REVIEW

From Prof. Mima Ivanova Nikolova, D.Sc.

of the materials submitted for participation in a competition for the academic degree of "**Associate Professor**" at University of Plovdiv "Paisii Hilendarski"
by: the field of higher education 4. Natural Sciences, Mathematics and Informatics;
professional field: 4.3. Biological Sciences; scientific specialty "Genetics - General and evolutionary genetics"

In the competition for "Aassociate professor", announced in the State Gazette, issue 98 of 19.11.2024 and on the website of the University of Plovdiv "Paisii Hilendarski" for needs of the Department of Developmental Biology at the Faculty of Biology, candidate is Senior Assistant Professor Penka Lazarova Vasileva, PhD from Department of Developmental Biology.

1. General presentation of the obtained materials

By Order No. RD-22-442 of 18.02.2025 of the Rector of Plovdiv University "Paisii Hilendarski" I have been appointed as a member of the scientific jury of the competition for the academic position of "Associate Professor" in the field of higher education 4. Natural Sciences, Mathematics and Informatics; 4.3. Biological Sciences (Genetics - General and evolutionary genetics), announced for the needs of the Department of Developmental Biology at the Faculty of Biology.

Senior Assistant Professor Dr. Penka Lazarova Vasileva from University of Plovdiv "Paisii Hilendarski" has submitted documents to participate in the announced competition.

The set of materials presented by Penka Vasileva meets the requirements of the Act on the Development of the Academic Staff of the Republic of Bulgaria, the Regulations for its implementation and the Regulations for the Development of the Academic Staff of the University of Plovdiv "P. Hilendarski".

2. Brief biographical data of the candidate

Senior Assistant Professor Dr. Penka Vasileva was born on 02.01.1972 in the city of Plovdiv. She completed her secondary education in 1991 at the National Commercial High School in the city of Plovdiv. In 1996 she graduated from the Faculty of Biology of the University of Plovdiv "P. Hilendarski", specialty in University Biology, specialization - Genetics and Microbiology. In the same year she completed a master's program in Pedagogy and received an additional qualification - Teacher of Biology.

Since 1999, he has been a full-time PhD-student at the Institute of Fisheries and Aquaculture in Plovdiv, where in 2007 she defended her dissertation on the topic "Research on some reproductive and morphological characteristics of the narrow-clawed crayfish *Astacus leptodactylus* Eschscholz, 1823 as an object of aquaculture" and received the educational and scientific degree "PhD". From 2002 to 2010, he was a research associate III, II, I degree at the Institute of Fisheries and Aquaculture in Plovdiv.

From 01.04.2010 to 23.12.2010 she worked as a biologist-chief expert in the Department of Developmental Biology at the Faculty of Biology of the University of Plovdiv “P. Hilendarski”, and from 23.12.2010 to the present she has been an assistant professor and chief assistant professor at the same department.

3. General description of the applicant activities

The candidate has over 14 years of teaching experience in the Department of Developmental Biology at the Faculty of Biology. Her teaching and pedagogical

activities include lecture courses in 3 academic disciplines ("Theory of Evolution", "General Biology" and "Genetics") and practice in "General and Population Genetics" and "General Genetics" with 5 bachelor's degrees (Ecology, Bioinformatics, Pharmaceutical Biotechnologies and the hybrid specialty - Biology and Chemistry and Biology and English).

She has prepared 5 lecture courses for bachelor's programs, 3 for master's programs and 2 for specialized courses. Under her guidance, 9 bachelors from the specialties of Medical Biology, Molecular Biology and Bioinformatics successfully defended their diploma theses. She participates in 10 scientific projects - 4 national, funded by the Ministry of Education and Science; 4 funded by the Scientific Research Fund of the University of Plovdiv “P. Hilendarski” and 2 funded by the Agricultural Academy.

Penka Vasileva is a co-author of 2 textbooks: "Genetic Foundations of Behavior" and "Population Genetics". She has extensive administrative experience with her participation in committees - on accreditation, on quality of education, in a candidate student committee, in committees for conducting a national conference and a student competition. She is a member of the technical committee of the Journal of BioScience and Biotechnology. All this shows that the candidate meets all the additional requirements of the Faculty of Biology.

The presented list of all the candidate's scientific works includes one independent monograph and a total of 40 scientific publications, of which 17 are in connection with the announced competition for "associate professor". They were published in journals with quartiles from Q1 to Q4 - one article in a journal with Q1, 6 in journals with Q3 and 10 in journals with Q4.

Twelve articles with a total impact factor of 7.686 have been published in journals with an impact factor, 13 have been published in Bulgarian journals, and 4 in international journals. All submitted scientific articles are co-authored

and in English. Over the years, she has participated in 8 national and 5 international forums, at which she has presented 13 independent reports.

The research and applied research activities of the candidate Penka Vasileva are focused on the following main areas:

Mutagenicity and cytotoxicity of xenobiotics

Intrapopulation variability during ontogenesis

Interpopulation variability

Human reproductive health – genetic and environmental components

Scientific contributions

- The presented monograph "Genetics in contribution of informed nutrition" has a significant scientific contribution, as it contains data from a study conducted for the first time in Bulgaria, proving mutagenic and cytotoxic effects of food additives (colorants, preservatives and sweeteners) used in the production of food products.
- A scientific contribution is the demonstration of the potential mutagenic and cytotoxic effect of pesticides, heavy metals and waters affected by anthropogenic pollutants through plant and animal test systems. It is proven that even minimal residual amounts of pesticides or heavy metals have a toxic effect on plant and animal organisms.
- It proves that the recommended concentration of the beekeeping acaricide Coumaphos has a toxic effect, and oxalic acid has a lower cytotoxic effect and lacks genotoxicity.
- An original contribution is the assessed potential of sperm as a tool for demonstrating genotoxic effects on honey bee populations, where high mortality rates have been recorded.
- The results of the morphometric analysis of narrow-clawed crayfish and the biochemical genetic analysis of termites are of a scientific research nature. Both sexual dimorphism in morphology and the genetic expression of soluble proteins and isoenzymes during ontogenesis are proven.

- No less significant are the results of the study of genetic variations within and between breeds with different geographical origins. New information has been provided on the polymorphism and phylogeny of ants of the genus Mesor in Bulgaria.
- Through a complex approach of conventional and comet assay analysis, the degree of sperm DNA damage is analyzed in men with reproductive problems.

All presented basic scientific contributions relate to obtaining new knowledge through the application of appropriate methodological approaches.

The scientific and applied contributions are primarily in the fields of health care and agriculture.

- A applied contribution is to focus public attention on an important aspect of healthy nutrition, such as food safety and the potential risk of additives. The evidence obtained can be used to update regulations related to food processing and storage.
- The established lower cytotoxic effect of oxalic acid and the lack of genotoxicity allow its use as an alternative method against varroatosis in beekeeping.
- The obtained data on the variability of mulberry silkworm breeds from different geographical regions can be used in selection work to prepare breeding programs with the aim of increasing the economic benefits in natural silk production.
- The demonstration that the acridine orange fluorescence test is sufficiently informative about the quality of fertility potential can be used to develop a system of activities for the prevention of male reproductive health.

The entire scientific production of the candidate Penka Vasileva and the obtained results have found a good response in the specialized scientific literature in our country and abroad. Confirmation of this is the 67 citations of 22 scientific publications, of which 57 are in foreign journals and 10 are in Bulgarian publications in English. Sixty-four are the citations in journals with an impact factor.

4. Assessment of candidate personal contributions

I believe that Senior Asst. Prof. Dr. Penka Vasileva has made a significant contribution in the works with which she participates in the competition. Her research on the mutagenicity and cytotoxicity of xenobiotics is of undoubted personal contribution, and the results obtained have extremely great medical-biological and social significance. The results on intra-population and inter-population variability have been cited by our and foreign authors and can be used to compare, differentiate and emphasize the Bulgarian and European populations. She shows the ability to work in a team and the ability to define and defend her ideas. She has a broad general culture, deep and lasting scientific interests in the field of genetics.

I have no substantive critical remarks about the materials presented in the contest. I would recommend that in her future activities, Senior Assistant Professor Penka Vasileva work to use the obtained results both in the field of healthcare and in changing a number of regulatory acts.

CONCLUSION

The documents and materials presented by Senior Assistant Professor Dr. Penka Lazarova Vasileva meet all the requirements of the Act on the Development of the Academic Staff in the Republic of Bulgaria (ADSRB), the Regulations for the Implementation of the ADSRB and the relevant Regulations of the University of Plovdiv “Paisii Hilendarski”.

The candidate has presented a significant number of scientific papers published after the materials used in the defense of the educational and scientific degree of "PhD" and "Chief assistant". They contain original scientific and applied contributions that have received international recognition. The scientific and teaching qualifications of Penka Vasileva are undoubted. The results achieved in teaching and research activities fully comply with the minimum national and additional requirements of the Faculty of Biology.

After reviewing the materials and scientific papers presented in the competition, analyzing their significance and the scientific and applied scientific contributions contained in them, I find it reasonable to give my **positive assessment** and to recommend to the Scientific Jury to prepare a report-proposal to the Faculty Council of the Faculty of Biology for the election of Senior Assistant Professor Dr. Penka Lazarova Vasileva to the academic position of "**Associate Professor**" at the University of Plovdiv "Paisii Hilendarski" in: field of higher education 4. Natural Sciences, Mathematics and Informatics, professional field 4.3 Biological Sciences (Genetics - general and evolutionary genetics).

15.03.2025 г.

Plovdiv

Reviewer: .....

Prof. Mima Nikolova, D.Sc.