

**O P I N I O N**  
**by Prof. Iliya Nikolov Iliev, PhD,**  
**University of Plovdiv “Paisii Hilendarski”**

**member of the scientific jury, according to the order of the rector of Plovdiv University  
No. P33-4296/10.08.2021.**  
**regarding the materials submitted for participating in the competition for occupying the  
academic position “Professor” in University of Plovdiv “Paisii Hilendarski”,**

in Area of higher education: 4. Natural Sciences, Mathematics and Informatics  
Professional Field: 4. 3. Biological Sciences  
scientific specialty Microbiology, for Department  
of Biochemistry & Microbiology in Plovdiv Uni-  
versity “Paisij Hilendarski”

Assoc. Prof. Dr. Sonya Kostadinova Trifonova from the Department of Biochemistry and Microbiology at Plovdiv University "Paisii Hilendarski" participates as the only candidate in the “Professor” competition proclaimed both in State Gazette no. 40, dated 14 May 2021 and in the University of Plovdiv “Paisii Hilendarski” website.

**1. General overview of the procedure and the candidate**

The set of materials presented by Assoc. Prof. Dr. Sonya Kostadinova Trifonova (in electronic form) is in accordance with the Law on the Development of the Academic Staff in the Republic of Bulgaria and the Development of Academic Staff Regulation in the University of Plovdiv “Paisii Hilendarski” and includes all necessary documents for participating in the competition.

The materials presented by Assoc. Prof. Dr. Sonya Kostadinova for participation in the competition for the academic position "Professor" include 36 scientific publications and one monography, which are not used for the acquisition of ONS "Doctor" and the academic position "Chief Assistant" and " Associate Professor ". The submitted materials for participation in the competition for the academic position of "professor" include 18 publications in issues with impact factor or impact rank, which are referenced and indexed in the database with scientific information - Web of Science and Scopus; 12 publications in refereed editions without impact factor or impact rank; 3 publications in proceedings of scientific conferences with scientific review; 2 textbooks; 1 management, which are a result of the scientific activity of the candidate after holding the academic position of "associate professor".

Associate Professor Dr. Sonya Kostadinova Trifonova was born on October 4, 1962. She graduated with honors from Plovdiv University "Paisii Hilendarski" (master) in 1988. Since 2003 she has been an associate professor of microbiology at the Department of Biochemistry and Microbiology, and in the period of 2007 - 2011 is the head of the Department of Biochemistry and Microbiology. Since 2011 and currently holds various administrative positions - Deputy Dean of

the Faculty of Law at the University of Plovdiv, Dean of the Faculty of Biology at the University of Plovdiv "Paisii Hilendarski". The work experience of the candidate in the specialty is 35, mainly as a lecturer at the University of Plovdiv "Paisii Hilendarski".

The scientific activities presented by Associate Professor Dr. Sonya Kostadinova Trifonova fully comply with the national minimum requirements for professional field 4. 3. Biological Sciences.

**For criterion A (min. 50 p.) - 50 points**

She obtained a PhD in Microbiology in 1992. The theme of the Doctoral thesis is "Purification and properties of phospholipase C and lipases from some Gram-negative bacteria".

**For criterion B (min. 100 p.) - 100 points**

It presented a monographic work "Phospholipases C, produced by Bacillus", which has not been used for the acquisition of the educational and scientific degree "Doctor", and for holding the academic position "Associate Professor".

**For criterion G (min. 200 p.) – 256 points**

They include 18 publications in scientific journals that are referenced and indexed in world-famous databases of scientific information (Web of Science and Scopus), which are in categories Q2 - Q4.

**For criterion D (min. 100 p.) – 202 points**

Includes 101 citations in scientific journals, monographs, collective volumes and patents, referenced and indexed in world-famous databases of scientific information (Web of Science and Scopus).

**For criterion E (min. 150 p.) – 246 points**

Assoc. Prof. Sonya Kostadinova is the supervisor of three successfully defended doctoral students, project manager, has participated in two national projects and one international project. The attracted funds from projects amount to BGN 70,000. to publish a textbook or textbook used in the school network. Assoc. Prof. Kostadinova significantly exceeds the minimum requirements.

**2. General characteristics of the activity of candidate**

Assoc. Prof. Dr. Sonya Kostadinova actively participates and shares her knowledge and skills both in conducting research in the department and faculty, and in the training of students and doctoral students.

***Scientific and applied activities***

The main scientific interests of the candidate are in the field of biosynthesis, purification and kinetic characterization of microbial lipases and phospholipases from Gram-positive

bacteria, in the field of microbial pathogenesis - identification of microorganisms associated with infections of the genitourinary tract (enterobacteria, Candida, Enterococcus), determination of virulence and pathogenicity factors in microorganisms and correlation between them and elucidation of the mechanisms of microbial pathogenesis. Also in the field of ecology of microorganisms - determination of the microbiological status of water bodies (dams), the influence of anthropogenic factors and horticultural farms located in reservoirs, metagenomic analysis of the structure of microbial communities, construction of bio-sorbents for heavy metals by immobilization of bacterial biomass was eliminated.

The candidate has systematized the scientific contributions in the following main directions:

- I. Microbial enzymes - phospholipases C, lipases, alkaline phosphatase.
- II. Virulence factors in microorganisms.
- III. Ecology of microorganisms.

I accept the scientific and scientific-applied contributions defined by Assoc. Prof. Kostadinova, which I would summarize as follows:

1. Three types of phospholipases type C - phosphatidylcholine-specific (PC-PLC), phosphatidylinositol-specific (PI-PLC) and sphingomyelinase C (SMase C) isolated from *B. cereus* strains have been studied and characterized in detail. A highly efficient purification scheme for phospholipase C strain *B. cereus* No. 51 has been developed. The gene encoding phospholipase C in strain *B. thuringiensis* var. *thuringiensis* 17 was isolated and sequenced. The production of phosphatidylinositol-specific phospholipase C in *B. sphaericus* strains has been demonstrated for the first time. The approximate molecular weight determined by gel filtration is  $34 \pm 1.5$  kDa.

2. The activity of the enzyme alkaline phosphatase in *Bacillus cereus* and *E. coli* was studied. Established production of extracellular (AP I) and membrane-bound (AP II) alkaline phosphatase.

3. Contributions in the field of microbial pathogenesis which are related to the identification of microorganisms associated with infections of the urogenital tract (enterobacteria, Enterococcus, Candida), determination of virulence and pathogenicity factors in microorganisms and elucidation of the mechanisms of microbial pathogenesis.

4. Contributions in the field of microbial ecology can be divided into several different areas - determining the microbiological status of two large dams - Dospat and Kardzhali dam, establishing the relationship between abiotic environmental factors, microbiological indicators of water quality and phytoplankton, with view of the development of intensive cage aquaculture, establishing the microbiological condition of the water body of Dospat Dam by identifying possible secondary sources of pollution in the water area, studies of interspecific communities and their ability to develop metabolic networks and biofilms with applicability in the processes of bioremediation of contaminated habitats.

5. The main characteristics and possibilities for use of immobilized microbial bio-sorbents for removal and concentration of metals from aqueous solutions are determined and results have been achieved in the construction of a new composite bio-sorbent for removal of heavy metals from aqueous solutions.

A special place in the presented scientific achievements of Assoc. Prof. Kostadinova I would give to the monography "Phospholipases C produced by Bacillus species", which presents its own results and summaries on the production and purification of phospholipases C from *Bacillus cereus*, *B. thuringiensis* and *B. sphaericus* species, and are compared with scientific advances in this field. The monograph is written on 144 standard pages of text and 354 cited literature sources and fully meets the definition of a monograph given in ZRASRB, item 10. (New, SG No. 30/2018, effective 05.05.2018).

Assoc. Prof. Kostadinova successfully manages and participates as a representative of Plovdiv University projects with national and international funding. With her diverse scientific activity she actively works to raise the scientific prestige of the Faculty of Biology.

### ***Teaching activities***

Assoc. Prof. Dr. Sonya Kostadinova has extensive professional experience as a lecturer in microbiology at the Faculty of Biology of Plovdiv University. She is a keynote speaker and author of the curriculum of the teaching course of "Microbiology", which is taught in all specialties of the Faculty of Biology. The academic work of the candidate is also related to conducting lecture courses and laboratory exercises (practical exercises) for master degree students from the Faculty of Biology. She has developed independent lecture courses, practical classes and curricula in the teaching courses of microbial metabolism, biotransformation, microbiological diagnostics, designed for students in various master's programs.

Assoc. Prof. Kostadinova is the author and co-author of textbooks and manuals intended for students of Bachelor's and Master's degrees in the Faculty of Biology of Plovdiv University "Paisii Hilendarski":

1. Textbook "Microbial Metabolism", University Publishing House "Paisii Hilendarski", 2021, 287 pages, ISBN 978-619-202-641-7;

2. Practicum "Practicum of Microbiology." with team Kostadinova S., V. Gochev, M. Markhova, T. Girova, D. Georgiev, I. Iliev. Guide to Microbiology. 2017. Paisii Hilendarski University Publishing House, 265 pages, ISBN 978-619-202-240-2;

3. Textbook "Biological membranes": I. Denev, St. Spasieva, D. Stefanova, E. Daskalova, M. Gevezova, M. Markhova, S. Kostadinova. Biological membranes. 2016, Electronic edition, Paisii Hilendarski University Publishing House, 181 pages, ISBN 978-619-202-111-5.

All presented textbooks contain original scientific and applied contributions and are written in a high scientific style with the necessary pedagogical precision. This shows the desire of Assoc. Prof. Kostadinova to teach and educate students in the spirit of modern biological science.

In her teaching career, Assoc. Prof. Sonya Kostadinova has been the research supervisor of many successfully defended graduates and the supervisor of three successfully defended doctoral students.

***Personal impressions:***

I have known Assoc. Prof. Sonya Kostadinova for a long time and I have witnessed her consistent growth as a teacher and scientist with in-depth knowledge and experience in the field of microbiology. For me, however, much more valuable are her qualities such as dedication to students, loyalty to colleagues and especially the developed sense of justice, which she has shown constantly over the years, regardless of the situations in which she found herself.

These qualities are the basis of my conviction that she fully deserves to be elected a professor at the Faculty of Biology of the University of Plovdiv "Paisii Hilendarski", supported by scientific achievements in the field of microbiology.

**CONCLUSION**

The documents and materials presented by Assoc. Prof. Dr. Sonya Kostadinova Trifonova meet all the requirements of the Law for Development of the Academic Staff of the Republic of Bulgaria and the Specific Additional Requirements of the University of Plovdiv, as publications and research activities exceed the minimum national requirements for employment. the academic position of "professor". The candidate's works contain original scientific and applied contributions, which have received international recognition through their publication in journals and scientific journals published by international academic publishers. Undoubtedly, we must add the very active teaching activity of Assoc. Prof. Kostadinova and the rich administrative experience as Dean of the Faculty of Biology. Based on all this, I give my positive assessment and without hesitation support the candidacy of Assoc. Prof. Dr. Sonya Kostadinova Trifonova for the academic position of "Professor" at Plovdiv University "Paisii Hilendarski".

27.10.2021 г.

Plovdiv

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