Вх.№ 1116/НО-05-06/02.12.2024 г.

REVIEW

by Associate Professor Dr Yasen Mutafchiev, IBER-BAS

for the appointment of an Associate Professor in the field “Biological Sciences” in scientific for the needs of the research group “Taxonomy, evolution and ecology of helminth parasites”, section “Biodiversity and Ecology of Parasites”, Department “Animal Diversity and Resources” at the IBER-BAS, advertised in the State Gazette, No. 66 on 6.08.2024

Dr Simona Gerogieva is the only applicant for the advertised position.

1. Career development of the applicant

Dr Georgieva graduated from the Faculty of Biology of the University of St. Kliment Ohridski" as a BSc in 2006 and as a MSc in "Parasitology" in 2008. I know the applicant from the time when he started working as a Biologist in the Central Laboratory of General Ecology at the BAS in 2005. In 2006. she was appointed as a Biologist and then as an Assistant at the Institute of Experimental Pathology and Parasitology - BAS. Subsequently, her research group became part of the Institute of Biodiversity and Ecosystem Research at the BAS (IBER). In 2011, she started pursuing her PhD on the theme "An integrative taxonomic approach to the study of trematode diversity and life-cycles in freshwater ecosystems” at the University of South Bohemia in České Budějovice, Czechia. She was awrade a PhD in 2015. with distinction and an award for outstanding scientific achievements.

Dr Georgieva continued her scientific career as a Postdoctoral Fellow in the Czech Republic (2015-2018), Spain (2018-2020) and Korea (2021-2023). Since 2020, she has been appointed as a biologist at the IBER.

2. Publications in the fields of the advertised position

Dr Georgieva has presented a total of 34 scientific papers in the competition, of which 11 are part of her dissertation, and with the remaining 23 she participated in the current competition for Associate professor. Among them 21 scientific journal articles are with Scopus Impact Factor (IF) and SJR, one journal article is without SJR or IF, there is also one book chapter presented.

All scientific works presented by Dr Georgieva are original contributions.

Although, I formally accept the applicant's reference to her scientific contributions, I believe that the approach used made some studies appear more than once without needing to. For example: Studies 1, 3, 10, 11, 19, 22 appear in both Part I "Contributions to species diversity, evolution and life cycles of the Trematoda using an integrative taxonomic approach" and Part II "Discovery on diversity of the Trematoda in extreme ecosystems". Along with contribution 2, which summarizes contributions to the genus *Diplostomum,* is also referenced paper #3, which is on the genus *Echinostoma*. Research paper #18 is also featured twice in the contributions. There are errors in referencing the contributions to the relevant scientific papers, for example: contribution 8 refers to scientific paper #34 of Faltýnková et al. (2017). Contribution 15 should be referenced to scientific paper #33, and not #22. The numbering of the copies of the scientific works provided does not follow that of the list of scientific works. Also, a copy of Faltýnková et al. (2017) was not provided.

In my opinion, a more appropriate approach to presenting scientific contributions would be to use the parasite taxonomy by family or order whenever possible. My reading of Dr. Georgieva's contributions, with an attempt to follow her structure, is:

Taxonomy, morphology and life cycle of the trematodes of the family семейство Echinostomatidae, references:

Georgieva, S., Faltýnková, A., Brown, R., Blasco-Costa, I., Soldánová, M., Sitko, J., Scholz, T. & Kostadinova, A. (2014). *Echinostoma* '*revolutum*' (Digenea: Echinostomatidae) species complex revisited: species delimitation based on novel molecular and morphological data gathered in Europe. *Parasites & Vectors*, 7, 520. [IF_{2014}=3.430] Q1; doi: https://doi.org/10.1186/s13071-014-0520-8

Georgieva, S.*, Selbach, C.*, Faltýnková, A., Soldánová, M., Sures, B., Skírnisson, K. & Kostadinova, A. (2013). New cryptic species of the '*revolutum*' group of *Echinostoma* (Digenea: Echinostomatidae) revealed by molecular and morphological data. *Parasites & Vectors*, 6, 64. [IF_{2013}=3.251] Q1 (*equal contributors); doi: https://doi.org/10.1186/1756-3305-6-64

Faltýnková, A., Georgieva, S., Soldánová, M. & Kostadinova, A. (2015). A re-assessment of species diversity within the '*revolutum*' group of *Echinostoma* Rudolphi, 1809 (Digenea: Echinostomatidae) in Europe. *Systematic Parasitology*, 90, 1–25. [IF_{2015}=1.316] Q3; doi: https://doi.org/10.1007/s11230-014-9530-3

Georgieva, S., Kostadinova, A. & Skírnisson, K. (2012). The life-cycle of *Petasiger islandicus* Kostadinova & Skirnisson, 2007 (Digenea: Echinostomatidae) elucidated with the aid of molecular data. *Systematic Parasitology*, 82, 177–183. [IF_{2012}=1.260] Q3; doi: https://doi.org/10.1007/s11230-012-9354-y

Selbach, C., Soldánová, M., Georgieva, S., Kostadinova, A., Kalbe, M. & Sures, B. (2014). Morphological and molecular data for larval stages of four species of *Petasiger* 1909 (Digenea: Echinostomatidae) with an updated key to the known cercariae from the Palaearctic. *Systematic Parasitology*, 89, 153–166. [IF_{2014}=1.336] Q3; doi: https://doi.org/10.1007/s11230-014-9513-4

Georgieva, S.**, Blasco-Costa, I. & Kostadinova, A. (2017). Molecular characterisation of four echinostomes (Digenea: Echinostomatidae) from birds in New Zealand, with descriptions of *Echinostoma novaezealandense* n. sp. and *Echinoparyphium poulini* n. sp. *Systematic Parasitology*, 94, 477–497. [IF_{2017}=1.181] (**corresponding author) Q3; doi: https://doi.org/10.1007/s11230-017-9712-x

Taxonomy, systematics and life cycles of the trematodes of the family Diplostomidae, references:

Georgieva, S., Soldánová, M., Pérez-del-Olmo, A., Dangel, D. R., Sitko, J., Sures, B. & Kostadinova, A. (2013). Molecular prospecting for European *Diplostomum* (Digenea: Diplostomidae) reveals cryptic diversity. *International Journal for Parasitology*, 43, 57–72. [IF_{2013}=3.404] Q1; doi: https://doi.org/10.1016/j.ijpara.2012.10.019

Stoyanov, B.*, Georgieva, S.*, Pankov, P., Kudlai, O., Kostadinova, A., Georgiev, B.B. (2017). Morphology and molecules reveal the alien *Posthodiplostomum centrarchi* Hoffman, 1958 as the third species of *Posthodiplostomum* Dubois, 1936 (Digenea: Diplostomidae) in Europe. *Systematic Parasitology*, 94(1): 1–20. [IF_{2017}=1.181] Q3 (*equal contributors); doi: https://doi.org/10.1007/s11230-016-9680-6

Pérez-del-Olmo, A.*, Georgieva, S.*, Pula, H. & Kostadinova, A. (2014). Molecular and morphological evidence for three species of *Diplostomum* (Digenea: Diplostomidae), parasites of fishes and fish-eating birds in Spain. *Parasites & Vectors*, 7, 502. [IF_{2014}=3.430] (*equal contributors) Q1; doi: https://doi.org/10.1186/s13071-014-0502-x

Selbach, C., Soldánová, M., Georgieva, S., Kostadinova, A., & Sures, B. (2015). Integrative taxonomic approach to the cryptic diversity of *Diplostomum* spp. in lymnaeid snails from Europe with a focus on the "*Diplostomum mergi*" species complex. *Parasites & Vectors*, 8:300. [IF_{2015}=3.234] Q1; doi: https://doi.org/10.1186/s13071-015-0904-4

Schwelm, J.*, Georgieva, S.*, Grabner, D., Kostadinova, A., & Sures, B. (2021). Molecular and morphological characterisation of *Diplostomum p*hoxini (Faust, 1918) with a revised classification and an updated nomenclature of the species-level lineages of *Diplostomum* (Digenea: Diplostomidae) sequenced worldwide. *Parasitology* 1–17. [IF_{2021}=3.243] Q2 (*equal contributors); doi: https://doi.org/10.1017/S0031182021001372

Faltýnková, A., Georgieva, S., Kostadinova, A., Blasco-Costa, I., Scholz, T. & Skírnisson, K. (2014). *Diplostomum* von Nordmann, 1832 (Digenea: Diplostomidae) in the sub-Arctic: descriptions of the larval stages of six species discovered by morphological and molecular analyses. *Systematic Parasitology*, 89, 195–213. [IF_{2014}=1.336] Q3; doi: https://doi.org/10.1007/s11230-014-9517-0

Blasco-Costa, I., Faltýnková, A., Georgieva, S., Skírnisson, K., Scholz, T. & Kostadinova, A. (2014). Fish pathogens near the Arctic Circle: molecular, morphological and ecological evidence for unexpected diversity of *Diplostomum* (Digenea: Diplostomidae) in Iceland. *International Journal for Parasitology*, 44, 703–715. [IF_{2014}=3.872] Q1; doi: https://doi.org/10.1016/j.ijpara.2014.04.009

Kudlai, O., Oros, M., Kostadinova, A., Georgieva, S. (2017). Exploring the diversity of *Diplostomum* (Digenea: Diplostomidae) in fishes from the River Danube using mitochondrial DNA barcodes. *Parasites & Vectors*, 10: 592. [IF_{2017}=3.294] Q1; doi: https://doi.org/10.1186/s13071-017-2518-5

Stoyanov, B.*, Georgieva, S.*, Pankov, P., Kudlai, O., Kostadinova, A., Georgiev, B.B. (2017). Morphology and molecules reveal the alien *Posthodiplostomum centrarchi* Hoffman, 1958 as the third species of *Posthodiplostomum* Dubois, 1936 (Digenea: Diplostomidae) in Europe. *Systematic Parasitology*, 94(1): 1–20. [IF_{2017}=1.181] Q3 (*equal contributors); doi: https://doi.org/10.1007/s11230-016-9680-6

Chibwana, F. D., Blasco-Costa, I., Georgeiva, S., Hosea, K. M., Nkwengulila, G., Scholz, T. & Kostadinova, A. (2013). A first insight into the barcodes for African diplostomids (Digenea: Diplostomidae): Brain parasites in *Clarias gariepinus* (Siluriformes: Clariidae). *Infection, Genetics & Evolution*, 17, 62–70. [IF_{2013}=3.264] Q1; doi: https://doi.org/10.1016/j.meegid.2013.03.037

Taxonomy of the trematodes of Lepidapedidae, references:

Pérez-del-Olmo, A. *, Dallarés, S. *, Georgieva, S. *, Constenla, M., Kostadinova, A., & Carrassón, M. (2019). Species of *Lepidapedon* Stafford, 1904 (Digenea: Lepidapedidae) from deep-sea fishes in the Western Mediterranean: molecular and morphological evidence. *Systematic Parasitology*, 2, 149–169. [IF_{2019}=1.047] Q3 (*equal contributors); doi: https://doi.org/10.1007/s11230-019-09845-z

Life cycles and evolution of the trematodes of Schistosomatidae (Trematoda), reference:

Khosravi, M., Thieltges, D.W., Shamseddin, J., & **Georgieva, S.** (2022). Schistosomes in the Persian Gulf: novel molecular data, host associations, and life-cycle elucidations. *Scientific Reports*, 12:13461. [IF_{2022}=4.6] Q1 https://doi.org/10.1038/s41598-022-17771-2

Taxonomy of the trematodes of Hemiuridae, reference:

Marzoug, D., Rima, M., Boutiba, Z., Georgieva, S., Kostadinova, A. & Pérez-del-Olmo, A. (2014). A new species of Saturnius Manter, 1969 (Digenea: Hemiuridae) from Mediterranean mullet (Teleostei:

Mugilidae). Systematic Parasitology, 87, 127–134. [IF2014=1.336] Q3; doi: https://doi.org/10.1007/s11230-013-9468-x

Taxonomy of the trematodes of Heterophyidae, reference:

Hernández-Orts, J. S., Georgieva, S., Landete, D. N., & Scholz, T. (2019). Heterophyid trematodes (Digenea) from penguins: A new species of *Ascocotyle* Looss, 1899, first description of metacercaria of *Ascocotyle* (*A.*) *patagoniensis* Hernández-Orts et al. (2012), and first molecular data. Int*ernational Journal for Parasitology: Parasites and Wildlife*, 8, 94–105. [IF_{2019}=1.923] Q1; doi: https://doi.org/10.1016/j.ijppaw.2018.12.008

Taxonomy of the trematodes of Brachycladiidae, reference:

Kim, S.**, Heejeong, Y., Lee, K., Lee., H., Kim, MJ., Kang, Y., Choe, S**., Georgieva, S.**(2023). Novel morphological and molecular data for *Nasitrema* spp. (Digenea: Brachycladiidae) in the East Asian finless porpoise (*Neophocaena asiaeorientalis sunameri*). *Frontiers in Marine Science* 10: 1187451 [IF_{2023}=2.8] Q1; (*corresponding authors) http://doi: 10.3389/fmars.2023.1187451

Taxonomy of the trematodes of Opecoelidae, reference:

Antar, R., Georgieva, S., Gargouri, L., & Kostadinova, A. (2015). Molecular evidence for the existence of species complexes within *Macvicaria* Gibson & Bray, 1982 (Digenea: Opecoelidae) in the western Mediterranean, with descriptions of two new species. *Systematic Parasitology*, 91, 211–229. [IF_{2015}=1.316] Q3; doi: https://doi.org/10.1007/s11230-015-9577-9

Diversity of the trematodes of the families Notocotylidae, Renicolidae, Gorgocephalidae and Philophthalmidae in the sea gastropod *Austrolittorina unifasciata*, reference:

O'Dwyer, K., Faltýnková, A., Georgieva, S., & Kostadinova, A. (2015). An integrative taxonomic investigation of the diversity of digenean parasites infecting the intertidal snail *Austrolittorina unifasciata* Gray, 1826 (Gastropoda: Littorinidae) in Australia. *Parasitology Research*, 114, 2381–2397. [IF_{2015}=2.027] Q2; doi: https://doi.org/10.1007/s00436-015-4436-9

Taxonomy of the trematodes of Cryptogonimidae, reference:

Kmentová, N. Bray, R. A., Koblmüller, S., Artois, T., De Keyzer, E. L. R., Gelnar, M., Vanhove, M. P. M., & Georgieva, S. (2020). Uncharted digenean diversity in Lake Tanganyika: cryptogonimids infecting endemic lates perches. *Parasites & Vectors*, 13:221. [IF_{2020}=3.876] Q1; doi: https://doi.org/10.1186/s13071-020-3913-x

Taxonomy of the trematodes of Aporocotylidae, reference:

Palacios-Abella, J. F., Georgieva, S., Mele, S., Raga, J. A., Isbert, W., Kostadinova, A., Montero, F. E. (2017). *Skoulekia erythrini* n. sp. (Digenea: Aporocotylidae): a parasite of *Pagellus erythrinus* (L.) (Perciformes: Sparidae) from the western Mediterranean with an amendment of the generic diagnosis. *Systematic Parasitology*, 94, 669–688 [IF_{2017}=1.181] Q3; doi: https://doi.org/10.1007/s11230-017-9733-5

Diversity and evolution of the trematodes from the families Hemiuridae, Opecoelidae of fishes in the Southern Ocean, reference:

Faltýnková, A., Georgieva, S., Kostadinova, A., & Bray, R. A. (2017). Biodiversity and evolution of digeneans of fishes in the Southern Ocean. In: Klimpel, S., Kuhn, T.& Mehlhorn, H. (Eds), *Biodiversity and evolution of parasitic life in the Southern Ocean. Parasitology Research Monographs*. Switzerland: Springer International Publishing, pp. 49–74. doi: https://doi.org/10.1007/978-3-319-46343-8_5

Lectin binding carbohydrate interactions on the surface of larvae of *Fasciola hepatica* (Fasciolidae), reference:

Georgieva, K., Georgieva, S., Mizinska, Y. & Stoitsova, S. R. (2012). *Fasciola hepatica* miracidia: Lectin binding and stimulation of *in vitro* miracidium-to-sporocyst transformation. *Acta Parasitologica*, 57, 46–52. [IF_{2012}=1.000] Q4; doi: https://doi.org/10.2478/s11686-012-0007-8

Taxonomy and biology of the acanthocephalans, references:

Hernández-Orts, J., Brandão, M., Georgieva, S., Raga, J., Crespo, E., Luque, J., & Aznar, F. (2017). From mammals back to birds: Host-switch of the acanthocephalan *Corynosoma australe* from pinnipeds to the Magellanic penguin *Spheniscus magellanicus*. *Plos One*, 12, e0183809. [IF_{2017}=2.766] Q2; doi: https://doi.org/10.1371/journal.pone.0183809

Taxonomy and phylogeny of monogeneans, reference:

Víllora-Montero, M., Pérez-del-Olmo, A., Georgieva, S., Raga, J. A., & Montero, F. E. (2020). Considerations on the taxonomy and morphology of *Microcotyle* spp.: Redescription of *M. erythrini* van Beneden & Hesse, 1863 (Monogenea: Microcotylidae) and the description of a new species from *D. dentex* (L.) (Teleostei: Sparidae). *Parasites & Vectors*, 13:45. [IF_{2020}=3.876] Q1; doi: https://doi.org/10.1186/s13071-020-3878-9

Lablack L., Rima, M., Georgieva, S., Marzoug D., & Kostadinova, A. (2022). Novel molecular data for monogenean parasites of sparid fishes in the Mediterranean and a molecular phylogeny of the Microcotylidae Taschenberg, 1879. *Current Research in Parasitology & Vector-Borne Diseases*, 2, 100069. https://doi.org/10.1016/j.crpvbd.2021.100069

4. Significance of the conducted research (citations, publications in prestigious journals, awards, membership)

According to the presented documents, Dr Georgieva's scientific works have been cited 704 times, from which 678 citations are in international journals with an impact factor, which is indicative of the significance of her contributions. Her research articles include 15 publications (43%) in Q1 journals, 3 articles in Q2 journals, 13 publication (38%) in Q23 and one paper in Q4 journal. The thirteen articles published in Q3 journals are in Systematic Parasitology, which is an esteemed showcase in the field of parasite taxonomy. Dr Georgieva is a member of the Editorial Boards of the Journal of Helminthology and Biodiversity Data Journal, as well as, is a member of the following scientific societies: The Systematics Association, The American Society of Parasitologists, The Genetics Society, The Society for the Study of Evolution, The Korean Society for Parasitology and Tropical Medicine.

4. Most significant applied science contributions

Dr Georgieva's contributions are primarily of a fundamental and cannot be defined applied science contributions. In the future, they can form the basis of applied science activities - identification of parasites of hosts with economic and environmental importance, discovery the paths of infection, etc.

5. Demonstrated skills and abilities for leading scientific projects

Dr Georgieva has worked on dozens of projects, most of them with multinational teams. In addition, Dr Georgieva has received multiple personal grants for conducting scientific research, the most significant being the post-doctoral long-term visits as a researcher at the University of Valencia (2018-2020) and at the Chungbuk National University (2021-2023). Evidence of her ability to lead scientific research is also the successful graduations of her students (PhD, Masters and Bachelors), as well as her role as senior or corresponding author of 5 scientific publications.

6. Role of the applicant for the training of young scientists and researchers

Dr Georgieva was the co-supervisor of two successfully defended PhD students:

- Dr Maral Khosravi defended in 2023 her thesis on "Trematode parasites of mollusc hosts from marginal seas and their sensitivity to warming" at the Christian-Albrecht University of Kiel - Leaders: Martin Wahl (Marine Ecology), David Thieltges (Parasite Ecology), S. Georgieva (Parasite Taxonomy and Phylogenetics);

- Dr Naraiana Taborda defended in 2020 her thesis on "Biodiversity of Diplostomoidea (Trematoda: Digenea: Diplostomida) in freshwater fish in Brasil: an integrative approach" at the Federal Rural University of Rio de Janeiro in Seropedica, Brazil - supervisors: J. L. Luque, S. Georgieva

Dr. Georgieva also supervised two master's theses at the University of Valencia, during the period 2019-2020, on the parasites of two Mediterranean fish species; she was the co-supervisor of two Master students (defended in 2017 and 2018) and one Bachelor student (defended in 2011) at the University of South Bohemia.

7. Expertise of the applicant

Dr Simona Georgieva's research is focused on the taxonomy, systematics and biology (life cycles, diversification, host specificity) of parasitic worms and in particular trematodes with an aquatic life cycle of the subclass Diginea. The approach used in her scientific works is integrated and uses both morphological and molecular methods. It is noteworthy that the morphological data are with attention to detail, and at least two gene markers are used in the molecular analyses. The results obtained from these two approaches are often analyzed together with ecological data, thus the contributions of her research are complex and in-depth. From the authors contributions, provided in her research articles, is clear that Dr Georgieva has a leading role in molecular studies and analyses, as well as in the morphological development of the material. Without a doubt, she is a experience scientist with a well-defined profile, who has worked in collaboration with renown specialists in trematode taxonomy and systematics.

8. Conclusion

The documents submitted by the applicant meet the requirements of the Regulations for the Implementation of The Law on the Development of the Academic Staff in the Republic of Bulgaria and the Regulations for the Terms and Conditions for the Acquisition of Scientific Degrees and for the Occupancy of Academic Positions at IBER-BAS. Therefore, I support and recommend the Scientific Scientific Council of IBER-BAS the appointment of Dr Georgieva as an Associate Professor a at the section “Biodiversity and Ecology of Parasites” – IBER-BAS.

Sofia 2.12.2024 Reviewer:

(Assoc. Prof. Dr Yasen Mutafchiev)