

REVIEW

From: Prof. Dr. Christo Tzekov Tzekov, MD, Department of Neurosurgery - Agibadem City Clinic, UMBAL "Tokuda Hospital" EAD, Sofia

Subject: Competition for the occupation of an academic position "associate professor" in the field of higher education 7. "Health and sports" professional direction 7.1. "Medicine" and scientific specialty 03.01.41 "Neurosurgery" for the needs of the Clinic for Neurosurgery, ., Neurosurgery Clinic - Acibadem City Clinic, UMBAL "Tokuda Hospital" EAD, Sofia announced in State journal No. 47 of 04.06.2024. The scientific jury for the competition was selected at a meeting of the Scientific Council of Acibadem City Clinic UMBAL Tokuda, EAD from 26.06.2024 and approved by Order No. 15-05-99/05.08.2024 of The Executive Director and Procurator of UMBAL Tokuda Hospital EAD.

Candidate: Dr. Toma Yuriev Spiriev, MD, neurosurgeon specialist at the Clinic of Neurosurgery, at Acibadem Cityclinic UMBAL "Tokuda Hospital" EAD. For the work of the jury, all the necessary documents and evidentiary material were presented and assessed as current and meeting the requirements of the ZRASRB and the Regulations for the Development of the Academic Staff of "Acibadem City Clinic UMBAL, Tokuda Hospital" EAD.

The candidate, Dr. Toma Spiriev, MD, has been known to the Neurosurgery Clinic since his student years, when he was an active member of the Neurosurgery Club. He himself was born in 1984 in the city of Sofia, where he completed his secondary education with honors in the language high school in French. In 2009, he graduated with a master's degree from the Medical University of Sofia and was awarded the "Professor Asen Zlatarov" award for high achievements in medicine.

The following year, he was awarded the "Academician Metodi Popov" award for achievements in mastering the biological sciences and medicine. In 2009, he was the Student of the Year in the professional field of "Medicine and Sports". He began his specialization in the Clinic of Neurosurgery at "Tokuda Hospital", in 2011 he was selected as the specialist of the year. He completed training in microneurosurgery in the city of Linz/Austria, 2010/, University Clinic-Zurich/Switzerland/ and Marseilles/France/. San Francisco /USA/ - 2014, meanwhile receiving and several awards from the universities mentioned above. In 2015, he successfully passed the neurosurgery specialty exam. In 2016, he completed an advanced

neuro-oncology training course in London (England). In 2018, he successfully passed the exam in neurosurgery at the European Association of Neurosurgery, being awarded the Braakman Award for exceptionally high results. In 2020, he already has a master's degree in Health Management at the Sofia University. In 2023, he presented the completed "3D Atlas of Neurosurgery" and was awarded an award by the European Association of Neurosurgical Societies. In 2019, he defended the scientific-practical DM degree with a defended dissertation - "Preoperative 3D planning and 3D simulation of neurosurgical approaches in cranial surgical interventions". He currently continues to work as a neurosurgeon at the Neurosurgery Clinic at Tokuda Hospital, Sofia. At the same time, he is a part-time assistant at Sofia University, Faculty of Medicine, Department of Anatomy, Histology, Pathoanatomy and Forensic Medicine. Doctor Spiriev is a proven neurosurgeon, trusted by patients and authority in the medical community, with exceptionally good professional, teaching and organizational qualities.

Participates and leads teams in complex and multi-stage interventions. Continuously improves his qualifications by attending authoritative courses and internships / 3 d skull base anatomy, Dusseldorf (2024); 3D Anatomy of Peripheral Nerves and Surgical Access to Peripheral Nerves and Surgical Access to Peripheral Nerves, Copenhagen(2024); Three-Dimensional Immersive Anatomy of Cerebral Circulation, Dusseldorf) 2023; 3D anatomy of the facial nerve and petrous bone, Copenhagen (2022); Access to the jugular foramen, Dusseldorf(2019); Skull Base Surgery, Copenhagen(2012); Aberrant protein expression in Alzheimer's disease Osaka (2007); Glitazones as a Potential Treatment for Glioblastomas, Albasette (2005); Intraoperative neuromonitoring, Verona (2017); Endoscopic skull base dissection, Barcelona (2016), Paris (2011), Copenhagen (2011); Leading Techniques in Neuro-Oncology, London(2016); 3D Anatomy of the Hand, San Francisco (2014); Neuropathology, Bucharest(2007) and many others.

He is fluent in English, French and German, which allows him to use a wide range of professional literature, as well as to communicate freely with other medical institutions worldwide. High computer literacy, knows 3D printing.

Emphasized interest in the teaching activity, as for 2021/22 his academic load is 54 hours of classroom occupation, in the next academic year 2022/2023 his classroom occupation is 129 hours, and in the last 2023/2024 /winter semester only/ - 78 hours of academic teaching. He is distinguished by impressive scientific productivity, with the total number of his publications being 72. For participation in the current competition, he submitted 32 publications, of which

he is the first author in 14. Referred and indexed in Scopus or Web of Science ca 30, with an impact factor of 29. His publications are mainly abroad - 30, and in Bulgaria - 2. He participated with printed summaries of 29 participations abroad in congresses and conferences, as well as in 13 - similar appearances in Bulgaria. The database of 681 citations were noted in Scopus, and 660 in those of Web of Science.

In general, his interests are in several directions, based mainly on planning in practical neurosurgery and teaching in this field:

- 3D preoperative planning and simulation of neurosurgical accesses
- Integration of 3D visualization systems in preoperative planning
- 3D printing in neurosurgery
- Using surface scanning algorithms to create highly specialized photorealistic 3D models of neuroanatomy
- Use of 3D visualization systems in the training of medical students and neurosurgery specialists

He has won several international and national projects, and the developed anatomical models have been uploaded to a publicly accessible site, developed especially for the project. His dissertation work, Three-Dimensional Photorealistic Atlas of Neurosurgery and Neuroanatomy, the developed 3D visualization systems for training neurosurgery interns and medical students, the integration of virtual and mixed reality systems in the preoperative planning of neurosurgical interventions deserve special attention. In his dissertation work "Preoperative 3D planning and 3D stimulation of neurosurgical approaches during cranial surgical interventions" a complete algorithm for preoperative planning for oncological intracranial lesions, vascular malformations, reconstruction of cranial defects was developed. A precise method for marking and localization of intracranial lesions has been developed, as well as a practically accurate methodology for simulating the different accesses using adapted software.

The development of the three-dimensional atlas is the result of cooperation in an extended international team including specialists from Bulgaria, Germany, Denmark and Italy

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, which are practically significant in teaching mainly neurosurgery trainees. This eliminates the need to maintain a constant set of anatomical preparations in teaching centers, which is also impossible for smaller countries due to religious, ethical or legal obstacles. This form of training is highly regarded by

medical students and future neurosurgeons. For the better adaptation of these high-tech techniques to teaching systems and practical application in neurosurgical practice in the planning of operative accesses, several 3D systems have been developed, the integration of which leads to the creation of a combined virtual and mixed reality system. According to the scientometric criteria for holding the position of "Associate Professor", Dr. Spiriev is presented with a total of 9598.05, with a required minimum of 400 points.

In conclusion, Dr. Toma Spiriev is a skilled neurosurgeon, respected by the medical community. Able to perform independently and as part of a team interventions from the full neurosurgical range. He has an exceptional affinity for teaching students and medical interns, and with the ZD systems he developed for virtual and mixed reality, he significantly improves the quality of teaching neuroanatomy to students and medical interns, and here it is the place to note the three-dimensional atlas developed jointly with an international team. The high impact factor, as well as the numerous citations, mostly from renowned European and world publications, speak eloquently about the quality of his scientific activity. Actively participates in the activities of the neurosurgery society as a member of the governing body.

I believe that Dr. Toma Spiriev possesses all the qualities and meets all the criteria of the ZRASRB Regulations for the Development of the Academic Staff at Achibadem City Clinic - UMBAL "Tokuda" - EAD, which is why I vote "YES" for his election as "associate professor" in Neurosurgery.

16.09.2024

Reviewer: Prof. Dr. Christo Tzekov dm.

