

STANDPOINT

by

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Member of the Scientific Jury, designated by Order No. P-109-381/September 26, 2022 by Prof. Dr. Valentin Ignatov, M.D., Ph.D. – Rector of Medical University “Prof. Dr. Paraskev Stoyanov”, Varna

Subject: Competition for awarding the academic position “**Associate Professor**” in the field of Higher Education 7. Healthcare and sport, professional direction 7.1. Medicine, and scientific specialty “Clinical Laboratory”, for the needs of the Department of Clinical Laboratory, Faculty of Medicine at the Medical University of Varna.

Brief information about the competition

Based on the decision of the Faculty Council of the Faculty of Medicine (Protocol No. 71/September 09, 2022) and the order No. P-109-381/September 26, 2022 of the Rector of the Medical University – Varna I have been assigned to prepare a statement. The competition was announced in the State Gazette No. 59/July 26, 2022. Dr. Irena Ivanova Dimitrova is the only candidate. The procedure for announcing the competition is in accordance with the requirements of the Law for the Development of the Academic Staff in the Republic of Bulgaria and with the Rules for the Development of the Academic Staff in the Medical University-Varna.

Short biographical details of the candidate

In 2003 Dr. Irena Dimitrova Ivanova graduated in medicine at the Medical University – Plovdiv. Her professional career started as a medicine resident at Third Internal Department of Pazardzhik General Hospital, Pazardzhik. From 2005 to 2009, she worked as a doctor specializing in the Clinical Laboratory at UH “St. Ivan Rilski” – Sofia, and from 2009 to 2010 she worked as a doctor with an acquired specialization in Clinical Laboratory in the Clinical Laboratory of UH “St. Ivan Rilski” – Sofia. From 2010 she was appointed as the Head of the Clinical Laboratory, UH “St. Ivan Rilski” - Sofia, where she works at present. She acquired an additional qualification – a Master's in Public Health and Health Management in 2018.

Her academic career began after successfully defense of her dissertation “Copper Status – Laboratory Aspects and Clinical Application in Some Pathological Conditions”. From 2016 to 2021, she was a “part-time assistant” at the Department of Clinical Laboratory, Sofia University, where she taught (in Bulgarian and in English) in the disciplines “Clinical Laboratory” for students of Medicine (3rd and 5th years) and “Clinical Chemistry” for Pharmacy students. Since 2016 she is a lecturer at the Department of Chemistry, Southwest University “Neofit Rilski”, Blagoevgrad, in the disciplines of “Medicinal Chemistry” and “Clinical Practicum” for students of Chemistry. From 2021 to 2022, she is a lecturer at the Department of Analytical Chemistry in

the Faculty of Chemistry and Pharmacy, Sofia University “St. Kliment Ohridski“ in the discipline “Clinical Chemistry“ for students majoring in Pharmacy.

Dr. Irena Dimitrova Ivanova is a member of: Bulgarian Medical Union, Bulgarian Clinical Laboratory Society, International Federation of Clinical Chemistry and Laboratory Medicine, General Medical Council, Federation of Laboratory Medicine in Moscow, Academy of EFLM. She is fluent in the English language, which she uses actively in her professional and academic career.

Professional experience

Dr. Irena Dimitrova Ivanova has 13 years of experience in the field of Clinical Laboratory as a specialist in Clinical laboratory. In terms of professional qualification, she meets the requirements for habilitation.

Scientific research activity

Scientific indicators (based on an academic reference from the University of Varna):

Dr. Irena Dimitrova Ivanova participates in the current competition with one dissertation work, one monographic habilitation work, 25 scientific national and international publications (19 in English and 6 in Bulgarian) and a chapter of a book (in English) published abroad.

A dissertation “Copper status – laboratory aspects and clinical application in certain pathological conditions“ for the acquisition of the educational and scientific PhD degree in Clinical Laboratory (**indicator A1 – 50 points**) is presented, as well as three publications in connection with it with a total number of **points 41.67** with a minimum requirement of **30 points** and a **total impact factor of 0.239**.

The following are presented:

- Habilitation thesis – a monograph with a total volume of 139 pages on the topic: “Copper exchange – physiological mechanisms and clinical applications“, published in 2022 and ISBN: 978-618-7491-50-0 (**indicator B3 – 100 points**).
- Publications and reports published in scientific publications, referenced or indexed in world-famous databases with scientific information (WOS or Scopus) in total 12 in number (**indicator G7 – 157.02 points**).
- Publications and reports published in non-refereed journals with scientific review or published in edited collective volumes totaling 8 in number (**indicator G8 – 63.53 points**).
- Published chapter of a collective monograph (**indicator G9 – 5 points**).

According to G5-G9 indicators, the candidate collects a **total of 225.55 points** with a required minimum of 200 points, and **their total impact factor is 7.969**.

- Full-text publications in scientific journals and anthologies, **beyond** the minimum requirements for occupying the academic position “Associate Professor” – 1 item in a non-refereed peer-reviewed journal (**10 points**).

According to the presented documents by the Medical Library of the Medical University of Varna, Dr. Irena Ivanova has 4 citations (**indicator D10 – 60 points in total**).

Dr. Irena Dimitrova Ivanova is first author in 12 of the presented publications (**48%**), second author in 4 publications (**16%**), third and so on – in 9 publications (**36%**).

Evidence was also presented regarding Dr. Ivanova's participation in national (14 in number) and international (15 in number) scientific events.

According to data from the creative autobiography, Dr. Irena Dimitrova Ivanova participated in 9 scientific research projects. She has active scientific profiles in Google Scholar, Research Gate, ORCID.

Scientific directions and contributions:

Dr. Irena Dimitrova Ivanova main scientific interests are in the field of the Clinical Laboratory in the following main directions:

1. **Clinical-laboratory aspects in trace elements analysis** (A1, G7.9, G7.11, G8.1, G8.3, G8.6, G8.7, G9.1). The dissertation marks the beginning of this direction, whose main scientific contributions are related to: standardization of the pre-analytical stage in the study of copper in various biological matrices, as well as validation of methods for the quantification of copper by flame AAS and ET-AAS and verification of immunoturbidimetric method for determining ceruloplasmin in serum; with a study of the biological variation in serum copper; with evidence of the need to update the reference limits for serum copper and with the characterization of copper status by the oxidase activity of the protein ceruloplasmin and the ratio copper/ceruloplasmin. All this is a prerequisite for an in-depth analysis of disturbed copper homeostasis in Wilson's disease and Alzheimer's disease. The scientific research of Dr. Ivanova in this direction continues and deepens, evidence of which is the subsequent publication activity regarding the pre-analytical analysis of microelement analysis (G8.1), accumulation of current data on the enzymatic activity of ceruloplasmin for the Bulgarian population, which is a valuable contribution in the clinical-applied aspect (G7.11). Of particular importance is determination of copper not bound to protein (the “free” fraction of copper), since it is precisely fraction that is responsible for its toxic effects. In G8.3, an original approach for calculating the free fraction of copper is indicated. A comparative analysis of the oxidase activity of ceruloplasmin in healthy individuals and those with Wilson's disease was also performed, demonstrating a higher diagnostic efficiency when ceruloplasmin was assessed by its enzyme activity rather than its concentration (G8.6). The possibilities for the application of microelement analysis in liquor specimens in the early diagnosis of Alzheimer's disease (G8.7) are clarified, since in its pathogenesis there is probably a disturbed copper homeostasis, and even an idea of chelation therapy is launched (G9.1).

Trace element analysis is also expanded with the development of a method for zinc determination in saliva (G7.9).

2. **Conditions with copper dyshomeostasis (G7.2, G7.5, G7.6, G7.7, G8.3, G8.7, G9.1).** In this direction, the idea of a parallel between Wilson's disease and Alzheimer's disease regarding disturbed copper homeostasis as the main pathogenetic mechanism is developed (G7.2, G7.6, G9.1, G8.3). An in-depth look at the exchange of copper in different conditions gives Dr. Ivanova the right to assume that it is better to pay attention to the redistribution of copper ions at the cellular and systemic level rather than the traditional division of conditions into those with a "deficiency" or with "accumulation" (G8.3). The relationship between the micronutrients copper, zinc, and iron and vitamin D levels in pregnant women with gestational diabetes (G7.5) was also evaluated. Laboratory parameters in serum, cerebrospinal fluid and urine are also specified, with the aid of which improvements for early diagnosis or monitor the treatment with chelation therapy are possible (G7.7, G8.7).
3. **Reference limits for serum copper and determination of biological variations in healthy Bulgarians (A.1, D7.1, D7.9, D8.8).** By validating an approach for determining serum copper with a reference method and studying the factors for biological variation, Dr. Ivanova achieves a very important goal by updating and enriching our knowledge about the reference limits of serum copper for the Bulgarian population (A.1), as well as for zinc in serum (G7.1) and in saliva (G7.9). Particularly original is her approach to present the biological variation of serum copper in the context of medical anthropology and to show the interaction between genetic predisposition and environmental influence, which represents a step towards personalized medicine and the possibility of determining the risk of a given disease depending on epigenetic factors (G8.8).
4. **Study of stress markers; new markers in liver pathology (NAFLD) and in kidney diseases; micronutrients and vitamins (G7.3, G7.4, G7.8, G7.10, G7.12, G8.2, G8.4, G8.5).** Dr. Ivanova's interests in this direction outline her broad clinical and laboratory understanding of the matter. Cortisol as a stress marker is well known, but Dr. Ivanova investigated it in an interesting and non-invasively acquired biological material, such as saliva. Applying it to different professional target groups (G7.3, G7.8, G7.12), she outlines trends and opportunities for preventive medicine. Of particular future and perspective are her studies regarding new biomarkers that could be successfully used in the modern diagnostic approach of severe and uncommon chronic kidney diseases and psoriatic arthritis (G7.10, G8.2). The association between the PNPLA3 I148M polymorphism in patients with non-alcoholic fatty liver disease and the increased risk of prediabetes, metabolic syndrome and insulin resistance was also made for the first time (G7.4). Another area of Dr. Ivanova's research interests is vitaminology, studying vitamin D status in pregnant women and patients with various autoimmune diseases (G8.4, G8.5).

In each of these areas, Dr. Irena Dimitrova Ivanova demonstrates a professional competence and the ability to transfer scientific results to an applied context. Her scientific work defines her as a contemporary researcher with original scientific ideas and contributions.

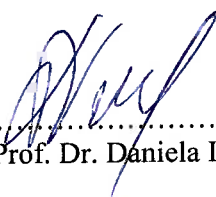
Teaching and learning activity:

Dr. Irena Dimitrova Ivanova has a total teaching experience of 6 years as “part-time assistant” in several prestigious universities of the country: Medical University – Sofia, Sofia University “St. Kliment Ohridski” and South-western University “Neofit Rilski”, Blagoevgrad. She teaches Medicine students the course “Clinical Laboratory” (in Bulgarian and in English), Pharmacy students – the course “Clinical Chemistry” (in Bulgarian and in English), Chemistry students – the courses “Medical Chemistry” and “Clinical Practicum”. For all these years, a total of 1602 study hours have been accumulated (1422 hours of practical work and seminars and 180 hours of lectures). 267 study hours are in English (237 hours of practical work and seminars and 30 hours of lectures). The average annual workload is **267** hours, which exceeds the minimum requirement.

CONCLUSION

Dr. Irena Dimitrova Ivanova is a distinguished specialist in the field of Clinical Laboratory with excellent professional knowledge and experience. After comprehensive analysis of her professional career, teaching experience and active participation in research projects and scientific work, my conclusion is that Dr. Irena Dimitrova Ivanova meets all the requirements of the Law for the Development of Academic Staff in the Republic of Bulgaria, the Regulations for its application and the Academic Staff Development regulations in MU-Varna to acquire an academic position “Associate Professor”. I strongly recommend to the esteemed jury to award Dr. Irena Dimitrova Ivanova the academic title “Associate Professor” in the field of higher education 7. Healthcare and sport, professional direction 7.1. Medicine and scientific specialty “Clinical Laboratory” for the needs of the “Clinical Laboratory” Department, Faculty of “Medicine” at the University of Medicine, Varna.

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