OPINION

by Prof. Dr. Genoveva Nacheva
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Regarding: Competition for the academic position of "Associate Professor" at the Institute of Molecular Biology "Roumen Tsanev" at the Bulgarian Academy of Sciences (IMB-BAS), announced in the State Gazette # 104/10.12.2024.

By order # 23-OB/21.01.2025 of the Director of IMB-BAS, I am appointed as a member of the scientific jury in a competition for the academic position of "Associate Professor" at the same institute in the professional field 4.3. Biological Sciences, scientific specialty "**Molecular Biology**", for the needs of the "Genomic Stability" Laboratory. One candidate has submitted documents for participation in the announced competition - Dr. Radoslav Alexandrov Alexandrov, Assistant Professor at the same institute. I was provided with all the documents required by the Law on the Development of the Academic Staff in the Republic of Bulgaria (LDASRB), the Regulations for its implementation (in force from 05/09/2023) and the relevant regulations of the Bulgarian Academy of Sciences and IMB-BAS in electronic form. The candidate has submitted an official note certifying that he has a total work experience in the field of over 10 years, which makes him legitimate for participation in the announced competition.

Brief biographical data

Dr. Alexandrov obtained a Master's degree in Biochemistry at the Faculty of Biochemistry of Sofia University "St. K. Ohridski" in 2014 and a PhD in "Molecular Biology" in 2018 at the Institute of Molecular Biology-BAS with the topic of his dissertation "Dynamics and sequence of binding of proteins responsible for DNA repair" and scientific supervisor Assoc. Prof. Stoyno Stoynov. At the Institute of Molecular Biology-BAS, Dr. Alexandrov has successively held the academic positions of "Assistant" from 2016 to 2022 and " Assistant Professor " from 2022 to the present.

During the period 2016-2022 the candidate has been awarded 3 times with the award for the best scientific article in molecular biology by the Institute of Molecular Biology-BAS, the "Roumen Tsanev" award for a young scientist, a scholarship from the World Federation of Scientists and the prestigious "Marin Drinov" award for a young scientist by the BAS, which is proof of the high assessment of Dr. Alexandrov's scientific achievements.

Scientometric indicators, research directions and contributions

Dr. Alexandrov participates in the current competition with 14 publications. The total IF of all articles is very high - **113.227**, and by quartile the journals in which he published are distributed as follows: Q1 – 11 issues, Q2 – 1 issue, Q3 – 1 issue and 1 without IF, which shows that among the articles those with the highest quartile dominate (79%). The scientific articles with the participation of the candidate have been cited a total of 530 times in Scopus, which is a certificate of the high quality of the scientific production of Dr. Alexandrov. So far, he has participated in 14 national and international conferences, in 4 international and 4 national he was an invited lecturer, and in the rest he participated with poster presentations.

Thematically, Dr. Alexandrov's publications fully correspond to the specialty "**Molecular Biology**" of this competition. The contributions in these publications can be attributed to the following research areas:

1. **Study of the dynamics of proteins involved in DNA repair in living cells.** By introducing precise quantitative measurements of the dynamics and activity of PARP1 *in vivo*, the mechanism of PARP inhibitors (PARPi) has been established. The retention of PARP1 induced by them corresponds to a delay in downstream repair events. The degree of retention of PARP1 on chromatin is related to the cytotoxicity of PARPi. The research approach introduced by the authors can be used to study the properties of other compounds targeting DNA repair. The mechanism of action of PARP1 has been revealed and it has been shown that PARP1 and DNA co-condense at the site of DNA breaks, thus holding the broken DNA ends together and facilitating the assembly of proteins involved in repair. It has been established that the spread of ATM-dependent chromatin phosphorylation occurs due to the diffusion of ATM kinase molecules activated by the MRN complex, which are inactive in the absence of double-strand breaks. A unique open-access software has been developed for processing images of living cells. The majority of the generated kinetic data are summarized in a unique DNARepairK database, which is freely available. In this research area, the results obtained are entirely contributory, and in one of the publications, Dr. Alexandrov is a corresponding author.
2. **Studies on the dynamics of replication in living cells.** A contribution to these studies is the development of an experimental tool for studying the effects of anticancer agents inducing replication stress. The results obtained shed light on the dynamics of the replication fork during nucleotide depletion. The role of the Dia2 protein of baker's yeast in cell cycle progression and cell size and shape under conditions of replication stress has also been elucidated.
3. **Study of the mechanism of action and properties of the neurotoxin vipoxin of *Vipera ammodytes meridionalis*.** Results were obtained regarding key amino acids involved in the catalytic centre of the sPL2 subunit and clones that neutralize it were developed. The cytotoxic effects of sPL2 were studied in order to establish anticancer properties.

In addition to these scientific areas, Dr. Alexandrov has research on the **aetiology of chronic rhinosinusitis**, in which a relationship was shown between the formation of a bacterial biofilm on the mucous membrane of the nasal cavity and the development of chronic rhinosinusitis, as well as research on the **metabolism of embryogenic and non-embryogenic plant cells**, in which differences in the levels of proliferation, the activity of a number of enzymes and oxygen consumption in cells with a common genetic origin were established.

Compliance with the LDASRB and the Regulations for its Implementation

In the table below, I have presented the compliance of Dr. Alexandrov's group of indicators from A to E with the national minimum requirements, adjusted for BAS by indicators C and D. As can be seen from the table, the total number of points of the candidate significantly exceeds the required minimum. This is mainly due to the citations of his publications, which is also one of the most important indicators of the relevance and significance of scientific production.

Indicator group	Minimum number of points	Candidate points
A	50	50
B	100	100

C	200 (220 for BAS)	220
D	50 (60 for BAS)	1060
E	Not required	488
Sum	**430**	**1918**

Project activity

Dr. Alexandrov has presented a list of participations in 11 national and 1 international projects. He was also the head of two national and one international project, for which the IMB received funds worth 1,340,000 leva. It should be noted that according to the Regulations for the implementation of the LDASRB, for the academic position "Associate Professor" no points are required under indicator E, and for the position "Professor" at least 150 points are required, i.e., on this indicator the candidate even exceeds the minimum requirements for "Professor". With this, I would like to emphasize that *Dr. Alexandrov's rich experience in the implementation and management of research projects is extremely valuable and constitutes a solid foundation for his successful implementation of the new academic position.*

Pedagogical activity

Dr. Alexandrov demonstrates very good pedagogical skills. He has supervised 3 theses for the Bachelor's and one for the Master's degree. As a member of the Association of Olympic Teams in Natural Sciences, in his capacity as an assistant leader, the candidate actively participates in the preparation of the Bulgarian team participating in the International Biology Olympiad, in which our competitors win many medals every year. *These activities show that Dr. Alexandrov possesses important qualities necessary for a future "Associate Professor", who will have the opportunity to independently train doctoral students and pass on his experience to the next generations.*

CONCLUSION

The candidacy of Dr. Radoslav Alexandrov fully meets and significantly exceeds the requirements of the LDASRB, Bulgarian Academy of Sciences and IMB-BAS for the academic position of "Associate Professor". The candidate has very significant scientific and applied scientific contributions, which is evidenced by the publication of his research in prestigious scientific journals with a very high rating and by the repeated citation of his works. He has solid methodological training and a clearly outlined scientific research profile in the scientific specialty "**Molecular Biology**" of the current competition. All this gives me reason to confidently recommend to the esteemed members of the Scientific Council of IMB-BAS to vote positively for the election of Assistant Professor Dr. Radoslav Alexandrov Alexandrov to the academic position of "Associate Professor".

Sofia, April. 25, 2025

Prof. G. Nacheva