

REPORT

from Prof. DSc Pavinka Alexandrova Dolashka,
Institute of Organic Chemistry with Centre of Phytochemistry – BAS

Regarding: submitted materials for participation in the competition for the academic position "Associate Professor" in professional field 4.3. Biological Sciences, scientific specialty "Molecular Biology," for the needs of the department "Regulation of Gene Activity," Institute of Molecular Biology "Roumen Tsanev" at BAS, Sofia (IMB-BAS), announced in the State Gazette, issue 52 of June 18, 2024, and on the IMB-BAS website.

Member of the scientific jury, according to order No. 110-OB/28.06.2024, Sofia.

Candidate: Assistant Professor Dr. Elena Bozhidarova Krachmarova from the Institute of Molecular Biology "Acad. Roumen Tsanev," BAS

1. General presentation of the received materials

The only candidate for the announced competition for the academic position of "Associate Professor" is Dr. Elena Bozhidarova Krachmarova, Assistant Professor in the department "Regulation of Gene Activity" from IMB-BAS.

The submitted materials by Dr. Krachmarova are in compliance with the Regulations for the Development of the Academic Staff at IMB-BAS and meet the criteria of IMB-BAS for the academic position of "Associate Professor."

2. Brief biographical data

Dr. Elena Krachmarova graduated with a master's degree in "Biotechnology" from the University of Chemical Technology and Metallurgy – Sofia (UCTM-Sofia) in 2011. She continued her work at IMB-BAS, where she was enrolled as a part-time PhD student in July 2015, and in 2018, she defended her dissertation for acquiring the educational and scientific degree of Doctor.

She was awarded by the Union of Scientists in Bulgaria with a diploma from the competition for high scientific achievements in the category "Scientific Achievements in Defended PhD Theses by Scientists under 35 Years of Age."

Asst. Prof. E. Krachmarova has been working at the Institute of Molecular Biology, BAS, since 2011 in the section "Regulation of Gene Expression" in collaboration with Acad. Ivan Ivanov and Prof. Genoveva Nacheva.

3. General characteristics of the candidate's activities

Evaluation of the candidate's scientific and applied scientific activities

Dr. Elena Krachmarova is a co-author of 17 publications indexed in Scopus/Web of Science. In the current competition, she participates with 14 publications and 2 patents, which have been cited 91 times according to Web of Science/Scopus. For the competition, 14 articles from the period 2017-2024 are presented, all closely related to the topic of the competition. Of these, 8 articles are published in Q1 journals, 1 in Q2, 2 in Q3, 3 in Q4, and 2 patents.

She was invited speaker at the 47th FEBS Congress in Tours, France. Additionally, she has delivered oral presentations at more than 10 national and international conferences and participated with poster presentations in over 20 conferences. She was a consultant for two master's theses, one of which was from an Erasmus student at UCTM-Sofia.

Dr. Krachmarova participated in 9 national and 2 international scientific projects; she led 1 scientific project funded by the program for supporting young scientists and PhD students of BAS. She is currently involved in 3 scientific projects funded by the National Science Fund and the Ministry of Finance.

According to the BAS and IMB-BAS criteria for the minimum national requirements for the academic position of "Associate Professor," Dr. Krachmarova is applying with materials that are assessed with 734 points, exceeding significantly the required 430 points.

Scientific contributions

Dr. Krachmarova's scientific contributions are significant, both in the field of fundamental research and in terms of practical application. Her scientific work mainly focuses on clarifying important mechanisms and processes in living organisms. The scientific contributions from her publications can be summarized in three main areas:

1. Investigation of the molecular mechanisms of action of the ORF6 and Nsp13 proteins of the SARS-CoV-2 virus in infected cells. Approaches to control the cytokine storm.
2. Investigation of factors affecting the biological activity of human gamma-interferon (hIFN γ) and its production as a recombinant protein.
3. Thermodynamics of the interaction of ionic liquids with the transport protein serum albumin.

It is also important to note the practical nature of her research, reflected in two patents protecting the most promising mutant analogues of hIFN γ : European (EP 3381935) and Bulgarian (BG 67190 B1), both issued in 2020.

Studies utilizing advanced techniques and methodologies for the analysis of biologically active compounds with potential for pharmaceutical development form the basis for future research as well as for practical application.

4. Evaluation of the candidate's personal contribution

Although many of Dr. Krachmarova's works are co-authored, she has well defined significant contributions to the obtained results.

5. Critical remarks and recommendations

I have no critical remarks regarding the submitted materials and scientific research. I recommend that Dr. Elena Krachmarova continue her studies on biologically active compounds and their application in medicinal preparations.

6. Personal impressions

I know Dr. Elena Krachmarova personally, and my impression is that she is a very responsible young scientist, diligent, goal-oriented, and dedicated to her work, which explains her significant scientific achievements and their dissemination at conferences and in prestigious scientific journals. She

is also involved in other research on proteins, the mechanisms of their cellular entry, and interactions with target proteins, as well as research on biomarkers for early diagnosis of neurodegenerative diseases, cognitive, hemodynamic, biochemical, and neurological changes after interventional treatment of critical carotid stenoses, and more.

CONCLUSION

The presented results show that Asst. Prof. Dr. Elena Bozhidarova Krachmarova demonstrates the necessary qualities and skills to conduct research and achieve original and significant scientific results. This is due to her profound theoretical knowledge and professional expertise in the field of "Biological Sciences," with a specialization in Molecular Biology.

Her research, carried out with modern methods and techniques in collaboration with renowned scientific teams, has been published in highly ranked scientific journals and significantly contributes to both fundamental science and practice.

Dr. Elena Krachmarova fully meets the requirements of the Bulgarian Law on the Development of Academic Staff, its regulations, and the internal rules of the Institute of Molecular Biology, BAS, for acquiring the academic position of "Associate Professor."

For the above reasons, I give a positive assessment of her research, results, and scientific contributions, and I confidently recommend to the esteemed scientific jury that the academic position of "Associate Professor" be awarded to Dr. Elena Bozhidarova Krachmarova in the field of professional direction 4.3. Biological Sciences, with a scientific specialty in "Molecular Biology."

October 15, 2024

Sofia

Author of the position:

(Prof. Dr. Sci. Pavlinka Dolashka)