OPINION

by Assoc. Prof. Dr. Maya Hristova Guncheva,
Institute of Organic Chemistry with Centre of Phytochemistry, BAS

of the documents submitted for the participation in the competition for the position "Associate Professor "at the Institute of Organic Chemistry with Centre of Phytochemistry (IOCCP), BAS

in the Field of higher education 4.0 Natural sciences, mathematics and informatics", Professional field 4.2. Chemical Sciences, Scientific specialty "Bioorganic chemistry, chemistry of natural and physiologically active compounds"

Senior Assist. Prof. Dr. Alexandar Konstantinov Dolashki from Laboratory "Chemistry and Biophysics of Proteins and Enzymes" of Institute of Organic Chemistry with Centre of Phytochemistry-BAS (IOCCP-BAS) is the only one candidate in the competition for the position "Associate Professor" announced in the State Gazette, issue 43/31.05.2019.

1. General presentation of the submitted materials

The full set of documents in an electronic and a paper format requested for the participation in the competition for the position of "Associate Professor" has been submitted before the deadline by Senior Assist. Prof. Dr. Alexandar Konstantinov Dolashki. The documents are in accordance with the requirements of the Act for the Development of the Academic Staff in the Republic of Bulgaria (ADASRB) and the IOCCP Regulations of the implementation of ADASRB.

From the application is seen that the Applicant fully meets the criteria of the ADASRB and IOCCP for the occupation of the academic position "Associate professor" in the professional field 4.2"Chemical sciences".

Senior Assit. Prof. Dr. Alexandar Dolashki has completed his higher education at the University of Chemical Technology and Metallurgy-Sofia, Bulgaria in 2000 as M.Sci. Chemical engineer in the specialty "Chemical technological processes and systems". From 2001 to 2005 A. Dolashki is a Ph.D. student in Biochemistry at the University of Tübingen, where in 2005 he defended a Ph.D. thesis entitled "Structure, function and properties of Cu-containing proteins: hemocyanins and superoxide dismutase". Since 2006 he has been appointed as Senor Assistant Professor at Laboratory "Chemistry and Biophysics of Proteins and Enzymes", IOCCP-BAS.

2. General characterization of the activities of the candidate

The total number of the publications of Dr. Dolashki is 49. He participates in the competition with 24 publications, 11 are the publications substitute the habilitation work (Indicator C-4) and 13 are the publications on Indicator D-7 (in Table 2 for the field of higher education 4. Natural sciences, mathematics and informatics in the Regulations for application of ADASRB and in the Regulations for Occupation of Academic Positions at IOCCP-BAS). Dr. Dolashki is the first author in 10 of the papers in Indicator C-4. All articles that are considered for the participation in the competition have been referenced and indexed in the world-renowned scientific databases Web of Science and/or Scopus and have been ranked as follows: 7 papers have been published in journals with rank Q1; 10 ─ in Q2, 5–in Q3 and 2 ─in Q4.

Dr. Dolashki is a co-author of a textbook and a training notebook entitled "Principles and application of mass spectrometry in biology" that are oriented to students in biology and medicine.

Dr. Dolashki co-authored 4 patents on the preparation of extracts and the development of health-care products based on hemocyanins and active peptides.

The candidate has provided a list of 225 citations in Web of Science and/or Scopus not included in previous competitions. His h-index is10.

Dr. Dolashki has been a project leader of 3 International projects, 2 projects funded by the National Science Fund of Bulgaria, and he has participated in 22 national and bilateral projects, among which 7 are ongoing. He participates in one National program and one project for the creation of Centre of Competences.

Dr. Dolashki won more than 18 awards, among them are prizes received from the technological exhibitions, awards obtained for the transfer of knowledge, as well as the prestigious awards "Pythagoras-2013" as a member of a team with implemented in the industry products based on research studies, and the award "Pythagoras -2017" for the company with the most R&D investment in 2017.

A list and materials confirming Dr. Dolashki's participation in 53 conferences are presented. Dr. Dolashki underwent numerous short-term specializations within the framework of collaborations with foreign Institutions, which undoubtedly enable him to improve his qualifications and to acquire new methodologies and techniques for characterization of proteins.

The research interests of Dr. Dolashki are in the field of bioorganic chemistry; more specifically his studies are focused on the investigation of the structure and biophysical properties of Cu-containing proteins and glycoproteins.

The contributions from his the research is both scientific and applied. In summary, they can be summarized as follows:

1. Contributions from the studies of Cu-containing proteins.

Two superoxide dismutases (SOD), Cu/Zn-SOD and Mn-SOD were isolated for the first time from fungus *Aspergillus niger*. The molecular mass of the protein was measured by MALDI-MS and ESI-MS, the sequence of the proteins was determined and using homology modeling the protein was compared with other proteins. Thermal and pH stability of the two proteins were determined (Art. №5 from the listed on Indicator C-4 papers).

Unusual localization (both in mitochondria and cytosols) of Cu/Zn-SOD from filamentous fungi *H. lutea* is reported for the first time. The *H. lutea* mitochondrial Cu/Zn-SOD is the first identified naturally glycosylated enzyme identified naturally glycosylated, isolated from the intermembrane space (Art. №7).

In the focus of the research of the Applicant are also, proteins containing two Cu^{2+} ions in their active site. Hemocyanis (Hcs) from the artropod (cancer *Eriphia verrucosa*) and mollusks (*Octopus vulgaris, Sepia officinalis,Rapana venosa, Carnu aspersumi)* were purified and characterized in view of their structure (primary, secondary, tertiary and quaternary) and their stability in respect to the temperature and the pH of the environment. The anticancer effect of some of the Hcs against numerous cell lines have been tested (Art. №1–3, 6, 8, 9, 11).

For the first time were isolated and characterized tyrosinases from bacterial strains *Streptomyces albus* and *Laceyella sacchari*. The structure, stability and activity of the two enzymes are studied in details (Art. №4 and Art. №10).

The studies are detailed, motivated and carried out methodically. The results have been interpreted in depth. The contribution and the role of Dr. Dolaski to research and publication, object of evaluation is clear. In 10 of the publications on indicator C-4 he is the first author.

3. Critical comments and recommendations

The habilitation work is written concisely and with understanding. Some misspellings are found in the text. While summarizing the contributions of his studies the Applicant has grouped the proteins in respect to the number of the Cu ions that present in their active site. He and has introduced the terms "type I" for single copper proteins in the center of activity, "type II" for proteins with two copper ions in the center of activity and "type III" for proteins with three copper ions in the center of activity, which is confusing.

According to the accepted nomenclature, the division by type of copper-containing proteins is according to the type of ligands and their planar location in the complex. Hence, hemocyanin (2 copper ions in AC) and tyrosinase (3 copper ions in AC) are type III copper-containing proteins, while SOD is type II copper-containing protein.

4. Personal opinion

I have known Senior Assist. Prof. Dr. Dolashki since he has been employed at IOCCP-BAS in 2006. He is initiative, with realistic expectations and focused. Based on the lectures that he has given at the Institute and on many scientific forums, I am convinced in his competence and broad knowledge on structural characterization of proteins with complex structure. Dr. Dolashki is a guest-lecturer on seminars and trainings related to entrepreneurship and topics on the relationship between business and science. He is often invited as a participant in broadcasts and interviews for electronic and print media, which contributes to the promoting of science in Bulgaria. I am convinced that he is highly respected for his work.

CONCLUSION

All documents and materials submitted by Senior Assist. Prof. Alexandar Konstantinov Dolashki for the participation of the competition for the position "Associate Professor" cover and exceed the requirements of the Act for the Development of the Academic Staff in the Republic of Bulgaria (ADASRB), and its Regulations, as well as the Regulation of the implementation of ADASRB of Bulgarian Academy of Sciences and IOCCP.

Dr. Dolashki has participated in the competition with a considerable number of scientific papers that have not been used in her Ph.D. and in the competition for the occupation of the academic position of "Senior Assistant Professor "at IOCCF-BAS. The papers contain original scientific contributions, and the leading role of Dr. Dolashki in the research described in the peer-reviewed publications is clear. The studies are of high scientific value, and 4 patents have been registered as an outcome of them.

Dr. Dolashki is highly qualified scientists and her results and contributions to the protein science are indisputable and fully meet the specific requirements and criteria of the Regulation of the implementation of ADASRB of IOCCP.

After the analysis of the research output of Senior Assist. Prof. Dr. Lexandar Dolashki, its importance and the scientific contributions reflected therein, I give **my positive assessment** and recommend to the Scientific Jury to prepare a report-proposal to the Scientific Board of IOCCP-BAS for the selection of **Senior Assist. Prof. Dr. Alexandar Dolashki** at the academic position of **"Associate Professor"** at IOCCP-BAS in the professional field 4.2. Chemical Sciences, scientific specialty: "Bioorganic chemistry, chemistry of natural and physiologically active compounds".

14.09.2019 Signature:

Sofia /Assoc. Prof. Dr. Maya Hristova Guncheva/