EVALUATION REPORT

by

Prof. Dr. Rositsa Ivanova Kurdova-Mincheva, DM, scientific specialty "Parasitology and Helminthology", member of the Scientific Jury, appointed by Order No. RD-269/23.07.2025 of the Rector of Burgas University "Prof. Dr. Asen Zlatarov", for the competition for the academic position of "Associate Professor", in the field of higher education 4. Natural Sciences, Mathematics and Informatics, professional field 4.3. Biological Sciences, in the academic discipline "Genetics", for the needs of Burgas University "Prof. Dr. Asen Zlatarov", as announced in the State Gazette, issue 42/23.05.2025, with sole candidate Assistant Professor Miglena Antonova Koprinarova-Angelova.

I hereby declare that I have no conflict of interest with the candidate in the selection procedure for the position of Associate Professor.

The submitted documents and materials of Assistant Professor Miglena Antonova Koprinarova-Angelova fully comply with the requirements of the Law on the Development of Academic Staff in the Republic of Bulgaria, the relevant rules for its application, and the internal regulations of Burgas University "Prof. Dr. Asen Zlatarov".

Career Development

Assistant Professor Miglena Koprinarova-Angelova graduated in 1992 with a Master's degree in Cell Biology and Developmental Biology at the Faculty of Biology of Sofia University "St. Kliment Ohridski," and in 2008 she obtained the scientific degree Doctor of Molecular Genetics at the Institute of Molecular Biology, Bulgarian Academy of Sciences. She has worked as a research associate, assistant, Assistant Professor, head of a group and projects in the Department of "Molecular Biology of the Cell Cycle," Department of "Molecular Genetics of Yeasts," Institute of Molecular Biology, Bulgarian Academy of Sciences (1992–2023); head of laboratory at Eurofins Scientific, Eurofins HOS Testing Bulgaria EOOD – Food Testing, in the period 2017–2021; and from 2013 to 2016 she worked in a private molecular medical-diagnostic laboratory "Genica." Since 2021, she is a manager for Bulgaria at RhineGene – Molecular Diagnostics. From 2020 to 2024, she has been a lecturer and author of a course in Nutrigenomics at the University of Food Technologies in Plovdiv.

The stated facts demonstrate a wide range of professional knowledge and skills of the candidate in the field of molecular genetics. She has further enhanced her qualifications by defending her doctoral dissertation titled "Dynamics of histone H4 acetylation and DNA interstrand crosslinks repair during the cell cycle" and by completing 7 specializations abroad and participating in 21 certified courses for postgraduate qualification in Bulgaria.

In the academic and professional biography of Assistant Professor Miglena Koprinarova, as well as in the attached recommendations from well-known Bulgarian scientists, a wide set of modern molecular-biological, microbiological, immunological, histo- and physicochemical, and radiological methods is highlighted, which she masters and applies.

Analysis of Scientific Research Activity

For her participation in the selection procedure for the position of Associate Professor, the candidate presented a list of 23 scientific works. These include 2 monographs, 10 articles in peer-reviewed scientific journals with an impact factor, 2 publications as abstracts in peer-reviewed scientific journals with an impact factor (quartile Q1), 3 articles in peer-reviewed scientific journals without an impact factor, 1 article in a non-refereed scientific journal, 2 articles in congress proceedings and scientific forums, and 3 articles in peer-reviewed scientific journals with an impact factor related to the dissertation work. All scientific works, except for the two monographs and one article, are in English.

Assistant Professor Miglena Koprinarova is the sole author of the two monographs, lead author of 11 publications, and second author of 5, which indicates her direct involvement in planning and conducting the scientific research, as well as preparing and publishing the results. She is the third author of 1 article and a subsequent author of 4.

The cumulative impact factor of the journals is 41.98.

The candidate's scientific works have received international recognition from other research teams, published in many prestigious journals around the world. The citation record according to Google Scholar is 320 citations, according to Web of Science – 197 citations. The documents submitted for the selection procedure present 75 citations in refereed scientific journals indexed in Web of Science and Scopus, which proves the candidate's international recognition. It is noteworthy that three of the publications with M. Koprinarova as the lead author have been cited in 19, 16 and 17 reputable journals.

During the period 2003–2019, she participated in the development of 20 research projects, of which 6 were international and 8 national, and she was the leader of 6 of them, which testifies to the to the candidate's exceptional research activity.

She was a reviewer for the prestigious journals *Current Topics in Medicinal Chemistry* (journal rank Q2) and *Comptes rendus de l'Académie Bulgare des Sciences* (journal rank Q2).

Evaluation of the Contributions of the Scientific Research Activity

Milena Koprinova's main areas of research are related to the theme of the competition. Her main contributions can be summarised as follows:

1. The molecular mechanisms by which sodium butyrate ($C_4H_7NaO_2$) sensitises cancer cells to cytotoxic and genotoxic agents have been investigated. An increase in the sensitivity of cancer cells to the antitumour agent cisplatin has been demonstrated. The in vitro and in vivo results contribute to the optimisation of therapeutic strategies and to an increase in the effectiveness of cisplatin, while at the same time providing an opportunity to reduce therapeutic doses in order to limit drug toxicity. The potential of HDAC inhibitors, such as butyrate, to serve as sensitising agents in combination antitumour therapies involving UV irradiation has been revealed.

It has been established that sodium butyrate inhibits both mechanisms for repairing double-strand breaks in DNA – NHEJ and HR, which leads to a significant increase in the radiosensitivity of tumour cells and enhances the therapeutic effect of radiotherapy through epigenetic modulation.

A new concept for stimulating endogenous butyrate production has been formulated and its beneficial effect on human health has been argued.

2. The role of histone H4 acetylation in cell cycle progression and cell cycle arrest has been investigated, and it has been found that histone H4 acetylation constitutes part of an epigenetic code that determines the functional activities of specific chromatin regions.

3. Experimental evidence has demonstrated that NH_2 PS-NPs induce an epigenetic response in human cells, including changes in the levels of histone H3K9 acetylation — a marker of altered gene expression and cellular homeostasis — highlighting the importance of epigenetic monitoring in the evaluation of nanoparticles.

4. Changes in the degree of promoter DNA methylation of target genes during the progression of type 2 diabetes mellitus and cervical dysplasia have been analysed. An association has been identified between the progression of type 2 diabetes mellitus and the DNA methylation status of specific genes. Alterations in the DNA methylation status of promoter regions of genes associated with the progression of cervical dysplasia caused by human papillomavirus have also been detected, indicating the role of their epigenetic inactivation in oncogenesis and suggesting potential epigenetic markers for the diagnosis and prognosis of the disease.

5. The molecular pathogenesis of spontaneous abortions has been investigated. Increased angiogenesis has been observed in spontaneous abortions without foetal aneuploidy compared with control tissues, supporting the discovery and application of new therapeutic approaches.

6. The molecular mechanisms underlying the antiangiogenic activity and the antitumour properties of the phyto-hydroxyanthraquinone aloe-emodin have been investigated. The results obtained may contribute to the evaluation of the antiangiogenic and antitumour properties of this natural compound and support its potential future clinical application in drugs containing AE.

7. The increased export of proteins, as well as the relationship between DNA replication and the repair of interstrand crosslinks in DNA, has been investigated in temperature-sensitive mutants of *Saccharomyces cerevisiae*. As a result of the study, *S. cerevisiae* mutants exporting proteins with potential practical applications in the biotechnology industry have been selected and characterised.

Participation in Teaching Activities

Assistant Professor Miglena Koprinarova created and lead a course of *Nutrigenomics and Personalised Nutrition*, which is included in the curriculum of the *Food, Nutrition and Dietetics* programme at the Master's degree with professional qualification: Nutritionist, with a duration of two semesters at the University of Food Technologies in Plovdiv. The course is conducted according to a curriculum developed by the candidate and approved by the Rector

of the University, including 30 academic hours of lectures, 30 hours of practical sessions and seminars, and concludes with an exam.

Under the supervision of Miglena Koprinarova, three students prepared and successfully defended their theses with excellent grades at Sofia University "St. Kliment Ohridski".

Conclusion

According to the minimum national requirements for acquiring the academic position of "Associate Professor," a minimum of 400 points is required from the candidate. According to the requirements of the State University "Prof. Asen Zlatarov"- 550 points, Miglena Koprinarova exceeds this minimum with a total of 604 points.

During her participation in the competition for the academic position of "Associate Professor", Mrs. Koprinarova presented substantial scientific production in the area of molecular genetics, meeting the criteria for independent scientific contributions. Her participation and leadership in numerous international and national scientific research projects, as well as her engagement in international forums and conferences, demonstrate that she is an established and recognized scientist.

Her pedagogical expertise is demonstrated through the preparation and teaching of an independent course at the University of Food Technologies in Plovdiv, as well as the successful supervision of students.

The presented scientific works and contributions fully meet the scientific criteria of the Higher Attestation Commission and the internal regulations of Burgas University "Prof. Dr. Asen Zlatarov" for acquiring the academic position of "Associate Professor." This gives me the confidence as a member of the Scientific Jury to vote in favor of awarding the academic position of "Associate Professor" in the field of Natural Sciences, Mathematics and Informatics, professional field Biological Sciences, in the scientific specialty "Genetics," at Burgas University "Prof. Dr. Asen Zlatarov" to Miglena Antonova Koprinarova-Angelova.

26.09.2025

Sofia

Prof. Rositsa Kurdova-Mincheva, DM