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REVIEW

By Assoc. Prof. Dr. Mariana Panayotova-Pencheva
Institute of Experimental Morphology, Pathology and Anthropology with Museum at the Bulgarian Academy of Sciences, appointed as a member of the Scientific Jury by Order No. 69/01.08.2025 of the Director of IBEI – BAS

In connection with a competition for the academic position of "Professor"
in the professional field 4.3. Biological Sciences, scientific specialty "Parasitology and Helminthology" for the needs of the research group "Taxonomy, Evolution and Ecology of Helminths", section "Biodiversity and Ecology of Parasites" at the Department "Animal Diversity and Resources" at the Institute of Biodiversity and Ecosystem Studies - BAS, announced on 3.06.2025 in issue 45 of the State Gazette

Submitted materials in connection with participation in the competition

Assoc. Prof. Yasen Mutafchiev is the only candidate who has applied to participate in the competition. In this context, he has provided the following documents in electronic form: a curriculum vitae in European format; copies of diplomas for a Master's degree, for the educational and scientific degree "Doctor" and for a previous habilitation for "Associate Professor"; a certificate of internship in the specialty; a certificate of compliance of the candidature with the minimum state requirements, the requirements of the Bulgarian Academy of Sciences and the criteria of the National Council of IBEI-BAS; a list of scientific publications; a list of citations; a certificate of contributions; a certificate of defended PhD and copies of scientific papers. The documents provide information on all requirements according to the Regulations on the terms and conditions for acquiring scientific degrees and for occupying academic positions at IBEI-BAS.

Candidate's education and career development

Yasen Mutafchiev was born on 13 January 1979. In 2003 he obtained a Bachelor's degree in Biology, and in 2005 he graduated with honours in “Invertebrate Zoology" from the Faculty of Biology of the University of Sofia “St. Kliment Ohridski” (Diploma No. 170569 of 13March 2005). After graduation, he started working as a specialist biologist in the “Biological Diversity” section at the Central Laboratory of General Ecology of the Bulgarian Academy of Sciences. In 2009 he defended his dissertation on the topic“Species Diversity of Nematodes of the Superfamily Acuarioidea (Spirurida) in Bulgaria” and obtained a doctorate in the scientific speciality “Parasitology and helminthology” (Diploma No. 33603 of 07.12.2009). In 2010, Dr Mutafchiev worked as a 1st rank research associate (or senior assistant professor) in the Department “Biodiversity”/“Biodiversity and Ecology of Parasites” at IBEI. From November

2015 until today, after successfully passing a selection procedure (certificate no. 000854 dated 22/02/2016), he has held the academic position of “Associate Professor” in the “Biodiversity and Ecology of Parasites” department of the IBEI. Assoc. Prof. Mutafchiev has 19 years of professional experience in the specialty of the competition.

During his work, Assoc. Prof. Yasen Mutafchiev received personal grants and carried out a series of visits to scientific organisations abroad (France, Switzerland, Italy, Germany, Austria, UK), where he had the opportunity to gain professional experience with prominent foreign scientists such as Dr. Jean Mariaux, Dr. Odile Bain, prof. Domenico Otranto, Dr. Coralie Martin, etc., and he also carried out a two-month specialisation with Dr O. Bain at the Muséum National d'Histoire Naturelle in Paris, funded by the WETLANET project.

Scientometric indicators and compliance with the minimum requirements and criteria for holding the academic position of "Professor"

In connection with the competition, Assoc. Prof. Mutafchiev presents a list of scientific works, which he himself has divided into three main groups: I.A. Dissertation; I.B. Scientific publications on the basis of which the dissertation was defended for the educational and scientific degree "Doctor"; II. Scientific works on the basis of which the previous habilitation as "Associate Professor" was acquired; III. Scientific works outside those related to the dissertation and outside those with which the previous habilitation was acquired.

The list comprises a total of 56 scientific works. One of these is the dissertation. The remaining 55 are divided as follows: scientific publications on the basis of which the dissertation was defended - 2; scientific works on the basis of which a previous habilitation was acquired - 31, including a book chapter; scientific works outside those related to the dissertation and outside those with which a previous habilitation was acquired - 22. Of the 55 publications, 54 are collective papers, one is independent, and Assoc. Prof. Mutafchiev is the first author of 24. Forty-eight of the scientific papers were published in foreign journals with impact factor or impact rank, 4 in a Bulgarian journal with impact rank, one article was published in a foreign journal and one in a Bulgarian journal without impact factor or impact rank. The book chapter in which the candidate is a co-author was published abroad. The total IF value of the publications in this selection procedure is 37.87.

The report on the fulfillment of the requirements arising from the Regulations for the Implementation of the ZRASRB, provided by the candidate for the competition, shows that the requirements for all criteria are met and even overlap: Under indicator B (habilitation work) Assoc. Prof. Mutafchiev has 150 points with a minimum score of 100, under G (publications in journals referenced and indexed in the world-renowned databases of scientific information Web

of Science and Scopus, outside the habilitation work) - 271 points with a minimum score of 220, under D (citations) – 678 points with a minimum score of 120, under E (successfully defended doctoral students and participation in projects) – 169 points with a minimum score of 150.

Assoc. Prof. Mutafchiev submits 7 scientific publications (those with the numbers 36, 45, 48, 50, 52 and 53, 55) as his habilitation thesis for "Professor". However,Although another publication is placed in the folder with copies of scientific publications under No. 55, and this one, part of the habilitation thesis, entitled "DNA-elucidated life cycle of a highly pathogenic avian nematode: Streptocara incognita (Spirurida: Acuariidae) and its morphological development from infective third-stage larva to adult" is missing, I have learned its content from the Internet and accept it as part of the documentation. The 7 scientific papers submitted are in the field of fauna, morphology and taxonomy of helminths of the phylum Nematoda and fully correspond to the specialty of the competition.

Scientific activity, scientific contributions and significance of the results obtained

Yasen Mutafchiev began his scientific career as a full-time doctoral student, during the course of which he worked out a rich collection of over 1000 specimens of nematodes from the superfamily Acuarioidea of the order Spirurida. Even as a doctoral student, he mastered a variety of working methods, namely the preparation and light microscopic observation of nematodes, the documentation of microscopic objects by drawing and digital photography, methods for performing scanning electron microscopy and computer programmes for carrying out cladistic analyses. His dissertation provides detailed information on the morphological, taxonomic and phylogenetic characteristics of the species of this systematic group distributed in Bulgaria, as well as comparative data on this topic based on worldwide scientific experience.

Associate Professor Mutafchiev is the author of important fundamental works that have made a significant contribution to parasitology, in particular helminthology. After the defence of his dissertation, his scientific work continues to focus on zooparasitic nematodes. Most of his research focuses on the fauna, morphology, taxonomy and phylogeny of nematodes of the order Spirurida, mainly from the family Acuariidae (publications with the numbers 4-9, 11, 13, 18, 23, 24, 27, 36, 45, 48, 52 and 55) and the family Onchocercidae (publications with the numbers 12, 14, 16, 19, 20, 21, 22, 26, 28, 35, 37 and 44), nematodes from the orders Ascaridida (publications with the numbers 31, 39, 41, 42 and 47), Strongylida (publications with the numbers 15, 29 and 38), Camallanida (publications with the numbers 43 and 47), etc. have also been studied. Another part of the scientific activity of Assoc. Prof. Mutafchiev concerns the complex relationships in the "parasite-host" system, in which studies on naturally and experimentally infested hosts have been carried out and important results have been obtained on

the biology of a variety of parasite species (publications numbered 10, 12, 14, 15, 21, 30, 38), on the ecological relationships between parasites, hosts and the environment (publications numbered 25, 32, 33, 40, 46, 49 and 51) and on the pathogenic influence of parasites on hosts (publications numbered 16 and 37).

The reference for scientific contributions of Assoc. Prof. Yasen Mutafchiev is a summarized presentation of the most important results of his entire scientific activity. He has organised the reference as follows: 1. Contributions to the taxonomy, systematics, phylogeny and life cycles of the family Acuariidae (Spirurida); 2. Contributions to the taxonomy and systematics of the family Spirocercidae (Spirurida); 3. Contributions to the taxonomy and systematics of the family Physalopteridae (Spirurida); 4. Contributions to the taxonomy of the family Aproctidae (Spirurida); 5. Contributions to the morphology, taxonomy and systematics of the family Heterocheilidae (Ascaridida); 6. Study of the nematode fauna of the Nile crocodile in the Kruger National Park; 7. Contributions to the taxonomy of the family Micropleuridae (Camallanida); 8. Contributions to the taxonomy of the family Kiwinematidae (Ascaridida); 9. Morphology, systematics and biology of the filarial nematodes of the family Onchocercidae (Spirurida); 10. Contributions to the phylogeny of the family Onchocercidae (Spirurida); 11. Studies on the biology of metastrongyloid nematodes of the families Angiostrongylidae and Crenosomatidae (Strongylida); 12. Studies on the helminth fauna of fish; 13. Dynamics of the helminths of the European sperm whale (Spermophilus citellus). I agree with the contributions he formulated in this way and would like to reproduce some of them here in a summarised version. In my opinion, the most significant contributions from the scientific activity of Assoc. Prof. Mutafchiev are those in the field of morphology, taxonomy and systematics of parasitic nematodes. In co-operation with leading scientists from Bulgaria and abroad, he has contributed to the following topics:

- ✓ The description of **4 new parasitic genera**: *Pelecanema* Mutafchiev & Georgiev, 2010 for *Synhimantus sirry* Khalil, 1931 and *Dispharynx pelecani* Johnston & Mawson, 1942, specific parasites of pelicans; *Parachordatortilis* Mutafchiev, Santoro & Georgiev, 2010 for *Dispharynx mathevossianae* Petrov & Chertkova, 1950 and *Chabaudacuaria* Mutafchiev & Kinsella, 2012 for *Cheilospirura multispinosa* Pérez Vigueras, 1938 parasitizing the stomach of herons in Florida, USA; *Ingwenascaris* Junker & Mutafchiev, 2017 from a Nile crocodile from South Africa.

- ✓ The description of **19 new parasitic species**: *Syncuaria mackoi* Mutafchiev & Georgiev, 2008, a parasite of the black stork, *Ciconia nigra* (Ciconiiformes, Ciconidae) in Bulgaria and

Slovakia; *Cosmocephalus podicipis* Mutafchiev, Halajian & Georgiev, 2010, a parasite of the Great Grebe, *Podiceps cristatus*, and the Black-necked Grebe, *Podiceps nigricollis* (Podicipediformes, Podicipedidae) in Bulgaria and Iran; *Cosmocephalus pelecani* Mutafchiev, Halajian & Georgiev, 2010, parasite of *Pelecanus conspicillatus* (Pelecaniformes, Pelecanidae) in Australia; *Acuaria paraguayensis* Mutafchiev, Mariaux & Georgiev, 2011, a parasite of Sirystes sibilator (Passeriformes, Tyrannidae) from Paraguay; *Quazithelazia alata* Mutafchiev, Mariaux & Georgiev, 2014, a parasite of *Enicurus ruficapillus* (Passeriformes, Muscicapidae) in Malaysia; *Quazithelazia rostrata* Mutafchiev, Mariaux & Georgiev, 2014, described from the native kingfishers *Ceyx erithaca* and *Alcedo euryzona* (Coraciiformes, Alcedinidae) in Malaysia; *Proyseria petterae* Mutafchiev, Mariaux & Georgiev, 2014, described from the native kingfisher *Corythornis vintsioides* (Coraciiformes, Alcedinidae) in Madagascar; *Quasithelazia minuta* Mutafchiev, 2016, described from a native kingfisher *Todiramphus sanctus* (Coraciiformes: Alcedinidae) in Australia; *Quasithelazia pearsoni* Mutafchiev, 2016, described from the native kingfisher *T. sanctus* (Coraciiformes: Alcedinidae) in Australia; *Acuaria europaea* Mutafchiev, Mariaux & Georgiev, 2017 described from a woodpecker, *Oriolus oriolus* (Passeriformes, Oriolidae) and a Syrian woodpecker, *Dendrocopos syriacus* (Piciformes, Picidae), in Bulgaria; *Cylicospirura crocutae* Junker & Mutafchiev, 2013, parasite of spotted hyena from Zimbabwe; *C. pardalis* Junker & Mutafchiev, 2013, a leopard parasite from South Africa; *Cylicospirura phiri* Junker & Mutafchiev, 2024, found parasitizing spotted hyena in Zimbabwe and striped hyena in Cameroon; *Aprocta bainae* Mutafchiev & Kinsella parasitizing the eye sockets of *Psiloscops flammeolus* (Strigiformes: Strigidae) in the USA; *Ingwenascaris sprenti* Junker & Mutafchiev, 2017 from a Nile crocodile from South Africa; *Typhlophoros kwenae* Junker & Mutafchiev, 2017 from the stomach of a Nile crocodile in South Africa; *Micropleura huchzermeyeri* Junker & Mutafchiev, 2017 – body cavity parasite of the Nile crocodile; *Meteterakis saotomensis* Junker, Mariaux, Measey & Mutafchiev, 2015 - parasite of Saotom caecilian from the island of Sao Tome; *Mammalakis zambiensis* Junker, Lutermann & Mutafchiev, 2017 – a mole parasite in Zambia.

- ✓ The proposal of **23 new combinations**: *Pelecanema sirry* (Khalil, 1931) Mutafchiev & Georgiev, 2010; *Pelecanema pelecani* (Johnston & Mawson, 1942) Mutafchiev & Georgiev, 2010); *Parachordatortilis mathevossianae* (Petrov & Chertkova, 1950) Mutafchiev, Santoro & Georgiev, 2010; *Decorataria magnilabiata* (Molin, 1860) Mutafchiev & Georgiev, 2011; *Chabaudacuaria multispinosa* (Pérez Vigueras, 1938) Mutafchiev & Kinsella, 2012 for *Acuaria multispinosa* Pérez Vigueras, 1938; *Proyseria alcedonis* (Puqin, Yanyin & Guocal,

1991) Mutafchiev, Mariaux & Georgiev, 2014; *Quasithelazia multipapillata* (Zhang, 1993) Mutafchiev, Mariaux & Georgiev, 2014; *Quasithelazia halcyoni* (Ryzhikov & Khokhlova, 1964) Mutafchiev, Mariaux & Georgiev, 2014; *Stammerinema hyalinum* (von Linstow, 1890) Mutafchiev, Mariaux & Georgiev, 2014; *Syncuaria sagittata* (Rudolphi, 1809) Mutafchiev, Georgiev & Mariaux, 2020; *Cylicospirura lyncis* (Matschulsky, 1952) Junker & Mutafchiev, 2013 for *Petrowospirura lyncis*; *Cylicospirura petrowi* (Sadykhov, 1957) Junker & Mutafchiev, 2013 for *Petrowospirura petrowi*; *Cylicospirura barusi* (Arya, 1979) Junker & Mutafchiev, 2013; *Ingwenascaris asymmetrica* (Ortlepp, 1932) Junker & Mutafchiev, 2017; *Quasithelazia microcordonis* (Schmidt & Kuntz, 1971) Mutafchiev, Mariaux & Georgiev, 2014; *Sandnema digitatum* (Chandler, 1929) Bain, Mutafchiev, Junker, Guerrero, Martin, Lefoulon & Uni, 2015; *Sandnema sunci* (Sandground, 1933) Bain, Mutafchiev, Junker, Guerrero, Martin, Lefoulon & Uni, 2015; *Pseudabbreviata dessetae* (Barus & Tenora, 1976) Mutafchiev & Vergilov, 2023; *Physalopteroides singhi* (Deshmukh, 1969) Mutafchiev & Vergilov, 2023; *Physalopteroides brooki* (Deshmukh, 1969) Mutafchiev & Vergilov, 2023; *Physalopteroides aurangabadensis* (Deshmukh, 1969) Mutafchiev & Vergilov, 2023; *Physalopteroides syedi* (Deshmukh, 1969) Mutafchiev & Vergilov, 2023; *Physalopteroides hemidactylae* (Oshmarin & Demshin, 1972) Mutafchiev & Vergilov, 2023).

- ✓ The description and re-description of a number of parasitic species, genera and families. The development of **keys for the identification** of species of the genera *Cosmocephalus* Molin, 1858; *Acuaria* Bremser, 1811; *Streptocara* Railliet, Henry and Sisoff, 1912.

- ✓ The proposal of **synonyms**: New synonyms of 5 species of nematodes were proposed: *Cosmocephalus argentinensis* Boero & Led, 1970 – synonym of *C. obvelatus* (Creplin, 1825); *Acuaria buttnerae* Chabaud & Petter, 1961 – synonym of *A. skrjabini*; *Stammerinema rhopalocephala* (Sołtys, 1952) – synonym of *Stammerinema hyalinum* (von Linstow, 1890); *Streptocara indica* Fotedar & Chishti, 1974 – synonym of *S. crassicauda* (Creplin, 1829); *Schistogendra oligopapillata* Zhang & An, 2002 – synonym of *Streptocara formosensis* Sugimoto, 1930. Proposed synonymization of subfamily Seuratiinae and inclusion of related genera in subfamily Acuariinae.

I would like to note that the work done in this area is very precise. The results reflected in the publications are visualized by detailed drawings, and in most cases by electron microscopic photographs or are accompanied by molecular genetic analyses, which proves their categoricality.

Another part of Assoc. Prof. Mutafchiev's scientific contributions are the result of developments in the field of parasitic fauna and biology. The following stand out among them:

- ✓ Based on an integrative (morphological and molecular) approach, the intermediate host, *Gammarus pulex pulex*, in the life cycle of *Streptocara incognita* Gibson, 1968 (Spirurida: Acuariidae) has been revealed.

- ✓ A study of the nematode fauna of the Nile crocodile in Kruger National Park was conducted, resulting in the identification of 11 nematode species from the families Heterocheilidae, Micropleuridae, Camallanidae and Cystidicolidae. The species *Dujardinascaris dujardini* and *D. madagascariensis* were identified for the first time for the fauna of South Africa.

- ✓ A study was conducted on filarial nematodes of the family Onchocercidae (Spirurida), in which two cases of human filariasis caused by *Onchocerca lupi*, a parasite of dogs and wolves, were documented. As a result of the study, it was shown that *O. lupi* is the causative agent of ocular nematodoses in humans along with *Dirofilaria repens*. A clinical case of rare onchocerciasis in horses, caused by *Onchocerca boehmi* (Supperer, 1953) Bain et al., 1976 (Spirurida: Onchocercidae), was also documented. This is only the second report of the species in Europe after its description in Austria in 1956.

- ✓ As a result of experimental setups, the development of *Aelurostrongylus abstrusus* (Railliet, 1898), *Troglostrongylus brevior* Gerichter, 1949 and *Crenosoma vulpis* (Dujardin, 1845) in the common garden snail, *Cornu aspersum* (=Helix aspersa) was studied. *Cornu aspersum* was identified for the first time as a potential intermediate host for *T. brevior* and *C. vulpis*.

- ✓ The helminth fauna of four fish species in Atanasovsko Lake was studied: the invasive species of sunfish (*Lepomis gibbosus*), Caucasian pipefish (*Knipowitschia caucasica*), three-spined stickleback (*Gasterosteus aculeatus*) and short-snouted pipefish (*Syngnathus abaster*). A small number of specific parasites were found in the sunfish, compared to their number in the natural range of the host, which, according to the authors of the publication, supports the hypothesis of "freedom from enemies" and favors the successful invasion of the species. The species *Gyrodactylus arcuatus* and *Timoniella imbutiformis* are reported for the first time for the fauna of Bulgaria.

Proof of the importance of the results of Assoc. Prof. Mutafchiev's scientific work are the numerous citations of his publications. He has submitted a report on the citations in journals with impact factor or impact rank, with the exception of those with which he has applied for the academic position of "Associate Professor". The report shows that from 2008 to date, 41 of his publications have been cited a total of 339 times – a figure that indicates that interest in his scientific research is extremely high. The fact that the materials from the research have been published in high-quality international journals has also contributed to this great resonance. All publications with which Assoc. Prof. Mutafchiev is participating in the current competition have appeared in quartile journals, with the majority in quartile Q1 (9 issues), 8 in journals with Q3, 3 in those with Q4 and 2 – in those with Q2.

Participation in and management of scientific projects, pedagogical activities

Both the publication and project activities of Assoc. Prof. Mutafchiev show that he is communicative, has established a number of connections with foreign researchers and is a sought-after collaborator for scientific research work in Bulgaria and abroad. He has participated in 9 scientific research projects. Six of them are national and funded by the National Science Foundation, the Ministry of Education and Science and other state institutions, and three are international – one bilateral under the EBR with the Lithuanian Academy of Sciences, one - funded by the EU Seventh Framework Programme and one - funded by the Swiss SCIEX programme. He leads a national project funded by the National Science Fund, which began in 2023 and continues to this day.

Associate Professor Mutafchiev was the scientific consultant of Maria Kachamakova - a full-time PhD student, with a successfully defended dissertation in 2021 in the professional field 4.3. of Biological Sciences, scientific specialty "Ecology and Conservation of Ecosystems", with the topic: "Adaptation of the European sperm whale (Spermo philus citellus) during translocations of individuals in Bulgaria", and he advised the PhD student on the parasitological topic of the dissertation work. He also co-supervised a PhD student - Krasimir Bachvarov, who in 2017 defended his Master's thesis in "Parasitology" at the Department of "Zoology and Anthropology" of the Faculty of Biology of the University "St. Kliment Ohridski" in Sofia on the topic "Helminths of dogs kept under different conditions in the surroundings of Sofia and the neighbouring areas".

Scientific profile of the candidate's research

The documents submitted by Assoc. Prof. Mutafchiev for the competition show that he is an established specialist in the field of helminthology, particularly in the field of the fauna,

morphology, taxonomy, phylogeny and biology of zooparasitic nematodes. This is evidenced by the seven publications he has submitted as his habilitation thesis, as well as his other scientific works. His research is up to date, combines classical and modern working methods and makes fundamental contributions to parasitological science. The candidate's scientific research profile fully corresponds to the announced competition.

Notes and recommendations

I have a few notes that are of a technical nature and concern the reference to the contributions. For contribution 4, a reference is made to article 56, but it should be 55, for contribution 8, a reference is made to publication 17, but it should be 39. The species "*Cosmocephalus podicipis*" and "*Syncuaria mackoi*" and the combinations "*Sandnema digitatum*" and "*Ingwenascaris assymmetrica*" are incorrectly written as "*Cosmocephalus podicepsi*", "*Syncularia mackoi*", "*Sandnema digitata*" and "*Ingwenascaris assymmetricum*". The positive, which is the newly described genus *Ingwenascaris* Junker & Mutafchiev, 2017, should be added to the list of published taxonomic acts.

Conclusion

The applicant's scientific research work in the competition has a clearly defined profile. His scientific output is extensive, of high quality and of global significance. His scientometric indicators meet and even exceed the minimum state requirements, the requirements of the Bulgarian Academy of Sciences and the criteria of the Research Council of the Institute of Biodiversity and Ecosystem Research - BAS for filling the competitive position. These facts give me reason to vote positively for the election of Assoc. Prof. Dr Yasen Mutafchiev as "Professor" in the professional field 4.3. Biological Sciences, scientific speciality "Parasitology and Helminthology".

24.09.2025 Member of the scientific jury and reviewer:

Sofia /Assoc. Prof. Dr. M. Panayotova-Pencheva, PhD/