

БЪЛГАРСКА АКАДЕМИЯ НА НАУКИТЕ

И-Т ПО ЕКСПЕРИМЕНТАЛНА МОРФОЛОГИЯ,  
ПАТОЛОГИЯ И АНТРОПОЛОГИЯ С МУЗЕЙ

Вх. №

66

21.03

2022

СОФИЯ

## Standpoint

by Prof. Ivan Dinev Ivanov, Department of General and Clinical Pathology, Faculty of Veterinary Medicine, Thrakia University, Stara Zagora

Member of the Scientific Jury based on Order №ПД  
-09-07/07.02.2022 of the Director of IEMPAM -  
BAS, Sofia, regarding participation in:

Contest for occupation of the academic position "Associate Professor", professional field 6.4. Veterinary medicine, scientific specialty 04.03.06 "Animal Pathology", published in the State Gazette, issue 107 of 16.12.2021.

Candidate in the announced competition is Ch. Assistant Professor Dr. Katerina Stanimirova Dimitrova from the Department of Pathology, Institute of Experimental Morphology, Pathology and Anthropology with Museum, Bulgarian Academy of Sciences.

• **Brief biographical data.** Katerina Stanimirova Dimitrova completed her secondary education at 12 high schools in Sofia, majoring in biology and chemistry. He received his higher education in 2005. from the Faculty of Veterinary Medicine at the University of Forestry, Sofia, specialty Veterinary Medicine. For a short time after graduation he worked as a veterinarian in an office in Sofia, after which he continued as a technical assistant in the preparation of preparations for electron microscopy at the Institute of Experimental Pathology and Parasitology - BAS. Only a few months later, Dr. Dimitrova held the position of 3rd degree research associate at the same institution. In 2010 he was an assistant, since 2016 he has been a chief assistant and as such he has been the Head of the Pathology Section at IEMPAM - BAS since 2017.

In 2015 successfully defended his dissertation on "Pathomorphological and immunological studies in chickens experimentally treated with fumonisin B1" and received ONS "Doctor". Dr. Dimitrova's biographical reference is supplemented by courses for



additional training and specializations, and teaching activities, specialized English and Russian with a qualification level of C1, respectively, and participation in research teams of research projects.

• **Description of the materials for participation in the competition.** According to the rules for development of the academic staff of IEMPAM - BAS, Sofia, the documents and materials received from me for preparing an opinion fully comply with the requirements.

Dr. Dimitrova presents for participation in the announced competition a list and copies of materials certifying the existence of a total of 53 scientific publications. He is also the author of a dissertation. Of course, all normative documents according to the requirements (diplomas for completed higher education, scientific degree, certificate for holding an academic position, etc.) are attached to the set of materials.

• **General characteristics of the candidate's activity.**

**Research activity.** The scientific publications presented by the candidate for participation in the competition are the result of 16 years of creative activity in IEMPAM-BAS (part of them in the structure of IEPP-BAS) and professional experience in the field of cell biology, morphology and clinical and experimental pathology.

Most of them ( $n = 31$ ) have been published in scientific journals indexed in WoS, Scopus, ERIH +. The remaining number of papers ( $n = 22$ ) are scientific publications in publications not indexed in WoS, Scopus, ERIH +, thematic collections, incl. Proceedings of international and national scientific forums. Main directions in the research activity of Chief Assistant Dr. Katerina Dimitrova are studies in the field of pathological and clinical aspects of diseases in humans and animals of infectious and non-infectious nature, as well as studies of biological activity and safety of newly synthesized, nanostructured materials or natural products through complex in vitro and in vivo approach for the purpose of their medical application.

The scientific results obtained from the research allow the author teams in which Dr. Dimitrova participates to bring contributions of fundamental and scientific-applied nature, which are grouped in relevant areas. Contributions from publications in connection with the dissertation are not subject to discussion. The contributions related to this competition from the publication activity of the candidate are grouped in two main directions:



1. Study of the biological activity of natural and synthetic products. The biological properties of a number of plant extracts and hemolymph products of invertebrates in *in vitro* and *in vivo* conditions (anticancer, bactericidal, immunomodulatory, antiparasitic effects) have been studied. The results show that extracts of *Cotinus coggygia* have the most pronounced antiproliferative effect and have high selectivity on HeLa cells and can be considered as a potential therapeutic agent in cases of cancer (№№ 20, 28, 35, 41). It was found after cytomorphological analysis of hemocyanin-treated HT-29 cells that the observed antitumor effects of mucus from *Helix aspersa* and  $\alpha$ -HaH are associated with induction of apoptosis in tumor cells, which reveals the potential for developing new therapeutic agents for colorectal therapy. carcinoma (№ 19). It has been proven, after the direct oil extraction of carotenoids (astaxanthin) from *Coelastrella* sp. BGV microalgae that they have antiproliferative activity and cause apoptotic cell death in HeLa cells *in vitro* and a potential antineoplastic effect (№33).

The biological properties of a number of synthetic products in *in vitro* and *in vivo* conditions (nutritional, anticancer, bactericidal, immunomodulatory, antiparasitic effects, etc.) have been studied. As a result, a significant antitumor effect of kilphosphocholine erufosine on Grafimyeloid tumor was observed, expressed by reduced transplantability, inhibition of tumor growth, inhibition of metastatic activity and prolongation of the average survival time of tumor-bearing hamsters. The benefits of poly (carboxybetaine methacrylate) hydrogels in the treatment of chronic wounds and their biocompatibility have been demonstrated. They have been shown not to be cytotoxic and do not elicit an immune rejection response in intramuscular implantation in rats (№24). Studies on the biocompatibility of polymer hydrogels for implants in surgery and dentistry are described in detail in several articles in the attached list (№№ 9, 10, 17).

2. Another group of publications with which she applied for habilitation for associate professor Dr. Dimitrova are related to the study of pathological and clinical aspects of diseases in humans and animals of infectious and non-infectious nature. Light and electron microscopic specimens were prepared from human or cadaveric surgical material diagnosed with various forms of autoimmune thyroiditis and thyroid adenoma, and positive PCR for the presence of HHV-6 DNA and healthy controls for various analyzes (№ 6, 14, 15, 25). A number of studies have been performed on BLV, genus Deltaretrovirus, family Retroviridae. Our results show that BLV infects animals of different species (rabbits and rats treated with whole blood or serum derived from leukemic cows), including infecting human cells *in vitro*



(№ 1, 2). The cytopathic effects of FB1 and DON (by quantitative and qualitative methods) on normal and tumor cells: BALB / c 3T3, DEC 99, MDA-MB-231, MCF-7 and Hela were studied and the intracellular localization of FB1 was established by immunosuppression, marking and transmission electron microscopy (№№4, 6, 38). Clinical cases of oncological diseases have been studied to clarify the factors and mechanisms responsible for the initiation and development of non-plastic processes and their morphological characteristics. Lobular and ductal carcinomas of the mammary gland in cats, dogs, and humans have been compared, and a case of recurrent post-vaccine fibrosarcoma in cats has been reported (№№7, 42).

In his wide-ranging research work, Ch. Assistant Professor Katerina Dimitrova applies a wide range of molecular biological, biochemical, immunological, cellular biological, virological, histopathological and morphological methods for the study of experimental or clinical cases, from macroscopic findings to the level of ultrastructure and nanoparticles.

- **Reflection of the candidate's scientific works in the literature.**

Ch. Assistant Professor Katerina Dimitrova, PhD has participated in the implementation of more than 20 research projects (funded by the NSF of the Ministry of Education and Science, contracts with universities and companies in the country and abroad, under European programs, etc.). She is the author and co-author of more than 60 scientific publications (first author of 15 of them) published in scientific journals and collections of scientific forums, many of which are referenced and indexed in world-famous databases and her scientific works are cited over 40 times. The results of her research work have been presented at more than 50 national and international scientific forums. Ch. Assistant Professor Dr. Katerina Dimitrova has completed specializations in Latvia, Germany and Italy and actively participates in the training of graduates, young scientists, PhD students and specialists from Bulgaria and abroad with an interest in the work of the section.

- **Some notes.**

Given the field in which Dr. Dimitrova works, and especially the challenges of our daily lives in this regard, as well as the working environment to date, which provide promising opportunities and from which can emerge interesting scientific developments, I would only allow myself to wishes new and greater successes.



• **Personal impressions.** I do not know the candidate personally, but the information provided in connection with the required indicators for participation in a competition for an academic position determines the characteristics of a disciplined and professionally responsible colleague.

• **Conclusion.** Analyzing the research activity on the basis of presented scientific productivity and references to reflect the contributions of the candidate's publishing activity, I believe that they fully meet the requirements of the law for the development of academic staff in Bulgaria, the rules for its application and IEMPAM criteria - BAS, Sofia, for acquiring the respective position under this competition.

In view of this, I propose to the esteemed members of the scientific jury to support my opinion and join my proposal to the Scientific Council of IEMPAM-BAS for awarding the academic title "Associate Professor" in the scientific specialty 04.03.06 "Animal Pathology" of Ch. Assistant Professor Dr. Katerina Stanimirova Dimitrova from the Department of Pathology, Institute of Experimental Morphology, Pathology and Anthropology with Museum, Bulgarian Academy of Sciences.

March 21, 2022

Prof. I. Dinev:

