

# Opinion

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About a competition for the Academic position of "**Associate Professor**" in the area of Higher Education 4. "Natural Sciences, Mathematics and Informatics", professional field 4.3. "Biological Sciences", specialty "Biochemistry", for the needs of the Faculty of Medicine at Sofia University "St. Kliment Ohridski" announced in the State Gazette, issue 63/ 30.07.2021 (correction in SG No. 65 / 06.08.2021).

**The only candidate in the competition for "Associate Professor" is a Senior Assistant Professor Dr. Asya Svilenova Tsanova.** The review of the submitted documents shows that the procedure for opening and conducting the competition has been followed as the documents have been prepared in accordance with the requirements of the Academic Staff Development Act in the Republic of Bulgaria, the Regulations for its implementation and the Regulations for Development of the Academic Staff (RDAS) at Sofia University "St. Kliment Ohridski" (SU). The candidate has attached in a very diligent and logical form the full set of required documents.

## Professional Development

Asya Tsanova obtained her master's degree in "Molecular Biology", specialty "Plant Physiology" at the Faculty of Biology (FB)-SU in 2005 **with full honors**. The educational and scientific degree "Doctor", Asya Tsanova acquired in 2014 in the specialty "Molecular Biology" entitled "Properties and mechanisms of action of neuropeptides with model membranes in view of their application in pharmacology." Since 2004 - present, Asya Tsanova has passed through the positions of Biologist (FB-SU), Assistant in Biochemistry at the Faculty of Medicine (FM)-SU (2007-2015), Senior assistant (2015 - present) in the Department of Chemistry and Biochemistry, Physiology and Pathophysiology " of FM-SU. Asya Tsanova also works as a medical specialist-assistant at Tchaikapharma High Quality Medicines AD (2006-2007).

## Research activity

The scientific achievements of Senior Assist. Prof. Asya Tsanova are mainly in the field of studying the functionality of the alveolar surfactant in normal and pathological conditions. So far, the candidate has published 55 scientific papers and participates in the competition for "Associate Professor" with a total of 43 scientific and scientific-educational papers. 19 of the scientific papers are in peer-reviewed journals, 20 in non-peer-reviewed journals, yearbooks and proceedings of scientific conferences and 4 textbooks. Of these 19 publications, 13 have an impact factor (IF), with a total of 16,979 and an individual IF of 3,389. 6 of the publications are in journals with SJR. The distribution of articles by quartiles is as follows: 3 fall into journals in category Q1, 5 fall into Q2, 5 fall into Q3, 6 fall into Q4. The reference for fulfillment of the minimum requirements shows that in the part "Habilitation" 6 scientific works are included. According to indicators B, D, E and E the candidate fully covers, and according to some of the indicators exceeds the required points determined by SU for holding the academic position "Associate Professor". Senior Assist. Prof. Asya Tsanova participates in the competition with 43 independent citations, mainly by foreign authors, for which evidence was provided. The scientific activity of Senior Assist. Prof. Asya Tsanova, measured by the Hirsch index so far amounts to 5 (Web of Science). She has participated in 18 research and educational projects, funded mainly by the National Science Fund, Bulgarian Ministry of Education and Science, SU. She

has participated in 81 international and national scientific congresses. Senior Assist. Prof. Asya Tsanova is a member of an authoritative professional organization such as the Association of Biochemists in Bulgaria.

### **Teaching and expert activity**

As an Assistant Professor of Biochemistry in the Department of Chemistry and Biochemistry, Physiology and Pathophysiology (2007-2015), Asya Tsanova has conducted over 2,500 hours teaching in Biochemistry for students, specialty "Medicine" at FM-SU, 200 hours in Biochemistry for students, specialty "Biology" and "EOOS" at FB-SU and over 200 hours in Biochemistry for students, specialty "Medicine in English" at FM-SU.

As a Senior Assistant Professor, the candidate has conducted over 1300 hours teaching in "Biochemistry" for students, specialty "Medicine" at FM-SU, 900 hours in "Biochemistry" specialty "Medicine in English", FM-SU, teaching in "Features of metabolism in *norma* and *pathology*" in Bulgarian and English for students, specialty "Medicine" and "Medicine in English" at FM-SU. The above-cited employment of Senior Assist. Prof. Tsanova clearly demonstrates her dedication as a lecturer. She has an extremely high authority among students and professors at SU.

Senior Assist. Prof. Tsanova is a member of the Commission for Examination and Evaluation of candidate-student works in Biology and Chemistry, specialty "Medicine" at Sofia University; Member of the National Commission for Evaluation of DZI in Biology and Health Education.

### **Research and teaching contributions of the candidate in the field**

The main scientific contributions of Senior Assist. Prof. Asya Tsanova are formulated as contributions of fundamental-applied and educational character. The fundamental-applied contributions are in the field of alveolar surfactant in *norma* and *pathology*, establishing the interaction of biologically active compounds with biological membranes by raising and proving new hypotheses, obtaining of new facts, creating of new approaches, proposing new mechanisms of action of different types of active substances on biological membranes, formulating new protocols for clinical practice for assessing the functionality of the alveolar surfactant.

(1) The scientific contributions related to alveolar surfactant in *norma* and *pathology* clarify the composition and properties of alveolar surfactant in Neonatal respiratory syndrome, the interaction of alveolar surfactant with hydrophilic polymers in order to increase the therapeutic efficacy of bronchodilators and exogenous preparations, *in vitro* analyzes of broncho-alveolar lavage in patients with pulmonary alveolar proteinosis, *in vitro* analyzes of broncho-alveolar lavage in patients with Non-small cell lung cancer. The analyzes of the surface properties of alveolar surfactant in clinical samples taken from patients with various pulmonary dysfunctions clearly demonstrate the potential of physicochemical methods for clinical practice use for rapid diagnosis of alveolar surfactant functionality and the application of adequate therapy.

(2) The scientific contributions related to the interaction of biologically active molecules with model membranes are formulated in three sub-directions: a) Interaction of synthetic enkephalins with model membranes. The enkephalins studied (Tyr-Gly-Gly-Phe-Met or Leu) are endogenous opioid neuropeptides due to their antinociceptive action. The mechanisms of their action on model and biological membranes are revealed in order to generate structural analogues increasing their stability in their pharmacological application; b) Revealing of the mechanisms of antimicrobial action of newly synthesized benzantrone on model membranes; The potential of poloxamers, triblock polyoxyethylene and polyoxypropylene copolymers for drug delivery on biological membranes has been established; c) Mechanisms of interaction between the photosynthetic cytochrome b6f

complex and the thylakoid membranes have been established. A specific interaction between the uncharged lipid monogalactosyldiacylglycerol (MGDG) and cit b6f has been revealed.

(3) Scientific-teaching contributions: a) The candidate has participated in the development and publication of textbooks prepared in accordance with the approved program for training in Biochemistry of medical students at FM-SU; b) The candidate has participated in the optimization of the learning process by testing new forms and methods of learning, small group discussions, didactic and role-playing games, multimedia learning, etc. ; c) The candidate has participated in conducting surveys among medical students at FM-SU, in which the so-called "Hybrid learning", in which traditional learning is complemented by web-based learning, allowing for easy communication, sharing of learning materials, solving web-based tasks, conducting tests, creating terminology guides, etc.

Based on the contributions cited above, it is clear that Senior Assist. Prof. Asya Tsanova works in a very promising scientific field related to the use of non-invasive methods, such as the use of gastric aspirates, for physico-chemical assessment of the maturity of the surfactant in newborns. The scientific group in which Asya Tsanova works is a leader in the field of this type of research in the European scientific area, revealing the functionality of the alveolar surfactant in normal and pathological conditions. The scientific product generated by the work of Senior Asist. Prof. Asya Tsanova, has proven fundamental and applied contributions, whose originality lies in the scientific and health priority areas of development of both Bulgaria and the European Union, which outlines a very positive outlook for the future research of the candidate.

### **Personal impressions**

Over the years, Senior Assist. Prof. Asya Tsanova proves to be an extremely fair, responsible and dedicated colleague to his students, who is always ready to share all the acquired knowledge and skills as a scientist and as a person. She always demonstrates a desire and readiness to participate in joint projects with colleagues from the country and abroad with his scientific expertise acquired over the years.

### **Conclusions**

Based on what has been described so far, I conclude that the significant contributions of the scientific papers presented in the competition, their repercussions in the scientific literature and the clearly defined scientific and teaching profile determine Senior Assist. Prof. Asya Tsanova as a dedicated, highly qualified and established scientist and lecturer in Biochemistry, in particular in the field of alveolar surfactant and the discovery of new drugs and vectors for the treatment of socially significant diseases. The candidate meets all the requirements for holding 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", for the needs of the Department of Chemistry and Biochemistry, Physiology and Pathophysiology of Medical Faculty at Sofia University "St. Kliment Ohridski" .

Therefore, I recommend to the esteemed members of the Scientific Jury to recommend to the esteemed members of the Faculty Council of the Faculty of Medicine, Sofia University to award Senior Assist. Prof. Asya Svilenova Tsanova, PhD, the academic position "Associate Professor".