REVIEW
by
Prof. Dr. Krasimira Ilieva Ikonomova, MD, PhD
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Head of Clinical Laboratory and Immunology
Member of the Scientific Jury, determined by Order No. P-109-257/06.06.2025 of Prof. Dr. Dimitar Raykov, MD - Rector of Medical University – Varna

Regarding the competition for the selection to occupy the academic position of "PROFESSOR"
in the field of higher education 7. Health and Sports,
professional field 7.1. Medicine, scientific specialty "Clinical Laboratory",
to the Faculty of Medicine, Department of Clinical Laboratory at
UMHAT "St. Marina" – Varna,
according to the competition announced in the State Gazette, issue 30/08.04.2025

With protocol № 37-39/07.05.2025 and by order № P-109-257/06.06.2025 of Prof. Dr. Dimitar Raykov, MD - Rector of the Medical University - Varna, I have been appointed as an official reviewer. Documents for participation in the competition were submitted by Daniela Ivanova Gerova - Associate Professor at the Department of Clinical Laboratory, Medical University - Varna. Criteria for awarding scientific degrees and titles and holding academic positions at the Medical University - Varna have been applied to assess the scientific research, teaching and diagnostic and therapeutic activities, which are in accordance with the minimum national requirements of the National Center for Information and Documentation (NCID).

The competition documentation is complete and contains the necessary data according to the existing requirements.

PROFESSIONAL DEVELOPMENT

Assoc. Prof. Gerova graduated from the Higher Medical Institute - Varna in 1986. First, she worked as a district pediatrician in the city of Shumen. From 1991 to 2010, she was an assistant, senior assistant, 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 2021, she was an associate professor at the Department of General Medicine and Clinical Laboratory, Clinical Laboratory Board, MU-Varna. From 2021 to the present, she is an associate professor at the Department of Clinical Laboratory, MU-Varna.

Assoc. Prof. Gerova has two acquired medical specialties - Biochemistry (1994 year) and Clinical Laboratory (2009 year). She also has additional qualifications in the field of laboratory endocrinology at the Bruggemann University Hospital, Brussels, Belgium (01.10.2006 – 30.09.2007). In 2015, Assoc. Prof. Gerova obtained PhD degree in the scientific specialty: "Clinical Laboratory, MU-Varna on the topic: Determination of vitamin D status and the importance of suboptimal vitamin D levels for the course of some chronic diseases.

In the laboratories where she works, Assoc. Prof. Gerova implements modern methods, taking into account the requirements of national and international laboratory standards. She has extensive experience in the organization of the medical laboratory and working in teams of various medical specialists.

RESEARCH ACTIVITY

The field of scientific interests of Assoc. Prof. Gerova is broad. Her scientific works are in the following areas:

VITAMIN D STATUS AND ITS ROLE IN SOME CHRONIC DISEASES

(B4-03, B4-10, D7-09, D7-11, D7-12, D7-18, D7-21, D8-01, D8-02, D8-03, D8-11, D8-12, D8-13, IMI-02)

The studies track the changes in vitamin D in various physiological states - childhood, pregnancy, adulthood. The importance of vitamin D as a modifiable factor in cardiovascular and neurodegenerative diseases, chronic diseases of the prostate and intestines, obesity is emphasized. The studies have both a scientific and research significance. It has been established that a number of diseases occur with a change in vitamin status, which requires its constant monitoring. This is of fundamental importance for preventive medicine, since regular supplementation with vitamin D leads to a reduction in the risk of developing a number of socially significant diseases

VITAMIN B12 STATUS AND PREGNANCY

(B4-09, D8-10)

Vitamin B12 deficiency leads to an increased incidence of complications during pregnancy and childbirth. Unfavorable consequences develop for both pregnant women (eclampsia, premature birth) and their newborns (neural cord defects, low birth weight). Vitamin B12 status of pregnant women is determined by a combination of direct biomarkers (total vitamin B12 and active B12) and the functional biomarker - methylmalonic acid (MMA). For the first time in Bulgaria, the determination of MMA by liquid chromatography with mass spectroscopic detection has been introduced.

VITAMIN K AND ITS RELATIONSHIP WITH BONE AND VASCULAR HEALTH

(B4-01, B4-04, D7-15, D9-01)

Scientific works enlarge the knowledge about the role of vitamin K in bone and vascular health. The examinations offer new approaches and biomarkers for the assessment of vascular calcification. They are important for the prevention and slowing of the course of a number of chronic diseases such as osteoporosis and atherosclerosis.

SALIVA AS A VALUABLE BIOLOGICAL MATERIAL WITH POSSIBILITIES FOR APPLICATION IN ROUTINE LABORATORY PRACTICE

(G7-02, G7-16, G7-17, G8-07, G8-08)

The results of the studies show the possibilities of saliva as a biological material for laboratory research. New approaches have been developed for collecting and storing the material. Information has been accumulated on the biological variation and reference intervals of the studied parameters. Lot of laboratory parameters have been adapted for the examination in saliva. New possibilities have been revealed in the field of salivary diagnostics.

It has been established that saliva is a valuable indicator in diseases of the gastrointestinal tract, since they most directly affect its formation and composition. Studies of indicators of oxidative stress in saliva prove its participation in the pathogenesis of chronic intestinal diseases. This provides an additional and important tool for assessing the activity and progression of intestinal diseases. The obtained laboratory results support therapeutic behavior through supplementation with antioxidants. This leads to an improvement in the condition of patients and their quality of life.

The studies enable 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.

BONE DISEASE IN MULTIPLE MYELOMA

(B4-06, B4-07, D7-07, D7-19, D8-09)

The changes in bone remodeling, which determine the pathogenetic mechanism of bone disease in multiple myeloma, are reviewed. The predominance of bone resorption over bone formation leads to the appearance of osteolytic lesions in over 80% of newly diagnosed myeloma patients. The studies shed light on the regulation of multiple signaling pathways, chemokines, signaling and effector molecules. The levels of osteoclast activators sRANKL, periostin, osteopontin and factors that reduce osteoblast activity such as sclerostin and Dickkopf-1 protein (DKK-1) were monitored. The studied parameters can be used as reliable biomarkers for better monitoring of bone disease during the course of the disease, as well as for assessing the effectiveness of therapy.

LABORATORY ABNORMALITIES IN NEOPLASMS

(G8-05, G7-10, G7-20, IMI-01)

The role of the enzyme adenosine deaminase (ADA) in the immune regulation of tumor processes is presented. Its use as a biomarker in the monitoring of patients with breast cancer and colorectal carcinoma is proposed. A direct dependence of ADA activity on the stage of the disease and metastasis has been established, with no correlation with CEA and Ca19-9.

In patients with different forms and stages of myelofibrosis, characteristic changes in indicators of iron metabolism and inflammation - hepcidin, IL-6 and IL-8 - have been established.

Information on tyrosine kinase inhibitors in the modern therapy of neoplastic diseases is summarized. Their pharmacokinetics, pharmacodynamics and side effects during treatment are discussed.

NEW BIOMARKERS FOR ASSESSMENT OF CHRONIC BOWEL INFLAMMATION

(B4-02, D7-13, D7-01, D7-14, D8-04)

Significantly higher levels of reactive oxygen radicals (ROS) and intrinsic antioxidant capacity (IAC) have been found in patients with chronic intestinal inflammation. The dependence of these parameters on the severity of the disease has been proven. A non-invasive panel of biomarkers for assessing the course of inflammatory bowel disease (IBD) is presented. Significantly increased levels of adenosine deaminase (ADA) have been found in patients with chronic intestinal inflammation. By examining ADA, it is possible to distinguish not only patients with IBD from healthy individuals, but also patients with active disease and those in remission. In addition to well-known markers of inflammation such as C-reactive protein and fecal calprotectin, ADA has emerged as a promising candidate biomarker for chronic intestinal inflammation.

In the field of gastroenterology the relation of childhood obesity and non-alcoholic fatty liver disease is discussed. Both routine and innovative laboratory biomarkers for liver inflammation, oxidative stress and apoptosis are highlighted.

METABOLIC SYNDROME AND ENDOTHELIAL DYSFUNCTION

(B4-05, B4-08, 7- 06, D8-06)

The studies have highlighted the importance of the transcription factor Nrf2, which plays an integral role in the protection of the endothelium.

The role of asymptomatic hyperuricemia as a metabolic risk factor for cardiovascular pathology has been assessed.

The predictive role of sST2 for the development of HF in patients with atrial fibrillation has been confirmed. The studies clarify the complex pathophysiological mechanisms of cellular damage in metabolic syndrome. This is essential for early diagnosis and treatment strategy.

RHEUMATOID ARTHRITIS – SYSTEMIC INFLAMMATORY DISEASE WITH AUTOIMMUNE GENESIS

(G7-03, G7-04, G7-05)

It is emphasized that in patients with rheumatoid arthritis, in addition to X-ray changes, early monitoring of rheumatoid factor, anti-CCP and inflammation markers is necessary. These laboratory parameters help to identify patients with a poor prognosis and direct to undertake earlier and more aggressive treatment in order to prevent the onset of disability.

The candidate's scientific works correspond to the scientific specialty for which the competition was announced.

In the presented list for compliance with the minimum national requirements, Assoc. Prof. Gerova has grouped her scientific works as follows:

INDICATORS GROUP A

Dissertation for the award of the educational and scientific degree PhD: "Determination of vitamin D status and the importance of suboptimal vitamin D levels for the course of some chronic diseases".

INDICATORS GROUP B

Habilitation work = 10 scientific publications that are referenced and indexed in world-renowned databases (Scopus and Web of science).

INDICATORS GROUP G

Publications and reports in scientific publications, referenced and indexed in world-renowned databases of scientific information (Scopus and Web of Science) - 21

Publications and reports in non-refereed journals with scientific review or in edited collective volumes, participation in a chapter of a monograph – 14.

INDICATORS GROUP D

Citations or reviews in scientific publications, referenced and indexed in world-renowned databases of scientific information (Scopus and Web of Science) – 49.

INDICATORS GROUP E

Supervision of successfully defended PhD thesis medical doctors - 2 medical doctors (Dr. Yordanova-Vasileva, Dr. Todorova).

Acquired two medical specialties: "Biochemistry" and "Clinical Laboratory"

Participation in projects - one project funded by the British Council, two projects funded by the Ministry of Education and Science and nine projects with institutional funding (Medical Science Fund at MU-Varna).

Training of postgraduates in clinical laboratory - two postgraduates (Dr. Boteva, Dr. Vasileva).

The compliance of Assoc. Prof. Gerova's scientific production with the quantitative and qualitative criteria for awarding scientific degrees and titles and holding academic positions at MU - Varna and their comparison with the minimum requirements of the National Center for Information and Documentation (NCID) is presented in the table.

Indicator group	Contents	Professor (number of points)	Your points
A	**PhD thesis**	50	**50**
B	**10 scientific publications in journals that are refereed and indexed in world-renowned databases, equivalent to a habilitation thesis**	100	**148.48**
G7-9	**Scientific publications in refereed and indexed publications in world-renowned databases, in non-refereed journals with scientific review, participation in a chapter of a monography**	200	**449,80**
D	**Citations or reviews in scientific publications, referenced and indexed in world-renowned databases**	100	**735**
E	**Acquired specialty, defended doctoral and postgraduate students, participation in scientific projects**	100	**250**
		550	**Общо: 1633,28 р.**

The attached table shows that the candidate's scientific publications meets all qualitative and quantitative criteria. The analysis of the works shows a sufficient volume and quality of scientific production. The total number of publications after the associate professorship is 49. Publications in refereed and indexed editions in Scopus and Web of Science - 31, publications in non-refereed journals with scientific review or in edited collections with full-text publications - 18. The total IF of the publications is 65.36. 49 citations from refereed databases are presented. In 3 of the works, Assoc. Prof. Gerova is an independent or lead author. She has participated in 52 scientific forums (39 abroad and 13 in Bulgaria). Assoc. Prof. Gerova has participated in 12 projects - one funded by the British Council, two funded by the Ministry of Education and Science and nine with institutional funding (Medical Science Fund at MU-Varna).

Assoc. Gerova is a member of the Union of Scientists in Bulgaria - Section of Biochemistry and Molecular Biology, Bulgarian Society of Clinical Laboratory, Bulgarian Society of Clinical Immunology. She is a member of the Management Board of the Bulgarian Society of Clinical Laboratory.

TEACHING ACTIVITIES

Assoc. Prof. Gerova is an well-known scientist with over 34 years of teaching experience. She is fluent in written and spoken French and English. Until 2009, Assoc. Prof. Gerova taught the discipline "Biochemistry" for students of Medicine and Dentistry in Bulgarian and English. Since 2010, she has been teaching the discipline "Clinical Laboratory" for students of Medicine (Bulgarian and English), Kinesitherapy and to Medical laboratory technicians from the Medical College at MU-Varna. Assoc. Gerova teaches the discipline "Clinical Chemistry" to pharmacists at MU-Varna. She also leads a lecture course for medical doctors specializing "Clinical Laboratory" at MU-Varna (summer and winter school). Her teaching workload for the last four years is 558 hours.

Assoc. Prof. Gerova has been the scientific supervisor of two PhD students students and two medical doctors specializing in Clinical Laboratory.

CONCLUSION

Based on the analysis and evaluation of the attached documentation, I believe that Assoc. Prof. Dr. Daniela Gerova fully meets the requirements of the law on the development of the academic staff in the Republic of Bulgaria and the qualitative and quantitative criteria for the development of the academic staff specified in the regulations of MU - Varna, consistent with the criteria of NCID, for acquiring the academic position of "professor".

The comprehensive assessment of the candidate's qualities gives me reason to recommend to the members of the esteemed scientific jury to elect Daniela Ivanova Gerova, MD as PROFESSOR of Clinical Laboratory at MU - Varna.

22. 07. 2025

Reviewer:

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

Prof. Dr. Krasimira Ikonomova, MD, PhD