

STATEMENT

by Dr. Nasya Borisova Tomlekova

Professor at the Institute of Vegetable Crops "Maritsa," Agricultural Academy (SAA)
on the materials submitted for participation in the competition
for the academic position of "**Associate Professor**"
at **Plovdiv University "Paisii Hilendarski"**

in the field of higher education 4. Natural Sciences, Mathematics, and Informatics

professional field PN 4.3. Biological Sciences (Genetics - General and evolutionary genetics)

In the competition for "Associate Professor," announced in the State Gazette, No. 98 of November 19, 2024, and on the website of Plovdiv University (PU) "Paisii Hilendarski," for the needs of the Department of Genetics – General and Evolutionary Genetics at the Faculty of Biology (FB), the candidate participating is Penka Lazarova Vasileva from the Department of "Developmental Biology," FB.

1. General Overview of the Procedure and the Candidate

Dr. Penka Vasileva completed her higher education at Plovdiv University (PU), where she obtained a master's degree in biology with a specialization in "Genetics and Microbiology," as well as additional pedagogical qualification. In 2007, she defended her doctoral dissertation at the Institute of Fisheries and Aquaculture (IFA), part of the Agricultural Academy (SAA), on a topic related to the reproductive and morphological characteristics of the lake crayfish. The candidate worked as a research associate at IFA, later as an assistant, and since 2011, has held the position of Chief Assistant at the Department of "Developmental Biology" at the Faculty of Biology (FB) at PU.

The set of materials submitted by Dr. Penka Vasileva in paper format is in accordance with the Regulations for the Development of the Academic Staff at PU and includes the required documents. The candidate has submitted a total of 40 co-authored scientific papers, 1 monograph (a publication among the submitted works without co-authorship), and 2 textbooks. A total of 18 scientific papers, including the monograph, are accepted for review, which are beyond the dissertation and are counted toward the final evaluation, along with 2 textbooks, 50 citations, and 6 research projects. Nine scientific papers related to the dissertation and 14 presented in the competition for Chief Assistant are not reviewed. The scientific works are published both in prestigious international journals with a high impact factor (**Q1-Q3**) – **10** papers – as well as in national (3 publications in Bulgarian journals) and foreign journals without impact factor, along with one monograph. The distribution demonstrates active research activity in the fields of genetics, ecology, and toxicology.

2. General Characterization of the Candidate's Activity

The application of Chief Assistant Dr. Penka Lazarova Vasileva for the position of "Associate Professor" meets both the minimum requirements and the additional faculty requirements, based on the provided data. The compliance with the minimum requirements according to the PPZRASRB is as follows:

- 50 points have been awarded for Penka Vasileva's doctoral dissertation related to aquaculture, which meets the minimum requirements for this indicator. Nine articles are related to the defense of the "Doctor" degree, and 14 are related to the competition for "Chief Assistant." The

aforementioned publications are not subject to review in this competition, but the following works have been considered for review:

- For the habilitation for "Associate Professor," Dr. Vasileva presents a published monograph titled "Genetics in the Service of Informed Nutrition," for which she has been awarded **100** points, meeting the minimum requirements for this indicator.
- Dr. P. Vasileva has **235** points for scientific publications in refereed and indexed journals in internationally recognized databases such as Scopus and Web of Science. This exceeds the minimum required points of **200** and confirms her significant scientific contribution.
- **134** points have been awarded for citations of Dr. Vasileva's works, which also exceeds the minimum required points of **50**.

The total number of points from these indicators is **519**, which is significantly higher than the required **400** points.

Over the years, Dr. Vasileva has built an impressive and active career in both research and teaching. Her research covers a wide range of important issues related to the reproductive and morphological characteristics of carefully selected organisms, and her contributions in these fields are highly significant, both theoretically and practically. Her work not only expands scientific knowledge but also has direct applications in various areas of biology, highlighting her high level of professionalism and commitment to science.

Summarized, the contributions can be presented as follows:

- (1) **Original contributions.** This includes the introduction of new methods for assessing genotoxicity, including sperm analysis for honeybees.
- (2) **Research contributions.** Evaluation of mutagenic and cytotoxic effects of various xenobiotics on plants and animals (food additives, beekeeping acaricide, pesticides, heavy metals, organic pollutants).
- (3) **Applied contributions.** Application of oxalic acid in beekeeping as a safe method for combating varroasis.
- (4) **Public contributions.** Improved awareness regarding the risks of pollutants and food safety.
- (5) **Educational contributions.** Active involvement of students in scientific experiments and training in cytogenetic methods.

Dr. P. Vasileva has made significant contributions to expanding knowledge about the toxicity of xenobiotics on natural organisms, such as the use of new testing systems and genotoxicity methods, including sperm analysis for bees, demonstrating innovation in ecological toxicology. She has provided valuable data on biological variability and sexual dimorphism in crayfish, as well as genetic markers in termites, enriching the understanding of population and inter-population variability in different species. She has conducted important research on genetic variability in species such as the silkworm, ants of different breeds with different geographical origins, useful for breeding programs. Following her studies on genetic damage in sperm cells of men with reproductive problems through combined comet and sperm analysis, she proposed innovative methods for diagnosing and assessing male infertility. She has developed approaches for identifying risks associated with genetic and ecological factors, which is a significant contribution to public health, including through the use of human cell cultures. Other species, in addition to those mentioned above, have been used in various test systems for mutagenicity, cytotoxicity, and ecological impact analysis, including common carp, lake crayfish, onion, and pepper.

Her monograph is a significant contribution to genetic toxicology and food safety with an original scientific input. It focuses on the genotoxic effects of food additives, establishing chromosomal aberrations associated with their toxicity using modern cytogenetic methods. The research is valuable for regulatory bodies and future scientific developments, expanding knowledge on safe nutrition and health risks. The statistical approaches applied enhance the methodological value of the work.

It is worth noting that the additional requirements of the Faculty of Biology at PU have also been met, strengthening Penka Vasileva's application for the position of "Associate Professor." She is a co-author of two educational aids, fulfilling the requirement. Dr. Vasileva has supervised nine graduates, exceeding the minimum requirement of five successfully defended thesis students. A document has been provided confirming that she meets the requirement for a five-year teaching experience. She has ensured the quality of education. Chief Assistant Vasileva has participated in ten (with a minimum requirement of two) research projects funded by the Bulgarian National Science Fund (FNI), the Ministry of Education and Science (MON), and PU, with her active contribution to various scientific research and developments. She has gained substantial administrative experience over the past five years, including participating in accreditation, student admission campaigns, and scientific events such as conferences and competitions.

Her works and scientific output have been highly regarded, and her administrative and teaching experience complement her strong application.

3. Critical Remarks and Recommendations

Question 1: What are the scientific or regulatory grounds for selecting the studied xenobiotics (pesticides and food additives), and what ecological or health risks justify this selection? What limitations and challenges arise when applying the test systems, and to what extent do the laboratory results reflect the real exposure of humans?

Question 2: How does the acridine orange fluorescent genotoxicity test compare to conventional methods for diagnosing male infertility, what are its advantages and limitations in clinical practice? To what extent can the results be applied to the general population, and what preventive measures do you recommend based on them, including safety limits and regulatory standards?

CONCLUSION

Based on the analysis of the provided information on the pedagogical, scientific, and applied scientific activities of the candidate, I believe that Chief Assistant Dr. Penka Lazarova Vasileva meets the national and additional faculty requirements of the ZRASRB, PPZRASRB, and the Regulations of Plovdiv University for its application.

All of this gives me grounds to evaluate her overall activity as **POSITIVE**.

I would like to suggest to the esteemed Scientific Jury to also vote positively, and for the Faculty Council of the Faculty of Biology at Plovdiv University "Paisii Hilendarski" – Plovdiv to appoint her as "Associate Professor" in the scientific field of "Genetics - General and evolutionary genetics."

April 2, 2025

Prepared by:

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