

## STATEMENT

By Assoc. Prof., Dr. Teodora Angelova Trichkova

Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences (BAS)  
Member of the Scientific Committee, appointed by Order No. 99/03.04.2023 of the Director  
of the Institute of Oceanology at BAS (IO-BAS), Varna

Regarding competition for the academic position 'Professor', announced in the State Gazette  
No. 12/03.02.2023, in the area of higher education: 4. 'Natural sciences, mathematics and  
informatics', professional field: 4.3. 'Biological Sciences', scientific specialty:  
'Hydrobiology', scientific section 'Genetics of Hydrobionts', at the Department of Biology  
and Ecology of the Sea, IO-BAS, Varna

Associate Professor Dr. Petya Pavlova Ivanova is the only candidate for the academic  
position 'Professor' in the competition announced in the State Gazette No. 12/03.02.2023 by  
the Institute of Oceanology BAS, Varna, Department of Biology and Ecology of the Sea.

Associate Professor Ivanova graduated from the Faculty of Biology at the 'St. Kliment  
Ohridski' University of Sofia, major in 'Hydrobiology and water protection'. She defended a  
diploma thesis on the topic 'Genetic polymorphism of myogens and muscle esterases in  
*Trachurus mediterraneus ponticus*', which she developed at the Institute of Fish Resources –  
Varna under the supervision of Prof. Ivan Dobrovolov, who later became her supervisor and  
colleague. She received the PhD degree at the Institute of Zoology at the Bulgarian Academy  
of Sciences, defending a thesis on: 'Taxonomy and population infrastructure of some species  
of the families Cobitidae, Atherinidae and Clupeidae (Pisces) in Bulgaria'. Associate  
Professor Ivanova has extensive professional experience, working successively at the Natural  
History Museum – Varna, the Institute of Fisheries Resources (IFR), Varna, and the Institute  
of Oceanology, BAS (IO-BAS), holding positions as deputy director, head of the Section of  
Ichthyology, head of the Laboratory of Population Genetics (IFR), scientific secretary and  
vice chairman of the Scientific Council (IO-BAS), etc. She participated in and coordinated a  
number of national and international projects. She has trained several graduate and PhD  
students.

The scientific production of the candidate includes a total of 99 scientific publications,  
a large number of which in international and national peer-reviewed and indexed journals. Of  
these, 8 publications are related to the PhD thesis, and 35 publications – to the competition for  
the academic position 'Associate Professor'.

A total of 32 publications are presented in the current competition, as follows:

- 9 scientific publications peer-reviewed and indexed in the WoS and Scopus citation databases (Indicator B4 – 148 points);
- 21 scientific publications peer-reviewed and indexed in the WoS and Scopus citation databases outside of the habilitation work, and one book chapter (Indicator D – 369 points);
- One published guide for university students (Indicator E).

In addition, more than 20 scientific publications are included, which are not evaluated, but are considered in the scientific contributions. Among the journals in which Prof. Ivanova publishes are highly-evaluated international publications in the area of molecular biology, marine ecology, and ichthyology, such as *Molecular Ecology*, *Molecular Phylogenetics and Evolution*, *Journal of Fish Biology*, *Journal of Environmental Protection and Ecology*, *Mediterranean Marine Sciences*, *Frontiers in Marine Science*, *Nature Conservation*, *Aquatic Invasions*, and others. The scientific works of Assoc. Prof. Ivanova have been cited in 373 publications, of which 273 (over 70%) are in publications peer-reviewed and indexed in the WoS and Scopus citation databases (index D – 546 points).

The evaluation of the scientific, publication, scientific-applied and organisational activities presented by the candidate in the current competition fully corresponds and exceeds, based on some criteria (D, E) many times, the minimum national requirements for occupying the academic position 'Professor' according to the Law on the Promoting the Academic Staff in the Republic of Bulgaria and the Regulations for its implementation, as well as the requirements of BAS and IO-BAS.

Associate Professor Petya Ivanova is one of the scientists who are distinguished by an extremely clear profile of their research activities. Her main research and scientific contributions are in the area of population genetics and molecular taxonomy of fish. She started working in this area as a student and during her professional career made significant efforts for its development in Bulgaria, applying new methods and approaches. She made significant efforts to develop the Laboratory of Population Genetics at IRR, and subsequently created and developed a modern Genetics Laboratory at IO-BAS. She is currently an internationally recognised researcher in this area.

Assoc. Prof. Ivanova's contributions have both scientific and scientific-applied and methodological significance. Some of the most important achievements are as follows:

- Clarifying the taxonomic status of some marine and freshwater fish species (gobies, *Alosa* sp., species of family Labridae, turbot, *Mullus* sp., sturgeon hybrids) and other hydrobionts (phytoplankton) through the application of genetic markers (allozyme and DNA);
- Collecting data on the current distribution and phylogenetic relationships of endemic fish species (*Rutilus frisii*, species of the genus *Atherina*);



- Identifying the molecular genetic markers for determining parental species and hybrid biotypes in the genus *Cobitis*;
- Clarifying the population-genetic structure of economically valuable fish species in the Black Sea (*Scophthalmus maximus*, *Engraulis encrasicolus*, *Mullus barbatus*, *Sarda sarda*, gobies) by applying genetic and morphometric markers, as well as new methods, such as eDNA analysis;
- Assessment of the state of fish populations in the NATURA 2000 protected areas along the Bulgarian Black Sea coast;
- Summary and update of the available information on the species composition of the Black Sea ichthyofauna;
- Develop and update regularly the list of alien and invasive alien species (IAS) of hydrobionts along the Bulgarian coast of the Black Sea; assessment of the state of the populations of 6 alien and invasive alien species of invertebrates and fish in the Varna Bay;
- Development of new parameters (morphometric, meristic and genetic-biochemical) for identification of the alien fish species *Liza haematocheila*;
- Clarifying the genetic diversity and distribution of the invasive alien species Prussian carp (*Carassius gibelio*) in Bulgaria;
- Assessment of the impact of environmental factors and various threats (overexploitation of fish resources, pollution with macro- and microplastics) on the population dynamics and biodiversity in the Black Sea and the Danube River.

The results of Prof. Ivanova's research work have significant contributions to: the assessment and protection of endangered species, biodiversity and biological resources in the Black Sea and inland water bodies; the assessment of fish resources and development and implementation of effective measures for the management of fisheries in the Black Sea; development and implementation of strategies for genetic monitoring and control of exploited fish resources; development of a surveillance and early warning system and mechanisms for rapid response and management in relation to IAS; development of a strategy to reduce litter and pollution and mitigate its potential impact on marine ecosystems and human health; and the development of mariculture in Bulgaria as an ecosystem service in order to reduce anthropogenic pressure on natural fish populations.

I know Petya Ivanova from the Faculty of Biology. Later we worked together on various tasks and projects. She has always shown initiative, striving for self-improvement, responsibility and professionalism in her work, as well as responsiveness and correctness in her relations with colleagues.

## **Conclusion**

The materials submitted by the candidate for the competition fully conforms the requirements for occupying the academic position 'Professor' according to the Law on the Promoting the Academic Staff in the Republic of Bulgaria and the Rules for its implementation, as well as the requirements of BAS and IO-BAS. The scientific publications show in-depth research and original scientific contributions in the area of population genetics and molecular taxonomy of fish that have received international recognition. Prof. Ivanova's contributions have both scientific, scientific-applied and methodological significance and contribute to the assessment and protection of endangered species, biodiversity and the environment in the Black Sea and inland water bodies and the development of strategies with measures for sustainable use and effective management of marine fish resources.

All the foregoing gives me grounds to recommend with full confidence to the Esteemed Members of the Scientific Committee to vote for awarding the academic position 'Professor' in the scientific specialty: 'Hydrobiology', scientific section 'Genetics of Hydrobionts', at the Department of Biology and Ecology of the Sea, Institute of Oceanology, BAS, Varna, to Dr. Petya Pavlova Ivanova.

Sofia 30.05.2023

Assoc. Prof., Dr. Теодора Тричкова