REVIEW

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on the competition for the academic position of 'professor', announced by the Stefan Angelov Institute of Microbiology – BAS, by field of higher education: 4. Natural sciences, mathematics and informatics, professional field: 4.3. Biological sciences, scientific specialty 'Microbiology - genomics and regulation of gene expression in prokaryotes'. The competition was announced in the State Gazette, issue 47. from 22.05.2020 and on the website of the Institute of Microbiology "Stefan Angelov" - BAS.

1. Presentation of the procedure and the candidate

Following the order of the Director of the Institute of Microbiology /IMicB/, Bulgarian Academy of Sciences № I-81 from 01.07.2020, I have been appointed a member of the scientific jury of a competition for the academic position of 'professor' in the field of higher education: 4. Natural sciences, mathematics and informatics, professional field: 4.3. Biological sciences, scientific specialty "Microbiology - genomics and regulation of gene expression in prokaryotes" for the needs of the Department of General Microbiology, Laboratory of Microbial Genetics of IMikB.

Only one candidate participated in the announced competition for "professor": Associate Professor DSc Penka Mladenova Petrova from the Institute of Microbiology "Stefan Angelov" - BAS.

The set of materials and documents presented by Associate Professor Penka Petrova on paper and electronic media for participation in the competition fully complies with the requirements of the Law for Development of Academic Staff in the Republic of Bulgaria.

Associate Professor DSc Penka Petrova was born in 1971, in 1994 she received the Master's degree, Faculty of Biology, Sofia University, Kl. Ohridski "with a specialty in Biotechnological Processes, Genetic and Cell Engineering. In 2003 he defended his dissertation at IMiKB on "Creation of a gene cloning system for Streptococcus thermophilus" and obtained the scientific and educational degree "Doctor", and in 2020 he successfully defended his dissertation on "Molecular biological research of new bacterial glycosides". -hydrolases with industrial application "and acquires the scientific degree" Doctor of Sciences "at IMikB-BAS. The academic career of Associate Professor Penka Petrova is mainly related to IMIKB-BAS, where she is a full-time doctoral student and has worked consecutively as a research associate since 2003, Associate Professor since 2011, Head of Laboratory of Gene Expression since 2013, Head of Department in General Microbiology from 2018 and as Director from 2020. Fluent in foreign languages, incl. excellent command of English and Russian and very good French. He has extensive knowledge and extensive experimental experience in a number of areas of biological sciences and biotechnology including microbiology, molecular biology, biochemistry, genetic and cell engineering and bioinformatics.

2. General characteristics of the candidate's activity

The materials presented by Associate Professor DSc Penka Petrova on the announced competition for "professor" include a total of 23 scientific publications in refereed journals with IF or SJR, in 17 of which he is a leading (first or corresponding) author, as well as 2 reports in full international conference. The high level of the candidate's scientific publications is also supported by the large

number of citations in publications of other researchers. In the attached reference, Assoc. Prof. Petrova has indicated a total of 731 noticed citations of her publications, in SCOPUS - 404, of which 350 after 'Associate Professor'. The presented scientific papers and citations exceed the requirements and are completely sufficient for holding the academic position of "professor" according to the criteria specified in the PRAS of BAS and the Additional requirements of IMiKB.
As part of the previous research activity of Associate Professor Penka Petrova, her participation in a total of 23 research projects (17 with national funding) should be highly appreciated, and in 7 of them she is the head of the basic organization - IMiKB.
The main results of the research and the original scientific contributions of Associate Professor DSc Penka Petrova in this competition include: / 1 / identification of genes responsible for the hydrolysis of α-glucans in lactic acid bacteria, incl. first results for isolation of amylolytic representatives of Lactobacillus sakei and genus Enterococcus and transcriptome analysis of gene expression of starch-modifying enzymes; (2) identified a new gene cgt and the enzyme cyclodextrin glucanotransferase in Bacillus pseudalcalophilus and immobilizing the enzyme in magnetically modified carriers; (3) analysis of the genomic sequence of the strain Bacillus velezensis 5RB with respect to the genes involved in the conversion of lignocellulosic substrates; (4) molecular-biological study of neuraminidase from the non-toxigenic strain Vibio cholerae and the characterization of the nanH gene, revealing the possibility for developing safe production of sialidase; (5) construction of a recombinant strain of Klebsiella pneumoniae with an introduced α-amylase gene from Bacillus licheniformis enabling the conversion of highly concentrated starch solutions into 2,3-butanediol; (6) Demonstration of the potential for use of diploid strains of yeast Ogataea polymorpha as hosts for heterologous expression; (7) metagenomic sequencing and characterization of a community that decomposes cellulose with application for waste degradation in manned space missions; (8) Purification of the enzyme cell-associated fructan-β-fructosidase of Lactobacillus paracasei and characterization of the nucleotide sequence of the coding gene and others. The presented scientific production and results of Associate Professor DSc Penka Petrova show that she is a researcher with extensive and in-depth knowledge, extensive experimental experience, proven skills, achievements and capacity to successfully conduct comprehensive research in the field of microbiology, molecular biology and bioinformatics, as well as proven possibilities for biotechnological applications of the obtained results.
Along with the successful research activity, Assoc. Prof. DSc Petrova actively participates in conducting a number of courses and training programs: "Genetic engineering and gene expression in bacteria", "Genetic engineering and recombinant DNA technologies" and others. The materials presented at the competition show that Associate Professor DSc Penka Petrova has an active teaching activity, including the management of two successfully defended doctoral students, five graduates and 42 graduates from the country and abroad.
The above results and facts from the research, teaching and organizational activities of Assoc. Prof. Petrova show that she actively works to raise the quality of the overall activity and prestige of IMIKB-BAS, which is mandatory and of high importance for the occupation. to the academic position of 'professor' in this competition.

3. Critical remarks and recommendations

I have no critical remarks on the presented candidacy of associate professor DSc Penka Petrova for the academic position of 'professor' at ImiqB-BAS. I know Assoc. Prof. Petrova in the framework of cooperation in the implementation of individual studies to research projects and discussions of various scientific problems. I have positive personal impressions of her knowledge in the field of molecular biology and biotechnology.

Conclusion.

After reviewing and analyzing the materials provided to me in the competition, I believe that:

/1/ the candidacy of associate professor DSc Penka Mladenova Petrova fully meets the requirements of ZRASRB and the requirements specified in the Regulations of BAS;

/2/ I give an excellent assessment of the overall research, teaching and organizational activities of Associate Professor DSc Penka Petrova;

/3/ I believe that the research profile and teaching experience of Associate Professor DSc Penka Mladenova Petrova fit perfectly and will significantly contribute to improving the quality and efficiency of overall research in the Department of General Microbiology / Laboratory of Microbial Genetics of the Institute of Microbiology "Stefan Angelov" - BAS as a whole.

In connection with the above, I strongly recommend to the Scientific Jury, Associate Professor DSc Penka Mladenova Petrova to be elected as "Professor", in professional field 4.3. Biological sciences, scientific specialty 'Microbiology - genomics and regulation of gene expression in prokaryotes', at the Institute of Microbiology "Stefan Angelov" - BAS / Department of General Microbiology, Laboratory of Microbial Genetics/.

14.09. 2020 Prof. DSc Ivan Atanassov