REVIEW

on the competition for "Professor" in the professional field 4.2 Chemical Sciences, scientific specialty "Bioorganic Chemistry, Chemistry of Natural and Biologically Active Substances" for the needs of the "Molecular Design and Biochemical Pharmacology" section of the Institute of Molecular Biology of the Bulgarian Academy of Sciences, announced in the State Gazette, issue 114 of 24.12.2025.

with a single candidate: **Associate Professor Dr. Nikolay Tzvetkov Tzvetkov**

Reviewer: Professor Dr. Nikolay Georgiev Vassilev, Institute of Organic Chemistry with Centre of Phytochemistry, Bulgarian Academy of Sciences

1. Biographical data and eligibility

Associate Professor Dr. Nikolay Tsvetkov graduated in 1999 from the University of Chemical Technology and Metallurgy (UCTM) in Sofia with the educational and qualification degree "Master" in the specialty Chemical Technologies with the professional qualification "Chemical Engineer" with specialization Technology of Organic Synthesis at the Faculty of Organic Technology and Chemical Engineering. His diploma thesis was prepared at the Institute of Chemical Reaction Engineering of the Technical University of Hamburg, Germany. In 2005 he acquired the scientific and educational degree "Doctor" in the professional field: 4.2. Chemical Sciences and scientific specialty: Bioorganic Chemistry, Chemistry of Natural and Physiologically Active Substances with the topic of the dissertation work "Photoreactions of Tricyclic Cyclopropyl Ketones: Construction of Polyquinanes and Analogous Ring Systems" at the Faculty of Chemistry of the University of Bielefeld, Germany. He then held successively postdoctoral positions at the Faculty of Chemistry of the University of Bielefeld in Germany, at the Institute of Pharmacy of the University of Bonn, Germany and Schwarz Pharma AD, Monheim, Germany. Since 2008, he has been a research associate-lecturer at the BioPharma Neuroalliance Consortium, Center for Pharmacy of the University of Bonn, Germany. Since 2014, he has been a senior research associate-lecturer, head of research and development projects with industrial partners at the Institute of Pharmacy of the University of Bonn, Germany. Since 2017, he has been an assistant professor, and since 2018, an associate professor in the section "Molecular Design and Biochemical Pharmacology" of the Institute of Molecular Biology at the Bulgarian Academy of Sciences.

The documents for participation in the competition of the candidate meet the requirements of the Regulations of the Institute of Molecular Biology and of the Act on the Development of Academic Staff in the Republic of Bulgaria, and his scientific and educational profile are in accordance with the requirements for a professor in the professional field 4.2. Chemical Sciences and the scientific specialty "Bioorganic Chemistry, Chemistry of Natural and Biologically Active Substances".

2. Scientometric indicators of the candidate

Associate Professor Dr. Nikolay Tzvetkov participated in the competition for a professorship with 5 scientific articles in Group of indicators B, equivalent to a habilitation thesis and 15 scientific papers in Group of indicators D. All publications are on the topic of the competition, and all are printed in specialized international journals, referenced in ISI Web of Knowledge and/or SCOPUS and have an impact factor (IF). In renowned international journals such as the *European Journal of Medicinal Chemistry* (with IF=5.9 for 2024), the candidate has published 3 articles, in *Biotechnology Advances* (with IF=12.5 for 2024) – 2 articles, in *Antioxidants* (with IF=6.6 for 2024), in *Antioxidants & Redox Signaling* (with IF=6.1 for 2024), in the *International Journal of Molecular Science* (with IF=4.9 for 2024) and in the *Journal of Natural Products* (with IF=3.6 for 2024) has published one article each, etc. It is noteworthy that the publications have been printed in various renowned journals depending on the thematic focus of the research. The distribution of the 5 scientific publications included in the habilitation thesis according to the category of scientific journals is as follows: four are in scientific publications with Q1, one is in Q2. The distribution of the remaining scientific publications with which the candidate participates in the competition for the academic position of "Professor" according to the category of scientific journals is as follows: 10 are in scientific publications with Q1 and five are in scientific publications with Q2.

The materials for the competition present a list of 312 (148 of the scientific publications included in the habilitation thesis) citations of the works of Associate Professor Dr. Nikolay Tzvetkov, with which he participated in the competition. The most cited article is the article in Frontiers in Molecular Neuroscience from 2019 with 112 citations. It is not surprising that mainly articles from the beginning of the candidate's scientific career have caused more resonance in the literature, while the more recent ones, although in more reputable journals, are still expected to be cited.

Associate Professor Dr. Nikolay Tzvetkov has also presented in his documents an extended habilitation report on his scientific contributions. This report contains an

introduction, which describes the essence of the researched scientific problems: design and development of new, potential therapeutic agents for the treatment of neurodegenerative diseases; development of low-molecular reversible inhibitors of monoamine oxidases (MAO); development of neurotensin peptide mimetics as antagonists of neurotensin receptors of type 1 and 2 and natural extracts as a primary source in the design of new biologically active molecules. The main scientific contributions of the candidate are also presented, which describe in detail the specific original scientific contributions with which the candidate participates in the competition and his/her views on future research work. The bibliography correctly distinguishes the articles with which the candidate participates in the competition from his/her other articles and the articles of other authors.

The attached certificate shows that Associate Professor Dr. Nikolay Tzvetkov meets and exceeds the minimum national requirements for occupying the academic position of "Professor" (indicators A and B meet the national requirements, indicator D is 350 with a minimum value of 220, indicator E is 624 with a minimum value of 120 and indicator E is 194 with a minimum value of 150).

3. Publications submitted for participation in this competition

Associate Professor Dr. Nikolay Tzvetkov has summarized in the "Habilitation Extended Report" his own scientific achievements in the scientific articles submitted for the competition, all works being in the field of "Bioorganic Chemistry, Chemistry of Natural and Biologically Active Substances".

The scientific contributions of Associate Professor Dr. Nikolay Tzvetkov in the publications submitted instead of the habilitation thesis can be grouped into three areas:

1. Development of (pyrrolo-pyridin-5-yl)benzamides as reversible MAO-B inhibitors;

2. Development of carboxamides and methanimines as inhibitors of MAO-B and acetylcholinesterase and

3. Development of short-chain analogues of neurotensin as potential therapeutics for Parkinson's disease.

It is noteworthy that in all publications submitted instead of the habilitation thesis the candidate is a corresponding author. In addition, two of the publications are reviews on the topic. One is a review of the literature on MAO inhibitors. The other is a review of neurotensins and their therapeutic potential. This demonstrates both the candidate's broad scientific outlook and detailed knowledge of contemporary scientific trends in the design and testing of new MAO inhibitors and neurotensins.

The scientific contributions in the publications under indicator group "G" demonstrate the expansion of the candidate's scientific interests in other areas of pharmaceutical chemistry and medicine, beyond the narrowly specialized research area of the development of low-molecular biologically active substances and short-chain peptide mimetics with potential in the therapy of neurodegenerative diseases.

Associate Professor Dr. Nikolay Tzvetkov has focused his scientific research on studying some essential processes related to the pathophysiology of various groups of diseases, such as pathological proliferation of vascular smooth muscle cells in cardiovascular diseases, the role of highly reactive oxygen-containing molecules in the processes of neurodegeneration, as well as clarifying the role and importance of natural products and herbal medicines for possible therapy and prevention of various types of dementia and Parkinson's disease, diabetes, cancer, chronic kidney disease, metabolic disorders and antiviral activity.

In his research, Associate Professor Dr. Nikolay Tzvetkov uses a combination of design and synthesis of new therapeutic agents, various spectral methods, quantum-chemical methods, molecular docking and various in vivo techniques and models for biological screening of potential candidate molecules. This allows in most cases to obtain a complete multidisciplinary study that is carefully planned, conducted and the results are promising.

The scientific works of Associate Professor Dr. Nikolay Tzvetkov are of a very high scientific level, correspond to the topic of the competition and are in the field of bioorganic chemistry, chemistry of natural and biologically active substances. The scientific publications also use various spectral and theoretical characterizations of the studied systems. The conducted studies can be attributed to the categories of novelty for science, as well as enrichment of scientific knowledge, by clarifying mechanisms of biochemical reactions and quantitatively predicting the biological action of the studied systems.

4. Project activity

Associate Professor Dr. Nikolay Tzvetkov was the leader of 3 successfully reported projects, financed by the Bulgarian National Science Fund of the Ministry of Education and Science and has participated in 2 international scientific projects, financed by a European program or the German DFG foundation.

CONCLUSION: Associate Professor Dr. Nikolay Tzvetkov meets all the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria and the Regulations on the Terms and Procedure for Acquiring the Academic

Position "Professor" of the Institute of Molecular Biology of the Bulgarian Academy of Sciences. The valuable scientific production submitted for participation in the competition is sufficient in volume, has been published in reputable scientific journals and has found a wide response in the literature.

Based on the above, I confidently give my positive assessment and propose that Associate Professor Dr. Nikolay Tzvetkov be elected "Professor" in professional field 4.2. Chemical Sciences, scientific specialty "Bioorganic Chemistry, Chemistry of Natural and Biologically Active Substances" for the needs of the "Molecular Design and Biochemical Pharmacology" section at the Institute of Molecular Biology of the Bulgarian Academy of Sciences.

20.04.2026 Reviewer:

(Prof. Dr. Nikolay Vassilev)