# REVIEW OPINION

**By Assoc. Prof. Irena Dimitrova Ivanova, MD**
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**Member of the Scientific Jury appointed by order No. R-109-257/06.06.2025 of Prof. Dr. Dimitar Raykov, MD. - Rector of Medical University "Prof. Dr. Paraskev Stoyanov", Varna.**

**Subject:** Competition for the academic position of PROFESSOR in the specialty "Clinical Laboratory", professional direction 7.1. Medicine, field of higher education 7. Health and Sports, for the needs of the Department of "Clinical Laboratory", Faculty of Medicine at MU - Varna.

## 1. Brief information about the competition

On the basis of the decision of the Faculty Council (Protocol No. 39/07.05.2025) and the order of the Rector of the MU - Varna No. R-109-257/06.06.2025, I am appointed to prepare a review opinion. The competition was announced in the State Gazette No 30/08.04.2025. Assoc. Prof. Daniela Ivanova Gerova, MD is the only candidate. The procedure for announcing the competition is in accordance with the requirements of the Act on the Development of the Academic Staff in the Republic of Bulgaria and the Regulations on the Development of the Academic Staff at MU - Varna.

## 2. Brief biographical details of the applicant

### 2.1. Education and qualification

Assoc. Prof. Daniela Ivanova Gerova graduated from the Medical University of Varna in 1986. She began her professional career as a pediatrician at the District Hospital in Shumen. From 1991 to 2010, she worked as a lecturer at the Department of Biochemistry, Molecular Medicine and Nutrigenomics at MU-Varna. She obtained two medical specialties - in Biochemistry (1994) and in Clinical Laboratory (2009). In 2007, Assoc. Prof. Gerova completed an additional qualification - a one-year internship in the field of laboratory endocrinology at the Central Laboratory at Bruggemann University Hospital, Brussels, Belgium. From 2010 to 2016, she worked as a specialist in Clinical Laboratory at the Clinical Laboratory of St. Marina University Hospital, and from 2016 to the present, she has been working in the Clinical Immunology Laboratory at St. Marina University Hospital. From 2010 to the present, she has been a lecturer at the Department of Clinical Laboratory at MU-Varna.

### 2.2. Academic Development

From 1991 to 2010, she successively held the positions of assistant, senior assistant and chief assistant at the Department of Biochemistry, Molecular Medicine and Nutrigenomics at MU-Varna. From 2010 to 2016, she was a chief assistant, and from 2016 to the present, she has been an associate professor at the Department of Clinical Laboratory at MU-Varna. The candidate has an impressive teaching experience of over 34 years, with consistent academic development.

In 2015, she obtained a PhD degree in the scientific field of Clinical Laboratory at MU-Varna with a thesis topic: "Determination of vitamin D status and the significance of suboptimal vitamin D levels for the course of certain chronic diseases".

### 2.3. Membership in professional organizations

1. Union of Scientists in Bulgaria (SUB), Biochemistry and Molecular Biology Section; 2. Bulgarian Society of Clinical Laboratory; 3. Bulgarian Society of Clinical Immunology.

### 2.4. Professional background

Assoc. Prof. Daniela Ivanova Gerova directs her professional qualification in the field of Clinical Laboratory, having accumulated professional experience of over 15 years as a physician - specialist in Clinical Laboratory. In terms of professional qualification, she fulfills the requirements for habilitation.

### 2.5. Scientific and managerial activities - 2 specialists and 2 PhD students

## 3. Scientific and research activities

### 3.1. Scientific indicators (based on an academic report from the Varna University of Medical Sciences - No. 186/28.05.25):

Assoc. Prof. Daniela Ivanova Gerova, MD, participated in the current competition with:

- 1 dissertation for the educational and scientific degree of "doctor" (indicator A1 – 50 points)
- 10 scientific publications that are referenced and indexed in world-renowned databases of scientific information (indicator B4 – 148.48 points)
- 21 publications in publications referenced and indexed in world-renowned databases (3 in Bulgarian and 19 in English), (indicator G7 – 339.88 points)
- 13 publications in non-refereed journals with scientific review (2 in Bulgarian and 11 in English), (indicator G8)
- 1 chapter of a book from a collective monograph (indicator G9 – 2 points)

According to indicators G5 – G9, the candidate collects a total of 450.38 points with a required minimum of 200 points, and the total impact factor is 47.788.

Full-text publications in scientific journals and collections, beyond the minimum scientometric requirements for the academic degree PROFESSOR – 3 issues – 28.5 points.

The Medical Library of the MU-Varna has presented a list of 49 citations of Assoc. Prof. Daniela Gerova (indicator D10 – total 735 points), covering many times the minimum requirements of 100 points.

Assoc. Prof. Daniela Gerova is the first author in 2 of the submitted publications (6%), second author in 17 publications (48%), third and fourth – in 16 publications (46%).

Evidence is also presented regarding the participation of Assoc. Prof. Gerova in national (33 in number) and international (41 in number) scientific events.

According to data from the applied biography, Assoc. Prof. Daniela Gerova is a participant in 12 scientific research projects. She has active scientific profiles in Google Scholar, ResearchGate, ORCID.

### 3.2. Research and contributions:

The main scientific interests of Assoc. Prof. Daniela Ivanova Gerova are in the field of Clinical Laboratory in the following main areas:

**1. Vitamin D status and its role in some chronic diseases** (B4-03, B4-10, G8-01, G8-02, G8-03, G8-11 and the published scientific reports: G7-09, G7-11, G7-12, G7-18, G7-21, G8-12, G8-13; above the minimum requirements - 02).

The main contributions in this thematic area are focused on a wide variety of chronic diseases and conditions covering almost the entire age range - from infancy to elderly individuals, as well as affecting the special physiological state of pregnancy. They are both of a scientific-research nature and of a practical nature, proving the need for regular monitoring of vitamin D status in individuals and imposing the idea of regular supplementation with the vitamin, promoting the entry of preventive medicine into real clinical practice. The significant role of vitamin D as an important modifiable factor in socially significant cardiovascular, neurodegenerative diseases, chronic prostate diseases, chronic inflammatory bowel diseases, as well as in pregnancy and conditions of obesity in prepubertal age is confirmed.

**2. Vitamin K – bone and vascular health** (B4-01, B4-04, the monograph G9-01 and the published scientific reports G7-15).

Over the past two decades, a wealth of data has accumulated on the role of vitamin K2 (menaquinone) in bone health, vascular calcification, brain function, neoplastic diseases, energy metabolism, cell growth, survival, and signaling. The participation of vitamin K in these processes is carried out not only through the well-known mechanism of gamma-glutamyl carboxylation of a number of proteins, through which they reach full functionality, but also through relatively recently identified mechanisms, including modulation of transcription, regulation of sphingolipid metabolism, antioxidant and anti-inflammatory action of the vitamin. The contributions in this thematic area are both of a scientific and research nature, complementing knowledge about the role of vitamin K in bone and vascular health, offering new approaches and biomarkers for assessing vascular calcification, but are also of a practical nature, because they provide grounds for preventing and/or slowing the course of a number of chronic and socially significant diseases such as osteoporosis and atherosclerosis.

**3. Metabolic syndrome (MetS) and endothelial dysfunction** (B4-05, B4-08, G7-06 and G8-06).

Major contributions consist in elucidating the importance of the transcription factor Nrf2 (nuclear factor2-related factor2), playing an integral role in the protection of the endothelium, and its interrelationship with malondialdehyde MDA, asymmetric dimethylarginine ADMA, the enzyme heme oxygenase 1 (HO-1) and the transcription factor NF-kB in MetS. This would contribute to the elucidation of the complex pathophysiological mechanisms of cellular damage in MetS, particularly important for prevention, early diagnosis and treatment strategy. In addition, the role of asymptomatic hyperuricemia as a new metabolic risk factor for cardiovascular pathology has been evaluated. The definitive role of suppression of tumorigenesis (sST2) in cardiovascular pathology remains to be elucidated, but the contribution of the scientific work is to confirm the predictive role of sST2 for the development of heart failure in patients with atrial fibrillation.

**4. New biomarkers for the assessment of chronic intestinal inflammation** (B4-02 and G8-04 and the published scientific reports G7-13, G7-14).

In modern gastroenterology, the assessment of disease activity, prognosis and therapy control in patients with IBD is a challenge. The search for non-invasive laboratory markers to monitor their chronic-relapsing course and manage treatment is an important part of ensuring a good quality of life for patients. 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. In addition to well-known markers of inflammation such as CRP and FC, adenosine deaminase (ADA) may be another promising candidate biomarker. In the B4-02 study, significantly increased levels of ADA were found in patients with IBD. ROC analysis revealed a good ability of ADA to distinguish not only patients with IBD from healthy individuals, but also to distinguish patients with active disease from those in remission. Together with fecal calprotectin (FC) and CRP, ADA can be used as an effective biomarker for assessing intestinal inflammation and as a potential indicator of disease activity. The contribution of this study is not only original but also of practical value, as it offers adenosine deaminase (ADA) as a new non-invasive biomarker in the arsenal of methods for monitoring patients with IBD.

**5. New Biomarkers to Assess Bone Disease in Multiple Myeloma** (B4-06, B4-07, G7-07, and G8-09 and Published Scientific Reports G7-19).

The main contribution of these studies is aimed at elucidating the molecular mechanisms of the development of bone disease in Multiple Myeloma (MM). It has been proven that the studied original combination of new bone biomarkers adequately reflects changes in the bone marrow and clinical characteristics of the disease, as well as the response to therapy. A significant practical contribution is the possibility of using the studied parameters as reliable biomarkers for better monitoring of bone disease during the course of the disease, as well as assessing the effectiveness of therapy.

**6. New biomarkers for assessment of vitamin B12 status** (B4-09 and G8-10).

An important practical contribution to clinical practice from this scientific direction is the proposed algorithm for assessing vitamin B12 status. The inclusion of methylmalonic acid as a functional biomarker in addition to the direct parameters total vitamin B12 (TB12) and active B12 (AB12) would contribute to a more reliable assessment of vitamin B12 status in routine laboratory practice.

**7. Saliva as a valuable biological material with potential for application in routine laboratory practice** (G7-02, G8-07 and G8-08, as well as the published scientific reports G7-16 and G7-17).

A real contribution of this study is the possibility of saliva being used as a biological fluid, useful for the development and introduction of new approaches in laboratory and clinical practice, especially in diseases of the gastrointestinal tract, which significantly affect the formation and composition of saliva. The theoretical contribution of this study, providing information on the biological variation and RI of the investigated parameters, predetermines the possibility of conducting new and more diverse studies in the field of salivary diagnostics. The study also has a practical contribution, enabling clinicians to confidently use saliva as a valuable biofluid and additional biological material for the purposes of the diagnostic process and correct interpretation of the results obtained.

**8. Section "Varia"** (G7-01, G7-03, G7-04, G7-05, G8-05, above the minimum requirements - 01, above the minimum requirements - 03, as well as published scientific reports G7-10, G7-20).

In each of these areas, Assoc. Prof. Daniela Ivanova Gerova demonstrates professional competence and the ability to transfer scientific results to an applied context. Her scientific output characterizes her as a contemporary researcher with original scientific ideas and contributions.

### 3.3. Educational and teaching activity

The academic development of Assoc. Prof. Daniela Ivanova Gerova includes exercises and lectures in the specialty Clinical Laboratory in Bulgarian and English. From the submitted references for the candidate, it is evident that the classroom employment of Assoc. Prof. Daniela Ivanova Gerova, who began in 1991 at the Medical University - Varna, is significant and reflects good teaching experience and mastered teaching skills as an assistant and lecturer. Total hours for the academic year 2023/2024 - 141. She teaches students of medicine, pharmacy, medical laboratory assistant, kinesitherapy specialists, specializing doctors. Assoc. Prof. Gerova contributed to the realization of several scientific works in the process of development and defense of dissertations of four doctoral students.

## 4. Overall assessment of teaching and learning activities

Assoc. Prof. Gerova is undoubtedly an excellent specialist in Clinical Laboratory with significant experience and publications and a large number of citations. Her election as a professor will be a logical consequence of her professional and teaching experience, scientific work and publication activity.

## 5. Critical notes and recommendations

I have no critical remarks or recommendations. I do not find procedural violations and documentary gaps in the submitted materials for the competition.

## 6. Assessment of the candidate's compliance with the mandatory conditions and mandatory quantitative criteria according to the University regulations.

I believe that Assoc. Prof. Daniela Gerova, MD, fulfills all the requirements of the Rules of the MU-Varna for the academic position of PROFESSOR.

**7. Conclusion**

Assoc. Prof. Daniela Ivanova Gerova is a prominent specialist in Clinical Laboratory with excellent professional training and proven qualities. After a complete analysis of her professional career, teaching experience and her scientific work, I find that she meets all the requirements, the Regulations for its application and the Regulations for academic development at the MU - Varna for the academic position "PROFESSOR" and I strongly recommend the esteemed jury to award Assoc. Prof. Dr. Daniela Ivanova Gerova the academic position "PROFESSOR" in the field of higher education 7. Healthcare and sports, professional direction 7.1. Medicine and scientific specialty "Clinical Laboratory" for the needs of the Department "Clinical Laboratory", Faculty of Medicine at the Medical University, Varna.

Заличено на основание чл. 5, §1, б. „В“ от Регламент (ЕС) 2016/679

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/Assoc. Prof. Irena Dimitrova Ivanova/