

## REVIEW

*On:* Competition for the occupation of the academic position "Associate Professor" in the Area of Higher Education 4. Natural Sciences, Mathematics and Informatics, Professional Field 4.3. Biological sciences, Scientific specialty "Biochemistry", announced by Sofia University "St. Kliment Ohridski", in the State Gazette, number 63/30.07.2021 (correction in the State Gazette, number 65/06.08.2021)

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### ***Information on the competition procedure***

The competition for the occupation of the academic position "Associate Professor" in the professional field 4.3. Biological sciences, Scientific specialty "Biochemistry", is announced for the needs of the Department "Chemistry and biochemistry, physiology and pathophysiology" in the Medical Faculty of Sofia University "St. Kliment Ohridski". The competition announcement was published in the State Gazette, number 63/30.07.2021 r. (correction in the State Gazette, number 65/06.08.2021).

The composition of the Scientific Jury was determined by an Order of the Rector No. p RD-38-483 of 28.09.2021 on the grounds of a decision of the Faculty Council of the Faculty of Medicine (Protocol No. 96/24.09.2021). One candidate participates in the competition: Chief Assistant Asya Svilenova Tsanova, PhD.

The regulatory requirements for the competition procedure have been met. The review was prepared in accordance with the Law on Development of Academic Staff in the Republic of Bulgaria (LDASRB), the Rules for the Implementation of the LDASRB and Section IV-Terms and Conditions for Occupation of the Academic Position "Associate Professor" of the Rules for the Conditions and Procedure for Acquiring Degrees and Occupation of Academic Positions at Sofia University "St. Kliment Ohridski". I declare that I have no common publications with the candidate submitted for this competition.

The applicant's documents are in compliance with the regulative requirements for admission and participation in the competition for the occupation of the academic position “Associate Professor” at Sofia University “St. Kliment Ohridski“. They are presented in sequence from No. 1 to No. 19 and include supporting evidence: Curriculum Vitae; Higher education diploma (Master's degree and Bachelor's degree); Diploma for educational and scientific degree “Doctor”; Document for academic position “Chief Assistant”; Certificate for work experience in the specialty; Reference to the indicators under art. 112, para 2; List of scientific publications (list of all publications and list of publications submitted for participation in the competition); List of participations in scientific forums; List of participations in projects; Reference according to the form for meeting the national minimum requirements for holding the academic position "Associate Professor" with evidence; Reference of citations; Reference to original scientific contributions; Scientific papers submitted for participation in the competition; Summaries of peer-reviewed publications in Bulgarian and English; Copy of the announcement in the State Gazette; Other documents and materials about the candidate's activity.

### ***Applicant's curriculum vitae and academic development***

Chief Assistant Asya Svilenova Tsanova, PhD was born in 1980 in Pleven. She obtained a Master degree in “Molecular Biology” at the Faculty of Biology, Sofia University “St. Kliment Ohridski“ (Diploma Series A-2003 SU No. 170599, Reg. No. M 170599/ 14.03.2005).

She was awarded the educational and scientific degree “Doctor” in 4.3. Biological sciences (Molecular biology) in 2014 (Diploma No. SU 2014 - 122/20.10.2014).

Asya Svilenova Tsanova has been working consecutively at Faculty of Biology and Pharmaceutical company as a biologist - specialist (01.12.2004 – 26.10.2007) and at Faculty of Medicine of Sofia University “St. Kliment Ohridski“, Department “Chemistry and biochemistry, physiology and pathophysiology” as assistant in biochemistry (29.10.2007 – 26.10.2015) and chief assistant in biochemistry (from 27.10.2014 until present).

She performs in good faith and dedicatedly various types of educational, administrative, organizational and expert activities at Faculty of Medicine of Sofia University “St. Kliment Ohridski“. Dr. Asya Tsanova is a member of three national expert commissions and one scientific organization.

### ***Scientific research and scientometric data***

The applicant's scientometric data, evaluated in their wholeness, are in compliance with the criteria and indicators recommended in the regulations for evaluation by the Scientific Jury at conducting a competition for “Associate Professor”. The scientific papers submitted for review are mainly from the field of higher education 4. Natural Sciences, Mathematics and Informatics, professional field 4.3. Biological sciences, Scientific specialty “Biochemistry”.

Chief Assistant Asya Tsanova is the author of published and reported scientific papers with very significant contribution in the field of biochemistry, molecular biology, cell biology, medical pedagogy and pulmonology.

Her dissertation for the award of educational and scientific degree "Doctor" is on topic: “Properties and mechanisms of action of neuropeptides with model membranes in view of their application in pharmacology”, Sofia 2014, with supervisor Corr. Member of BAS Prof. Zdravko Lalchev, PhD, DSc. The experimental research of the dissertation was conducted at the Department of Biochemistry, “Biological Membranes” Laboratory, Faculty of Biology, Sofia University "St. Kliment Ohridski”.

The total scientific production presented by Chief Assistant Dr. Asya Tsanova includes: published scientific articles - 45 (24 publications of them in journals with impact factor and Q rank/quartile according to the SJR, 4 publications related to the dissertation); reported scientific papers in international and national scientific forums - 81; textbooks - 4. Dr. Asya Tsanova has participated in 18 research projects.

According to the information provided the total IF is 24.447 and individual IF is 4.639.

Chief Assistant Dr. Asya Tsanova for her participation in this competition has presented: 41 scientific publications, 21 of them being internationally referenced and indexed in the international databases Scopus and Web of Science of journals with IF, 20 in peer-reviewed journals; four textbooks, participation in scientific conferences and congresses - 73, which are not peer-reviewed in previous competitions for awarding scientific degrees and academic positions; participation in scientific and educational projects – 18.

The total IF is 16.979 and individual IF is 3.389. The *H-index* of Asya Tsanova is 4 - according to the data from Scopus, and 5 - according to the data from Web of Science.

According to the information provided 34 citations are found in the *Scopus* and *Web of Science* databases (without self-citations).

#### ***Analysis of scientific contributions***

The scientific interests of Chief Assistant Dr. Asya Tsanova and the published scientific results are in the field of the announced competition.

The most significant contributions from the scientific work of Dr. Asya Tsanova are reflected in detail in the "Author's reference for the contributory nature of scientific works" attached to the documents of the competition. They have theoretical and applied medical-biological character. The essential part of the candidate's research is related to the analysis of the influence of surfactants on the structure and properties of biological membranes.

Original experiments related to the characterization of the molecular mechanisms of interaction of various biologically significant surfactant molecules (neuropeptides, antibacterial agents, proteins, etc.) with model membranes were performed. The functional maturity of the alveolar surfactant was studied using biochemical and biophysical methods for diagnosis of lung pathology.

The most significant original scientific contributions, reflected in the scientific works of Dr. Asya Tsanova, can be systematized in several scientific fields:

*1. Analysis of the composition, properties and characteristics of the alveolar surfactant in normal and pathology*

The obtained original results are fundamental because they clarify the dynamics of the deviations in the composition of the alveolar surfactant and their correlation with its biological properties and lung function. On the other hand, these studies have an indisputable application to clinical practice by seeking rapid and adequate methods for the diagnosis and treatment of pulmonary maturity and pulmonary dysfunction.

A. New data has been obtained for the composition and properties of the alveolar surfactant in Neonatal Respiratory Distress Syndrome (publications № I.1, I.2, I.4, I.11, I.15, II. 1, II.3, II.7, II.8, II.11).

B. The interaction of the alveolar surfactant with hydrophilic polymers has been clarified in order to increase the therapeutic efficacy of exogenous surfactant preparations (publications № I.8, I.10, I.17, II. 6, II.9, II.13, II 14, II.16).

C. *In vitro* analyzes have been successfully performed of broncho-alveolar lavage in a patients with pulmonary alveolar proteinosis (publications № I.8, II. 6).

D. New *in vitro* data were obtained from analyzes of broncho-alveolar lavage in patients with non-small cell lung cancer (publications № I.7, II.2, II.5).

*2. Interaction of molecules that have biological significance with model membranes*

Original results of studies on the interaction of various molecules that have biological significance (such as neuropeptides, hydrophilic polymers, antimicrobial agents) with model membranes are presented. From a fundamental point of view, these studies support the study of the molecular mechanisms of action of the test compounds on biological membranes. In addition, the same analyzes prove the effectiveness of the application of model membranes as a suitable model for studying the activity of various newly created or modified biologically active molecules at the level of biomembranes.

A. Original results were obtained from the study of the interaction between synthetic enkephalins with model membrane systems (publications № I.6, I.19, I.20, I.21, II. 12, II.19, II.23).

B. The mechanisms of antimicrobial action of newly synthesized benzantrone on model membranes have been studied (publication № I.3).

C. New data have been obtained on some potential drug delivery systems on model membrane systems (publication № I.18).

D. A new approach to the study of the mechanism of interaction between the photosynthetic cytochrome b6f complex and thylakoid membranes has been introduced (publications № I.12, I.15, I.16).

### *3. Contributions in educational activity*

A. The candidate, together with the staff of the Biochemistry section at Department “Chemistry and biochemistry, physiology and pathophysiology” in the Medical Faculty of Sofia University, participates in the development and publication of textbooks for the preparation of practical classes in biochemistry for first and second year students of the Master's program "Medicine" at the Medical Faculty, Sofia University "St. Kliment Ohridski" (publications № III. 1-4).

B. New forms and methods of teaching have been introduced, such as small group discussions, didactic and role-playing games, multimedia training, etc. It has been shown that the various innovative educational methods lead to greater interest and better results in learning the material (publications № II.17, II.18).

C. The so-called "Hybrid training" in which the traditional teaching of biochemistry to medical students is complemented by web-based training, enabling easy communication, sharing training materials, solving web-based tasks, conducting tests, creating a glossary and others (publication № II.4).

D. New opportunities are offered to improve the learning process of medical students at the Medical Faculty of Sofia University "St. Kliment Ohridski" (publication № II.10).

Dr. Asya Tsanova is registered in the Register of Scientific Activity at NACID. The comparative analysis of the minimum national requirements under Art. 2b of the Law on Higher Education in the field of higher education 4. Natural sciences, mathematics and informatics, Professional field 4.3. Biological Sciences with the attached reference to the real points of the candidate shows that Asya Tsanova meets the minimum national requirements for holding the academic position of "Associate Professor".

The detailed analysis of the relevant groups of indicators **A/A**, **B/Б**, **C/В**, **D/Г**, **E/Д**, **F/E** of Dr. Tsanova proves the following: Indicators **A** [A.1] – 50 points (required 50 points) and **C** [C.4] 109 points (required 100 points) meet the national requirements. Indicator **D** [D.7] is 213 points at a minimum requirement of 200. Indicator **E** [E.11] is 60 points at a minimum requirement of 50. Indicator **F** [F14 and F20] is 106 points with a minimum required value of 0 points for academic position "Associate Professor".

The total number of points of Dr. Tsanova is 537 with the minimum number as a national requirement for the academic position of "Associate Professor" being 400 points. By group of indicators (**D**, **E** and **F**), Dr. Tsanova's values exceed the national minimum requirements.

### ***Teaching and lecturing activities***

Chief Assistant Asya Tsanova is a lecturer with intensive teaching work in the field of biochemistry. She has significant experience in teaching "Biochemistry" and "Peculiarities of metabolism in norm and pathology" to students for the educational qualification degree Master, specialty Medicine in Bulgarian and English.

The report on the study employment of Dr. Tsanova shows that her classroom employment in the discipline "Biochemistry" with students in "Medicine" at the Faculty of Medicine is over 5000 hours of practice, and at the Faculty of Biology with students in "Biology" - over 200 hours.

Chief Assistant Asya Tsanova is a respected by her students and colleagues highly qualified and erudite teacher.

### ***Conclusion***

Chief Assistant Asya Svilenova Tsanova, PhD, participating in the competition for the occupation of academic position of "Associate Professor" is very hardworking and established researcher with significant scientific work and original contributions in the field of biochemistry, molecular and cell biology. She is a respected lecturer in the field of biochemistry, a highly qualified specialist with excellent team research work.

Asya Tsanova, PhD shows consistency, perseverance, competence and precision in all aspects of her research activity. Her research work is intensive and productive. Dr. Tsanova's scientometric data are not only in compliance, but also exceed the national minimum requirements, the regulative criteria and indicators for evaluation of candidates in conducting a competition for the academic position "Associate Professor".

In general, the original scientific results obtained by Asya Tsanova, PhD have an indisputable fundamental, methodological and scientifically applied contribution character in the medico-biological aspect, with possibilities for application in medical practice.

The complex evaluation of her documents gives me grounds for a positive opinion. Therefore, with complete conviction, I propose to the honourable members of the Scientific Jury to decide on the election of Chief Assistant Asya Svilenova Tsanova, PhD for "Associate Professor" in professional field 4.3. Biological Sciences, scientific specialty "Biochemistry" and occupation of this academic position at the the Department "Chemistry and biochemistry, physiology and pathophysiology" in the Medical Faculty of Sofia University "St. Kliment Ohridski"

06<sup>th</sup> November 2021

Sofia

Member of the Scientific Jury:

(Prof. Ts. Marinova, MD, PhD, DMSc)