

**Scientific Opinion**  
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***Subject: Evaluation of the documents of candidate Yuliana Georgieva Ivanova, participant in the competition for the academic position "Associate Professor" in professional direction 4.3. Biological sciences, specialty "Plant Physiology", for the needs of the "Experimental and Applied Algology" laboratory of IFRG-BAS.***

1. Information about the competition

The competition for the academic position of "associate professor" was announced by the Institute of Plant Physiology - BAS in the "State Gazette" (SG No. 44/19.05.2023), and my participation in the Scientific Jury is in accordance with Order No.RD- 01-44/17.07.2023.

The only candidate in the competition for the academic position of "Associate Professor" is Dr. Yuliana Georgieva Ivanova, Assistant-Prof. in the "Experimental and Applied Algology" Laboratory of IFRG - BAS.

2. General data on the candidate's career and thematic development

Dr. Ivanova was born on March 24, 1967. She received her higher education at the Faculty of Biology of the Sofia University of "St. Kliment Ohridski" with MS degree in "Biotechnology", a specialization "Microbiological processes". Dr. Ivanova had a consistent development from specialist-biologist (1994-2006), and assistant-prof. (2011-until now) at IFRG-BAS. Her thesis for obtaining an ONS "Doctor" was on "Physiologicobiochemical characterization of *Rhodella reticulata* and relationships with a bacterial pathogen". The scientific work experience of the candidate over 26 years.

The thematic directions in the work of Dr. Ivanova are related to the isolation and optimization of the conditions for cultivating microalgae; the synthesis of biologically active substances such as polysaccharides and secondary metabolites. The developments enable the use of microalgae as nutritional supplements with antioxidant and anti-inflammatory effects. Another direction is the inclusion of microalgae in environmental research such as absorption of heavy metal ions or wastewater treatment. In addition, the candidate has also presented data on the cultivation of microalgae in a medium containing fermentation products obtained in the course of a biogas production process, which is a new direction with potential development and broad application. Dr. Ivanova's personal contribution to the

development of these several topics and directions is indisputable: she has a total of 49 scientific publications, and her citations are 193. She participated in 8 research projects, 6 of which she was the leader or acting in this position. She has presented her results at 12 international scientific forums (5 abroad).

### 3. Fulfillment of the requirements for occupying the academic position "Assoc. Prof."

There are 19 publications submitted for participation in the competition. The distribution by quartiles is as follows: Q1: 2 articles, Q2: 4 articles, Q3: 8 articles and Q4: 5 articles. Seven of the publications are included in indicator group B, and 12 publications in indicator group "Г". In both indicator groups, the collected points are more than the minimum required, according to the normative documents. The report on indicator D shows that 56 citations form 112 points, with a minimum of 100 points according to PPZRASRB. With a minimum of 70 points in indicator E, the candidate submits documents for 120 points (management and participation in projects and attracting funds). One of the publications is a Utility model "A treatment agent for waste bio-sludge from biogas plants".

All the references presented convincingly testify to the fulfillment of the indicators for the position of "Associate Professor" according to the Regulations for the Application of ZRASBR and the Regulations for the Growth of the Academic Staff of IFRG-BAS. The candidate's H-index in the Scopus database is 6.

According to the reference, the candidate exceeds the minimum requirements of the RASRB and the Regulations for its application for the position of Associate Professor, as well as the additional requirements of the BAS and the Institute of Plant Physiology for the position.

### 4. Scientific topics

The directions in which Ch. Associate Professor Ivanov's works contribute to the development of science in the field of algology. They could make a big contribution to society in relation to the Green Deal, a pact to make Europe the first carbon-free continent, and also in relation to climate change. The areas in which the candidate for "Assoc. Prof." is researched are the following: (1) study of the physiological-biochemical features of microalgae and (2) biological activity of their metabolites. In the first direction, detailed research was done on the impact of humic acids and thiamine in the medium on the growth of microalgae, the optimal light conditions, etc. were sought. physical factors for good conditions for the development of microalgae and interactions with the accompanying (including pathogenic) microflora in the cultivation process. A method for long-term storage of microalgae strains in laboratory conditions has been created. In the second direction, part of the presented publications are devoted to the antitumor, antiviral, and antioxidant activity of heteropolysaccharides from red microalgae and the combinations with known chemical compounds to inhibit tumor growth. Future research on the development of algal mass on

nutrient media waste from biogas production will perhaps develop and lead to new directions of Dr. Ivanova's scientific work.

#### 5. Organizational and training activity

There are no data on graduate, doctoral or undergraduate students. Perhaps this is an omission in the documentation, and if not, they should step up future post-habilitation training activities.

#### 6. Critical notes and recommendations

I have no critical remarks either to the tender documentation or to the applicant's activities. I would recommend looking for new opportunities for funding scientific work - both national projects with higher funding and participation in international networks and European projects.

#### 7. Conclusion

Based on the submitted materials and analysis of the submitted publications and supervised projects, I consider that the candidate fully fulfills the criteria for the position. I give a completely POSITIVE assessment to the candidate and strongly recommend the election of Ch. Associate Professor Dr. Yuliana Georgieva Ivanova for the academic position "Associate Professor" in the field of higher education 4. Natural sciences, mathematics, and informatics, professional direction 4.3. Biological Sciences.

09/06/2023 Signature:

(Prof. Dr. Penka Petrova)