

OPINION

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reviewer according to IBPhBME-BAS Director's Order № 344 / 19.05.2023 г.

of the materials submitted for participation
in the competition to occupy the academic position "associate professor"

at the Institute of Biophysics and Biomedical Engineering
- Bulgarian Academy of Sciences (IBPhBME-BAS)

in the field of higher education 4. "Natural sciences, mathematics and informatics",
professional field „Biological Sciences – 4.3, scientific specialty „Biophysics“, to section
"Electroinduced and adhesive properties"

In the competition for the academic position "Associate Professor", announced in the State Journal, issue no. 27 of 24.03.2023, the only participated candidate Dr. Severina Semkova, senior assistant professor from the Institute of Biophysics and Biomedical Engineering - Bulgarian Academy of Sciences (IBPhBME-BAS) has submitted the respective documents.

1. General presentation of the received materials

The applicant has submitted a set of documents containing:

1) Request letter from the candidate to the Director of IBPhBME -BAS for participation in the competition; 2) *Curriculum vitae* according to the European model; 3) Diploma for acquisition of educational and scientific degree "PhD" issued on 27.04.2017; 4) Abstract in English from 2017 for obtaining educational and scientific degree "PhD"; 5) Certificate (official note) for internship in the specialty; 6) Complete list of publications [No. 1-4 publications for acquisition of "PhD" (4 papers.); No. 5-6 Publications for the occupation of the academic position "Senior Assistant" (beside "PhD" degree - 2 papers); No. 7-23 Publications related to the participation in a competition for the acquisition of the academic position "Associate Professor" (17 papers); No. 24-26 Additional publications (besides those presented for participation in the competition for the acquisition of the academic position "Associate Professor" (3 papers))]; 7) Detailed reference for the fulfillment of minimum national and specific requirements for the position of "Associate Professor"; 8) Extended Habilitation Reference for Scientific Contributions; 9.1) Summaries of scientific publications in Bulgarian; 9.2) Summaries of scientific publications in English; Copies of publications presented in the competition (pdf format of which 6 (after 2019) according to Indicator B and 11 (after 2018 according to Indicator Г); 11) A copy of the regulations for the implementation of the Rules for the Development of the Academic Staff of IBPhBME-BAS.

The documents and materials presented by Dr. Severina Semkova **meet all the requirements** of the Law for the development of the academic staff in Republic of Bulgaria, the Rules for its implementation, the Rules for the Development of the Academic Staff of IBPhBME -BAS, and meet the criteria of IBPhBME -BAS for occupation of an academic position "Associate Professor"

In 2017, Dr. Severina Semkova defended her dissertation on the topic: "Combined approach for *in vitro* and *in vivo* visualization of the penetration and localization of fluorescent nanoparticles in tumors after electroporation", which fulfills the criteria of **indicator group A** of the minimum requirements.

The candidate has attached a list of a total of 26 scientific works for the entire period of her creative work, of which 17 papers in full text (6 papers falling under indicator B, and 11 papers under indicator Г), which are accepted for current reviewing process. These 17 papers (15 with impact factor and 2 with impact rank SJR and quartile Q4) are independent from her PhD thesis and are counted in the final evaluation. Total Impact Factor (IF) of the 17 publications presented in the contest: 50,233. The 17 scientific works presented for the competition were published after 2018, which means a high publication

activity. The publications have five or more co-authors, which is a consequence of the interdisciplinary nature of the scientific developments. Senior assistant professor Dr. Severina Semkova has also submitted an extended habilitation reference for the scientific contributions for the participation in current competition. All articles are published in journals indexed by Web of Science and/or SCOPUS and have an impact factor or impact rank, respectively. The articles can be grouped as follows: Q1 - 4 publications, Q2 - 9 publications, Q3 - 2 publications and Q4 - 2 publications, as well as by the number of co-authors (with five co-authors - 2 articles, with six co-authors - 3 articles, with seven co-authors - 5 articles, with eight co-authors - 2 articles, with ten co-authors - 5 articles).

Six of the presented scientific publications are equated to a habilitation thesis, which collects a total of 112 points and fulfills the requirements under **indicator group B**. The remaining 11 scientific works referenced and indexed in world-famous databases collect a total of 222 points, out of the required 220, with which the candidate fulfills and even exceeds the minimum requirements under **indicator group Г**.

The scientific works of Dr. Semkova have found a wide response in the international literature. 106 citations (excluding self-citations according to Scopus reference) in refereed and indexed journals and in monographs abroad have been noted so far. Of them, 73 are included for the needs of the current competition. From the presented citations in renowned journals, the points for group of indicators Г are exceeded compared to the minimum requirements mentioned in the regulations of IBPhBME - BAS. At the time of preparation of this opinion, a search in SCOPUS shows that Dr. Severina Semkova has an H-index of 7 for the entire period of creative work.

According to the provided scientific autobiography, some of Dr. Semkova's research has been popularized among the scientific community with a total of 34 participations in international and national scientific forums.

Senior assistant professor Severina Semkova also demonstrates extensive experience in conducting research and managing scientific research projects funded by international and national organizations. According to the provided scientific curriculum vitae, Dr. Semkova is a participant in 15 scientific research projects funded by universities, scientific research institutes and others.

She is the head of 3 national scientific projects. From the material presented in this way, it is clear that Dr. Semkova shows herself to be a productive scientist, capable of finding funds for conducting scientific research, working and leading research teams, as well as generating scientific output in accordance with generally accepted high international standards.

I know Dr. Severina Semkova as a colleague from a postdoctoral specialization for scientific research in Japan - JSPS during the period 2018 - 2019. I have excellent impressions of her as a colleague and scientist. I truly believe that she is motivated, hardworking, modest, responsive, and dedicated to her work, with ideas and perspective for development, with a wide range of interests and high competence in the field of natural sciences. Dr. Semkova is a highly qualified, inventive, thorough, and self-critical researcher, with a flair for current issues in the field of biological sciences and works well in a team, which undoubtedly led to the significant scientific achievements. I believe that with her professional experience and competence, the candidate contributes to increasing the authority not only of the "Electroinduced and Adhesive Properties" section, but also of IBPhBME - BAS in the field of natural sciences.

2. Assessment of the applicant's contributions and scientific and practical activity

The main scientific achievement in Dr. Severina Semkova's habilitation is related to the extensive research of newly synthesized and/or unstudied biologically active substances of natural origin in combination/or not with electroporation. All test substances showed *in vitro* anticancer activity against a panel of human breast cancer cell lines.

The scientific activity covered by the works with which he participated in the competition is thematically divided by publications as follows:

- Study of a newly isolated extracellular polysaccharide from *Porphyridium sordidum* - a strain of red microalgae;
- Study of the isolated and purified by liquid chromatography Trehalose lipid produced by *Rhodococcus wratislaviensis* strain;
- Investigation of the influence of the lipid biosurfactant Trehalose lipid on the isometric contractions of isolated mouse mesenteric arteries;
- *In vitro* anticancer activity of mono- and di-Rhamnolipids (Rhamnolipids: RL-1 and RL-2) against a panel of human breast cancer cell lines: MCF-10A, MCF-7 and MDA-MB231, alone or in combination with Cisplatin;
- Analysis and comparison of the effect of two anticancer drugs that differ in their main action: miltefosine and cisplatin;
- Detailed description of a general overview of modern aspects and applications of electrochemotherapy.

3. Critical remarks and recommendations

I have no critical remarks to the submitted documents and scientific research.

CONCLUSION

From the presented publications it is clear, that Dr. Severina Semkova has established remarkable collaborations with research groups both in Bulgaria and abroad, as well as with world-renowned scientists in the field of chemistry. Once again, I would like to emphasize the interdisciplinary nature of the scientific activity of the candidate, which is confirmed by the above and the content of the published scientific works. This is confirmed by the candidate's good publication activity and high citation rate. The response in the world literature of the candidate's scientific research is impressive. Obviously, she is visible, recognizable, which is undeniable proof that she works in an up-to-date scientific field.

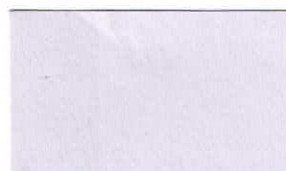
The documents and materials presented by Dr. Severina Semkova **meet all the requirements** of the Law for the development of the academic staff in Republic of Bulgaria, the Rules for its implementation, the Rules for the Development of the Academic Staff of IBPhBME -BAS, and meet the criteria of IBPhBME -BAS for occupation of an academic position "Associate Professor".

The candidate has submitted a significant number of scientific works, published after the defense of her "PhD". The candidate's works contain original scientific and applied contributions, reflected in scientific journals published by international academic publishing journals. Undoubtedly, the candidate has the necessary scientific qualifications. The results achieved by Dr. Severina Semkova fully correspond to the specific requirements of the Regulations of IBPhBME -BAS.

After getting acquainted with the materials and the scientific works presented for the competition, and upon analyzing their significance and the scientific, and applied contributions, I find it reasonable to give my **positive assessment** and to recommend the Scientific Jury to prepare a report-proposal to The Scientific Council of IBPhBME -BAS for the election of **Senior Assistant Professor Dr. Severina Semkova to the academic position of "Associate Professor"** in IBPhBME -BAS in the professional direction 4.3. Biological Sciences, scientific specialty „Biophysics“, to section "Electroinduced and adhesive properties".

Sofia, 24 July 2023

Reviewer:



/Assoc. Professor Atanas Kurutos, PhD/