

STATEMENT

**From Rossitza Konakchieva, Prof., Dr. Habil. at Sofia University "St. Kl. Ohridski",
elected a Member of the Scientific Jury, appointed by Order No. RD-38-246 of 19.05.2021
of the Rector of Sofia University "St. Kliment Ohridski "**

**On competition for an academic position of "Professor" in the field of higher education 4.
Natural sciences, mathematics and informatics, professional field 4.3. Biological Sciences
(Biochemistry), announced in SG no. 32 from 16.04.2021, Sofia University "St. Kl.
Ohridski"**

Presentation of candidates

In the competition for the academic position "Professor" of 4.3 Biological Sciences (Biochemistry), there was one candidate - Dr. Jordan Atanasov Doumanov, Associate Professor in Biochemistry at the Department of Biochemistry, Faculty of Biology, Sofia University "St. Kliment Ohridski ". The presented materials are in accordance with the requirements of the Law for development of the academic staff in the Republic of Bulgaria (ZRASRB), the Regulations for application of ZRASRB, the Regulations for the conditions and procedure for acquiring scientific degrees and holding academic positions at Sofia University "St. Kliment Ohridski ". The documentation on the competition is well organized and reflects in a comprehensive volume the research, design and teaching activities of the candidate.

Dr. Jordan Atanasov Doumanov completed his higher education in 1999 at the Faculty of Biology of Sofia University "St. Kliment Ohridski " with a BSc degree in Biology and a Master's degree in Cell and Developmental Biology. From 2001 to 2006 he was a doctoral student at the University of Hohenheim, Stuttgart, Germany, where he successfully defended his doctoral dissertation and obtained the scientific and educational degree "PhD". In Sofia University "St. Kl. Ohridski" Dr. Doumanov was first appointed as an assistant in 2006 and successively held the academic positions of "senior "and" chief assistant "in the Department of Biochemistry of Faculty of Biology of Sofia University "St. Kliment Ohridski. In 2015 he was elected associate professor of "Biochemistry" in the same department. Associate Professor Doumanov has specialized as a post-doctoral student for two years at the Institute of Vision, Pierre and Marie Curie University in Paris, France. During

this period and on the same topic, Assoc. Prof. Doumanov has completed a short four-month specialization in CABIMER, Seville, Spain. The subject of these specializations is related to in-depth research on the protein bestrofin-1 and bestrofinopathies. Assoc. Prof. Doumanov introduced in a unique way at Sofia University "St. Kliment Ohridski" this line of research and further developed it consistently and successfully, which is reflected in his scientific works.

Research activity

In the competition for the position of "Professor" Associate Professor Doumanov presented 20 scientific publications in full text with a total impact factor of 40,131, which have not been included in the competition for his habilitation as an Associate Professor. Of these, 14 publications are in renowned international journals, of which 9 are with quartile Q1, and 6 are in Bulgarian magazines and conference reports in full text. The candidate also presented 46 participation in national and international scientific forums. The full scientific production of the candidate includes 47 publications with a total impact factor of 80,408, and the total number of participations in scientific conferences and congresses is 78. The candidate also participates as co-author in the publication of two textbooks. According to the report provided by the Scopus database, all publications were cited in total of 124 times, with 100 citations in Scopus and Web of Science and 24 outside these databases, which shows the high quality of published scientific papers. Assoc. Prof. Doumanov is a holder or participant in 18 competitive research projects in the field of biochemistry, biophysical chemistry and molecular biology, which have completed with successful developments.

Scientific contributions

The scientific activity of Assoc. Prof. Doumanov fully corresponds to the scientific specialization of the competition - biochemistry and borderline science like biophysical chemistry, cell and molecular biology. Following directions can be singled out with respective contributions:

1. Contributions to the study of the transmembrane protein bestrofin-1 (hBest1).

Clarifying the structure and function of hBest1 is the main scientific topic and direction of the candidate, on which he has been working for more than 10 years. The main elements of the

secondary structure of hBest1, the surface characteristics and morphology of bestrofin-1 in Langmuir monolayers, as well as its visualization by atomic force microscopy have been established. For the first time, images of "pure" hBest1 were obtained. The surface characteristics and morphology of mixed hBest1 / POPC and hBest1 / SM Langmuir monolayers were also established, as well as the condensing effect of cholesterol on hBest1, hBest1 / POPC and hBest1 / SM films.

Phosphatidylcholine, sphingomyelin and cholesterol are the main components of lipid shelves in biological membranes, so the interactions of hBest1 with these lipids are extremely important for its association with lipid microdomains, its activity and function. In this regard, the association of hBest1 with Lo (65%) and Ld (35%) domains in the plasma membrane of living cells was shown for the first time. This contribution is fundamental to the structure, activity and functions of the transmembrane channel. The contribution of the candidate and his team in this direction is certified by the high impact factor - over 20, 4 of the publications fall in Q1, one in Q2, and one chapter of a book (publications 1, 2, 3, 4, 14, 15,).

2. Contributions related to studies on newly synthesized nanoparticles

The use of nanoparticles to deliver genes to target eukaryotic cells is a modern approach in the treatment of genetic diseases. The main contributions in this direction relate to studies on the internalization and transfection efficiency of comb-like polyplexes based on polyethyleneamine and polyplexes containing POEGMA-b-PLL diblock copolymer. Original results with potential application are presented, which show that polyethyleneamine-based polyplexes with a denser structure can be considered as "promising" gene transfection systems and POEGMA-b-PLL nanoparticles are a good candidate for the delivery of genetic An important contribution is the results of studies on the cytotoxicity and internalization of particularly topical nanoparticles of spherical nucleic acids (Nucleic acid-polymer conjugates) (NAPCs). (publications 9, 10, 11, 13, 17, IF - 12,82, three in Q1 and one in Q2).

3. Contributions to the study of biologically active substances

Important contributions of the candidate are related to research on vipoxin, which is the main toxic component in the venom of the Bulgarian *Cinderella Vipera ammodytes meridionalis*. The results show that the PLA2 subunit induces cytotoxicity, which is related to its enzymatic

activity, while vipoxin and VAC show a high degree of genotoxicity (publications 5.6, IF - 7.11, Q1 Q2).

In addition to these contributions are those from studies of plant extracts of *Harberlea rhodopensis*, *Lamium album* L. and species of the genus *Inula*, which show the potential for future complex treatment of pathological dermatological and tumor conditions (publications 8, 12, 16, 18, 19, 20, two of them with IF - 1.69, Q2 Q3).

Teaching activity

Associate Professor Doumanov has a high teaching load. He is a holder of compulsory lecture courses in "Biochemistry" for Bachelor's degree in Biology, EEA, Optometry, as well as of part-time study courses. He is the holder of the course "Biological Membranes" for ACS bachelor's degree in Molecular Biology, as well as the courses in "Fundamentals of Biochemistry" for ACS master's degree in part-time training in Optometry and Medical Physics. He is also the holder of the course in "Protein Sorting and Cell Polarization" for the Master's degree in Biochemistry and Cellular Biology and Pathology, as well as in the elective course in Model Membranes.

Mentoring and supervision

Under his leadership in the period 2015 to 2021 seven MSc diploma theses have been successfully defended, and in addition he is a joint supervisor of two successfully defended PhD theses as well as of other two, which are in the process of defense at the Department of Biochemistry.

I accept the reference for fulfillment of the minimum national requirements under art. 2b of ZRASRB, for the scientific field and the professional field 4.3 Biological sciences (Biochemistry), in which Assoc. Prof. Doumanov exceeds the points by group of indicators G, D and E.

In conclusion, given the stated opinion on the professional research and teaching activities of the candidate, which outlines a rich and high-quality scientific production and significant in volume teaching and teaching activities, I strongly recommend the Distinguished Members of the Scientific Jury appointed by Order No. RD-38-246 from 19.05.2021 of the Rector of Sofia

*Competition for academic position "Professor"
4.3. Biological science, Biochemistry*

*Opinion
Prof. Dr. Habil. Rossitza Konakchieva*

University "St. Kliment Ohridski "to propose to the Faculty Council of the Faculty of Biology, Associate Professor Dr. Jordan Atanasov Doumanov to be elected to the academic position of Professor in the Professional Field 4.3. Biological sciences (Biochemistry).

27 July 2021, Sofia

Prof. Dr Habil Rossitza Konakchieva