



## OPINION

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of the materials presented for the participation in a contest

for the tenure of the academic position "ASSOCIATE PROFESSOR"

field of higher education: 4. „Natural sciences, mathematics and informatics”,

professional field: 4.2. „Chemical sciences“,

scientific specialty „Bioorganic chemistry, chemistry of the natural and physiologically active compounds“

**in the Institute of Organic chemistry with a Center of Phytochemistry (IOCCP), BAS**

The contest for "Associate professor" in the field of higher education: 4. „Natural sciences, mathematics and informatics”, professional field: 4.2. „Chemical sciences“, scientific specialty "Bioorganic chemistry, chemistry of the natural and physiologically active compounds" was announced in PN № 43/31. 05. 2019 for the needs of IOCCP, BAS. The only candidate in the contest is assistant professor engineer Aleksandar Konstantinov Dolashki, from the laboratory CBPE of the same institute.

### 1. General presentation of the received materials

Just from the beginning I would like to underline that the represented by assistant professor Dolashki materials in a paper copy and on an electronic holder are **completely in compliance** to the Regulation for development of the academic structure of IOCCP and **correspond** to the criteria of IOCCP-BAS for the tenure of the academic position "Associate professor".

In the documentation of the contest Dr. Dolashki has presented 50 scientific papers, 45 of which are published in journals with an IF (total IF 80.458). The papers till now have been cited 225 times. His h-index is 10. He is also an author of 4 requests for national patents for inventions.

For the participation in the contest for "Associate professor" Dr. Dolashki participates with 11 scientific papers published in the period 2008-2019 - all of them in journals with IF (total IF - 19.176). They are distributed as it follows: in Q1 - 3, Q2 - 5, Q3 - 2 и Q4 - 1. In 9 of the articles he is a leading (first) author. All of his papers are in the field of the **bioorganic chemistry and are devoted on the study of the structure and properties of the copper containing proteins and glycoproteins.**

The results of Dr. Dolashki are presented in 53 national and international scientific forums. The information about the execution of the minimal scientific requirements indicates the he has 1840 points.

**Regarding the documentation, it is prepared precisely, understandable, with an experience. All of the scientific papers are originals and those that has to be revised are focused and completely correspond to the field of the announced contest.**

## 2. Short biographical data

Assistant professor Dr. Eng. Aleksandar K. Dolashki was born on 29.12.1977. He graduated the University of chemical technology and metallurgy - Sofia in 2000 as a master engineer-chemist in the specialty “chemical-technological processes and systems”. He continues his education in the University of Tubingen, Germany as a PhD student and in 2005 he defends a PhD dissertation on the subject “Structure, functions and properties of the copper-containing proteins: hemocyanins and superoxidodismutases and becomes a doctor in “Bioorganic chemistry, chemistry of the natural and physiologically active compounds”. At the moment he is an assistant professor in IOCCP-BAS. During his carrier development Dr. Dolashki has been on a specialization and on a work in co-projects in series of universities - Tubingen, Germany; Mainz (Germany); Padova (Italy), Gent (Belgium), Kiev (Ukraine), Qingdao (China) and others. He was awarded with the prestigious award for science “Pythagoras” for 2017.

### 2.1. Scientific projects

Assistant professor Dr. A. Dolashki have worked successfully on various projects on a national and an international level. He is a participant in the elaboration of 27 scientific projects with a national and a foreign financing. He has been a coordinator of 2 projects financed by the MES and a coordinator of the Bulgarian teams in three co-projects with Germany, China and Belgium. At the moment he participates in **two large projects** - creation and development of Center of competence “Clean technologies for sustainable environment - waste, water, energy for circular economy” and National scientific program “BioActiveMed”, financed by MES. Both projects are planned and are executing with large teams, significant financing and their results are important for the science and the practice. This indicates and establishes the perspectives and the development of the researching and implementing work of the future **ASSOCIATE PROFESSOR**. His high competence Dr. Dolashki possesses in a tiny collaboration with researchers from different Bulgarian universities and institutes, as well as with scientists from the universities in Tubingen, Germany; Mainz, Germany; Padova, Italy; Gent, Belgium; Kiev, Ukraine and Qingdao, China.

## 3. General characteristic of the activity of the candidate

### 3.1. Assessment of the scientific papers of the candidate represented for the contest

In the represented author information about the contribution of the production of Dr. Dolashki clearly could be outlined four scientific fields: 1/ Isolation and characterization of the structure and properties of proteins with one copper ion in the active center - superoxidodismutases /article 1/; 2/ Isolation and characterization of the structure and the properties of proteins with two copper ions in the active center - hemocyanins /article 3, 4, 5/; 3/ Isolation and characterization of the structure and properties of glycoproteins with three copper ions in the active center - tyrosinases /articles 6, 7, 8 and 9/; 4/ Proteomic analysis of the anti tumor activity of hemocyanins /article 10 and 11/.

Among the most standing out contributions are the achievements in the study of the structure of the **Cu/Zn-superoxidodismutases** /proteins with one copper atom in the molecule/, the glycoproteins with two copper atoms - the hemocyanins of molluscs (snails) and arthropods that function as oxygen carriers. Despite their same biological function, the hemocyanin of both type of organisms have different structure and properties. As significant

ones, I could outline as well his contributions related to the copper-containing proteins with three copper atoms in the active center - the tyrosinases and their cognate catechol oxidases. In the papers of Dolashki a studying subject are the unresearched till now tyrosinases from *Streptomyces albus* and *Laceyella sacchari*.

The last two publications form the paper list for the contest /10, 11/ are devoted to the study of the **biological effects of the hemocyanins from molluscs**. The hemocyanins from *Helix lucorum*, *Rapana venosa* and *Megatara crenulata* and their functional units are proved agents with an anti tumor activity according to human tumor cell lines from a bladder cancer (CAL-29 and T24).

I accept all of the contributions described by Dr. Dolashki. I found them as **significant for the science in a national and an international plan**, noticeable achievements in the field of the proteomics and the glycobiology. They are a solid basis for the future development of Dr. Dolashki as a scientist and a partner in larger researching and implementing elaborations. They are the critical necessary scientific-researching mass for the unification and creation of a scientific-researching team around Dr. Dolashki and a future school managed by him.

At the end of the self-assessment of the contributions, Dr. Dolashki represents as well his vision about his future work that I have to outline that it represents a **continuation, overbuilding, expansion and putting in a compliance to the requirements of the newest programs and priorities for the science, education and intelligent growth**, as it follows:

1/ Proteomic analyses of the natural peptides, proteins, glycopeptides and researches directed to the study of clarification of the mechanisms of their activity and interaction with different agents causing diseases - bacteria, pathogenic fungi strains, viruses, tumors;

2 / Work in the project "Clean technologies for sustainable environment - waste, water, energy for circular economy". The accent will be put on the foundation and diagnostic of pollutants in the environment, especially toxic and priority ones, which methods represent a huge scientific and applicable challenge;

3/ Participation in the National scientific program "Innovative low-toxic biological active compounds for a precise medicine" will direct his studies to the expansion and deepening of the specter of the therapeutic innovative agents with an applicable character;

All of this is in a tiny relation to the acquired, newly created, multiple times approbed methodology during his PhD studying and during the way of assistant professor Dolashki to the present associate professor. **The acquired good researching practices, their realization, fast walking of the long way from the specific scientific study to the real application of the foundation in the practice**, the unification of the opportunities for application with good business models and a market realization of the products is a priority of the **PRESENT DAY**. Dr. Dolashki has acquired this and proved it in its activity. **I assess it highly**. I find that this is a overbuilding, expansion and development of the skills and competences of the scientist-researcher and this model of development of the researchers is necessary to be supported and popularized.

#### 4. Critical notes and recommendations

I do not have any specific critical notes that deserve to be described. I think that it is fiddling to list technical lapses on such a large, reasonable, deep and giving results work. I have shared them directly to the candidate.

I have one recommendation to Dr. Dolashki. The future associate professor to put efforts, an experience and a talent in the education of young specialists - master and PhD students because I think the popularization of his good researching, innovative, applicable and business

practices are key for the development of specialists with innovative and entrepreneurial skills but also acquiring and passing through the hard way of the researching work and methodological upgrading.

#### 4. Personal impressions

I have known Dr. Dolashki for 5 years when our teams started to work together on the functional activity of proteins and peptides isolated by a slime of a garden snail. Since the first moment of the partnership and human acquaintance I was impressed by the competence, the good quality, the large experience and complex thinking of Dr. Dolashki. Here, I have to outline as well his chance to **grow and mature in a scientific team that is one of the most expressing in a national and an international plan, a team created his own style and unique algorithms in the development of the proteomics and glycomics**. All of this is proved by the multiple significant and many times cited scientific products of the team - articles, patents and their popularization through citations. Impressing are the implementing achievements of this team for the creation of multiple pharmaceutical and cosmetic products whose realization have received acknowledgment and business results in Bulgaria and abroad. For the last one a large contribution and a decisive partnering has Dr. Dolashki.

Except the significant scientific and applicable results which are a direct object on this opinion, in the contest for the academic position "ASSOCIATE PROFESSOR" it is important also **the personality, the potential and the perspectives for the development of the future specialist with an academic rank**. By this point of view, I think that Dr. Dolashki is a realized, talented, devoted, perspective young, but achieved a scientific maturity researcher, with a huge implementing potential. The acquired and adapted to our reality business model should be popularized and developed through the young specialists taking the way to the development of the bio-economy of the Republic of Bulgaria. Regarding to this, he has been invited and will pass his experience to master students from the master program "Bio-business and bio-entrepreneurship" of the Faculty of Biology of Sofia university and in the Center of competence „Clean&Circle”.

#### 5. CONCLUSION

Based on the above analysis of the scientific achievements and the complexity of Dr. Dolashki as a person and a researcher I could summarize with conviction the following.

Assistant professor Aleksandar Dolashki is built and established specialist in the field of **bioorganic chemistry and especially in the study of the copper-containing metal-proteins such as the superoxidodismutases, tyrosinases and the hemocyanins**. In this fields he has published 50 scientific articles in leading international journals in biochemistry, bioorganic chemistry and molecular biology that have been cited more than 500 times in the worldwide literature. In the above mentioned field he is a popular scientist in Bulgaria and abroad.

The information for the execution of the minimal national requirements indicates that he has 1840 points. This many times exceeds the official criteria of NCID, BAS and IOCCP for the tenure of the academic position "ASSOCIATE PROFESSOR" in the field of higher education: 4. „Natural sciences, mathematics and informatics”, professional field: 4.2. „Chemical sciences“, scientific specialty „Bioorganic chemistry, chemistry of the natural and physiologically active compounds“. I highly assess as well his organizational, managing and business qualities that he, as an associate professor, will attach and multiply in his own school.

All of this gives me a reason to recommend with conviction to the honored Scientific jury, as well as on the SC of IOCCP to confer him the academic position "ASSOCIATE PROFESSOR".

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Prepared the opini

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