To Assoc. Prof. Lyuben Zagorchev, DSc,
Chairman of the Scientific Jury,
determined by Order № RD 38-609/14.11.2023
of Prof. Anastas Gerdjikov, DSc
Rector of the Sofia University
„St. Kliment Ohridski"

STANDPOINT

on the procedure for obtaining the academic position "Associate Professor" in professional Direction 4.3 Biological Sciences (Virology – Molecular Virology),
announced in the Bulgarian State Gazette No 86 from 13.10.2023
for the needs of the Sofia University "St. Kliment Ohridski", Faculty of Biology

This standpoint was prepared by Prof. Neli Stoyanova Korsun, MD, DSc,
a member of the scientific jury
Specialty: Virology
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The standpoint was compiled following the requirements of the Law on the development of the academic staff in the Republic of Bulgaria (LDASRB) and Section III / Section IV of the Rules of LDASRB - Terms and Conditions for Obtaining the Academic Position "Associate Professor"

I have no joint publications or participation in scientific forums and projects with the candidate.

I. Description of the presented materials

I received all the materials for the competition by e-mail. The candidate Assistant Professor Anton Hinkov has submitted a curriculum vitae, a diploma for higher education, a diploma for the educational and scientific degree "doctor", a document for the academic position " Assistant Professor", a list of publications, participation in conferences and projects, a sample reference for the fulfillment of the minimum national requirements for the relevant scientific field and the additional requirements of SU "St. Kl. Ohridski" with the necessary proofs attached, reference to the citations, reference to the original scientific contributions with the relevant proofs attached, scientific works submitted for participation in the competition, summaries of the publications, copy of the announcement in the "State Gazette", reference to academic employment, for scientific guidance of graduates, etc.

II. General characteristics of the activity

Scientific production and publication activity

For participation in the current competition Assist. Prof. Anton Hinkov presents 17 full-text publications in scientific publications, referenced and indexed in world-renowned databases with scientific information (Scopus and Web of Science). A total of four publications are in Q1 editions, three in Q2 editions, six in Q3 editions, and four in Q4 editions. Of all the publications presented, 16 are in impact factor journals with a total impact factor of 32.77. In the listed publications Assist. Prof. A. Hinkov is the first author in 1 (6%). The publications submitted for the competition do not repeat those submitted for the acquisition of the educational and scientific degree "doctor".

The total number of the candidate's publications is 23 scientific publications, referenced and indexed in world-renowned databases with scientific information (Scopus and Web of Science), and 9 publications in journals without IF or SJR-factor. Three of these publications are included in the PhD thesis. In total, the candidate has 7 publications in journals with Q1, three – with Q2, six - with Q3, and five - with Q4. He has participated in 21 international scientific forums, of which 2 are held abroad, as well as in 8 national scientific forums.

To participate in the competition, the candidate submits 28 citations in publications, referenced and indexed in world-renowned databases with scientific information (Scopus and Web of Science). The total number of citations is 93, of which 73 are in publications referenced and indexed in world-renowned scientific information databases (Scopus and Web of Science). The H-index of Assist. Prof. A. Hinkov is 6. The citations in the world databases show the significance of the scientific topics developed by the candidate and the recognition of the international academic community.

Assist. Prof. A. Hinkov has participated in a total of 13 research projects, of which 8 are financed by SU "St. Kl. Ohridski" and 5 from the MES/Scientific Research Fund.

III. Compliance of the applicant with the minimum national requirements contained in the Regulations for the implementation of the LDASRB - Section III. Conditions and procedure for occupying the academic position "Associate Professor" (amended and supplemented, SG No. 15 of 19.02.2019; Field 4. Natural sciences, mathematics, and informatics; Professional direction 4.3. Biological sciences) and in the **Regulations for the conditions and the procedure for obtaining scientific degrees and for holding academic positions at the SU "St. Kliment Ohridski"**

Table 1. Number of points by indicators

A group of metrics	**Indicators**	**Number of points** according to Regulations for the implementation of the LDASRB	**Number of points based on the evidence presented**
А	1. Dissertation work for the educational and scientific degree "Doctor"	50	**50**
В	4. Habilitation work - scientific publications in journals that are referenced and indexed in world-famous databases with scientific information (Web of Science and Scopus)	25 for publ. in Q1 20 for publ. in Q2 15 for publ. in Q3 12 for publ. in Q4 10 for publ. in edition with SJR without IF	**50** (2 x 25) **20** (1 x 20) **30** (2 x 15) **Total: 100**
Г	7. Scientific publication in journals that are referenced and indexed in world-renowned databases of scientific information (Web of Science and Scopus), outside the habilitation work	25 for publ. in Q1 20 for publ. in Q2 15 for publ. in Q3 12 for publ. in Q4 10 for publ. in edition with SJR without IF	**50** (2 x 25) **60** (3 x 20) **60** (4 x 15) **36** (3 x 12) **Total: 206**
Д	11. Citations in scientific publications, monographs, collective volumes, and patents, referenced and indexed in world-renowned databases of scientific information (Web of Science and Scopus)	2	**56** (28 x 2) **Total: 56**
	Total points		**412**

Table 2. Minimum required points by groups of indicators for occupying the academic position "Associate Professor" and number of points based on presented evidence

A group of metrics	Content	Minimum points required according to Regulations for the implementation of the LDASRB	Number of points based on the evidence presented
A	Indicator 1	50	50
B	Indicators 3 or 4	100	100
Г	A sum of indicators from 5 to 10	200	206
Д	A sum of points in indicator 11	50	56
E	A sum of the indicators from 12 to the end	-	-
	Total points	400	**412**

It is clear from the tables presented above that the evidence for the separate groups of requirements from the two Regulations exceeds the required number of points.

Main directions in scientific activity

The scientific production of Assist. Prof. Anton Hinkov is directed to the study of the antiviral activity of several natural products and synthetic compounds, as well as the study of the antiherpetic effect of some physical factors. The candidate's scientific contributions are detailed in the academic report. Of these, I will highlight contributions of an original and scientific-applied nature, divided into 3 directions:

Scientific contributions of Assist. Prof. Anton Hinkov

I. Investigation of the antiviral activity of natural products

1. The activity of total methanol, ethanol, and water extracts of fresh and air-dried leaves of *Haberlea rhodopensis* Friv has been investigated. (a rare species endemic to the Balkans), as well as apolar and polar fractions of methanolic extracts against human herpesvirus type 1 and 2. The total methanolic extract of dry leaves showed the highest activity – 61% and 60% respectively, against human herpesvirus type 1 and 2.
2. Anti-herpes viral activity has been found in four Bulgarian medicinal plants - Common wort (*Teucrium chamaedrys* Wall germande), Catnip (*Nepeta nuda* L.), Wormwood (*Artemisia chamaemelifolia* Vill.) and *Astragalus glycyphyllos* L. From all tested extracts, obtained from *Teucrium chamaedrys* Wall germander with the highest activity characterized the chloroform obtained by Soxhlet extraction, as well as the methanol extract obtained by extraction in a thermostat. They inhibit the replication of human herpes virus type 2 by up to 80%.

   In addition, they strongly suppress the infectivity of extracellular virions and the step of virus penetration into the cell. Aqueous extract of mountain wormwood (*Artemisia chamaemelifolia* Vill.) preserves up to 80% survival of cells infected with acyclovir-resistant human herpesvirus type 2. This activity makes it possible to overcome drug

resistance. The aqueous extract of catnip (*Nepeta nuda ssp. nuda L.*), prepared from the flowers of the plant, exhibits high antiherpetic activity. A standardized extract of the aerial parts of the plant *Astragalus glycyphyllos L* suppresses up to 70% of the replication of both acyclovir-susceptible and acyclovir-resistant strains of human herpesvirus.

3. A detailed description of the results of antiviral studies of Bulgarian medicinal plants (families *Amaryllidaceae, Fabaceae, Geraniaceae, Lamiaceae, Onagraceae, Ranunculaceae, Rosaceae, Scrophulariaceae* and *Rhodophyta*) from the last three decades has been made.
4. Haemolymph from *Rapana venosa* (hRv), *Helix lucorum* (Hl) and *Eriphia verrucosa* (hEv), mucus from *Helix aspersa* (Ha) and structural subunit α-HaH of hemocyanin from *H. aspersa* (sHa) were investigated for the replication of sensitive to acyclovir strains F and BA of human herpesvirus type 1 and type 2. The hemolymph fractions from *R. venosa* (MW 30-100 kDa) and *E. verrucosa* (MW 3-100 kDa) showed the highest inactivating activity (over 99% inactivation of extracellular virion infectivity).
5. The activity against human herpes virus types 1 and 2 of ten strains of lactic acid bacteria from traditional fermented food media has been investigated. For the probiotic strains *Lactobacillus delbrueckii* subsp. Bulgaricus KZM 2-11-3 and *Lactiplantibacillus plantarum* KC 5-12 have been found strong activity against human herpes virus type 2 with a selectivity index above 45.

I. Investigation of new synthetic compounds for the presence of anti-herpes effect

1. Four new dihydroxyethylene isoesteres of the dipeptides Phe-Pro and Pro-Pro have been investigated to determine their activity against HIV protease. Two Phe-Pro isoestere-based inhibitors have been further tested in vitro and demonstrated their ability to suppress HIV-1 replication in infected MT-2 cells. They have been established with low cytotoxicity. The results indicate that the Phe-Pro dihydroxyethylene isostere can be used for the synthesis of HIV-1 protease inhibitors.
2. The activity of three Abacavir esters containing the amino acid glycine (Gly) and dipeptide esters (glycyl-glycine) against HIV-1 replication in MT-4 has been investigated. One of the newly synthesized esters – Gly-ABC shows low cytotoxicity, low mitochondrial toxicity, and high anti-HIV-1 activity in MT-4 cells, as well as a high genetic barrier to resistance.
3. To increase the bioavailability of the antiherpes drugs ganciclovir and penciclovir, the activity of the esters of these preparations with bile acids (cholic, chenodeoxycholic, and deoxycholic) and amino acid esters of aciclovir against human herpes virus type 1 and type 2 has been investigated. The modified analogs are less active compared to the generic substances, which shows that this type of modification is not suitable for increasing the bioavailability of ganciclovir, acyclovir, and penciclovir in the cell.

III. Investigation of the impact of physical factors on the replication and extracellular virions of HSV 1

For the first time on a global scale, the impact of food medium and water treated with surface wave non-equilibrium gas discharge plasma (constructed by a Bulgarian team of scientists) has been investigated for antiviral and virucidal action on the human herpes virus. When studying the virucidal effect of a plasma-treated virus suspension diluted in a ratio of 1:2 with dH2O, a reduction of the virus titer in the virus sample has been found, compared to the control, by 1.67 log10.

Teaching activity

Assist. Prof. A. Hinkov has been a teacher at the Faculty of Biology of the "St. Kl. Ohridski" from 2012 to the present moment. He gives lectures to students for the acquisition of Bachelor' and Master' degrees. He conducts practical exercises and learning practices. In the last 5 years, his average study time is 445.7 hours, of which an average of 300.7 hours is classroom time. He is the scientific supervisor of 9 diploma theses for the acquisition of the Master's degree and 4 for the Bachelor's degree of students from the Faculty of Biology of the SU "St. Kl. Ohridski".

CONCLUSION

Materials presented by Assist. Prof. Anton Hinkov for this competition exceed the requirements for holding the academic position "Associate Professor", contained in the Regulations for the Implementation of the ZRASRB and in the Regulations for the Terms and Procedures for the Acquisition of Scientific Degrees and for the Occupation of Academic Positions at SU "St. Kl. Ohridski". The scientific achievements and significant teaching activity of Assist. Prof. Anton Hinkov gave me a reason to recommend to the respected scientific jury to award Assist. Prof. Anton Hinkov the academic position "Associate Professor" in the field of higher education 4. Natural sciences, mathematics, informatics; professional direction 4.3. Biological Sciences (Virology)

February 5, 2024 Member of the scientific jury: .....

/Prof. Neli Korsun, MD, DSc/