

## EVALUATION STATEMENT

**on competition for an academic position "associate professor" in the field of higher education 4. Natural sciences, mathematics and informatics, professional direction 4.3. Biological sciences, scientific specialty "Cell Biology" published in the "State Gazette", no. 45/17.06.2022 from University "Prof. Dr. Asen Zlatarov" - Burgas,**

**with candidate: Veselina Stoyanova Merhar, PhD, Assistant Professor**

Member of the scientific jury: Assoc. Prof. Dr. Katya Ivanova Gabrovska, University "prof. Dr. Asen Zlatarov" - Burgas

### 1. General characteristics of the candidate's research and applied scientific activity

In the competition for the academic position "Associate Professor" in Professional field 4.3. Biological Sciences, scientific specialty "Cell Biology" participated one candidate - Assistant Professor Dr. Veselina Merhar. The submitted materials for the competition meet the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for its Application and the Regulations for the terms and conditions for occupying academic positions at "Prof. Dr. Asen Zlatarov" University – Burgas. The materials are precisely arranged, correctly and precisely cited by the candidate in the attached references. The candidate participated in the competition with a total of 41 scientific papers, which could be classified as follows:

- Publications in journals with impact factor – 12
- Published book chapter or collective monograph – 2
- Monographs – 1
- Publications in peer-reviewed collections and journals from international scientific forums – 6
- Reports and posters at international forums – 16
- Reports and posters at national forums – 4

Scientific publications show a systematic approach and in-depth analyzes in the selected scientific topics. A large part of them are a logical continuation of the main directions in the doctoral dissertation, which Dr. Merhar developed and clearly show an upgrade of new ideas, techniques and approaches in the interpretation of the obtained results. The scientific-research and scientific-applied work of the candidate is closely related to the professional direction for which the competition has been announced.

The participation of the candidate in 5 scientific projects is a great recognition and high appreciation of her scientific qualification: as head of 1 scientific research project financed by the University of KwaZulu-Natal, Durban, Republic of South Africa "Microscopical studies of the consequences of fungal infections in recalcitrant and orthodox seeds" and as a researcher in 4 research projects funded by the National Research Foundation (NRF) of the Republic of South Africa, namely:

1. "Placental Lymphangiogenesis in Preeclampsia" (2015-2017);

2. "Implication of mycoflora in recalcitrant seed deterioration during short term hydrated storage (2003 – 2006);
3. "Responses of the nucleo- and cytoskeleton to dehydration in recalcitrant seeds of *Trichilia dregeana*" (2002 – 2005);
4. "Biochemical-molecular study of leaf rust resistance in wheat" (1997 – 2000).

The scientific papers with the participation of Chief Assistant Veselina Merhar have 60 citations in scientific publications referenced and indexed in world-renowned databases with scientific information. The candidate's most cited papers are:

- Anguelova-Merhar V.S. A.J. van der Westhuizen & Z.A. Pretorius 2001.  $\beta$ -1,3-Glucanase and Chitinase Activities and the resistance response of wheat to leaf rust. *Journal of Phytopathology*, 149: 381- 384 – 32 times;

- Anguelova, V. S., van der Westhuizen, A. J., and Pretorius, Z. A. 1999. Intercellular proteins and  $\beta$ -1,3-glucanase activities associated with leaf rust resistance in wheat. *Physiol. Plant.* 106:393-401 – 9 times.

The fulfillment of the national requirements is summarized in the following table:

№	Group of indexes		Number of points
	Indexes	Requirements	Fulfillment
1.	Group of indexes A.	<i>At least 50 points</i>	50
2.	Group of indexes B.	<i>At least 100 points</i>	100
3.	Group of indexes Г.	<i>At least 200 points</i>	244
4.	Group of indexes Д.	<i>At least 50 points</i>	120
5.	Group of indexes E.	<i>At least 100 points</i>	130

From the table it can be seen that the candidate meets the basic requirements of the Regulations for the terms and conditions for holding academic positions at the University "prof. Dr. Asen Zlatarov" - Burgas. Some of the metrics are overfilled.

## 2. Evaluation of the pedagogical preparation and activity of the candidate

In 1986 Chief assistant Veselina Merhar graduated Master Degree (equalized), specialty "Molecular and Functional Biology" at the Faculty of Biology at Sofia University "St. Kliment Ohridski", in 1993 she obtained the scientific degree "PhD" in the specialty "Biology" at the Institute of Plant Physiology, Russian Academy of Sciences, Moscow,

Russia. In the period: February 1997 - April 2000, she was a postdoctoral fellow at the University of Bloemfontein, Republic of South Africa, after which until 2017, Dr. Merhar gained extensive experience as a research assistant, researcher and coordinator. The candidate's career as an academic teacher began in 2019 at the Medical College, University "Prof. Dr. Asen Zlatarov", where she conducts classes on the subject "Pharmaceutical Botany". In March 2020, she started working as a chief assistant in the Department of "Biology, Medical Genetics and Microbiology", Faculty of Medicine, University "Prof. Dr. Asen Zlatarov", where she currently works. The candidate teaches 6 subjects, of which 1 - to students in the Bachelor degree and 5 - to students in the Master degree; participated in the development of 2 study programs - "Immunocytochemistry and immunohistochemistry" and "Human Biology", he is the head of 6 interns. Dr. Merhar participated in the organization and conduction of 6 scientific forums and was leader in 3 student scientific sessions.

### 3. Basic scientific and scientific-applied contributions

The candidate's contributions are of scientific and, above all, of applied interest, significantly enriching achievements in the scientific field with new knowledge. They are formed in four main directions:

- Biochemical-molecular studies of wheat resistance to leaf rust.

They are mainly related to histopathological studies of the penetration of the pathogen into the plant tissues, as well as the way in which it colonizes the tissues; fluorescence microscopy studies of the hypersensitive response (HR) in tissues of disease-resistant plants (those carrying the Lr35 gene); biochemical studies of a group of proteins isolated from the intercellular space of leaf tissues containing the Lr35 gene. As a result of the microscopic and biochemical analyses, the mechanisms and changes at the cellular and molecular level that lead to resistance to leaf rust have been established.

- "Microscopic studies of the consequences of fungal infections in recalcitrant and orthodox seeds" and "Influence of mycoflora on the damage of recalcitrant seeds during their short-term hydrated storage"

They are mainly related to tracking the changes occurring in the cells of different types of recalcitrant seeds after infection with *Fusarium moniliforme*. It was found that during *Fusarium moniliforme* infection of fresh seeds of *Avicenia marina* containing PR-proteins (such as  $\beta$ -1,3-glucanase), the enzymes leave the vacuoles and localize in the cell walls and intercellular spaces after the pathogen has already colonized the tissues. This delay in the immune response, together with the absence of a hypersensitive response, is in all probability one of the decisive factors for the high susceptibility of recalcitrant seeds to fungal infections.

- Nucleo- and cytoskeleton responses to dehydration in recalcitrant seeds of *Trichilia dregeana*

They are mainly related to TEM studies of the state of cell organelles in seeds subjected to dehydration; development of an immunofluorescence method for direct visualization of the

nucleoskeleton of the cells of these seeds, has a contribution to cell biology, due to the difficulties in visualizing the inner nuclear lamina.

➤ Placental lymphangiogenesis in preeclampsia

The immunoexpression of LYVE-1 and PODOPLANIN (two lymphatic markers) in the placenta of HIV-infected normotensive women versus women with preeclamptic was evaluated, the distribution of antibody-labeled LYVE-1 and podoplanin were observed microscopically and their amount was determined morphometrically by the degree of staining. Besides providing new insight into the differential distribution of the lymphatic markers, LYVE-1 and podoplanin in the fetal circulation in HIV-infected women with preeclampsia, the study also demonstrates the advantages of computerized morphometric image analysis as a reliable tool for quantifying immunostaining in biological tissue.

#### **4. Significance of contributions for science and practice**

In essence, the contributions are scientific applicable and are directly related to the theme of the competition. They can be appreciated as enriching the existing knowledge and as applicable in theory and practice.

The quantitative indicators of the Regulations for the terms and conditions for occupying academic positions at the University "Prof. Dr. Asen Zlatarov" - Burgas, as well as the requirements of the RSARB and the Regulations for its application are fulfilled.

The presented data indicate that the candidate can be assessed as a very good educator, researcher and popularizer of the latest achievements in science.

#### **5. Critical notes and recommendations**

I have no critical notes.

#### **CONCLUSION**

**After getting acquainted with the materials and scientific works presented in the competition, analyzing their significance and the containing in them scientific-applied contributions, I give a positive assessment and recommend to the Scientific Jury to make a proposal to the FC of the Faculty of Medicine to award Chief assistant Veselina Stoyanova Merhar, Ph.D., in the academic position "Associated Professor" in the field of higher education 4. Natural sciences, mathematics and informatics, professional direction 4.3. Biological sciences, scientific specialty "Cell Biology".**

14.09.2022.  
Burgas

MEMBER OF THE JURY: ...  
/Assoc. Prof. Dr. Katya Gabrovska/