OPINION

of Prof. Nesho Hainrich Chipev PhD, retiree, University of Shumen "Ep. Konstantin Preslavski"

Subject: the candidacy of Ch. Ass. Prof. Silvena Boteva Boteva PhD for participation in the competition for the academic position of "Associate Professor" in 4.3 Biological Sciences (Ecology and Ecosystem Protection - Ecology of Microorganisms), for the needs of the Faculty of Biology at Sofia University "St. Cl. Ohridski "- Department of Ecology and Environmental Protection, announced in SG no. 88 / 13.10.2020

1. General presentation of the received materials

In the competition for the academic position of "Associate Professor", which was announced for the needs of the Department of Ecology and Environmental Protection of Sofia University "St. Cl. Ohridski", the only candidate is Ch. Assistant Prof. Silvena Boteva, PhD. The submitted documents and the set of materials for the competition have been prepared accurately and in accordance with the requirements of the Law on the Protection of the Rights of Persons with Disabilities, the Regulations for its implementation and the Regulations for the development of the academic staff of Sofia University "St. Kliment Ohridski "and meet the criteria of the Faculty of Biology for the academic position of "Associate Professor ".

2. Brief biographical data about the candidate

Dr. Boteva graduated in 2004 with a bachelor's degree in "Ecology and Environmental Protection", and in 2006 received a master's degree from the Faculty of Biology at Sofia University "St. Cl. Ohridski in the master's program "Environmental Protection". The candidate S. Boteva receives in 2011 the educational and scientific degree "Doctor" in 4.3. Biological Sciences (Ecology and Ecosystem Protection). From 2009 to 2014 she worked as an expert-ecologist in the Research Sector at the Technical University, Sofia, and in addition to the expert work she also participated in the training of students in EIA. Since 2014 (February) she is a senior Assistant Prof. in the Department of Ecology and Environmental Protection at the Faculty of Biology, Sofia University" St. Cl. Ohridski.

3. Assessment of the teaching activity of the candidate

Dr. Boteva has a teaching experience, which began at the time when he was a full-time doctoral student and continued at the Technical University of Sofia, and then at the Faculty of Biology, which is more than 12 years. She has led and leads practical classes in various disciplines: Microcoenosis (specialty EIA, Biology, Biomanagement and sustainable development); EIA procedures and complex permits (specialty Engineering Ecology at the Technical University); Ecology and Environmental Protection (EEA, Biology, BUR, Biology and Chemistry, Geography and Biology, Molecular Biology and Biotechnology at the Bulgarian Academy of Sciences; Ecochemistry at the Faculty of Chemistry and Pharmacy); Waste management (specialty EIA and BUR); Soil science and ecological monitoring (specialty EIA); Ecology of microorganisms (specialty "Ecology", MP).

Dr. Silvena Boteva leads lecture courses together with exercises in various compulsory and elective disciplines: Soil Science (special Agrobiotechnology, optional); Environmental Impact Assessment (mandatory for the special BUR mandatory and optional for the Ministry of Ecotourism at the GGF of Sofia University); Ecological footprint (optional for various specialties); Alternative energy sources (Biobusiness, optional); Mapping and assessment of ecosystem services - together with other teachers (Ministry of Ecology, selective); Procedures

for environmental impact assessment and complex permits (specialization in Environmental Engineering at the Technical University of Sofia, MP).

Dr. Silvena Boteva has a significant total classroom employment (742 hours, of which 298 hours of lectures (equated to exercises) and 444 hours of exercises).

Under her scientific guidance, 11 graduates (8 from the Technical University and 3 from the Faculty of Biology) defended their theses.

4. Characteristics of the scientific activity of the candidate

Dr. Boteva has a scientific production, including a total of 29 scientific publications, of which 25 are published in scientific journals, which are referenced and indexed, and 4 publications are in non-referenced publications. She has participated in a total of 34 scientific conferences, 16 of which are international or national with international participation.

In the present competition the candidate participates with 22 publications, of which 19 are published in refereed and indexed journals, among which are some journals with a high impact factor, incl. *Environment, Development and Sustainability* (IF 2.191); *International Journal of Environmental Research and Public Health* (IF 2.849); *Environmental Science and Pollution Research* (IF 3.306); *Ecotoxicology and Environmental Safety* (IF 3.324). The candidate has published also two book chapters in English abroad (co-authored) by reputable publishers. For participation in the competition 3 articles published in non-peer-reviewed and indexed scientific journals are also presented. Dr. Boteva's scientific publications have been cited 113 times, 65 of which are in publications in journals referred in Scopus, and 66 in other publications. The total impact factor of the candidate is 16.54, and the h-index (according to Scopus) is 4.

The presented indicators of the scientific activity of Dr. Boteva fully cover and even exceed the minimum national requirements for the academic position of "Associate Professor". The main scientific field in which Dr. Boteva develops research is the ecology of soil microorganisms. The main studies and publications are related to the assessment of the impact of soil pollution on microbial communities (B4-1, B4-2, G7-5, B4-3, B4-4, B4-5, G7-3, G8-2, G7 -11, G7.0-3, G7-10). Another, narrower scientific field in which the candidate is actively working is Ecotoxicology (publications G7-8, G7.0-1, G7.0-2, G8-1). Dr. Boteva's other research is in the field of ecology in a broader sense and includes studies such as the microflora of alpine lakes (G7-14), the use of remote methods in ecology (G7-2, G7-4, G7-7 , G7-12, G7-13) and others (G7-6, G7-9).

5. Evaluation of scientific contributions

The report on the scientific contributions of Dr. Boteva is not properly presented. Contributions are not defined clearly enough as contributions, but rather have the character of a description of results. This makes the presented report too detailed, insufficiently clear and insufficiently informative. In addition, contributions should be divided into contributions of a fundamental nature, contributions of a confirmatory nature, etc.

In general, I find that the research of the candidate related to the scientific fields in which she works has certain contributions, reflected in the main publications in the fields.

The main contributions, which I can assess as more significant and original, are the result of research on the ecology of soil microorganisms in two outlined directions, namely:

1. Contributions to the study of the impact of soil pollution with different types of pollutants on the communities of microorganisms:

- New data on the effects of azoxystrobin on microbial communities and enzymatic activity in the soil, which reflects the changes in soil habitats, are of a contributory nature.

- New data have been obtained on the impact of heavy metals and radionuclides on various soil characteristics, determining the functional activity of microbial communities.

- The assessment of the role of microorganisms, which overcome the stress of pollution faster, for the maintenance of biochemical cycles and the productivity of plants in pollution conditions is of a contributory nature.

2. Contributions to ecotoxicology research:

- The toxic effect of the herbicides paraquat and glyphosate was assessed by the use of two test organisms.

- New data have been obtained on the possibility of using *Lepidium sativum* L. as a bioindicator for soil monitoring,

- The assessment of the ecotoxicity of treated waste from the production of metal products, based on the test objects *Pseudorasbora parva* and *Lepidium sativum*, is of a contribution nature.

6. Project activity

From the provided documentation it is evident that Dr. Boteva has participated in 7 research projects, as the NSF has funded 2 projects, under the Financial Mechanism of the European Economic Area - 1 project was funded, from the European Regional Development Fund - 1 project was funded. The submitted documentation does not indicate the specific funding organization of three of the projects led by Dr. Boteva.

7. Conclusion

The scientific production and the teaching activity of Ch. Assistant Professor Silvena Boteva I assess as fully meeting the requirements for holding the academic position of "Associate Professor". I evaluate the overall activity of Dr. Boteva positively and on the basis of the above characteristics, I will confidently vote "YES" for holding the academic position of "Associate Professor" under 4.3. Biological Sciences (Ecology and Ecosystem Protection - Ecology of Microorganisms) and I propose to the esteemed members of the scientific jury to vote positively and unanimously to award the scientific position of "Associate Professor" to Ch. Assistant Professor Silvena Boteva Boteva, PhD.

02/02/2021

Signature:

(Prof. Nesho Chipev PhD)