Attitude of Reviewer

by Professor Nina Atanassova, PhD, DSc,
Corresponding Member of Bulgarian Academy of Sciences
Institute of Experimental Morphology, Pathology and Anthropology with Museum, Bulgarian Academy of Sciences

Re: competition for the academic position „ASSOCIATED PROFESSOR“ in the Professional field 4.3. Biological Sciences, specialty "Immunology" in the Department "Pathology" of the Institute of Experimental Morphology, Pathology and Anthropology with Museum, Bulgarian Academy of Sciences, announced in the Newspaper of State no. 38/28.04.2023

Assistant Professor Rositsa Milcheva is the only candidate in the announced competition for the occupation of the academic position "Associated Professor" in the Department "Pathology" of the Institute of Experimental Morphology, Pathology and Anthropology with Museum, Bulgarian Academy of Sciences. She presents detailed documentation of an active and promising scientists with indisputable indicators for academic promotion.

Rositsa Milcheva graduated from the Faculty of Biology of the Sofia University “St. Kliment Ohridski" with a master's degree in molecular biology in 2002 with specialisation in clinical chemistry. She started her carrier in 2002 in the Institute of Experimental Pathology and Parasitology of the Bulgarian Academy of Sciences as a researcher. In 2005 she was appointed to the academic position "assistant", and in 2014, she was promoted in Assistant Professor at IEMPAM-BAN. From 2007 to 2011, she was a PhD student in the Department of Pathology of the Faculty of Medicine at the Comenius University in Bratislava, Slovakia, where in 2011 she defended a doctoral thesis on the topic "Mechanisms of apoptosis in striated muscle fiber after invasion by Trichinella spiralis”. It is obvious that the topic of the dissertation is in the field of the announced competition.

Dr. Milcheva's scientific production includes 29 publications, of which 22 have been published in international journals, referenced and indexed in the world databases Web of Science and Scopus. With Impact Factor (IF) and/or Impact Rank (SJR) are 21 articles. The total number of citations is 74; h-index 5 (Scopus).

The candidate participated in the current competition with19 scientific articles with a total impact factor of 24.242. According to Web of Science and SCOPUS metrics, the articles are distributed by the respective quartiles as follows: 4 articles with Q1; 2 articles with Q2; 10 articles with Q3; 2 articles with Q4. The international journals with IF in which the scientific works of Dr. Milcheva have been published are prestigious international journals: Gels, Acta Histochemica, Materials Science and Engineering, Open Life Sciences, Parasitology Research, Biologia, Acta Parasitologica, Helminthologia, Folia Parasitologica,

In the 19 publications presented in the competition, the candidate is the first or second author in 12 articles (in 10 she is the first author), which demonstrates her significant personal contribution. Her ability to work in international and interdisciplinary teams is evident. Since her promotion into Assistant Professor (2014) till now Dr. Milcheva has published 15 articles in Web of

Science and Scopus, which represents nearly 80% of the articles used in current competition. This is an expression of a growing and sustainable trend in her publication activity.

Dr. Milcheva has participated in 22 scientific forums, 12 of which are international. She presented 16 reports and 6 poster presentations. A list of 32 citations is presented

The scientometric analysis of the research activity clearly indicates that she meets the criteria/requirements of the Regulations on the terms and conditions for obtaining scientific degrees and for academic positions in IEMPAM. According to indicators "В", "Г" and "Д", Dr. Milcheva covers and exceeds the required minimum according to the regulations of IEMPAM-BAN - for example, according to "Г7" ((*Scientific publications in journals refered and indexed in Web of Science and Scopus, that are not included in the habilitation thesis*), which requires at least 220 points, she has 234 points; according to indicator Д (*citations*, requiring minimum of 60 points) she has got 64 points

Dr. Milcheva's main scientific contributions are in the field of immunology, cell biology, biochemistry and molecular pathology. The changes of an immunological, morphological, genetic, biochemical and functional aspects are followed in the "nurse cell" formed as a result of invasion of the parasitic nematode Trichinella spiralis in the skeletal muscle fibers. This is a unique experimental model for studying the cellular and molecular mechanisms of human muscular dystrophies, representing a wide-ranging group of diseases, the outcome of which is permanent immobilization with serious negative consequences for the quality of life of the suffering patients. For this purpose, Dr. Milcheva applies a wide range of classical and modern methods - lectin and immunohistochemistry, one- and two-dimensional electrophoresis, Western and lectin blot, flow cytometry, cell culture, primer design, RT-PCR, real time PCR, biostatistical analysis.

Dr Milcheva has presented her scientific contributions in concise and comprehensive form with a clear evaluation of the fundamental contribution of her scientific achievements. Elevenoriginal achievements were formulated that are of clinical importance. A significant part of them is devoted to complex studies on the immune response, inflammatory reactions, apoptosis, sialylation of glycoproteins and changes in expression of key genes in the “Nurse cell” of the parasitic nematode Trichinella spiralis.

The high adaptability of the parasite has been proven by elucidating: the mechanisms of suppression and escape of the host's immune response; the ability to modulate the intracellular systems of infected muscle fibers. The mechanisms of dedifferentiation of the affected area are associated with increased sialylation of glycoproteins and increased gene and protein expression of dystrophin - a contribution for understanding the adaptive and regenerative abilities of striated muscle tissue, which is important to the fight against hereditary and congenital myopathies.

In the field of nanomedicine, two contributions are summarized, one of which is related to the development of new antibiofilm coatings with zinc oxide nanoparticles applied on catheters (vascular, urinary, and postoperative), which are a promising strategy in the clinic for the prevention and control of catheter infections. A new type of interpenetrating polymer network-hydrogel based on polymethacrylates is characterized. High biocompatibility of the hydrogel has

been proven with an in vivo model, which defines it as a unique biomaterial for application in medicine, pharmacy and production of smart materials included in the production of sensor devices.

In a methodological aspect, a contribution has been formulated to the application of various alcohol-based fixatives in histology and molecular biology, that is widely used in development of scientific, diagnostic and laboratory-techniques.

Project funding is a strong point in Dr. Milcheva's scientific research activity. She was the coordinator of two projects and a participant in 1 project funded by the National Research Institute. She participated in 2 EBR projects between Bulgarian Academy of Sciences (BAS) and Latvian Academy of Sciences. At present she is the leader of a project funded by bilateral cooperation between BAS and Slovak Academy of Sciences. She participated in a project financed by the OP "Development of Human Resources" to support the development of doctoral students, postdoctoral fellows and young scientists. The candidate has prepared 3 reviews – of 1 project and 2 articles for international journals.

Dr. Milcheva has specialized several times at the Comenius University in Bratislava, where she defended her dissertation and to date develops international cooperation with the research group of Prof. Babal. She has held fellowships at Imperial College London, University of Wales Aberystwyth and Institute of Molecular Biosciences, Karl Franz University Graz, Austria

Dr. Milcheva is the winner of five awards - for the best publication of a young scientist at IEPP-BAS, for the best presentation at international forums, for the leader of a project with significant project funding at IEMPAM-BAS.

Conclusion: Based on the materials presented in the competition, I find that Assistant Professor Rositsa Milcheva is a talented scientist, a specialist in the field of immunology, cell biology and molecular pathology. As results of her research, original fundamental contributions have been generated with high applied potential for human medicine. The candidate conducts interdisciplinary research with doctors and chemists, thus responding to the modern trends in the development of biomedicine. Dr. Milcheva has high scientometric indicators that exceed the criteria in the Regulations of IEMPAM-BAS for obtaining the academic position "Associate Professor". The candidate has made a significant contribution to project financing and international cooperation. I believe that Assistant professor Dr. Rositsa Milcheva fully meets the requirements of ZRASRB and the regulations (of BAS and IEMPAM) for holding the academic position of "Associate Professor". All this gives me sufficient grounds to confidently recommend to the Scientific Jury to vote positively for the proposal to the Scientific Council of IEMPAM, Assistant Dr. Rositsa Milcheva to be promoted into " Associate Professor " in the scientific specialty "Immunology" (06.01.23), Professional Field 4.3. Biological Sciences.

07.08.2023

Sign: .....

(Prof. Nina Atanassova, PhD, DSc)