

БЪЛГАРСКА АКАДЕМИЯ НА НАУКИТЕ  
ИНСТИТУТ ЗА ЕКСПЕРИМЕНТАЛНА МЕДИЦИНА  
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СОФИЯ

To

The chairman of the scientific jury,  
determined by Order № I-39 / 23.04.21.  
of the Director of IMicB, BAS

**Attached I present: Review**  
**in a competition for the academic position of "Associate Professor"**  
**in the scientific specialty "Immunology",**  
**announced for the needs of IMicB-BAS**  
**in SG issue: 20, dated 09.03.2021.**

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**Scientific specialty: "Immunology"**  
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**The review is compiled in accordance with the requirements of LDACRB and Section III /  
Section IV of RILDACRB - Conditions and procedure for holding the academic position of  
"Associate Professor" / "Professor"**

## REVIEW

in a competition for the Academic position of "Associate Professor" in the professional field 4.3. Biological Sciences, Scientific specialty: "Immunology", announced in SG issue: 20, dated 09.03.2021, IMicB - BAS

by Prof. Krassimira Todorova-Hayrabedyan, Ph.D., DSc  
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### I. Analysis of the candidate's career profile.

Ch. Assistant Professor Nikolina Mihaylova Mihaylova is the only candidate in the competition. She has completed a master's program in "Cell Biology and Pathology" at the Faculty of Science at Sofia University "St. Kliment Ohridski " in 2005. She started working as a specialist at the Stefan Angelov Institute of Microbiology in 2003, preparing her dissertation on the topic: "Suppression of the activity of the autoimmune disease systemic lupus erythematosus with a chimeric molecule binding to an inhibitory b-cell receptor". In 2005 she has started her doctoral studies in the Department of Immunology, Institute of Microbiology "Stefan Angelov" - BAS with supervisor: Prof. Chavdar Vassilev, with the topic of her doctoral dissertation: "Immunomodulatory activity of new experimental IgM and IgG preparations", successfully defended with a diploma in 2009. In 2007 she specialized in flow cytometry (FACS), immunoprecipitation and cellular signaling at the INSERM Institute, Paris, France in the laboratory of Dr. Srinivasa Kaveri. Since 2008 she has held the academic position of Chief Assistant at IMicB.

### II. General description of the submitted materials in the competition.

The materials presented in the competition are well arranged and reflect the requirements of the Law and the Regulations for the implementation of the law for the development of the academic staff in the Republic of Bulgaria, as the materials are presented in both paper and electronic media. The overall history and production of Ch. Assistant Professor N. Mihaylova, both through a CV, lists of publications and citations, and through the submitted scientific contributions, and a reference-declaration for implementation of minimum national requirements and the requirements of BAS for participation in a competition for "Associate Professor", in area 4 Natural sciences, mathematics and informatics Professional field 4.3. Biological sciences. The presented data show, according to a preliminary assessment, coverage of the minimum scientometric and other criteria of LDACRB and RILDACRB, as well as of the Rules of BAS for development of the academic staff, which allows subsequent detailed evaluation of the application.



### III. Evaluation of the candidate's scientific works for the overall academic development.

For participation in the competition are presented 1 abstract of a dissertation and 23 scientific articles (of which 1 chapter from a book). From the presented publications 19 pcs. are in international journals with impact factor, as the total impact factor is 61. The scientific production is very good and is well reflected in the scientific community through citations and through its presentation in a number of scientific forums. Data for participation in 153 scientific forums in the country and abroad are presented, with oral reports and posters. Data are presented for 102 citations from 18 literature sources, in which Dr. Mihaylova is the author. In the analytical tools of the information system Scopus Chief Assist. N. Mihaylova is evaluated with h-index 9. Ch. Assistant Professor N. Mihaylova is also very successful in the field of project financing, having participated in a total of 16 projects, mainly funded by the NSF and BAS. She is the leader of 2 scientific projects. One project is funded by the Research Fund for the period 2019-2022. Dr. Nikolina Mihaylova is a member of the scientific societies: Union of Scientists in Bulgaria, Immunology Section and European Federation of Immunological Societies - EFIS.

Ch. Assistant Professor N. Mihaylova has won numerous awards:

2017 - Award of the Bulgarian Academy of Sciences "Prof. Marin Drinov" for a young scientist in the field of biological sciences.

2009 - Award of the Bulgarian Academy of Sciences "Ivan Evstratiev Geshov" for a young scientist up to 30 years in the field of biological sciences.

2008 - The award of the Stefan Angelov Foundation for the best work of a young microbiologist in Bulgaria.

2007 - Young Scientist Award from The 8th International Congress on SLE 2004 - Dresden Price on the Study of Autoantibodies

The developments of Ch. Assistant Professor N. Mihaylova are in 3 major thematic areas, and in each area there are several areas in which Dr. Nikolina Mihaylova has contributions:

1. Selective response of pathological autoreactive cells by protein-engineered antibodies and by monoclonal antibodies in mouse and human models of autoimmunity.
2. Natural biological molecules with anti-tumor and adjuvant properties.
3. Immunomodulatory activity of immunoglobulin molecules.

Some of the most significant achievements of the research conducted with the participation of Dr. Nikolina Mihaylova are:

1. An innovative approach for selective suppression of auto-reactive B-lymphocytes has been developed, which mimics the physiological mechanisms that suppress the activity of B-cells. The approach is based on the generation of specific protein-engineered chimeric molecules comprising an antibody binding to a specific B-cell inhibitory receptor to which antigenic peptides are conjugated. The efficacy of these chimeric molecules has been studied in various murine models of autoimmune disease, and a suppressive effect has been demonstrated on the levels of pathological autoantibodies and on characteristic pathological manifestations in murine and humanized lupus models.
2. A mouse model for the treatment of type 1 autoimmune diabetes has been developed by genetically engineered bi-specific chimeric molecules containing epitopes from the GAD65 molecule, the amount of autoantibodies induced, and inducing selective apoptosis in their producing B lymphocytes. This selective therapeutic approach was confirmed in a series of in vitro experiments performed with peripheral mononuclear cells from the blood of patients with type 1 diabetes. Possibilities for suppression of autoreactive B- and T-cells in different murine models of lupus were

investigated by administering a monoclonal antibody against annexin A1, achieving effective inhibition of T-cell activation and proliferation, suppression of plasma cells, secreting anti-dsDNA antibodies.

3. In a mouse model of colorectal cancer, the anti-tumor and anti-proliferative properties of various hemocyanins were studied and suppression of the formation of solid tumors, splenomegaly and lung metastases was found. An increase in the humoral anti-tumor response and a prolongation of the survival of the studied animals were reported.

IV. General assessment of the applicant's compliance with the mandatory conditions and the mandatory quantitative criteria and scientometric indicators.

Under the procedure are presented scientometric data according to LDACRB and RILDACRB, as well as the minimum criteria of IMicB, BAS in area 4. Natural sciences, mathematics and informatics Professional field 4.3. Biological sciences, in sub-categories, as follows:

1. By group of indicators "A" - 1. Successfully defended dissertation for PhD - presented Abstract (50 p. from the required 50 p.)
2. By group of indicators "B" - Habilitation work or scientific publications in publications - publications with rank Q1 - 3 are presented; Q2 - 4 p.; Q3 - 2 p.; (185 p. out of the required 100 p.)
3. By group of indicators "D" - Scientific publication in publications that are referenced and indexed in world-famous databases - 13 publications with rank Q1 - 3 p.; Q2 - 7 p.; Q4 - 1 p.; SJR - 2 p. (262 tons of the required 200 p. / 220 p.)
4. By group of indicators "E" - Citations in scientific publications, monographs, collective volumes and patents, referenced and indexed in world-famous databases with scientific information - 102 citations (204 p. from the required 50 p. / 60 p.)

Regarding the additional requirements of IMicB:

Of the required 20 p. publications, Dr. N. Mihaylova presents 23 publications, in 6 of them she is the first or corresponding author of the required 5 copies. Of the required 100 citations - 102 citations are presented; from the required h index = 5 - the data for the scientific-metric indicators of Ch. Assistant Professor N. Mihaylova show h index = 9; from the required 3 participations in projects a reference is provided for 16 p.

The current application exceeds the required points on the criteria.

## V. Conclusion

This application fully meets the mandatory and specific conditions and scientometric criteria for holding the academic position of "Associate Professor". Ch. Assistant Professor Nikolina Mihaylova has 36 scientific papers (28 with an impact factor), 153 participations in scientific forums, a total impact factor of 93,672 and 256 citations from 27 publications.

For the competition Ch. Assistant Professor Nikolina Mihaylova participated with 23 publications (impact factor 61; in 6 of them she is the first or corresponding author) and an abstract; 102 citations from 18 publications. She is the manager of 2 projects and she has participated in many projects (16 p).



The scientific works of Dr. Nikolina Mihaylova are of professional value and very high citation. In the works of Dr. Nikolina Mihaylova there are original scientific and applied contributions that have received international recognition.

In conclusion, I strongly vote "Yes" and recommend to the Scientific Jury in this competition the award of the academic position of "Associate Professor" to Dr. Nikolina Mihaylova, believing that she has professional qualities that make her suitable for a researcher with independent development and future research supervisor of graduates and PhD students.

Sofia,  
5.07.2021

Reviewer:

/ Prof. K. Todova-Haybedyan, PhD, DSc /