical and practical-applied nature.*

## Conclusion

The implementation of the Law on the Development of the Academic Staff of the Republic of Bulgaria (2018), the Regulations for its Application and the Regulations for the Development of the Academic Staff of the Medical University "Prof. Dr. Paraskev Stoyanov" - Varna, the candidate's scientific, teaching and clinical experience are the basis for my positive assessment and I suggest to the honorable members of the Scientific Jury to vote "positively" and propose to the Rector of the Medical University "Prof. Dr. Paraskev Stoyanov" - Varna, Associate Professor Emilia Petrova Georgieva, Ph.D. to occupy the academic position "Professor" in the specialty "Public Health Management" for the needs of the Educational Sector "Medical Laboratory Assistant", Medical College, Medical University "Prof. Dr. Paraskev Stoyanov" - Varna.

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