

OPINION

By: Associated Professor Maria Prokopova Geneva, PhD; IPPG-BAS,

Regarding: competition for the academic position "associate professor" at the Institute of Biophysics and Biomedical Engineering (IBPhBME), BAS, for the need of Department "Photoexcitable Membranes"

Information about the contest: The competition was announced in the State Gazette, No 21 of 07.03.2023 for the needs of the IBPhBME-BAS of the Department "Photoexcitable Membranes", in the professional field 4.3. Biological sciences, scientific specialty "Biophysics".

Information about the candidates in the competition: For participation in the announced competition for the academic position "associate professor" at the IBPhBME-BAS, documents were submitted by only one candidate assistant professor Martin Angelov Stefanov. The set of materials presented by assistant professor Stefanov fully meets the requirements of the Rules of the Academic Staff Development in the Republic of Bulgaria and the Regulations on the Conditions for Procedures for Acquisition of Academic Degrees and Occupation of Academic Positions at IBPhBME -BAS.

The attached CV accurately explains Dr Stefanov's education and scientific development. He started working at the IBPhBME-BAS in 2013 as a specialist biologist. Since 2015 he is a PhD student in the Department "Photoexcitable Membranes". In 2019 he successfully defended his PhD thesis with title: " Adaptation mechanisms of photosynthetic apparatus to salinity and light stress on two Pawlownia lines" with scientific supervisor Professor Emilia Apostolova. From 2019 until now he has been an assistant professor at IBPhBME -BAS.

The candidate speaks English, German and Russian, which allows him to use specialized scientific literature related to the scientific subject he works.

General characteristics of the presented scientific works/publications and Fulfilment of the requirements for occupying the academic position

The scientific publications of Assistant Professor M. Stefanov, presented for participation in the promotion procedure are in the field of biophysical study and photosynthetic membranes characterization and their function in conditions of abiotic stress such as: salinity, drought, heavy metals, low temperature and high light intensity.

The data from the applicant's research throughout his scientific career have been published in full text in a total of 23 scientific papers, for which 133 citations have been noticed. This is a good indicator of the quality of scientific production. For participation in the

competition, Dr Stefanov has applied a total of 17 scientific papers, 9 of which he is the first author. In group B - *publications that are referenced and indexed in world-recognized databases of scientific information (Web of Science and Scopus), which are equated to habilitation work*, 5 scientific papers (4 with Q1, and 1 with Q2 factors) with a total JCR-IF (Web of Science):23,07 are applied, and in all of them, the candidate is indicated as the first author. In Group G7 *Scientific publications in publications that are referred to and indexed in world-renowned databases of scientific information (Web of Science and Scopus), other than habilitation thesis*, included publications are 11 - 4 with Q1, 2 with Q2, 4 with Q3 and 1 with Q4 factors with a total JCR-IF (Web of Science): 21.944. And in Group G8, a "published chapter of a book or collective monograph" includes a chapter of a book.

The applicant fulfils the national minimum and specific requirements according to LDASRB – with a minimum threshold of 430 points, Dr Stefanov, PhD has 503 points. They are summarized as follows:

Section A — 50 points, out of the minimum required 50 points;

Section B — 120 points out of the minimum required 100 points;

Section G — 227 points out of the minimum required 220 points;

Section D — 106 points out of the minimum required 60 points.

Dr. Stefanov has presented some of his results with oral and poster presentations in 39 international and national scientific forums. He has been a project leader of 5 projects of which 1 project funded by the NSF "Funding for Fundamental Research for Young Scientists and Postdoctors", 2 projects "Program for Supporting Young Scientists at the Bulgarian Academy of Sciences" and 2 projects „Project for future and science career development, National Research Programme “Young scientists and postdoctoral students”. He has participated in the implementation of 8 more projects.

The applicant's scientific activity characteristic

1. Assessment of scientific publications in publications, referred to and indexed in world-renowned scientific information (Web of Science and Scopus), equalized to habilitation thesis.

In terms of salt tolerance, the effects of the degree of salination on the photosynthetic activity of sorghum and corn are studied and compared to the use of PAM chlorophyll fluorescence, JIP tests, oxidative stress markers and pigments. A significant contribution of the applicant is a comparative analysis of the function of different components of the photosynthetic apparatus of two plants with different types of photosynthesis C3 (*Pisum sativum* L.) and C4 (*Zea mays* L.), under salt stress. It has been found that the C4 (*Zea Mays* L.) is more tolerant of salt stress than the C3 (*Pisum Sativum* L.). Another important contribution to the scientific investigation of the applicant is, studying the influence of salt-induced changes in the energy transfer between pigment-protein complexes and modifications

occurring in the Mn cluster of oxygen-evolving center, on the degree of photochemical inhibition of the two photosystems in isolated thylakoid membranes of two hybrid lines *Paulownia*: *Paulownia tomentosa* x *fortunei* (TF) and *Paulownia elongata* x *elongata* (TE). The protective role of the carotenoids and the levels of flavonoids and proline at the photosynthetic apparatus functions in the first days of salt stress, and the adaptation of plants to a high content of NaCl, has been established. It may be considered that the greater increase in the content of the common flavonoids, carotenoids and proline during the first days of salt stress, in the TF line compared to the EE line, is the cause of less impact of salt stress on the functions of photosynthetic apparatus in the TF line, and determines the higher tolerance of this line, as well as adaptation to a higher NaCl concentration for a longer period of time.

2. *Assessment of the other publications presented in Group G, not used in the appointment of the academic position "Assistant Professor"*

The mechanisms of resistance and protection of photosynthetic apparatus in cultural plants with various genotypes (corn, sorghum, wheat, rice), as well as the effects of sodium nitroprusside (donor of NO), salicylic acid, ZnO NPs and ZnO-Si NPs on Photosynthetic membranes under abiotic stress (salt, low temperature, high light intensity, heavy metals), have been investigated. Another direction in which the applicant worked is a comparative analysis of the change in photosynthetic oxygen evolution in the treated with phenylurea (DCMU, isoproturon) and phenolic type (ioxynil) herbicides green algae *Chlorella kessleri* and cyanobacteria *Synechocystis salina*, differing in the organization of photosystem 2

Conclusion: The documents and scientific materials presented by assistant professor Martin Angelov Stefanov, PhD published after the materials used in the defense of the ONS "doctor", are sufficient by number and quality, meet the minimum national requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for the Implementation of the ZRASRB, as well as meet the specific requirements of the Regulations for the Terms and Conditions for Holding for occupying the academic position of "Associate Professor" at IBPhBME-BAS. Based on the analysis of the materials and scientific articles presented in the competition, and the scientific contributions contained in them, I find that the applicant responded to the profile of the announced competition fully and gives my **positive assessment** and recommend the respected members of the Scientific Jury to prepare a report-proposal to the IBPhBME-BAS Scientific Council for election of Martin Angelov, PhD to the academic position of "associate professor" at IBPhBME-BAS in professional field 4.3. Biological sciences (scientific specialty Biophysics).*A*

June 28, 2023 / Sofia

Signature: ...

(Associate Prof. Maria Geneva, PhD)