

## STATEMENT

**By:** Assoc. Prof. Dr. Ivanka Georgieva Tsacheva, Department of Biochemistry, Sofia University “St. Kliment Ohridski”, member of the scientific jury appointed by order No ПД-38-246 / 19.05.2021 of the Rector of Sofia University “St. Kliment Ohridski”, Prof. Anastas Gerdjikov, Dr.

**Re:** The materials submitted for participation in a competition for the academic position „Professor” of Sofia University “St. Kliment Ohridski” in Higher Education area 4. *Natural sciences, mathematics and informatics*; Professional area 4.3. *Biological sciences*, scientific specialty "*Biochemistry*".

The competition for the academic position “Professor” in Higher Education area 4. *Natural sciences, mathematics and informatics*; Professional area 4.3. *Biological sciences*, scientific specialty "*Biochemistry*" has been launched for the needs of the Department of Biochemistry, Faculty of Biology at Sofia University in SG no. 32/16.04.2021. Assoc. Prof. Dr. JORDAN ATANASOV DOUMANOV is the only applicant who has submitted documents for this competition within the deadline regulated by the law. He currently works on a permanent position at the same department.

### **General presentation of the procedure and the applicant**

The presented materials are in compliance with the requirements of the Act for the Development of the Academic Staff in Republic of Bulgaria, the Regulations for its implementation, and the Regulations for the conditions and the order for acquiring scientific degrees and holding academic positions in Sofia University “St. Kl. Ohridski”. They also meet the recommended criteria for holding the academic position of “Professor” in Professional area 4.3. Biological sciences. The documentation for the competition is structured in a way that fully reflects the educational, scientific and applied research activities of the applicant in both qualitative and quantitative aspects.

Assoc. Prof. Dr. Jordan Doumanov graduated from Sofia University "St. Kl. Ohridski", Faculty of Biology in 1999 with a Master degree in Cell and Developmental Biology. He defended his PhD thesis “Identification of a basolateral sorting signal within the cytoplasmic domain of the interleukin-6 signal transducer gp130” in 2006 at the Faculty of Life Sciences, University of Hohenheim, Stuttgart, Germany. He began his academic career later that year at the Department of Biochemistry as Assistant Professor. In the period March 2008 – January 2010 he held a postdoc position at Insitute of eyesight (Institut De La Vision), Pierre and Marie Curie University, France. In 2009 he conducted a medium-term specialization at CABIMER, Sevilla, Spain.

Assoc. Prof. Dr. Jordan Doumanov has authored 47 articles in peer-reviewed and indexed journals including 20 scientific articles with a total IF of **80,408**, 27 articles in journals without IF and 2 textbooks. According to Scopus/Web of science research databases, the presented papers are cited 100 times and in other databases - 124 times. Twenty publications are presented in the competition for the academic position “Professor”. Among them, 14 research papers in international peer-reviewed and indexed journals with a total IF of **43.131**, distributed in quartiles as follows: Q1 - 9 papers, Q2 - 4 papers, Q3 - 1 paper and 1 book. The reference in Scopus/Web of science databases

shows that these articles were cited 96 times. The results of the research activity were reported at 78 international and national scientific forums. The intensive scientific and applied research, and educational activity of Assoc. Prof. Dr. Jordan Doumanov and his professional skills in the field are reflected in his participation in 18 projects.

## **General assessment of the applicant activity**

### **I. Assessment of the educational and pedagogical activity**

As a tutor at the Faculty of Biology of Sofia University Assoc. Prof. Dr. Jordan Doumanov performs noteworthy teaching and pedagogical activities in Bachelor, Master and PhD degree programs. On average, his total and auditorium workload over the last 5 years is 630 and 465 hours, respectively. This activity comprises the development and conduct of lecture courses at the BSc programs in Biology and Ecology (Biochemistry), in Optometry (Basic Biochemistry); in Molecular Biology (Biomembranes); MS program Biochemistry and MS program Cell Biology and Pathology (Cell sorting and cell polarization, Model membranes), MS program Optometry and MS program Medical Physics (Basic Biochemistry). Assoc. Prof. Dr. Jordan Doumanov is a co-author of the Laboratory Manual of Biochemistry for bachelor students in all specialties in Faculty of Biology. He has participated in the joint supervision of 2 PhD students that have already defended their thesis, and currently is supervising 1 PhD student at full-time education. Six graduates have successfully defended their BSc and MSc thesis under his supervision

### **II. Assessment of academic achievements**

#### ***Scientific papers***

The reference for compliance with the minimal state requirements in accordance with Art. 2b of the Act for the Development of the Academic Staff in the Republic of Bulgaria for Higher Education area 4. *Natural sciences, mathematics and informatics*; Professional area 4.3. *Biological sciences*, scientific specialty "*Biochemistry*", indicates that the applicant research achievements fully fit the stipulated criteria, as follows:

|  |                           |
|--|---------------------------|
| ✓ Indicators of group A: PhD thesis        | <b>50 p.</b> (min 50)     |
| ✓ Indicators of group B: monograph         | <b>100 p.</b> (min 100)   |
| ✓ Indicators of group C: research articles | <b>235 p.</b> (min 200)   |
| ✓ Indicators of group D: citations         | <b>150 p.</b> (min 50)    |
| ✓ Indicators of group E: projects          | <b>193.3 p.</b> (min 150) |

Clearly, the applicant's academic achievements fulfilled the minimal state requirements, exceeding them by three criteria – research articles, citations and projects.

### ***Scientific and applied research contribution***

The applicant's research contribution is in the field of Biochemistry, Biophysical Chemistry, Molecular and Cell Biology. These contributions can be grouped as achievements of scientific and applied research.

#### Major scientific contribution:

✓ *Characterization of the transmembrane protein bestrophin-1 (hBest1).*

The functional characterization of bestrophin-1 is the main topic of the undertaken research of the applicant in regard of discovering the mechanisms underlying ocular diseases, named Bestrophinopathies. Assoc. Prof. Dr. Jordan Doumanov is head of the only research group in Bulgaria and one of the few internationally, committed to studying bestrophin-1. This research group is unique in the efforts to explore the basic characteristics of the protein (structure, interaction with membrane lipids, association with lipid rafts), in cellular and extracellular model systems. For the first time in 2013 a new method for expression and purification of recombinant fully functional bestrophin-1 is created by Assoc. Prof. Doumanov's group. Until this moment they remain the only ones who have the means to purify and study this protein. Several world biotechnology companies are interested in buying the generated cell line which is capable of stable expression of bestrophin-1. The main contributions are:

- Determination of the structure and surface characteristics of bestrophin-1 in Langmuir monolayers – elements of the secondary structure of hBest1; surface physical-chemical properties and morphology of the Langmuir monolayers of purified hBest1 with/without Ca<sup>2+</sup>, Glu and GABA; form and dimensions of the protein.
- Determination of the surface characteristics of mixed hBest1/POPC Langmuir monolayers – effect of POPC on the surface dynamics of binary films; binary films of hBest1 and POPC are phase separated at the air/water interface; effect of phospholipids on oligomerization and activity of hBest1 in cell membranes.
- Determination of the surface characteristics of mixed hBest1/ sphingomyelin (SM) Langmuir monolayers – the process of mixing in hBest1/SM monolayers is spontaneous and the effect of protein on binary films was defined as “fluidizing”, hindering the phase-transition of monolayer from liquid-expanded to intermediate.
- Determination of the condensing effect of Cholesterol on hBest1/POPC and hBest1/SM Langmuir Monolayers.

✓ *Newly synthesized nanoparticles.*

The focus in nanoparticle research is on their cytotoxicity and pathways of internalization in eukaryotic cells.

- Internalization of comb-like poliplexes as means for gene transfection of eukaryotic cells.
- Internalization pathways and transfection effectivity in eukaryotic cells with poliplexes from POEGMA-b-PLL copolymer for DNA delivery.
- Investigation of cytotoxicity of nanoparticle from poly(2-(dimethylamino)ethyl methacrylate) - b l o c k - p o l y ( ε - c a p r o l a c t o n e ) – block - poly(2-(dimethylamino)ethyl methacrylate) (PDMAEMA20-b-PCL70-b-PDMAEMA20) copolymer for DNA delivery in eukaryotic cells.
- Investigation of cytotoxicity and internalization pathways of nanoparticle from spherical nucleic acids - non-toxic, biocompatible, high efficiency of up taking without the need for transfection, nuclease resistant.

✓ *Natural bioactive substances.*

- Multiple biological roles of snake venom Phospholipase A2 on RPE-1 cells
- Physiological effects of plant extracts from *Haberlea rhodopensis*, *Lamium album* L and species from genus *Inula*

### **Assessment of the applicant's personal contributions**

The thorough review of the presented by Assoc. Prof. Dr. Jordan Doumanov research papers allows me to assume that his personal contribution to the experimental development, analysis, interpretation and publication of the scientific achievements does not raise any doubts. In addition, Assoc. Prof. Dr. Jordan Doumanov successfully balances and integrates educational and pedagogical work with the research aspects of his professional development. I have known Assoc. Prof. Dr. Jordan Doumanov since he started his academic career at the Department of Biochemistry and I have witnessed his professional development and achievements. I am fully convinced that as an applicant for the academic position Professor of Sofia University "St. Kl. Ohridski", he has all the professional qualities to hold this position: scientific erudition, teaching approaches, collegiality and responsibility.

### **Conclusion**

All formal requirements specified in the Act for the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for its implementation, and the Regulations for the conditions and the order for acquiring scientific degrees and holding academic positions in Sofia University "St. Kl. Ohridski" have been fulfilled. Convincing evidence for scientific and applied

research, and educational activity of high quality are presented. The assessment of their significance on my part allows me to **strongly recommend** to the esteemed scientific jury, appointed by order No ПД-38-246 / 19.05.2021 of the Rector of Sofia University “St. Kliment Ohridski”, to issue a report-proposal to the Faculty Council of the Faculty of Biology at Sofia University “St. Kl. Ohridski” for the election of Assoc. Prof. Dr. JORDAN ATANASOV DOUMANOV for the academic position “Professor” in HE area 4. *Natural sciences, mathematics and informatics*, Professional area 4.3. *Biological sciences*, scientific specialty "*Biochemistry*".

29.07.2021

Author:

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