OPINION

by Assoc. Prof. Dr. Ivaylo Petrov Ivanov, Faculty of Medicine at the Medical University – Sofia, member of the Scientific Jury for the competition for the academic position of "Associate Professor" for the needs of the "Gene Activity Regulation" section at the Institute of Molecular Biology at the Bulgarian Academy of Sciences in the professional field 4.3. Biological Sciences, specialty "Molecular Biology", announced in State Gazette No. 66/12.08.2025, with the sole candidate being chief Assistant Professor Dr. Rositsa Georgieva Tsekovska.

Rositsa Tsekovska, who works in the Gene Activity Regulation Section at the Acad. R. Tsanev Institute of Molecular Biology, Bulgarian Academy of Sciences, has submitted her application and been accepted to participate in the competition.

In 2004, chief Assistant Rositsa Tsekovska defended her doctoral dissertation on "Non-enzymatic Glycosylation of Proteins in Escherichia coli" under the supervision of Prof. Ivan G. Ivanov, D.Sc. and Senior Researcher associate II Rumyana S. Mironova.

The scientific contributions of chief assistant Rositsa Tsekovska, presented within the framework of the competition, have been published in a total of 22 scientific publications between 2003 and 2025. Six of the publications (numbers 1, 2, 13, 14, 16, and 19) are included in the habilitation thesis for the competition. The total number of points from these publications is 107, exceeding the minimum national requirements and those of IMB-BAS according to indicator B4.

Scientific publications after obtaining the degree of Doctor of Science, which are referenced and indexed in world-renowned scientific information databases (Web of Science and Scopus), apart from the habilitation thesis, are eleven (numbers 3 to 12 and 15). The candidate is also a co-author of two chapters in books (numbers 17 and 18) after obtaining her PhD degree. Thus, according to indicators G7 and G8, chief assistant Rositsa Tsekovska has 225 points, which exceed the minimum national requirements and those of the IMB-BAS according to indicator G.

The total number of citations in scientific publications, referenced and indexed in world-renowned scientific information databases, is 168, which earns 336 points, far exceeding the minimum national requirements and those of the IMB-BAS under indicator D. The results for this indicator clearly demonstrate the relevance and significance of the research conducted.

The candidate has 120 points under indicator E, based on her participation in two international scientific projects, leadership of two national scientific projects, and funds attracted for projects led by the candidate.

Thus, chief assistant Rositsa Tsekovska has a total of 838 points, which exceeds twice the minimum national requirements and those of the IMB-BAS.

In addition, the candidate has an h-index of 7 and has participated in 23 scientific forums.

The interaction of reducing sugars and deoxyozones (1,2-dicarbonyl compounds) with compounds containing free amino groups (proteins and nucleic acids) is a chemical reaction that occurs under physiological conditions. This reaction is known as glycation or the Maillard reaction. The endogenous formation of primary glycation products and the subsequent chemical processes leading to stable glycation products result in irreversible

changes in the structure and function of biomolecules. This is the basis of aging, inflammatory reactions, and secondary complications in patients with diabetes and renal failure. However, this reaction is subject to modulation, including slowing and suppression, which is why suitable inhibitors of the Maillard reaction are being sought.

The candidate's scientific research is focused on studying the processes of glycation and deglycation, searching for substances that inhibit the glycation process, and finding molecular markers for glycemic control.

The main scientific and applied scientific contributions (original and confirmatory) in the publications after the acquisition of the Doctor of Science degree by chief assistant Rositsa Tsekovska, are:

Original contributions:

- The glycation of the protein (rhIFN γ), produced by the bacterium E. coli, occurs during its synthesis in bacterial cells, and in general the glycation process contributes to the "aging" of bacteria in the active division phase and in the stationary phase, with the glycating agents in E. coli being of endogenous origin. It has been established that the glycolytic enzyme phosphoglucose isomerase in E. coli exhibits deglycosylating (amadorian) activity.
- The glycosylation of human interferons causes structural changes and loss of biological activity.

Confirmatory findings:

- The anti-glycation properties of acetylsalicylic acid, aminoguanidine, arginine, vitamer of B6 vitamins, resveratrol, theophylline, theobromine, xanthine, and hypoxanthine have been confirmed.
- The lack of correlation between serum levels of Nε-(carboxymethyl)lysine and markers of glycemic control has been confirmed, as has the marker potential of Nε -(carboxymethyl)lysine in patients with chronic kidney disease and fructosamine in patients with diabetic nephropathy has also been confirmed.
- The modulating effect of oxidative stress on glycation has been confirmed.

The documents and materials submitted by chief assistant Rositsa Tsekovska meet all the requirements of the Law on the Development of Academic Staff in the Republic of Bulgaria, the Regulation for the implementation of the Law on the development of the academic staff in the Republic of Bulgaria, and the minimum requirements for obtaining scientific degrees and holding academic positions at the IMB-BAS.

The candidate has presented a sufficient number of scientific papers published in international specialized journals. The works have original scientific and applied contributions. Their high scientific level is proven by the number of citations by other authors.

After reviewing the materials and scientific papers submitted for the competition, analyzing their significance and the scientific and applied contributions they contain, I find it reasonable to give my positive assessment and recommend that the Scientific Jury vote for chief assistant Rositsa Georgieva Tsekovska PhD to take up the academic position of "Associate Professor" for the needs of the "Gene Activity Regulation" section at the Institute of Molecular Biology at the Bulgarian Academy of Sciences in the professional field 4.3. Biological Sciences, specialty "Molecular Biology."

11.11. 2025 Assoc. Prof. Ivaylo Ivanov, PhD