

REVIEW

on the materials for participation in a competition for the academic position of "**Professor**" in "Parasitology and Invasive Diseases of Animals and Humans", code 04.03.07, for the "Experimental Parasitology Section" at the Institute of Experimental Morphology, Pathology and Anthropology with a Museum (IEMPAM) at the Bulgarian Academy of Sciences (BAS) /State Gazette No. 81/3.10.2025/

Candidate for participation in the competition:

Mariana Stancheva Panayotova-PENCHEVA, PhD

Rewiew prepared by:

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Corresponding Member of Bulgarian Academy of Sciences

professional area 6.4. Veterinary medicine,

Medical University - Pleven

1. Brief biographical data of the applicant.

Mariana Stancheva Panayotova-Pencheva was born in 1971 in the city of Dobrich. She graduated with honors from the Higher Institute of Zootechnics and Veterinary Medicine (currently Trakia University) in Stara Zagora in 1995.

In the same year, she started working as a specialist veterinarian at the "Fauna and Circulation of Parasites" section at the Institute of Experimental Pathology and Parasitology of the Bulgarian Academy of Sciences in Sofia. Two months later, she won a competition and was reappointed as a research associate of the 3rd degree. From 2003 to 2007, she worked as a research associate of the 2nd degree, and from 2007 to 2014 - as a research associate of the 1st degree (chief assistant).

In 2009, she defended her PhD dissertation on the topic "Etiological, epizootiological and pathomorphological studies on protostrongyliasis in domestic and wild ruminants in Bulgaria" before the specialized scientific council on "Infectious and parasitic diseases of animals and food safety from them" at the Bulgarian Academy of Sciences and received a scientific specialty "Parasitology and invasive diseases of animals and humans" (Diploma No. 33726 of 07.01.2010).

From June 2014 to the present, after successfully passing a competition, she holds the academic position of "Associate Professor" in the "Experimental Parasitology" section of the Institute of Experimental Morphology, Pathology and Anthropology with a Museum at the Bulgarian Academy of Sciences (Certificate No. 000603 of 10.06.2014).

Doctor Panayotova-Pencheva has many years of experience as a part-time lecturer. She works at the Department of Infectious Pathology, Technology and Control of Food of Animal Origin of the Faculty of Veterinary Medicine at the Forestry University - Sofia, teaching the disciplines "Parasitology" (1998 - 2015) and "Diseases of Game" (2011 - 2015). Her work experience in the specialty of the competition is 30 years and 5 months.

2. Compliance of the submitted documents and materials of the candidate with the required ones pursuant to the Rules for development of the academic staff at the Institute of Experimental Morphology, Pathology and Anthropology with a Museum (IEMPAM) at the Bulgarian Academy of Sciences, Sofia.

Associate Professor Mariana Panayotova-Pencheva participates in the competition for professor with the necessary set of 18 documents, which are required by the Regulations on the conditions and procedure for acquiring scientific degrees and for occupying academic positions at IEMPAM-BAS. One copy is submitted on paper and another 8 on electronic media. According to the attached reference, the candidate in the competition covers the minimum required points for professor in the groups of indicators of IEMPAM-BAS, area 6. Agrarian Sciences and Veterinary Medicine, 6.4. Veterinary Medicine, as follows:

- Indicator A (50): PhD Dissertation – 50 points
- Indicator B (100): Scientific publications (not less than 10) in publications that are referenced and indexed in world-renowned databases of scientific information – 208 points
- Indicator D (200): 264.5 points are collected from
 - Articles and reports published in scientific publications, referenced and indexed in world-renowned databases of scientific information and from
 - Articles and reports published in non-refereed journals with scientific review or published in edited collective volumes
- Indicator D (100): Under this indicator, related to citations or reviews in scientific publications, referenced and indexed in world-renowned databases of scientific information or in monographs and collective volumes, I accept the collected 20520 points, exceeding many times the required 100.
- Indicator E (100): From the supervision of a successfully defended PhD student and participation in projects - national and international, a total of 155 points are accumulated

✚ **The candidate in the competition associate professor Mariana Stancheva Panayotova-Pencheva has a total of 3197.5 points, exceeding the required minimum 550 points for an professor.**

3. Assessment of the candidate's scientific, scientific applied and publication work.

The competition for professorship includes 54 scientific papers, of which 32 with IF or SJR. The large number of articles in the elite quartiles Q1 – 6 and Q2 – 10, as well as in Q3 – 8 and Q4 – 8, is impressive.

A very high mark can also be given for the high scientific activity in the last three years (2023-2025) - 10 publications in Scopus.

The total impact factor of the candidate for professorship is 22.328, the individual 9.729, and the h-index 8.

Assoc. Prof. Pencheva's citations are over 300.

I also note with satisfaction the fact that she was a Guest Editor of a special edition of the Journal of Zoological and Botanical Gardens on the topic "The Long-Standing Problem of Parasitic Diseases in Zoo Animals: Current Challenges and Searching for Solutions" (2025).

The most important studies and contributions of Associate Professor Pencheva's research work are in the following 5 areas:

I. ETIOLOGY AND DISTRIBUTION OF PARASITOSEs

- Studies have been carried out on the pulmonary helminth fauna of cloven-hoofed animals (domestic and wild) from different regions of the country. Nematodes from 3 families and 15 species

have been identified. For the first time in our country, a study has been carried out in chamois.

- The parasitic fauna of deer, roe deer and mouflons from state hunting and forestry farms in different parts of the country has been studied. Gastrointestinal and pulmonary nematodes, trematodes, cestodes and eimeria have been identified. For the first time, the genus *Neostongylus* has been identified in wild animals in Bulgaria.

- In wild hares in our country, the nematodes - *Protostrongylus tauricus* and *P. cuniculorum*, a cestode species - the larval form of *Taenia pisiformis* - *Cysticercus pisiformis* and one arthropod - the larval form of *Linguatula serrata* - *Pentastomum denticulatum* have been identified. For the first time, the species *Protostrongylus cuniculorum* has been identified as part of the helminth fauna of Bulgaria and southeastern Europe.

- In the species composition of helminths in squirrels, the following were identified: cestodes - *Mesocestoides* sp. and *Taenia* sp. and nematodes - *Crenosoma petrowi*, *Filaroides martis*, *Sobolevinygylus petrowi*, *Eucoleus aerophilus*, *Pearsonema plica* and *Spirocerca melesi*. For the first time, the species *S. melesi*, *F. martis* and *S. petrowi* have been reported as part of the helminth fauna of Bulgaria and southeastern Europe.

- *Dirofilaria immitis* has been studied in carnivorous animals from 19 regions in our country. Parasitism was found in 37.54% of jackals, 25.22% of foxes and 33.33% of dogs. A phylogenetic analysis was also performed.

- The extent of infestation with *Dirofilaria immitis*, *D. repens* and *Acanthocheilonema reconditum* in dogs, jackals and foxes in separate regions of the country has been described.

- The species composition of parasites in domestic cats and dogs from the Sofia region and in animals from the "Predators" sector of the Sofia Zoo has been studied. The first case of thelaziasis in a domestic cat from Bulgaria has been reported.

- In Patagonian maras (*Dolichotis patagonum*) /Sofia Zoo/, the gastric nematodes *Graphidioides affinis* have been studied morphometrically, molecularly and phylogenetically. These are the first data for science on the genome of this parasite and show its distinctiveness compared to other gastrointestinal nematodes.

- Two new genera - *Varestrongylus* and *Elaphostrongylus* - and six new species - *Muellerius tenuispiculatus*, *Protostrongylus hobmaieri*, *Protostrongylus rupicaprae*, *Protostrongylus cuniculorum*, *Varestrongylus sagittatus* and *Elaphostrongylus cervi* - have been identified in Bulgaria.

- The distribution of the eye nematode *Thelazia callipaeda* in wild carnivores in the Russian Far East has been studied: in sables (*Martes zibellina*), raccoons (*Nyctereutes procyonoides*), foxes (*Vulpes vulpes*), Asian black bears (*Ursus thibetanus*) and lynx (*Lynx lynx*).

- Species identification of pulmonary strongyles in Alpine ibex (*Capra ibex*) from the territory of Austria has been carried out. It has been established that the nematodes are of the species *Protostrongylus caprae*. The identification of *P. caprae* in the Alpine ibex represents the registration of a new host for the species, a new geographical distribution for the nematode, which is the European continent.

- The nematode fauna of terrestrial mollusks from Bulgaria and Crimea has been studied. It has been established that the composition of the nematode fauna in both countries is similar.

- The results of our own research and the literature data on pulmonary helminths of terrestrial mammals in Bulgaria, Armenia, Poland and Russia have been summarized.

- A chromosomal analysis of trematodes of the genera *Psilotrema* and *Sphaeridiotrema* (intestinal parasites of birds and mammals) has been performed on materials from larval stages (redia obtained from naturally invaded freshwater snails-intermediate hosts from Bulgaria and the USA). Clear

differences in the number and morphology of chromosomes of *Psilotrema spiculigerum* and *P. simillimum* were found, as well as in these indicators for populations of *Sphaeridiotrema globulus* from the USA and Lithuania. Morphometric characteristics of chromosomes of 3 species of cercariae (*Cercaria levantina* 18, *Cercariae melanopsi* VI and VII) from freshwater snails from Israel were studied.

- The surface structures of miracidia and cercariae of trematodes of the genus *Philophthalmus* were studied. It was found that the characteristics of miracidia, but not those of cercariae, help to determine the species of philophthalmids.

- Morphometric description of 22 parasite species (*Muellerius capillaris*, *M. tenuispiculatus*, *Cystocaulus ocreatus*, *Neostrongylus linearis*, *Protostrongylus brevispiculum*, *P. rufescens*, *P. hobmaieri*, *P. rupicaprae*, *P. cuniculorum*, *P. tauricus*, *Varestrongylus sagittatus*, *Dictyocaulus eckerti*, *Metastrongylus salmi*, *M. elongatus*, *M. pudendotectus*, *Linguatula serrata*, *Dirofilaria immitis*, *Oesophagostomum dentatum*, *O. quadrispinulatum*, *Ascarops strongylina*, *Thelazia callipaeda*, *Angiostrongylus daskalovi*) on materials from Bulgaria. The first stage larvae of the species *P. rupicaprae* are described for the first time in the scientific literature. An original method has been developed for the preparation of permanent microscopic preparations for taxonomic studies from protostrongylid-infested lung tissue.

- In deer, the morphometric characteristics of the first stage larvae of the brainworm, *Elaphostrongylus cervi*, have been described for the first time, based on materials from southeastern Europe.

- Microfilaremia studies have been conducted on dogs, jackals and foxes from different regions of the country. A morphometric description of the 3 types of microfilariae identified has been performed, and according to the summarized and analyzed results, the larvae have been assigned to the species *Dirofilaria immitis*, *D. repens* and *Acanthocheilonema reconditum*.

- A modern taxonomic structure of the cestode order Cyclophyllidea has been developed.

- The question of the exact causative agent of intestinal infections caused by eukaryotes from the kingdom Protista in camels - *Buxtonella*, has been clarified, and the name of the camel ciliate species *Buxtonella cameli* n. comb.

- Different stages of the life cycles of protostrongylids from the genera *Muellerius* and *Elaphostrongylus* have been reproduced. The role of 14 species of snails, common to the Bulgarian fauna, as their intermediate hosts has been studied. Five new intermediate hosts of lung nematodes from the family Protostrongylidae have been identified.

- The possibility of using laboratory animals (rabbits, hamsters, rats, white mice) as experimental models of definitive hosts for protostrongylids of the genera *Muellerius* and *Elaphostrongylus* has been investigated. Studies on the biology of protostrongylids of the genus *Elaphostrongylus* are the first of their kind in our country.

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II. EPIDEMIOLOGY OF PARASITOSESES

- It has been established that the distribution of pulmonary nematodes of the family Protostrongylidae in the country is wide, domestic ruminants are affected to a higher extent, and in wild ones the genus diversity of parasites is greater.

- An original method for quantitative larval diagnostics of protostrongylidae in definitive hosts has

been developed.

- The importance of some common species of snails for the Bulgarian fauna as a biotic factor in the epizootiology of protostrongyliasis has been assessed.
- The role of seabirds and invertebrates in the epizootiology of trichinellosis has been studied.
- Epizootic aspects of pulmonary parasitosis in wild rabbits have been studied. The highest prevalence of pulmonary parasitosis was observed in young (4–6 months) and adult rabbits (over 3 years of age).
- It has been established that stray dogs are at risk for *Dirofilaria immitis*, shelter dogs for *Ehrlichia canis*, and hunting dogs for *Borrelia burgdorferi*.
- For the first time, the detection of *Ehrlichia* spp. in *Rh. sanguineus* ticks from Bulgaria has been reported, as well as *Rickettsia* spp. in *I. ricinus* ticks collected from foxes in our country.
- Comprehensive studies have been conducted on the causative agent of intestinal protist infections in camels. It has been proven that camels are not a reservoir for human balantidiasis.

III. IMMUNITY, PATHOGENESIS AND PATHOMORPHOLOGY OF PARASITOSEs

- Under experimental conditions, the immunobiological reactivity of rats to invasion with the zoonotic nematode *Trichinella spiralis* was studied.
- The chemical and physicochemical changes occurring in different muscle groups in cattle invaded by the trematodes *Fasciola hepatica* and *Dicrocoelium dendriticum* were determined.
- The pathomorphological changes in the lungs of domestic and wild ruminants invaded by pulmonary nematodes of the family Protostrongylidae, and in the lungs, stomach and small intestines of wild boars invaded by *Metastrongylus* spp., *Ascarops strongylina* and *Macracanthorhynchus hirudinaceus* were studied.

IV. CONTROL OF PARASITOSEs

- Alternative approaches (probiotics, homeopathic remedies, plant extracts) for the control of parasitosis have been summarized and analyzed.
- A literature review has been conducted on studies on the antiparasitic treatment of wild mammals from the families Cervidae, Bovidae and Suidae.
- Literature data on the treatment of parasitosis in wild animals raised in captivity have been analyzed.
- Treatment of nematodes from the family Ascaridae lion, puma and brown bear was carried out using antiparasitic preparations intended for dogs and horses according to the label. Dosages have been adapted, tolerance to the drugs and the effect of the treatment have been monitored.

V. BEE PATHOLOGY AND BEE PRODUCTS

- Studies have been carried out on the use of honey bees (*Apis mellifera*) and their products as a bioindicator for environmental pollution and as alternative means of combating parasitic diseases.
- The distribution of the pathogens *Varroa destructor*, *Nosema apis* and *N. ceranae* in different regions of Bulgaria has been studied using field and laboratory (morphological and PCR) methods.
- Alternative means of combating varroatosis have been used; the most reliable are entomopathogenic fungi, from plant extracts and oils - compounds based on thymol, and from organic acids - formic and oxalic.
- Honey bee diseases in Bulgaria and Estonia have been studied. It has been established that varroatosis, nosematosis, American foulbrood and European foulbrood are problematic in both countries. The main causative agent of nosematosis in Estonia is *Nosema apis*, and in Bulgaria *N. ceranae*.

Associate Professor Mariana Pencheva is very well represented with her participation in projects: 8 national scientific projects, most of which were funded by the Scientific Research Fund, and 4 international ones. She was the head of 2 national and 3 international projects.

The candidate for professor also has 65 participations in authoritative national and international forums (congresses, conferences, etc.).

Her participation in international scientific colleges and councils - Russian Journal of Parasitology, Journal of Zoological and Botanical Gardens - makes a very good impression. She has also been on the organizational and program committees of scientific forums - 2 in Bulgaria and 2 in Armenia.

She is the author of 12 reviews/opinions in our country for academic positions and scientific degrees. She has reviewed 48 scientific articles for leading international and Bulgarian scientific journals.

She also defended a doctoral thesis in 2020.

4. Assessment of the candidate's personal contribution

- ✦ **I am convinced of the high personal contribution of the candidate for associate professor, in his overall scientific, pedagogical and expert activity.**

C O N C L U S I O N

Covering the requirements of the Law on the Development of Academic Staff in the Republic of Bulgaria, as well as the required criteria of the Institute of Experimental Morphology, Pathology and Anthropology with a Museum at the Bulgarian Academy of Sciences, and considering all the arguments mentioned, I propose to the esteemed scientific jury to award **Associate Professor Dr. Mariana Stancheva Panayotova-PENCHEVA** the academic position of "**Professor**" in "Parasitology and Invasive Diseases of Animals and Humans", code 04.03.07, for the needs of the section "Experimental Parasitology" at the Institute of Experimental Morphology, Pathology and Anthropology with a Museum at the Bulgarian Academy of Sciences.

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14-01-2026