OPINION

By Prof. Dr. Eng. Krassimir Georgiev Vassilev, department "Physiology, Chemistry and Biochemistry" and department "Biotechnology", University "Prof. Dr. Asen Zlatarov" - Burgas, appointed as a member of the scientific jury, according to order No. RD-266/15.09.2022 of the Rector.

on the materials submitted for participation in the competition for the appointment of the academic "associate professor", field of higher education 4. Natural sciences, mathematics and informatics, professional direction 4.2 Chemical sciences, scientific specialty "Biochemistry"

I. Procedure and eligibility

The competition was announced by the Faculty of Medicine at the University "Prof. Dr. Asen Zlatarov" and published in the Official Gazette, no. 45/17.06.2022. The only candidate is Dr. Eng. Yordan Nikolaev Georgiev, holding the academic position of "chief assistant", in the Laboratory of Biologically Active Substances in the city of Plovdiv (LBAV-Plovdiv) at the Institute of Organic Chemistry with the Center for phytochemistry - BAS (IOHTCF-BAS). The review of the documents shows that the procedure for the disclosure and announcement of the competition has been followed and the documents have been prepared in accordance with the requirements of ZRASRB, its regulations for implementation and the Regulations for the terms and conditions for acquiring scientific degrees and occupying academic positions at the University "Prof. Dr. Asen Zlatarov" in the city of Burgas.

II. A brief biographical reference for the applicant

Associate Professor Yordan Georgiev, Ph.D., graduated with a master's degree in Biopharmaceutical Biochemistry in 2013 at the Faculty of Biology of "Paisii Hilendarski"University of Plovdiv. He was appointed to the academic position of "assistant" in LBAV-Plovdiv at IOHTCF-BAN in 2016. He received the scientific and educational degree "doctor" in 2018. based on a defended dissertation on the topic: "Study of the structure and immunomodulatory potential of pectin-type acidic heteropolysaccharides in Bulgarian medicinal plants", in the scientific specialty 01.05.10 Bioorganic chemistry, chemistry of natural and physiologically active substances. From 12.07.2018, he holds the academic position of "chief assistant" in LBAV-Plovdiv at IOHTCF-BANS.

III. Evaluation of the candidate:

Dr. Georgiev has participated in the development of 17 scientific research projects funded by the National Research Institute of the Ministry of Education and

Science, operational programs of the EU and BAS. In the current procedure, 13 projects are included, 3 of which have international participation, and the applicant is the head of 3 of the 13 projects.

The candidate attended specializations on a competitive basis within one to six months in educational and scientific institutions in the city of Berlin (Germany), the city of Tokyo (Japan), the city of Brno (Czech Republic) and the city of Oslo (Norway). His oral presentations are 28 in total. (12 items presented in this competition), of which several in the Czech Republic and one each in Sweden, Albania and Poland. He has a rich and varied scientific research work, which is reflected in a total of 33 scientific works (19 publications under the current competition with a total impact factor of 82.9) with a total impact factor of 102. In the habilitation work, which is presented in the form of publications printed in refereed and indexed in world-famous databases with scientific information (WOS and Scopus), Dr. Georgiev is first and corresponding author in 4 out of 6 scientific works. Five of the six thesis publications fall into the Q1 category. A large part of the scientific works of the competition for groups of indicators B and D have been published in leading prestigious journals, such as Carbohydrate Polymers (IF: 10.723, Q1, 2021, WOS), Biomedicine & Pharmacotherapy (IF: 7.419, Q1, 2021, WOS) , Food Chemistry (IF: 6.306, Q1, 2019, WOS), International Journal of Molecular Sciences (IF: 6.208, Q1, 2021, WOS), Journal of Fungi (IF: 5.724, Q1, 2021, WOS), Algal Research (IF: 5.276, Q1, 2021, WOS), Journal of Ethnopharmacology (IF: 5.195, Q1, 2021, WOS), Molecules (IF: 4.927, Q1, 2021, WOS) and Plants (IF: 4.658, Q1, 2021, WOS).

The main thing that characterizes Dr. Georgiev is his active research and teaching activity. The candidate's educational workload includes teaching work for the biochemistry education of Bulgarian and foreign students from the specialties of Medicine, Dentistry and Pharmacy. His total classroom employment is 1428 hours after holding the academic position of "principal assistant". He is the author of a teaching aid in Biochemistry for medical students. It includes six sections, each of which contains different options for self-preparation for the colloquiums during the two semesters of the students' studies. The aid will also serve as a very good basis for studying biochemistry-related disciplines in the following courses. The candidate was the academic co-supervisor of a graduate student.

The publishing activity of ch. assistant Georgiev shows that he can work in a team. The topics to which he devoted his research work on biologically active polysaccharides and antioxidant action of natural phenols are current and important both for human nutrition and for biomedicine. The presented publications reflect a significant volume of scientific research activity in the two main scientific directions formulated by the candidate. The essential scientific contributions in the field of Biologically active polysaccharides can be summarized as follows:

Determination of the structural features of pectin polysaccharides in the rhizomes and leaves of the medicinal plant blood geranium (*Geranium sanguineum L.*)

and proof of their immunomodulatory effects on human leukocytes, prebiotic and antibacterial properties.

Identification and characterization by NMR spectroscopy of biologically active α-D-glucans, β-D-glucomannans with 1,4,6-β-D-Manp structural units and α-L-fuco-2-(1,6)-D-galactans having 3-O-methylated galactose.

Characterization of the composition and biological activity of intracellular polysaccharides in the biomasses of the chemically poorly studied cyanobacterial species *Anabaena laxa, Oscillatoria limosa and Phormidesmis molle*, as well as the content of valuable hydrophilic and lipophilic bioactive metabolites in them, such as carbohydrates, fatty acids, cycle metabolites of Krebs, phenols, carotenoids, chlorophylls, terpenes, etc.

Evidence of the biosynthetic possibilities for the accumulation of exopolysaccharides from two poorly studied species of psychrophilic yeasts *Vishniacozyma victoriae and Tremellomycetes sp.*, and determination of the chemical composition of the obtained high-molecular heteromannans and β-D-glucans. The new exopolysaccharides can find application in the pharmaceutical industry and as functional additives in foods.

Study of the structural features of the rhamnogalacturonan type I fragments of the pectin polysaccharides in the leaves of the Balkan endemic *Haberlea rhodopensis* Friv. by NMR and mass spectral analyses, and proof of the immunostimulatory effect of their branched arabinogalactan chains by enzymatic hydrolysis and fine chromatographic purification.

Partial disclosure of the mechanism of the antitumor action of corn xylooligosaccharides by decreasing the formation of ATP after depolarization of the mitochondrial membrane, disrupting glutathione exchange and suppressing the formation of proinflammatory cytokines in U-937 leukemic tumor cells. Conducting *in silico* experiments suggesting the possibility of blocking TLR4 and the active center of the glutathione reductase enzyme with oligosaccharides with a degree of polymerization of 6.

The indicated scientific researches and their contributions are in an up-to-date and prospective field, and have applied value. The formulated achievements faithfully reflect the significant contribution of Ch. assistant Dr. Georgiev for the achieved results. Regarding the significance of the contributions presented in the candidate's publications (including by group of indicators D), I judge by the number of citations in scientific articles registered in the world-famous scientometric databases Scopus and WOS. This, in turn, is an assessment of the candidate's recognition among specialized scientific circles abroad. The total number of citations of the publications in the scientific information databases WOS and Scopus at the moment are more than 234.

The various activities of the candidate characterize him as a scientist and teacher. Attached to the competition documents are three reviews of Dr. Georgiev's qualities as a researcher during his specializations in the acquisition of new knowledge and

laboratory techniques for the structural characterization of natural polysaccharides and evaluation of their biological activity at the Department of Pharmacy at the University of Oslo. Laboratory of Biopharmacology of Phytotherapeutics at Kitasato University in Japan and Department of Developmental Biology at "Paisii Hilendarski" University of Plovdiv. They indicate his qualities as a collaborator who is able to work hard and purposefully on research problems and his ability to generate fresh ideas. Thanks to these qualities, he was awarded by the BAS with the Young Scientist Award "Prof. Marin Drinov", in the direction "Biomedicine and quality of life" in 2022.

I have two questions for the candidate:

1. In which area of functional biochemistry does he intend to direct his research efforts and does he plan to seek collaboration with doctors?
2. How does he plan to attract the attention of students for circle work?

IV. Conclusion

The analysis made above convinces of the high level of Dr. Georgiev's research work. His scientific activity and contributions satisfy the requirements of the Law on the Development of the Academic Staff in the Republic of Belarus, the Regulations for its Application and the Internal Regulations of the University "Prof. Dr. Asen Zlatarov" to occupy the academic position of "associate professor".

Bearing all this in mind, I strongly recommend the Honorable Scientific Jury to vote on a proposal to the Faculty Council of the Faculty of Medicine to award ch. Assistant Professor Yordan Nikolaev Georgiev, Ph.D., the academic position of "**Associate Professor**" in the scientific specialty "Biochemistry".

11.11. 2022

Burgas

Jury member:

/Prof. Dr. Krasimir Vassilev/