

## EVALUATION REPORT

by Professor Dr. Ira Valkova Stancheva, Institute of Plant Physiology and Genetics - Bulgarian Academy of Sciences (retired) on a competition for the academic position "Associate Professor" in the professional field 4.3 Biological Sciences, scientific specialty "Genetics", announced in the SG № 24/21.03.2025 for the Laboratory "Regulators of Plant Growth and Development" with candidate senior assistant Dr. Krasimira Nedyalkova Tasheva

### **1. General data on the candidate's career and thematic development**

Krasimira Tasheva graduated from the Faculty of Biology of Sofia University "St. Kliment Ohridski" in 2000 with the qualification of Master - Molecular Biologist (specialization - Genetics). In 2011, after successfully defending a dissertation, she received the educational and scientific degree of Doctor in the scientific specialty "Genetics" with code 01.06.06. at the Institute of Plant Physiology and Genetics - Bulgarian Academy of Sciences. The topic of the dissertation is related to conditions for *in vitro* propagation and cultivation of *Rhodiola rosea* L. for the production of biologically active substances. Subsequent research activity continues to be related to the study of the possibilities for *in vitro* cultivation of valuable and endangered medicinal plants for the accumulation of biologically active substances and with the potential for their use in the therapy of socially significant diseases. She is the head of two projects at the Fund for Scientific Research - Ministry of Education and Science. He has participated in 7 projects at the National Science Fund - MES, 2 COST actions, 1 bilateral cooperation project with India, 1 project at the Ministry of Environment and Water and 2 projects at the Operational Program "Human Resources Development."

### **2. Evaluation of the submitted references for compliance with the requirements of the Law on the development of academic staff in the Republic of Bulgaria and the specific requirements for the position of "Associate Professor" at IPPG-BAS.**

Doctor Tasheva is a co-author in a total of 42 scientific works, of which 38 are scientific articles, 2 are scientific reviews and 2 are book chapters. The total impact factor of the publications indexed in Scopus and/or WoS is 60.357. She is the first or corresponding author in 18 publications, h index - 6. She participated in the competition for associate professor with 17 publications. According to the submitted report, the following points are presented for the individual groups of indicators: Group of indicators A - 50 points, group of indicators B - 100 points, quartile Q1 - 4 publications x 25 points with a total JCR IF -14.1 according to the year of

publication. Group of indicators G - 237 points. By quartiles Q1-5x25-125; Q2- 1-20; Q3-3x15 - 45 and Q4-1 - 12, book chapter 1x15. Publications with SJR, indexed in the Scopus and Web of Science systems (2x10 = 20 points). In 7 of the publications in this group, she is a first or corresponding author. Total JCR IF- 25.118 according to the year of publication. Total number of points by indicator group D – 378, number of citations in Web of Science and Scopus 189x2=378. Indicator group E - 120 points: E14 - participation in a national scientific or educational project - 30 points, E15 - participation in an international scientific and educational project - 20 points; E17 - leadership of a national scientific or educational project 2x20=40 points; E 18 - funds attracted from the candidate's projects - 30 points. Of the 540 points required for occupying the academic position of "associate professor" - Dr. Tasheva has collected 887 points.

### **3. Analysis of the main directions in the candidate's research work.**

The scientific results of the publications presented in the competition are related to two main scientific directions. The first direction concerns the application of biotechnological methods for *in vitro* propagation, adaptation and cultivation of valuable medicinal - rare and endangered plants, as well as practices for modulation and evaluation of their biologically active substances. Research in this direction is indicated in the publications B4-01, B4-02, G7-06, G7-08, G7-09, G7-10, G7-11, G7-12, G8-01. An effective system for micropropagation of *Sideritis scardica* Griseb, *Clinopodium vulgare* L. and *Rhodiola rosea* L. has been developed. The obtained *in vitro* plants have been successfully adapted and cultivated in field or mountain conditions and show a higher content of polyphenols and higher antioxidant activity compared to traditionally cultivated and wild plants. In *Rhodiola rosea* – an endangered species, callus cultures have also been successfully developed. The personal participation of the candidate in these studies is the conduct of biotechnological, phytochemical and cytological experiments, preparation of publications and management of a research project. The review article G7-11 analyzes the role of biotechnology in stimulating valuable secondary metabolites in *R. rosea*, as well as the possibilities for its preservation. The chapter of the book G8-01 describes and examines in detail biotechnological approaches to the endangered species of the genus *Rhodiola*, *Gentiana*, *Leucojum*.

The second scientific direction is related to the study of the effectiveness of extracts from medicinal plants as potential therapeutic agents in oncological diseases and Alzheimer's disease.

It has been established that extracts from in vitro propagated and cultivated plants of *Sideritis scardica*, *Salvia aethiopis* and *Clinopodium vulgare* cause a decrease in cell viability and proliferation of human tumor cells of serious cancers such as HeLa - cervical carcinoma HT-29 - colorectal carcinoma, MCF-7 - breast carcinoma, Hep - G2 - hepatocellular carcinoma. The results of these studies are shown in publications B4-01, B4-02, B4-04, G1-01. The neuroprotective effect of extracts from in vitro propagated and cultivated plants of *Sideritis scardica*, *Marrubium vulgare* and *Clinopodium vulgare* in scopolamine-induced dementia of the Alzheimer type in rats and mice was evaluated. The results are reflected in publications B4-03, G7-02, G7-03, G7-04, G7-05, G7-07. The personal participation of the candidate is obtaining the *in vitro* plants, preparing the samples and extracts, participating in the behavioral experiments, shaping the results for publication. In addition, it was found that the application of extracts of broadleaf plantain and calendula in combination with mucus from *H. aspersa* leads to more effective wound healing in rodents (G7-07).

#### **4. Significance and relevance of the scientific topic.**

Senior Asst. Prof. Dr. Krasimira Tasheva has a clearly defined scientific topic, as her scientific publications are focused on developing modern in vitro models for propagation, growing and cultivating valuable and endangered plant species. The main directions of her research are dedicated to increasing plant productivity and stimulating the biosynthesis of biologically active substances with antioxidant and protective properties and the prospects for their application in socially significant diseases, with a contribution to science and society. The research contributes to the protection and preservation of endangered species and represents a serious potential for the production of raw materials for the pharmaceutical industry.

#### **5. Organizational and educational activities.**

Senior Assistant Professor Krasimira Tasheva has participated in 40 scientific conferences and congresses, 30 of which were international events. She has participated in the Academic Ethics Committee at the Institute of Plant Physiology and Genetics and the Accreditation Committee of the Doctoral Program "Genetics". She has made 4 public appearances in lectures and presentations. Dr. Tasheva has prepared 9 anonymous reviews of scientific articles and 2 public reviews at the Faculty of Biology -SU "St. Kl. Ohridski". Supervisor of a bachelor's degree graduate and of the same graduate for a master's degree.

## **6. Critical comments and recommendations**

I have no critical comments on the materials presented by Dr. Krasimira Tasheva.

I have two questions:

1. How the sensitivity of HeLa cell lines is explained 48 hours after the application of extracts from in vitro propagated aerial parts of *S. scardica* and what is the reason for introducing the IVS variant into the experimental scheme along with FGP – B4-01, Table 4.

2. Why the in vitro technology and plant acclimatization are described in detail in the article on the antioxidant and antitumor activity for *S. scardica* only (B4-01), while for *C. vulgare* (B4-04) and *S. aethiops* (G7-01) this description is very brief.

I recommend deepening the research on the therapeutic potential of the studied medicinal plants and the prospects for their application both in concomitant and adjuvant therapy of tumor and neurological diseases.

## **7. Conclusion**

After analyzing the research activities of Chief Assistant Professor Dr. Krasimira Tasheva, I express my conclusion that the candidate meets the requirements for holding the academic position of "associate professor" according to the Law on the Development of Academic Staff in the Republic of Bulgaria, the Regulations for its implementation, and the internal rules of IPPG-BAS for occupation of the academic position "Associated Professor". I believe that Dr. Tasheva has the necessary training and competence for further development of research activities in the field of plant biotechnology with the application of new high-tech methods and she has the capacity for active participation in the training of doctoral students and young scientists. In view of the above, I recommend that the members of the esteemed Scientific Jury propose to the Scientific Council of the IPPG - BAS the election of Dr. Krasimira Nedyalkova Tasheva to the academic position of "associate professor" in professional field 4.3. Biological Sciences, scientific specialty "Genetics".

30.06.2025

Sofia

/Prof. Dr. Ira Stancheva/