

OPINION

By: Assoc. Prof. Yordanka Georgieva Gluhcheva, Institute of Experimental Morphology, Pathology and Anthropology with Museum – BAS, determined by Order No ПД 38-279/07.06.2022 of Prof. Anastas Gerdjikov - Rector of Sofia University “St. Kliment Ohridski”

Regarding: the competition for the academic position “Associate Professor” in the professional field 4.3 Biological sciences (Biochemistry) published in SG issue 30/15.04.2022 for the needs of the Faculty of Biology, Sofia University “St. Kliment Ohridski”

Assist. Prof. Kirilka Stefanova Mladenova, PhD is the only candidate in the present competition for the academic position “Associate Professor” in professional field 4.3 Biological sciences (Biochemistry) published in State Gazette issue 30/15.04.2022. The presented documents are precise and in compliance with the requirements of the Law for Development of the Academic Staff in the Republic of Bulgaria and the regulations for its implementation.

Assessment of academic and career development

Kirilka Stefanova Mladenova obtained her BSc degree in 2011 and MSc degree in 2013 at Sofia University “St. Kliment Ohridski” with a specialty in Biology, master’s program in Cell biology and pathology. In 2017 she became a PhD following a successful defense of her doctoral thesis on: “Interactions of the protein bestrophin-1 with model membrane structures and its behavior in eukaryotic cells” in professional field 4.3 Biological sciences (Molecular biology – cell polarization and membranes) at the Faculty of Biology, Sofia University “St. Kliment Ohridski”. Since 2015 Dr. Mladenova is an Assistant and Assistant Professor, respectively at the Department of Biochemistry in the Faculty of Biology, Sofia University “St. Kliment Ohridski”.

Dr. Mladenova organizes and delivers lectures, seminars with students from different faculties of Sofia University, summer practical course with BSc and MSc students and extracurricular activities. She has supervised several successfully defended bachelor’s and master’s thesis. In parallel with her academic activity Kirilka Mladenova carries out administrative and research work, participating in 14 scientific projects with national and international funding. She has coordinated 2 research projects financed by Sofia University Science fund.

Assessment of works

In the present competition Assist. Prof. Kirilka Mladenova has submitted 17 scientific works, published in referenced and indexed journals in Scopus and/or Web of Science (WoS), one of which is a chapter from a book. In 9 publications Dr. Mladenova has a leading position (1st or 2nd author) which shows her leading contribution in the investigations. The total scientific works is 31, three of which are part of her PhD thesis.

The research activity of the candidate encompasses interdisciplinary studies in the fields of biochemistry, molecular biology, biocatalysis, biophysical chemistry and cell biology and the contributions based on her scientific works are in the following main fields:

- **Physicochemical characterization of the transmembrane protein bestrophin (hBest1)**

Dr. Kirilka Mladenova's work in this field is a continuation of her doctoral thesis. The original studies and obtained for the first time data by Bulgarian research group about the structure, expression and properties of the transmembrane protein bestrophin-1 show the national and worldwide significance of Dr. Kirilka Mladenova's work.

- **Investigation of the biological properties of nanoparticles**

The biological properties of different nanoparticles based on polyethylenamin and hybrid block copolymers have been studied. Significant contribution is the development of biocompatible, non-toxic, enzyme-stable nanoparticles with increased cellular uptake. These original results along with the established mechanisms for nanoparticle penetration into the cells are of significant importance for nanomedicine.

- **In vitro studies of the effects of biologically active substances on different cell lines**

The obtained new data about the properties of different biologically active substances isolated from plant and/or animal species are of importance for pharmacology, dermatology and oncology. The ability of the substances to affect *in vitro* cellular membrane of normal and tumor cells is determined in indisputable manner.

The multidisciplinary profile of Dr. Kirilka Mladenova's work has generated original, fundamental and applied scientific data that are of significant importance for ophthalmology, oncology, dermatology and pharmacology. The results are published in prestigious international scientific journals and presented at various international scientific meetings.

Dr. Mladenova's scientific papers have been cited 31 times (excluding self-citations) in journals indexed in Scopus and WoS and another 6 times in other data bases. This indicates the high quality of the publications and the significance of the conducted studies.

Scientometric analysis

The candidate has presented 17 publications in referenced and indexed in Scopus and/or WoS. Seven of the articles are published in Q1 journals, 4 in Q2, 3 – in Q3, 2 in Q4 and one is a chapter in book. The scientometric analysis shows that Dr. Kirilka Mladenova has 104 points for indicator B and 226 points for indicator G which exceed the required minimum according to the national Legislation and Regulations. The points for citations (62) found in Scopus and/or WoS also exceed the required minimum.

In 2017 Dr. Kirilka Mladenova received the “Women in Science” award for her scientific achievements. The award is a joint initiative of L'Oréal and UNESCO.

Conclusion

Based on the presented documents, I believe that Assis. Prof. Kirilka Mladenova, PhD is a prominent and promising researcher in the field of Biochemistry. On the basis of the obtained data for the structure, biological properties and mechanisms of action of bestrophen and different biologically active substances, original contributions of fundamental and applied significance are obtained. They aim development of new therapeutic strategies for the treatment of different socially significant diseases in regards to improving health and quality of life. Dr. Mladenova demonstrates active project activity which proves her ability to collaborate and work in a team. She carries out joint interdisciplinary studies with chemists, medical doctors and pharmacutists which corresponds to the modern trends in the development of biomedicine. The Scientometric

analysis shows that the candidate fully meets the requirements of the legislation in the Republic of Bulgaria and the Regulations on the Minimum Requirements and I recommend Assis. Prof. Kirilka Mladenova, PhD to be elected “Associate Professor” in the professional field 4.3 Biological Sciences (Biochemistry) for the needs of the Faculty of Biology, Sofia University “St. Kliment Ohridski”.

Date: 11.08.2022 г.

(Assoc. Prof. Yordanka Gluhcheva, PhD)