

TO THE CHAIRMAN OF THE SCIENTIFIC JURY
IT IS DETERMINED BY ORDER No. 15-05-99/05.08.2024 OF THE EXECUTIVE
DIRECTOR AND THE AUTHORITY OF
"ACIBADEM CITY CLINIC UMBAL TOKUDA"
ACCORDING TO THE PROCEDURE FOR ACCOMPANIING THE ACADEMIC
POSITION "ASSOCIATED PROFESSOR"

REVIEW
FROM

Prof. Vasil Hristov Karakostov, MD, PhD, DMSc
Head of the Neurosurgery Clinic of the University Hospital, "St. Iv. Rilski" - Sofia

Regarding: Procedure for occupying the academic position of Associate Professor
"Neurosurgery", field of higher education 7. Health care and sports 7.1
Medicine in the discipline "Neurosurgery", according to the decision of the Scientific Council
of "Acibadem City Clinic UMBAL Tokuda" EAD (Protocol No. 53/26.06.2024) and
published in State Journal No. 47 of 04.06.2024.

In the submitted documents for the competition for associate professor, one candidate
submitted his documents - **Dr. Toma Yuriev Spiriev, MD, PhD**

At the first meeting of the Scientific Jury, I am appointed to prepare Applicant review.
Dr. Toma Yuriev Spiriev has submitted all the required materials on the competition, necessary
for the preparation of this review.

Brief biographical data:

Dr. Toma Yuriev Spiriev, MD was born on November 25, 1984 in the city of Sofia.
He completed his secondary education - French language high school in Sofia, with honors. In
2009, he graduated medicine at the "Medical University Sofia" with excellent success and was
declared "student of the year" in the professional field "Medicine and Sports". One year later
he was honored with the award "Academician Metodi Popov" for achievements in mastering
the biological sciences and medicine.

He specializes in neurosurgery at the Neurosurgery Clinic of "Acibadem City Clinic UMBAL Tokuda" EAD and in 2015,

Dr. Spiriev received a board certification in neurosurgery. In 2018, he successfully passed the exam of the European Association of Neurosurgery, receiving an award for the highest achieved result. In 2019, he obtained the educational and scientific degree "Doctor" after defending a dissertation on the topic "Preoperative 3D planning and 3D simulation of neurosurgical approaches in cranial surgical interventions". He has a master's degree in health management in 2020 from Sofia Medical University. Dr. Spiriev continues to work as a neurosurgeon at the Clinic for Neurosurgery, "Acibadem City Clinic UMBAL Tokuda Hospital", Sofia and as a part-time assistant in the Department of "Anatomy, Histology, Pathoanatomy and Forensic Medicine" at the Medical Faculty of Sofia University. He has excellent competencies of English and good French and German languages. Has a high level of computer literacy. Dr. Spiriev has multiple specializations in Austria, Switzerland, England, France and the USA.

Evaluation of research activity

In the current competition, Dr. Spiriev presents in the current application **32 publications** in specialized scientific journals and one doctoral dissertation. Thirty the publications are indexed in SCOPUS or Web of Science and **29** of them are in journals with Impact Factor. Of those presented for review, Dr. Spiriev also has /2/ two publications in Bulgarian scientific journals. In the scientific production of Dr. Spiriev, he is the first author in **14** of the publications, and second and subsequent in **18**. The author has **42** poster participations and summaries of reports from scientific forums, of which **29** are in English and **13** in Bulgarian. The total number of citations of the candidate's scientific works in the database - SCOPUS and **Web of Science is 612 citations and 7 citations in Bulgaria**. The total Impact factor of the candidate's scientific works is **6.369**, with **h-index - 14**.

The scientific interests and resulting publication activity of Dr. Spiriev are focused mainly in the field of preoperative planning using 3D visualization systems, neuroanatomy, 3D scanning, 3D printing and their application in neurosurgery.

In Dr. Spiriev's dissertation "Preoperative 3D planning and 3D simulation of neurosurgical approaches in cranial surgical interventions", a comprehensive algorithm for preoperative planning in intra, extra-parenchymal oncological lesions, vascular malformations, cranioplasty was developed using an open access program, and the accuracy measurements of the program were previously verified by comparison with data from the author's previous anatomical study

with the same measurements, but made with Osirix. An accurate method for marking and localization of intracranial lesions was developed and described using the software is prospective as all described methodology is gradually integrated into daily practice. This allows repeatability of the method for other authors and ease of application of the program. The method can be applied and tested for other software than Osirix allowing 3D reconstructions based on DICOM data.

Another direction in the scientific interests and production of the author is the application of 3D visualization systems in the training of neurosurgery residents and medical students, as well as integration of virtual and mixed reality systems in preoperative planning of neurosurgical interventions.

The author develops the implementation of algorithms for preoperative planning and data integration in virtual and mixed reality systems allowing preoperative discussion of the stages of the operation, as well as direct superposition in mixed reality of the 3D reconstructions on the patient's own data intraoperatively.

- Three-dimensional printing in cranial surgery (cranioplasty) spinal surgery (3D models for preoperative planning)
- Photorealistic 3D scanning of anatomical models enabling training of interns and students through the project www.3Datlasofneurologicalsurgery.org
- 3D stereoscopic lectures using modern methods of visualization (3D glasses and multimedia).

As a culmination of the author's scientific interests is the development and creation of a three-dimensional photorealistic atlas of neurosurgery and neuroanatomy with open-access, where Dr. Spiriev has a leading role in the application of surface scanning technologies, in particular photogrammetry, where by using modern technologies for photorealistic 3D imaging of anatomical preparations, 3D modeling based on segmented image studies in the creation of 3D models, a large database of photorealistic 3D models has been generated that can be used for training. At the moment, the collected database contains a large volume of three-dimensional models of neuroanatomy, as well as standard and highly specialized skills in neurosurgery - skull base, spinal surgery, peripheral nerve surgery. All of this data has been successfully used to train neurosurgery residents and medical students.

Dr. Spiriev is a co-author in the writing of 3 textbooks on neurosurgery.

According to Dr. Spiriev's scientometric indicators, he collects **9598.05 points** with a minimum requirement for "associate professor" of **400 points**.

With his scientific activity and publication activity, it can definitely be assumed that Dr. Spiriev has an established research profile in the field of neurosurgery.

Educational and teaching activity

Dr. Spiriev in his capacity as a part-time assistant to the head of medicine faculty of SU "St. Kliment Ohridski", leads practical exercises in neurosurgery and anatomy for medical students. According to the attached report from the university, his classroom workload for the last three academic years is 261 hours.

Diagnostic and neurosurgical activity

Dr. Spiriev as a specialist neurosurgeon with more than 8 years of experience in The Neurosurgery Clinic of "Acibadem City Clinic UMBAL Tokuda" is actively involved in the treatment-diagnostic process of the Clinic, performs surgical interventions of large and very large volume and complexity independently or as part of an operative team. Dr. Spiriev is respected from the neurosurgical community in the country, colleagues and patients.

Conclusion

Based on the above, I consider it perfectly reasonable to give **positive review** and propose to the honorable members of the Scientific Jury to vote positively for the election of Dr. Toma Yuriev Spiriev, MD of the Academic position "associate professor" in the field of higher education 7. Health care and sports" by professional field 7.1. "Medicine" and scientific specialty "Neurosurgery", for the needs of the Neurosurgery Clinic of "Acibadem City Clinic UMBAL Tokuda", announced in State journal No. 47 of 04.06.2024.

01.10.2024 г. Sofia

prof. Vassil Karakostov, MD, PhD, DMSc

