

STANDPOINT

from prof. **Albert Ivanov Krastanov, DSc**
University of Food Technologies – Plovdiv

Regarding the announced competition for the academic position “**Associate Professor**”, in a professional field 5. „Technical sciences“, scientific direction 5.11. Biotechnologies (Technology of biologically active substances) for the needs of the Department “Biotechnology”(Laboratory of Metabolomics)at The Stephan Angeloff Institute of Microbiology – Bulgarian Academy of Sciences, published in State Gazette No 12 from 12.02.2021.

Candidate for participation in the competition: Chief Assistant Professor **Andrey Stoyanov Marchev, PhD.**

Grounds for the standpoint: Order NoI-31/29.03.2021of the Director of The Stephan Angeloff Institute of Microbiology – Bulgarian Academy of Sciences, prof. Penka Petrova, DSc and the first session of the Scientific Jury.

Brief biographical data about the candidate

The candidate, chief assist. prof. Andrey Stoyanov Marchev has graduated his Master’s degree in Biotechnology at The University of Food Technologies, Plovdiv (UFT) in 2006. In 2014 he is successfully defending a dissertation entitled “Biologically active substances from rare and endangered *Salvia* species and their *in vitro* cultures”. From 2012 to 2015 he has been appointed as an assist. prof. at The Stephan Angeloff Institute of Microbiology – Bulgarian Academy of Sciences (IMicB-BAS). Since 2015 till now he is chief assist. prof. at the same Institute and part of Department “Plant Cell Biotechnology” at The Center of Plant Systems Biology and Biotechnology as well. Up to date Dr. Marchev has been performed several short specializations, i.e. Technical University, Drezden, Germany for 3 months in 2010-2011 and later in the same University in 2015 and 2017 for 1 month each time. In 2014 he is performing specialization in Laboratory of Molecular and Cellular Biology of Cancer, Luxembourg and in Division of Cancer Research, Medical Research Institute, Jacqui Wood Cancer Centre, University of Dundee, Scotland in 2017, both times for 1 month.

The principal scientific interests of the candidate are in the field of plant biotechnologies, initiation and manipulation of the biosynthetic capacity of plant *in vitro* systems aiming the production of biologically active substances, as well as, metabolomics and metabolic profiling with aim of identification and quantification of the active metabolites in complex plant extracts. The performed specializations abroad has extended the candidate scientific interests towards investigations of anti-inflammatory, anticancer, and cytoprotective activities of the secondary metabolites from plant origin.

Compliance of the submitted documents and materials by the candidate to therequirements according to the Rules for development of academic staff at IMicB-BAS.

Chief assist. prof. Marchev has presented all the documents, required for the participation in the competition for the academic position “Associate Professor”. The set of documents has been prepared according to the requirements of professional field 5. „Technical sciences“, scientific direction 5.11. Biotechnologies (Technology of biologically active substances). This has also been confirmed by the Commission appointed by the Director of IMicB-BAS.

Assessment of the candidate's scientific, applied scientific and publication work

Chief assist. prof. Andrey Marchev has a total work experience in the specialty for 9 years and 8 months. For the participation in the competition for "Associate Professor" he has presented a total of **43** scientific papers, which do not repeat those for the acquisition of the "PhD" degree.

The total number of points obtained by the group of indicators is 2 761.44 with minimum national requirement of 400 points.

By indicator 1 (group A) Dr. Marchev has **50 points** out of 50 required for dissertation for acquisition of "PhD" degree in 2014.

By indicator 2 (group B): 0 points of 0 required.

By indicator of group B, the candidate has **102.74** points out of 100 required, which are formed by 10 scientific papers referred and indexed in world-famous databases with scientific information.

By indicators of group Γ the total points are **202.70** out of 200 required. These points are the sum from 17 scientific publications (149.18 points) referred and indexed in world-famous databases with scientific information; 11 scientific publications (41.86 points) in unreferenced journals with scientific reviewing or edited collective volumes, as well as, 4 book chapters (11.66 points).

By indicators of group Д, citations or reviews in scientific journals referred and indexed in world-famous databases with scientific information or in monographs and collective volumes, the candidate has **2 190** points (219 citations x 10 points) out of 50 required. Such a number of citations and its value is a relatively rare case among the candidates for „Associate Professor“, and exactly the citations are the precise indicator for the standard and the impact of the scientific publications of a certain scientists.

By indicators of group E, although points are not required for „Associate Professor“, the candidate is presenting 216 points. These points are formed from: Participation in national or educational project (70 points), participation in international or educational project (40 points), guidance of national or educational project (60 points), attracted funds from projects, guided by the candidate (6 points) and a recognized application for a utility model, patent or copyright certificate (40 points).

Dr. Marchev's research assets significantly exceed the additional criteria for the development of the academic staff at IMicB-BAS. The number of publications with which he participated in the competition is 43 (at required 20). In 17 of the presented scientific papers (with a required minimum of 5 publications), chief assist. prof. Dr. Marchev is a leading or corresponding author. The total impact factor (IF) of the articles in the competition is **83.18** (86.83 for the entire scientific career) with a required minimum of 20. The total number of citations is 219 (at required 100) and H-index **9** (at required 5). With a required minimum of participation in 3 projects, Dr. Marchev has participated in **12**.

Participation in scientific, applied and educational projects

Dr. Marchev is involved in a total of 12 projects (2 international and 10 national projects). In 3 of the national projects the applicant is a manager, and the total amount of funds raised for the basic organization is 30 000 BGN. As a result of the successful implementation of the project "Biotechnological platform for sustainable production of pharmaceutically important metabolites of golden root", whose leader is Mr. Marchev, he received an award for excellent project management under the joint program "Supporting young scientists at BAS" as a joint initiative of MES and BAS.

Characteristics of the published scientific results

The list of scientific papers is 43, of which 1 utility model, 4 book chapters, 27 publications in referenced and indexed journals in world-famous databases of scientific information (13 in Q1, 6 in Q2, 3 in Q3 and 1 in Q4) with a total impact factor of 83.18 and 11 in unreferenced journals with scientific review or in edited collective volumes. In 17 of the presented scientific works chiefassist. prof. Dr. Marchev is a leading or corresponding author. Publications No 8, 9, 10, 11, 14, 15, 19, 20, 21 and 22 are included in indicator B. Publications No 2, 3, 4, 5, 6, 7, 12, 13, 16, 17, 18, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42 and 43 are included in indicator Г. Publication No 1 is included in indicator E. The scientific results are presented through 25 participations in international and national scientific conferences.

The general scientific activity of chief assist. prof. Dr. Andrey Stoyanov Marchev is characterized by topicality; good methodological base of research, characterized by the use, creation and introduction of appropriate and modern methods; obtained significant results for science and practice, as well as those that open opportunities for future interesting scientific and applied research.

Reflection of the candidate's scientific activity in literature (citation)

Data on **219 citations** of publications with the participation of Dr. Marchev are presented. This number of citations (excluding auto-citations by all authors/co-authors) is only of the scientific publications included in the competition and is an excerpt from the Scopus database until 05.04.2021.

Main scientific contributions of the candidate

Significant scientific and applied contributions stand out, which are difficult to comment on in a single opinion. However, the scientific and applied research and contributions of chief assist. prof. Dr. Andrey S. Marchev make a clear impression in the following scientific fields: plant biotechnology (Publications, 22), chemistry of natural molecules (metabolomics and metabolic profiling based on nuclear magnetic resonance and high performance liquid chromatography) (Publications № 9, 14 and 20) and pharmacology (Publications № 8, 10, 11, 15, 19, 21), most of which bring together several of the mentioned scientific fields.

The contributions of chief assist. prof. Dr. Marchev managed to unite basic and applied science. In this regard, the main emphasis is on the initiation of plant *in vitro* systems, in most cases from rare or protected plant species for the purpose of biosynthesis of valuable secondary metabolites, as well as metabolic manipulation of secondary metabolism. On this basis, a utility model has been developed, the main purpose of which is to optimize the nutrient medium composition for *in vitro* propagation of Orpheus flower (*Haberlea rhodopensis* Friv.), in order to biosynthesize myconoside, a secondary metabolite with important applications in the cosmetics and pharmaceutical industries. By overexpressing some transcription factors and blocking competing metabolic pathways, the biosynthesis of *t*-resveratrol and its derivatives in transgenic tobacco roots is increased.

The candidate successfully develops and integrates the applicability of metabolomics and metabolic profiling by combining modern analytical platforms based on nuclear magnetic resonance and high performance liquid chromatography. This approach can study not only the qualitative and quantitative composition of secondary metabolites in plants or their individual parts, but also to define the so-called metabolic markers on the basis of which to determine the authenticity and quality of plant derived supplements. Such is the case with the plant

golden root (*Rhodiola rosea* L.), which is used extremely widely in the form of nutritional supplements to overcome stress and depression.

Subsequent pharmacological studies also contribute to the integrity of the applicant's scientific profile. Studies conducted with extract and pure molecules of golden root, reveal its potential to overcome resistance to apoptosis in some autoimmune and cancerous diseases. A standardized extract of the same plant has a positive effect on learning and recognition functions in rats with induced memory impairment. Myconoside and calceolarioside E, biotechnologically derived from the Orpheus flower, have cytoprotective effects due to the activation of the transcription factor Nrf2.

The outlined guidelines for the future development of the candidate are based on his achievements so far and aim to expand his competence in the relevant scientific field by integrating "omics" approaches, not only to study metabolism in plants but also in microorganisms. In addition, the study of signaling pathways related to the regulation of various diseases, as well as the definition of disease-specific metabolic markers has been stated. The general scientific activity of chief assist. prof. Dr. Marchev is characterized by: - Actuality; - Good methodological basis of research, characterized by the use, creation and introduction of appropriate and modern methods; - Obtained significant results for science and practice, as well as those that reveal opportunities for future interesting scientific and applied research; - Significant scientific output.

Other activities related to the scientific activity of the candidate

Apart from research activity, Dr. Marchev's activity also includes organizational and expert activity. His participation in the organizing committees of 3 international scientific conferences, as well as his participation as a member of the Management Board of the Bulgarian Phytochemical Society testify to his organizational activity. His expert work is based mainly on reviews in several scientific journals such as Phytomedicine, Phytochemical analysis, Phytochemistry Reviews, Food and Chemical Toxicology, Molecules, Industrial Crops and Products, etc., as well as the review of a doctoral dissertation by the University of Alicante, Spain.

Conclusion: The candidate chief assist. prof. Dr. **Andrey Stoyanov Marchev** is a well-prepared and erudite researcher in his field with an impressive scientific output, which characterizes him as a modern scientist with original scientific ideas and methodological preparation for their implementation. With his publications he makes significant contributions to science and practice and opens up opportunities for new research.

This, together with my personal impressions and my impression of all the materials presented in the competition, gives me reason to strongly recommend to the esteemed scientific jury to unanimously propose chief assist. prof. Dr. Andrey Stoyanov Marchev for holding the academic position "ASSOCIATE PROFESSOR", 5. Technical sciences, professional field 5.11. Biotechnologies.

22.05.2021
Plovdiv

Signature:
(prof. A. Krastanov, DSc)