

Scientific Opinion

of Assoc. Prof. Dr. Penka Mladenova Petrova, DSci,
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Director of The Stephan Angeloff Institute of Microbiology - BAS
Scientific area 4.3. - Natural Sciences,
Specialty: Microbiology

About: Assessment of the candidate Violeta Valcheva Ruseva, participant in the competition for associate professor in the scientific specialty "Microbiology" in Department of Infectious Microbiology, The Stephan Angeloff Institute of Microbiology - BAS

1. Information about the competition

The competition is in the professional field 4.3. Biological Sciences (Microbiology) for the needs of the Department of Infectious Microbiology, Laboratory "Molecular Biology of Mycobacteria" and was announced in the State Gazette, issue 47 /22.05.2020. My participation in the Scientific Jury is in accordance with order № I-84 / 01.07.2020 of the Director of IMikB - BAS.

2. Information about the candidate

The only candidate in the competition for associate professor is Dr. Violeta Valcheva Ruseva, assistant prof. in the Department of Infectious Microbiology of the Institute of Microbiology - BAS. Dr. Ruseva has a master's degree in "Microbiology and Microbiological Control" at the Faculty of Biology at Sofia University "St. Kl. Ohridski "in 2005, and received an educational and scientific PhD degree in Microbiology in 2009 at IMIKB-BAS on the topic: " Molecular genetic characteristics of Mycobacterium tuberculosis strains isolated from different regions in Bulgaria ". In the period 2008 - 2019 Dr. Ruseva improved her qualification by participating in courses at various international institutes (Institute of Health, Utrecht, Institute Pasteur, St. Petersburg, Center for Bioinformatics, Biostatistics and Integral Biology at the Institute Pasteur, Paris, courses in Athens , Shanghai, Hong Kong, etc. in the field of molecular-epidemiological studies of mycobacteria and bioinformatics. In the same period she won the awards for "Best Scientific Publication of a Young Bulgarian Microbiologist" for 2008 by the Foundation "Acad. Dr. Stefan Angeloff ", and the award for "High scientific achievements of a young researcher "of the Union of Scientists in Bulgaria Dr. Ruseva is a member of the European Society of Mycobacteriology, the Federation of European Microbiological Societies, the Union of Scientists in Bulgaria, the International Society of Infectious Diseases and European Society of Clinical Microbiology and Infectious Diseases.

3. Teaching activity

Although she is not a habilitated scientist, Dr. Ruseva participates in the preparation of doctoral students. She is a scientific consultant to two PhD students in 2017 and 2019 at the Institute of Organic Chemistry with a Center for Phytochemistry, BAS, Laboratory of Organic Synthesis and Stereochemistry and is co-supervisor of a master's degree in 2013.

4. Fulfillment of the requirements for holding the academic position

Dr. Violeta Ruseva participates in the competition with 24 scientific publications (12 to Group G, indicators 7 and 8), of which 10 are scientific publications and two are book chapters. All publications in Group G are in English in referenced and indexed foreign publications and form 237 items (with a minimum requirement of 200). As substitutes for habilitation work are presented 6 publications (130 points, with a minimum of 100) in journals, which are referenced and indexed in world-famous databases of scientific information (Web of Science and Scopus) (Group B). The total number of publications in international journals with impact factor is 15, without IF, but with SJR - 1, in national journals the publications are 4, of which 3 are in journals with IF or SJR, 1 is in a proceeding.

Dr. Ruseva is the first author in 7 scientific papers, the second author in 7 scientific papers, and the third and next author in 10 scientific papers. The report by criteria Group D shows a sufficient number of citations in referenced and indexed databases (241 citations, 482 points). A review of the Scopus database shows that the candidate actually has as many as 471 citations in peer-reviewed journals between 2009 and 2020. In total and separately by groups of criteria, the candidate exceeds the minimum requirements of the Law on the Application of the position of "Associate Professor" and the additional requirements of IMikB - BAS for the position of "Associate Professor".

4. Scientific topics

The main topic of the candidate is the study of the causes of a socially significant disease such as tuberculosis and, more precisely, studies on molecular epidemiology, drug resistance, phylogenetic and evolution of *Mycobacterium tuberculosis* in Bulgaria and around the world. In the candidate's research, the focus is on multidrug-resistant and extensively drug-resistant tuberculosis (MDR / XDR-tuberculosis), which is a major global problem. The candidate's publications prove that the migration of the human population is a major factor forming the phylogeography of *M. tuberculosis*, which has a relatively low prevalence (<4%) in Bulgaria, has a heterogeneous population structure and is dominated by several globally distributed international (ST53, ST47, ST34) and Balkan (ST125, ST41, ST284) polytype. A contribution is the introduction of molecular methods for determining drug resistance to *M. tuberculosis* as a rapid alternative compared to cultural methods for

phenotypic susceptibility, which facilitates accurate and timely therapy and reduces the overall cost of treating tuberculosis. Another thematic area of the candidate is related to the spread of paratuberculosis in wild animals in Bulgaria. The introduction of molecular genetic methods in the diagnosis of the disease makes it possible to establish the genetic diversity of the strains circulating in the country and the world. With the participation of Dr. Ruseva, the first for such a study of the genetic diversity of the *Mycobacterium bovis* strains circulating in Bulgaria and the first description of the circulation of *Mycobacterium caprae* strains were conducted. An in-depth comprehensive study for the presence of paratuberculosis in free-range deer and mouflon was performed. Characteristic pathoanatomical changes in paratuberculosis have been established, and they have been confirmed after histological, microbiological and molecular genetic studies. The planned future topics are related to bioinformatics analysis, Next generation sequencing and search for new active compounds.

5. Participation in congresses and other scientific forums

In the period 2006 - 2019 Dr. V. Ruseva has participated in huge number - 72 - congresses and other international and Bulgarian scientific forums. In 13 of them she was an invited lecturer and gave 18 reports.

6. Projects and expert activity

The applicant has participated in a large number of projects (14), and she is the leader of five of them. The projects are funded by the Ministry of Education and Science, NATO, FP7 and others. All are related to the main topics in her research. Dr. Ruseva is a reviewer of over 120 scientific articles abroad and in Bulgaria, on 8 Bulgarian and foreign projects, opinions for 3 state organizations and others.

7. Conclusion

In conclusion, Assistant Professor Dr. Violeta Ruseva is a promising researcher with excellent knowledge of the problems she has been working on for decades. She has a vision for the development of the field and irreplaceable experience in modern molecular approaches, which necessarily enter microbiology and medicine. As a creative and tireless researcher, she would contribute to the development of the infectious microbiology unit at IMiKB. **Based on the presented materials and analysis of the achievements, I give a completely POSITIVE assessment of the candidate and I strongly support the occupation of the academic position "Associate Professor" by Ch. Assistant Professor Violeta Valcheva Ruseva, PhD.**

August 28, 2020

Signature:(Assoc. Prof. Penka Petrova)