

SCIENTIFIC STATEMENT

from **Prof. Maria Angelova, DSc**, The Stephan Angeloff Institute of Microbiology, Bulgarian Academy of Sciences
on the competition for the occupation of the academic position “Associated Professor” in the professional field: 4.3. Biological Sciences (Virology), presented to a Scientific Jury formed by order No. I-134/27.09.2022 of the Director of the Stefan Angelov Institute of Microbiology at the Bulgarian Academy of Sciences

For the competition for "Associated Professor", announced in the State Gazette, issue 60 of July 29, 2022, documents of Dr. Neli Milenova Vilhelmova-Ilieva, Chief Assistant Professor in the Department of Virology at the Stephan Angeloff Institute of Microbiology (IMicB) at the BAS have been received.

GENERAL PRESENTATION OF THE PROCEDURE AND THE CANDIDATE

To participate in the competition, Dr. Vilhelmova-Ilieva submitted the necessary documents and materials proving the fulfillment of the requirements for occupying the academic position of "Associated Professor" in electronic format. All of them are in accordance with the Law on the Development of the Academic Staff in the Republic of Bulgaria (ZRASRB), the Regulations for its implementation, as well as with the Regulations of IMicB.

Ch. Associate Professor Vilhemova-Ilieva completed her master's degree at the Faculty of Biology of the Sofia University "St. Kliment Ohridski" in 2004 with the qualification "Molecular Biologist in Virology". In 2009, she started working in the Department of Virology of the IMicB, where she successively passed through the positions of "specialist" and "assistant". In 2012, she received the educational and scientific degree "doctor", after which she held the academic position of "Chief Associate Professor " in the same department. Vilhelmova is fluent in English, French, and Russian; she has excellent computer skills.

The candidate's scientific career is entirely related to the theme of the competition and reflects current and promising areas of Virology.

CHARACTERISTICS OF THE APPLICANT'S ACTIVITY

Ch. Associate Professor Neli Vilhelmova-Ilieva is a co-author of 32 scientific articles with a total impact factor of 46.15 and *h* factor of 6.

The report on the fulfillment of the minimum requirements for the academic position "Associate Professor" shows that the candidate covers and exceeds the required points for the individual indicators, and instead of the required 400, she scores 496, as follows:

- Group A indicators - Ph.D. Autoreferat - 50 points.

- Group C indicators - 4 scientific articles in IF journals and rank Q1 – 100 points.
- Group D indicators -12 scientific articles in IF journals and rank Q1 – 4; Q2 – 3; Q3 – 2 and Q4 3; 4 book chapters – 286 items.
- Group E indicators -30 citations x 2 points = 60 points

The journal papers from the indicators are published in specialized magazines with a high rating and form IF 43.001. In the presented 20 scientific works, Vilhemova-Ilieva is in first place in 9 of them, which outlines her share in the developed tasks.

In accordance with the additional requirements of the IMicB, the candidate submits 24 scientific works for the competition (with a requirement of 20 after the ONS "doctor"), which include 20 journal articles and 4 book chapters. Of these, I accept 23 for review, as one is included in the defense of the doctoral degree (Vilhelmova-Ilieva et al., 2008). Vilhelmova-Ilieva has a total of 120 citations.

RESEARCH ACTIVITY AND CONTRIBUTIONS

The scientific works of Ch. Associate Professor Neli Vilhelmova-Ilieva fully covers the topic of the current competition. They include the activity of the candidate in a very current field of science - Virology and outline four directions.

1. Antiviral activity against *Herpes simplex* and mechanism of action of new and marketed agents

- Data were obtained on the inhibitory action of newly synthesized ellagitannins concerning acyclovir-sensitive and resistant strains of the *Herpes simplex* virus. The synergistic effect of some of them in combination with acyclovir has been proven.
- The antiviral effect of a new group of ellagitannins and galotannins (43 compounds from the class of organosilicones) was demonstrated against eight model strains of viruses causing infections. A relationship between the structure and activity of the compounds has been established, giving the prospect of targeted synthesized antiviral agents.
- Information on the mechanism of antiviral action of ellagitannins was obtained.
- Acetylated acyclovir and its complex with Zn ions have been shown to be able to overcome the resistance of HSV-1 and HSV-2 to acyclovir.
- The involvement of oxidative stress in the mechanism of action of HSV has been confirmed, which guides new therapies against this virus.

2. Antiviral activity of natural products of pharmacological importance

- Strain-specific virucidal activity of postbiotics from lactic acid bacteria (*Lactobacillus fermentum* and *L. plantarum*) against HSV-1 was recorded. Data on the mechanism of action have been obtained;
- The virucidal effect of Canadian propolis against HSV-1 and HSV-2 has been proven;
- Data were obtained on the inhibition of HSV-1 reproduction in the combined action of acyclovir and essential oil from *Rosa damascena* and *Rosa alba*;
- Inhibitory activity of extracts from Bulgarian medicinal plants against different viruses (HSV, human coronavirus, and strains from families *Picornaviridae*, *Adenoviridae*, *Paramixoviridae*, and *Herpesviridae*) was established. Data were obtained on the activity of hemocyanin from *Rapana thomasi* against the replication of *Bovine rotavirus*;
- Of interest are the results on the antiviral effect of acetyl-lactose, outlining its application in cosmetic formulas;
- The effectiveness of novel photoactive dendrimers as promising inhibitors of HSV infection has been demonstrated.

3. Importance of viral pathogens for aquaculture

- Up-to-date information is presented on the most common viral pathogens causing serious economic losses in fish farming with an emphasis on the main aquacultures grown in the country. Effective biosecurity strategies for viral diseases in fish are discussed to replace the lack of resistant antiviral drugs suitable for aquatic environments.

4. Effectiveness of disinfectants

- The effectiveness of preparations from the commercial network as antiviral disinfectants has been proven.

TEACHING ACTIVITY

Ch. Assistant Professor Dr. Neli Vilhelmova-Ilieva also participates in the training of young staff. She is a lecturer in Microbiology, Parasitology, and Virology at Southwestern University "Neofit Rilski" with a horary of 25 hours of lectures and 5 hours of exercises. In addition, she is the co-supervisor of a Ph.D. student.

PROJECT ACTIVITY

The candidate is a participant in 8 projects, of which 4 are with FNI, 2 with Bulgarian companies, and 2 with foreign ones. All projects are multidisciplinary with the participation of contractors with different profiles, as well as with a practical focus. In the implementation of the projects and the preparation of the joint publications, Vilhelmova-Ilieva shows her ability to work

in a team. It should be noted that she also has expertise as a reviewer of articles in reputable journals.

CONCLUSION

Ch. Assistant Professor Dr. Neli Vilhelmova-Ilieva is a promising scientist in the field of the current competition, distinguished by her own scientific profile and modern research approach. She also participates in the training of students in the specialty of the competition. Its overall activity in terms of scientometric indicators meet the requirements of the Law on the Development of the Academic Staff, the Rules for it, as well as the Rules of the IMicB for occupying the academic position "Associated Professor". Because of everything noted so far, I give a positive assessment and strongly recommend that the members of the honorable Scientific Jury, formed by order No. I-134/27.09.2022 of the Director of the Stefan Angelov Institute of Microbiology at the BAS, to prepare a proposal to the Academic Council for the election of **Ch. Assistant Professor Neli Milenova Vilhelmova-Ilieva, Ph.D.**, in the academic position of "Associated Professor" in the Professional direction 4.3. Biological Sciences (Virology).

05.12.2022

Sofia

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чл. 2 от ЗЗЛД

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/Prof. Maria Angelova, DSc/