



OPINION

by Associate Professor Ventsislava Yankova Petrova

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of the materials submitted for participation in competition for

"PROFESSOR"

in the field of higher education 4. Natural sciences, mathematics and informatics;

professional field 4.3. Biological sciences; scientific specialty

"MICROBIOLOGY" (General and Food Microbiology)

The competition for "Professor" in the field of higher education 4. Natural sciences, mathematics and informatics, professional field 4.3. Biological Sciences, scientific specialty "Microbiology" (General and Food Microbiology) has been announced for the needs of the Department of "General and Industrial Microbiology" at the Faculty of Biology of Sofia University "St. Kliment Ohridski" in SG no. 88 of 13.10.2020. Under this habilitation procedure, as the only candidate submitted documents is Assoc. Prof. Dr. Petya Koycheva Hristova, Associate Professor in the Department of General and Industrial Microbiology at the Faculty of Biology, Sofia University "St. Kliment Ohridski".

1. General presentation of the procedure and the candidate

The presented set of materials on digital media comply with the requirements of the Act for the Development of the Academic Staff in the Republic of Bulgaria (DASRBA), Regulations for the Implementation of the Act for the Development of the Academic Staff in the Republic of Bulgaria (RIDASRBA) and the Rules on the Conditions and Procedure for Acquiring Science Degrees and Holding Academic Positions in Sofia university "St. Kliment Ohridski", as exceeding the recommended criteria for holding the academic position "Professor" in Professional Field 4.3. Biological sciences. The documentation for the competition is very well organized and fully reflects the versatile research and teaching activities of the candidate.

Associate Professor Hristova presented a list of publications for all her scientific activity, a total of 65 scientific papers: 1 chapter of a book, 1 monograph, 40 articles in peer-reviewed journals, 7 articles in non-peer-reviewed journals, 3 articles in scientific and applied journals, 4 articles in collections from scientific conferences, 2 textbooks and 8 handbooks, as none of the publications presented in this

competition repeat those used in previous procedures. The publications are cited 529 times in the literature. The Scopus scientific database contains 34 of the publications, with 292 citations. According to the same database, the candidate's h-index is 9.

In the habilitation procedure for the academic position of "Professor", 22 scientific papers were presented. From this list, 1 monograph is equated to habilitation work. 21 publications are outside the habilitation work, of which 14 are referenced and indexed in world-famous databases with scientific information Web of Science or Scopus (distributed by quartiles: Q1-1, Q2-1, Q3-6 and Q4 -6 pcs.), 5 are published in non-refereed editions or within international educational projects, and 2 are University textbooks. According to the attached reference, the number of citations of the scientific publications submitted for participation in the competition is 283. The total IF of the scientific papers submitted for participation in the competition is 10.38. The results of the scientific and research activity were reported at 19 international and national scientific forums. Evidence for the active research activity and recognized professional skills in the field is the participation in 32 national and international projects, of which 8 for the period of the competition "Professor" (2013-2020) - 5 national and 3 international.

The attached reference shows that Assoc. Prof. Petya Hristova meets the minimum national requirements for the academic position of "professor" (indicator A meets the minimum national requirements - 50, indicator B meets the minimum national requirements - 100, indicator D is 207 at a minimum value 200, indicator E is 566 at a minimum value of 100 and indicator E is 220 at a minimum value of 150).

2. Brief biographical data

Associate Professor Dr. Petya Hristova graduated with a degree in Molecular and Functional Biology, specialization in General and Industrial Microbiology at Sofia University "St. Kl. Ohridski" in 1987. She defended his PhD dissertation on "Study of the collagenolytic activity of some soil streptomycetes" in 1991 at the Department of General and Industrial Microbiology, Faculty of Biology, Sofia University "St. Kl. Ohridski". In 1997 she began her career as a specialist, then assistant and chief assistant professor, and since 2012 she has been an associate professor in the Department of General and Industrial Microbiology, Faculty of Biology, Sofia University. In the period 2016 - 2020 Assoc. Prof. Hristova occupied the position of Vice-Dean of Student affairs - Bachelor's Degree at the Faculty of Biology, Sofia University, and since 2016 she has been Head of the Department of General and Industrial Microbiology. In her career development, Assoc. Prof. Petya Hristova has completed a number of specializations abroad: internship in the Department of Biotechnology at the Technical University "Robert Gordon" - Aberdeen, Scotland; specialization within the TEMPUS program in the laboratory of microbiology of ENITIAA, Nantes, France; postdoctoral specialization in ENITIAAI, Nantes, France; specializations within the ERASMUS program in the laboratory of microbiology of ENITIAA, Nantes. Assoc. Prof. Hristova's expert activity is also related to the review of publications for a significant number of international journals, research projects and her participation in scientific juries for awarding scientific degrees and occupying academic positions.

3. Evaluation of scientific papers and scientific contributions

The scoring of the scientific works with which the candidate participates in the habilitation procedure is:

- Indicators from group A: dissertation - 50 points.
- Indicators from group B: habilitation work- 100 points.
- Indicators from group G: publications in Q1 - 25 points; publications in Q2 - 20 points; publications in Q3 - 90 points; publications in Q4 - 72 points. Total: 207 points.
- Indicators from group D: cited papers - 666 points.

4. Evaluation of scientific and research activity

The candidate's scientific contributions are mainly in the field of biological hazards in food, antibiotic resistance to opportunistic pathogens, molecular taxonomy of microorganisms, production of biologically active substances with antimicrobial activity and microbiological control of probiotic products - promising branches of the BIOLOGICAL SCIENCE with great importance for improving the quality of life in modern reality.

Associate Professor Hristova's research is aimed at clarifying the role of cross-pathogens as new biological hazards in plant foods, which she summarizes in the monograph "Cross-pathogens - new biological hazards in plant foods." Here, for the first time, the paradigm of cross-pathogenicity in two biological kingdoms, where plants and humans are common "hosts", is considered, and an answer is sought to how the transition from one kingdom to another takes place.

Other important areas in the candidate's research work are related to the study of opportunistic pathogens and the observed tendency for a higher frequency of resistance to many drugs among bacteria. The main original scientific and applied contributions of these studies are related to evaluating the effectiveness of rapid tests to detect producers of broad-spectrum beta-lactamases, carbapenemases and metallo-beta-lactamases, as well as to characterize the degree of resistance of these microorganisms to other antibiotics. A large part of the candidate's research is devoted to the molecular identification and typing of microorganisms in various food products. Many achievements with fundamental and applied character have been realized on the basis of the conducted investigations:

- ✓ for the first time in the scientific literature the dynamic changes in the structure of the intestinal bacterial community of *C. aspersum* and the Bulgarian bees have been proved;
- ✓ a combined approach has been developed for the assessment of mixed biocenoses, which has an applied and methodological contribution for the assessment of biodiversity and dynamics of lactic acid bacteria in different food products;
- ✓ the genetic diversity of different varieties of *Solanum lycopersicum* L. and weeds from 11 geographical regions in Bulgaria was traced and for the first time the isolation of *X. euvesicatoria* as a pathogen causing bacterial spot disease on tomatoes in Bulgaria was reported.

The research interests of Associate Professor Hristova are also focused on the production of biologically active substances with antimicrobial action. An important result of fundamental and practical

importance is the establishment of the fact that glycosylated proteins, such as hemocyanin, have the potential to be used as substitutes for some commonly used antibiotics.

5. Evaluation of teaching activities

The candidate for professor has a significant teaching activity in the three educational degrees - Bachelor's Degree, Master's Degree and Doctor's Degree. The average annual auditorium is about 450 hours. She is the author of and teaches the following subjects:

Educational-qualification degree "Bachelor" - Specialty "Molecular Biology" - disciplines "Microbiology" and "Pathogenic microorganisms".

Educational-qualification degree "Master" - Specialty "Pharmacy" - the discipline "Microbiology and Virology"; academic disciplines for MP "Microbiology and Microbiological Control" - "Molecular Biology of Prokaryotes" and "Food Microbiology"; academic disciplines for MP "Food Quality and Safety" - "Microbiological control of food and food products" and "Biological hazards in food"; the academic discipline for MP "Cell Biology and Pathology" - "Cell Pathogens".

Educational and science degree "Doctor" - authors and leader of the disciplines "Food Microbiology" and "Methods in Microbiology".

Associate Professor Hristova actively participates in the education process in Postgraduate qualification with the authorship and teaching of a number of courses such as: "Microbiology", "Microbiological control of pharmaceutical products", "Sanitary control and food safety", "Microbiology and microbiological control", "Microbiological control of water, food and pharmaceuticals" and "Clinical Microbiology and Virology". The candidate is especially active in the training of master's graduates and PhD students. At the time of submitting the documents for the competition, Associate Professor Hristova has been supervisor of 35 successfully defended masters and bachelors, 2 successfully defended PhD students and 3 full-time doctoral students at present.

The contribution in the area of this activity exceeds twice the fulfilment of the minimum national requirements under Art. 2b of the DASRBA, indicators from group E, and is 220 points. Based on this, it can be concluded that the candidate has great merits for the development of this direction in the FACULTY OF BIOLOGY.

6. Evaluation of scientific - project and administrative activity

Associate Professor Hristova has been the leader of 7 projects and a member of the team of 25, of which 12 projects are included in the competition for "Professor". Associate Professor Hristova is actively present as a member of the academic community with administrative commitment – she participates in the General Assembly and the Mandate Commission of Sofia University, the Faculty Council, the Academic Commission and the Quality Commission of the Faculty of Biology, as well as the Council of specialties in Molecular Biology at Biological Faculty. Since 2016, she is the founder and head of the Master's program "Food Quality and Safety", full-time and part-time training. She is the head of the Laboratory "Molecular Analyses of Prokaryotes" at the Department of General and Industrial Microbiology.

Critical remarks and recommendations

I have no critical remarks or recommendations on the documents submitted by the candidate, as well as on her scientific and teaching activities.

Personal impressions

I have known Associate Professor Hristova for more than 20 years. Over the years I have had the opportunity to follow closely her professional and personal development and I think that she is an excellent teacher and colleague, constantly updating and enriching the material taught to meet the changing requirements of the modern higher education. She is also a good researcher with good professional training, which is evident from her publications and participation in national and international conferences and projects. Of the personal qualities of the candidate, I would like to point out only her perseverance, persistence and serious attitude to each task.

CONCLUSION

Based on the above analysis of the scientific achievements and complexity of Associate Professor Hristova as a researcher and lecturer with an imposed research profile and established scientific group, it can be said:

Associate Professor Dr. Petya Hristova is a well-established and imposed specialist in the field of microbiology, with proven contributions in the field of food microbiology. In this field, she has published 65 scientific papers in leading international journals, which have been cited more than 300 times in the world literature.

The reference on the fulfilment of the minimum national requirements shows that she has 1143 points out of the required 600 minimum. Thus, she almost doubles the official criteria of NACID for holding the academic position "PROFESSOR" in the professional field 4.3. Biological sciences; scientific specialty "Microbiology" (General and Food Microbiology).

I highly appreciate her teaching qualities and the ability to create a group of highly trained young researchers around her.

All this gives me grounds to convincingly recommend to the esteemed scientific jury, as well as to the Scientific council of the Faculty of Biology at Sofia University "St. Kliment Ohridski" to award the academic position "PROFESSOR" to Assoc. Prof. Petya Hristova.

28.01.2021 г.

The opinion is prepared by:

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