

To the Chair of the Scientific Jury
According to Order No. P-109-257/06.06.2025
of the Rector of the Medical University of Varna

REVIEW

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Assoc. Prof. Dr. Daniela Ivanova Gerova, MD is the sole candidate for participation in the competition announced in the State Gazette, No. 30/08.04.2025, for the academic position of "Professor" in the specialty "Clinical Laboratory" at the Department of Clinical Laboratory, Faculty of Medicine, Medical University of Varna, and the Clinical Immunology Laboratory at the Medical Diagnostic Laboratory of UMHAT "Sveta Marina", Varna.

The procedure for the announcement and conduct of the competition is in accordance with the Law on the Development of Academic Staff in the Republic of Bulgaria and the rules for its application, as well as the conditions for holding academic positions according to the regulations for the development of the academic staff at the Medical University of Varna.

Education and Professional-Academic Development:

Dr. Daniela Gerova graduated in Medicine from the Medical University of Varna in 1986. From 1991 to 1994, she specialized in Biochemistry, and from 2004 to 2009, she specialized in Clinical Laboratory. In 2006-2007, Dr. Gerova completed a one-

year internship in laboratory endocrinology at the Central Laboratory of the University Hospital "Brugmann" in Brussels, Belgium. Between 2013-2015, she was a independent doctoral student at the Department of General Medicine and Clinical Laboratory, Medical University of Varna. In 2015, she obtained her PhD in the scientific specialty: "Clinical Laboratory" after successfully defending her dissertation on the topic: "Determining Vitamin D Status and the Importance of Suboptimal Vitamin D Levels in the Course of Some Chronic Diseases." She is fluent in written and spoken French and has a very good command of English.

Dr. Gerova began her professional career in 1987 as a district pediatrician in Shumen. From 1991, she worked successively as an Assistant, Senior Assistant, and Chief Assistant in the Department of "Biochemistry, Molecular Medicine, and Nutrigenomics", in the Department of "General Medicine and Clinical Laboratory", since 2018 until now - in the Department of "Clinical Laboratory" at Medical University of Varna. From 2010 to 2016 Dr. Gerova worked as a physician in the Central Clinical Laboratory. In 2016, she was appointed Associate Professor and currently works as a physician at the Clinical Immunology Laboratory at UMHAT "Sveta Marina" EAD, Varna.

Scientific Activity and Scientometric Indicators:

Throughout her scientific career, Assoc. Prof. Gerova has shown scientific interests in various fields. These are well illustrated by her participation in 12 research projects and a total of 89 published articles with a cumulative IF = 96.965, and 74 participations in scientific forums. According to the Google Scholar platform, her publications have a total of 1347 citations, with 354 since 2020. Assoc. Prof. Gerova is the author of two monographs, one textbook, and one teaching aid.

After her habilitation as an Associate Professor, Assoc. Prof. Gerova has worked in the following major research areas:

1. Non-classical biological roles of fat-soluble vitamins: Vitamin D, Vitamin K.
2. Metabolic syndrome and endothelial dysfunction.
3. New biomarkers for assessing chronic intestinal inflammation, bone disease in multiple myeloma, and Vitamin B12 status.
4. Saliva as a valuable biological material with potential for use in routine laboratory practice.

For the "Professor" competition, Assoc. Prof. Gerova has presented 49 scientific publications with significant contributions, mainly in the first three research areas. Some of her scientific work is a continuation and deepening of her previous research, which led to the realization of her doctoral thesis and her appointment as an Associate Professor.

Her research on the non-calcemic effects of Vitamin D has become a major focus of her scientific interests, leading to more than 10 publications and numerous contributions to scientific forums after her habilitation. Her work has highlighted the important role of Vitamin D as an important modifiable factor in cardiovascular and neurodegenerative diseases.

For the first time in Bulgaria, the Vitamin D binding protein was used to assess Vitamin D status, allowing for the calculation of "bioavailable" 25OHD. In another study, she conducted a comparative analysis of the androgen status in a representative sample of patients from the Bulgarian population with chronic prostate diseases. The status is assessed not only through the routinely used total and free testosterone levels, but also with the introduction of an extended panel of androgens.

A worse vitamin D status has been confirmed in patients with prostate cancer compared to patients with benign prostatic hyperplasia. In another study on the role of vitamin D in adult patients with heart disease, Assoc. Professor Gerova applies an innovative approach, namely, not only determining the serum levels of 25OHD but also investigating the gene expression of the regulatory enzyme 1-alpha-hydroxylase (CYP27B1) in mononuclear cells from peripheral blood." It is demonstrated not only that the vitamin D status is worse in the studied cohort compared to the controls, but also that it worsens depending on the severity of cardiovascular pathology and the degree of coronary calcium deposition. The results of this original study suggest that vitamin D deficiency or insufficiency may be an independent cardiovascular risk factor, associated with the severity of cardiovascular pathology and increased calcium deposition in the coronary vessels.

Dr. Gerova's research on inflammatory bowel diseases (IBD) shows that almost 95% of IBD patients have Vitamin D deficiency or insufficiency. She also analyzed the Vitamin D status in Bulgarian pregnant women, finding that it is comparable to the status of pregnant women in most European countries, since there is a positive attitude towards supplementation with the vitamin in this target group."

Her research also focuses on the relationship between circulating uncarboxylated MGP (ucMGP), as a potent Vitamin K-dependent inhibitor of vascular calcification, Vit K status, the assessment of coronary artery calcium (CAC), and traditional risk factors for cardiovascular diseases in patients ranging from healthy hypertensive individuals without known cardiovascular diseases to patients with cardiovascular pathology, including atrial fibrillation or heart failure.

A major contribution from the results of studies related to metabolic syndrome and endothelial dysfunction is the clarification of the significance of the transcription

factor Nrf2 (nuclear factor2-related factor 2), which plays an integral role in endothelial protection and its interrelationship with other factors in metabolic syndrome. This contributes to understanding the complex pathophysiological mechanisms of cellular damage in patients with metabolic syndrome, which is of particular importance for prevention, early diagnosis, and treatment strategies. The role of asymptomatic hyperuricemia as a new metabolic risk factor for cardiovascular pathology has also been assessed.

Significant contributions have also been made in studies related to the evaluation of the informative value of new biomarkers in certain diseases. The search for a non-invasive panel of biomarkers to assess the course of inflammatory bowel disease (IBD) and various aspects of intestinal inflammation is a priority task for Assoc. Professor Gerova. In addition to well-known inflammation markers such as CRP and fecal calprotectin (FC), adenosine deaminase (ADA) is another promising candidate biomarker. The contribution of this study is not only original but also of practical application, as it proposes ADA as a new non-invasive biomarker in the arsenal of methods for monitoring patients with IBD.

Significant contributions to the assessment of myeloma-induced bone disease (MBD) come from the results of two other publications. The circulating levels of sRANKL, periostin, and osteopontin were analyzed as osteoclast activators, as well as the levels of sclerostin and Dickkopf-1 (DKK-1), factors that decrease osteoblast activity. The established dynamics in the levels of the studied biomarkers in newly diagnosed patients with multiple myeloma accurately reflect the severity of bone disease, positively correlating with the stage of the disease and bone lesions. It has been proven that the studied original combination of new bone biomarkers adequately reflects not only changes in bone marrow and clinical disease characteristics but also the response to therapy.

A significant practical contribution to clinical practice from the scientific field related to 'New biomarkers for assessing vitamin B12 status' is the proposed algorithm for evaluating vitamin B12 status. The inclusion of methylmalonic acid (MMA) as a functional biomarker, in addition to direct parameters such as total vitamin B12 and active vitamin B12, would contribute to a more reliable assessment of vitamin B12 status in routine laboratory practice.

Regarding INDICATOR V4 from the scientometric indicators presented for the academic position of 'Professor', field 7. Healthcare and Sports, the required 10 scientific publications equivalent to a monographic work are presented in journals that are peer-reviewed and indexed in globally recognized scientific databases. The presented publications have a total IF of 19.267. They carry 148.48 scientometric points, with the minimum required being 100. Only twenty percent of them are literature reviews on current scientific issues. The remaining 8 publications are original studies, the result of team efforts with researchers from different scientific departments of the Medical University of Varna. The topics of these 10 publications are related to the biological roles of vitamins D and K, metabolic syndrome and endothelial dysfunction, and new biomarkers.

Regarding INDICATOR G7, 21 scientific publications and reports have been presented, published in journals that are peer-reviewed and indexed in globally recognized scientific databases, with a total IF of 46.093. Eight of them are full-text scientific articles, and the published scientific reports are 13.

For INDICATOR G8, 13 scientific publications and reports have been included, published in non-refereed journals with scientific review or in edited collective volumes, 11 of which are full-text publications.

For INDICATOR G9, one collective monograph is presented on the topic: 'Extrahepatic GLA-proteins – Potential Biomarkers for Vascular Calcification.'

With a required minimum of 200 points for indicators G5-G9, Associate Professor Gerova has 450.38 points. The total number of points is 735.

Regarding INDICATOR D in the Academic Record of Assoc. Professor Gerova, 49 citations are listed, all of which are in scientific publications that are peer-reviewed and indexed in globally recognized scientific databases.

Teaching Activity:

Assoc. Prof. Gerova has over 34 years of teaching experience, including 8 years and 8 months as an Associate Professor. Assoc. Professor Gerova delivers lectures and conducts exercises in Biochemistry, Clinical Laboratory, and Clinical Chemistry for students in Bulgarian and English-taught medical programs, dental medicine, pharmacy, master's students in kinesitherapy, students from the 'medical laboratory technician' program, as well as a lecture course for specializing doctors in 'Clinical Laboratory' at the Medical University of Varna. The presented Academic Workload Report for the last 4 academic years shows that Assoc. Professor Gerova has met and exceeded the required workload of 110 hours set by the Academic Council of the Medical University of Varna. She has also served as the supervisor for two specialists and two successfully defended doctoral candidates. One of the doctoral students had a dissertation topic: 'Role of Vitamin D and Vitamin B12 in Pregnant Women and Newborns.' Assoc. Professor Gerova's expertise in this area has undoubtedly contributed to the successful defense of the doctoral candidate.

Conclusion:

Assoc. Prof. Dr. Daniela Gerova is a well-established specialist with extensive knowledge in both Clinical Laboratory and Biochemistry. She is an intelligent, erudite and collegial doctor and an excellent teacher. Most of the presented scientific publications are interdisciplinary developments— a prerequisite for achieving a level of interaction aimed at comprehensive knowledge. They have a marked scientific-applied character and contribute to the prestige of clinical laboratory science both in the country and abroad. The Academic Record of Assoc. Professor Gerova clearly shows the candidate's compliance with the Minimum National Requirements for all groups of indicators, as well as with the Conditions and Procedures for holding the academic position of 'Professor' outlined in the Regulations for the Development of the Academic Staff at the Medical University of Varna.

In conclusion, based on the information presented in this review, I recommend positively and urge the members of the respected scientific jury to support the appointment of Assoc. Prof. Dr. Daniela Gerova as "Professor" in Clinical Laboratory for the needs of the Department of Clinical Laboratory, Faculty of Medicine at the Medical University of Varna, and the Clinical Immunology Laboratory at UMHAT "Sveta Marina," Varna.

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Prof. Dr. A. Ruseva