

REVIEW OPINION

by Assoc. Prof. Dr. Bissera Dimitrova Atanasova, MSc, PhD

Regarding: competition for awarding the academic position "Associate Professor" in the field of Higher Education 7.Health care and sport, professional direction 7.1.Medicine, in the scientific specialty 03.01.12 Clinical Laboratory, announced in the State Gazette number: 59/26.07.2022 and on the website of MU – Varna.

By order No. P-109-381/26.09.2022 of the Rector of MU-Varna, I have been elected as a member of Scientific Jury and I have been appointed to prepare Opinion on the procedure for awarding the academic position "Associate Professor" in the specialty "Clinical Laboratory" at Medical University-Varna, with a single candidate, Dr. Irena Dimitrova Ivanova, MD, Head of Clinical Laboratory at University Hospital "St. Iv. Rilski" - Sofia.

All the necessary materials, concerning the official procedure, have been provided in accordance with Regulations for Development of Academic Staff at MU-Varna.

Career profile of the candidate

Education and qualification. Professional development. Membership in professional organisations. Dr. Irena Ivanova has obtained a master's degree in Medicine 2003 at MU-Plovdiv. She has also completed a postgraduate specialization in Clinical Laboratory 2005-2009 at MU-Sofia with certification as a specialist. In 2014, she has been enrolled as a doctoral student of self-preparation at Department of Clinical Laboratory and Clinical Immunology, MU-Sofia. In 2016, she has successfully completed PhD thesis on the topic "Copper status - laboratory aspects and clinical application in some pathological conditions" and obtained the scientific and educational degree "Doctor". She has also received a master's degree in Public Health and Health Management. Dr. Ivanova's professional career includes work as a medicine resident at Third Internal Department of Pazardzhik General Hospital, as a specialising doctor in clinical laboratory 2005-2009 at Clinical Laboratory of University Hospital "St. Iv. Rilski"-Sofia and already as a specialist during 2009-2010, and up to now as Head of the same laboratory. She has specialized in Laboratory of Neurobiology, Fatebenefratelli Foundation, AFaR Division, Fatebenefratelli Hospital, Rome, Italy, with the financial support of IFCC Professional Exchange Programs (PEP) 2015 - funded project on the role of trace elements and especially copper in neurodegenerative diseases - Alzheimer's disease, Senior Scientific Supervisor: Prof. Dr. Rosanna Squitti.

Dr. Ivanova has received a certificate issued by European Federation of Laboratory Medicine (EFLM) for inclusion in European Register of Specialists in Laboratory Medicine. She is a member of the following professional organizations: - Bulgarian Society of Clinical Laboratory (2003 until now); - International Federation of Clinical Chemistry and Laboratory Medicine IFCCLM (2014 until now); - General Medical Council-London, GB (2014 until now); - Federation of Laboratory Medicine, Moscow, RU (2021 until now); - Academy of EFLM. She has been awarded Second Prize for the best poster at National Conference on Clinical Laboratory 2017 and Balkan Award for the best innovation in the field of medicine 2022. She participates in Editorial Board of Journal of Pathology and Laboratory Medicine, ISSN Print: 2640-446X, ISNN Online: 2640-4478.

Academic teaching activity. Dr. Ivanova has occupied the academic position of "part-time assistant" with teaching in Bulgarian and English language at Department of Clinical Laboratory, MU-Sofia during 2016-2021. Since 2016 until now, she is a part-time lecturer in the specialties of "Medicinal Chemistry" and "Clinical Practicum" at Faculty of Science and Mathematics, Department of Chemistry, "Neofit Rilski" SouthWest University - Blagoevgrad. Since 2021, she is a part-time lecturer, with teaching in English, on the matter of the specialty "Clinical Chemistry" at Department of Analytical Chemistry, Faculty of Chemistry and Pharmacy, Sofiiski University "St. Kliment Ohridski". **The official references, presented by the mentioned above universities, point that Dr. Ivanova's auditory engagement during the last almost seven years is associated with the loading of good teaching experience and skills in lecture courses and practical trainings.**

Materials, presented for the competition. The materials about the official procedure are in paper and electronic versions according to Regulations at MU-Varna. They comprise published articles, a published monography and a book chapter. Summaries of the monography work and scientific articles and reports, published in well known scientific referenced and indexed databases, are also presented. Lists of actual printed full-text publications and participations at national and international scientific forums, certificates and official information about the relevant academic and professional activities are attached.

Scientific production. The official academic reference of the individual scientific metric indicators, issued by Library of MU-Varna, includes: 1 dissertation work for the acquisition of the educational and scientific degree "Doctor", 1 monography, 12 publications and reports in scientific journals, referenced and indexed in world-recognised databases with scientific information Scopus and Web of Science, 8 publications and reports in non-refereed peer-reviewed journals or published in edited collective volumes and 1 published in a book chapter. The scientific metric data indicate a higher number of points than the mandatory minimum for occupying the academic position "Associate Professor", a number of citations covering the minimum requirements for clinical specialties, and 1 publication outside the minimum scientific metric requirements. Most of the published materials are since the last 5

years, a fact proving the relevance and actuality of the discussed in them matter. The citations, provided in the detailed reference of National Library "St. St. Cyril and Methodius" - 42 and in that of Library of MU-Varna" – 4, in prestigious internationally scientific databases, highly recognize the value of the studies in the relevant scientific publications. The metric individual evaluation of the publication activity of Dr. Ivanova **h-index 5** (as productivity and as a number of citations) is a testifying for the significant impact of her academic work.

The candidate's scientific and creative achievements are objectively, in details, documented in "Reference on Contributions of Scientific Work". They are structured into scientific fields and main directions. Original scientific contributions and those with clinical application are formulated.

The high quality of Dr. Ivanova's research and scientific activity is supported by her active scientific profiles in internationally known databases for contact and exchange of research information: ORCID, Scopus, FrontiersIn, ResearchGate, Google Scholar, and **also by her participation in significant research projects:** - Trace elements and Alzheimer disease - current tendencies and future perspectives IFCCLM 2015-03 to 2015-05|Grant; - Biomarkers in cerebrospinal fluid and serum in early diagnosis of Alzheimer's disease -Research project with funding of Medical University-Sofia, 2013 to 2014|Grant Contract No. 59/2013, Project No. 45; - Interdisciplinary approach in patients with immunodeficiency European Commission (Granada, Virgen de las Nieves Hospital, Granada, Spain) 2005-03 to 2005-06|Grant: Ref. No. BG/05/A/PI-166196/01.6.2005 (information about the projects is according Funding section of Dr. Ivanova's profile in ORCID). In the creative autobiography, Dr. Ivanova reflects participation in totally 9 projects.

Monography. Dr. Ivanova presents in details the modern level of knowledge about copper significance in health and disease. The information is considered in several important theoretical and methodological directions: biological functions and physiological significance of copper as an essential trace element; the dual nature with manifestation of the toxic effects in overload; complex physiological mechanisms responsible for homeostasis and those for balance disorders; highly complicated interactions with other trace elements such as zinc and iron. The clinical laboratory aspect includes a competent and detailed characterization of all phases in the total testing laboratory process with an accent on reducing the errors thus providing patient safety. Current trends for the introduction of new diagnostic and therapeutic options for copper metabolic disorders are considered. **The copper problematic, discussed in the monography, supports the idea about important role of micronutrients as a part in integrated approach of prevention, diagnosis, prognosis and treatment ("Precision Medicine"), focused in gene variability, environmental factors and life-style of individuals.**

Dr. Ir. Ivanova is undoubtedly highly competent clinical laboratory specialist, with serious professional experience and expertise in investigation of trace elements as a highly specialized activity, with loaded experience as a clinical laboratory manager, with significant scientific output in the field of specialty and a large number of publications and citations in prestigious databases. Her teaching activity as a prolongation and experience in three Bulgarian universities is associated with accumulated and emphasized pedagogical skills. Awarding her the academic position of Associated Professor in Clinical Laboratory would be a natural consequence of the achievements in her professional and academic career.

CONCLUSION

I FIRMLY BELIEVE THAT THE SUBMITTED CANDIDACY FULLY MEETS THE REQUIREMENTS OF REGULATIONS FOR THE DEVELOPMENT OF ACADEMIC STAFF AT MEDICAL UNIVERSITY-VARNA AND I STRONGLY RECOMMEND THE RESPECTED SCIENTIFIC JURY TO AWARD THE ACADEMIC POSITION „ASSOCIATED PROFESSOR” TO DR. IRENA DIMITROVA IVANOVA, MD, PhD.

22 November 2022

Assoc. Prof. Bisera Atanasova:.....

