

OPINION

of Prof. Dr. Dimitar Stefanov Kadiysky, Doctor of Medical Sciences, Institute of Experimental Morphology, Pathology and Anthropology with Museum (IEMPAM) at Bulgarian Academy of Sciences (BAS), Academic Georgi Bonchev St., bl. 25, 1113 Sofia; member of the Scientific Jury of the competition for the academic position of *associate professor* under Order No. RD 09-49 of 17.08.2022. of the Director of IEMPAM.

Regarding: Holding of a competition for the academic position of "*associate professor*" for the needs of the Section of Anthropology and Anatomy at IEMPAM, in the scientific specialty "Anthropology" 01.06.01, professional direction 4.3 "Biological Sciences", announced in State Gazette, no. 60, 29.07.2022, by proposal and decision of the Scientific Council of IEMPAM.

The competition received the candidacy of only one participant - Silvia Yanakieva Nikolova, chief assistant in the Section of Anthropology and Anatomy at IEMPAM at the Bulgarian Academy of Sciences. The materials deposited by the candidate (for me on an electronic medium) are in full compliance in terms of type, quality and volume with the national normative requirements for occupying academic positions and are in accordance with the specific requirements of the regulations of the BAS and IEMPAM. All required documents are available.

I. Career profile of the candidate

Chief assistant Silvia Yanakieva Nikolova, PhD, graduated in 2005 from the University of St. Kliment Ohridski as a Master in General Anthropology, majoring in Biology. From 2009 to today, Silvia Yanakieva Nikolova has successively held the academic positions of specialist-biologist, assistant and chief assistant at IEMPAM, working actively in the areas of research activity specific to the Section of Anthropology and Anatomy. In 2011, the candidate received a diploma (date of issue 03.01.2011) for the educational and scientific degree "doctor" after successfully defending on 02.11.2010 a dissertation on the topic: "*Anatomical variations of the cranium - anthropological characteristics and assessment of gender and bilateral differences*". Important for the further scientific development of Silvia Nikolova is her participation in a national practical specialization - *Intensive course on digitalization and creation of replicas of cultural heritage objects and on the use of new technologies and mobile applications for museums* - Smart Fab Lab workshop organized in University of Architecture, Construction and Geodesy - Sofia. This specialization is directly related to the directions of her research work. There is no data for applied teaching activity and training of students by the candidate in the period since her graduation from higher education until now. During her academic career, Silvia Nikolova worked on six scientific projects, among which there are projects financed by the *National Fund of Scientific Research*, the *Program for the Support of Young Scientists at the BAS*, and the *Human Resources Development Operational Program*. She is member of *European Anthropological Association*, *Bulgarian Anatomical Society*, *Federative International Programme for Anatomical Terminology (FIPAT)*.

II. General description of the submitted materials for the competition

The applicant submits detailed documentation that presents her as a promising scientist with an indisputable track record of successful academic growth. The entire creative path and career profile of Silvia Yanakieva Nikolova is focused on scientific problems in the fields of physical anthropology and anatomy - *anatomical variations in the structure of the cranium, mandible and postcranial skeleton; study of the reorganization of the sagittal suture during its closure; study of the configuration of the skull in case of premature closure of the sutura squamosa*, etc., including the study of macroanatomical features of the human skeleton. The candidate's research confirms the existence of a useful scientific potential of applying *combined anthropological approaches simultaneously in the spheres of physical anthropology and paleoanthropology*. A significant part of the candidate's scientific growth is dedicated to the application of modern *information and communication technologies in anthropology and the digitalization* of existing conventional morphometric studies.

Principal assistant Silvia Yanakieva Nikolova, PhD, participated in the competition with a total of 21 scientific publications, of which she was the first author in 11. All publications are in international journals, referenced and indexed in global scientific databases (*Web of science and Scopus*) and have appropriate IF and SJR respectively (14 have an impact factor, 6 have an impact rank and one monograph chapter is included). The candidate presents detailed documentation of her participation in 43 national and international scientific events, where the number of her (collectively) scientific communications presented is a total of 74 (including those published in full text). The attached reference certifies 172 known citations to date - most of them are found in prestigious foreign scientific publications. The estimation of the *h-index* of Silvia Nikolova is 5 as of the date of the competition. It is appropriate to mention here that many of her works are in valuable scientific publications such as *Forensic Science International, Anatomical Record, Anatomical Sci Intern, Anthropologischer Anzeiger, Legal Medicine*, etc.

The scientific analysis of the activity is clearly presented in a separate document, where it is evident that it covers and exceeds the requirements of the Regulations for the implementation of the *Law for the Development of the Academic Staff (LDAS)* in the Republic of Bulgaria, adopted with Ministerial decree 122/29.06.2018 and in force from 07.06.2018 with its late additions, effective at the time of the announcement of the competition in the official State Gazette. The scientometric requirements and conditions stemming from the BAS Regulations for the application of LDAS in the Republic of Bulgaria and, of course, the IEMPAM Regulations for occupying academic positions have been met. The applicant's scientific indicators shows total 504 points, instead of the required 430.

III. Evaluation of the candidate's scientific works

Due to limitations in the volume of my opinion and since a detailed assessment of the candidate's scientific activity will be presented by the reviewers of this competition, I will only briefly touch on her main original scientific and scientific-applied contributions.

The main direction of the candidate's research work is the characterization of *anatomical variations* in humans. The multi-year studies conducted in this direction lead to completely original theoretical contributions, visible in the publications (NN. 1-6, 8, 12). These contributions are a summary of the incidence, etiology, and anticipated potential clinical complications of various anatomic variations. The objects of study that contributed to obtaining these contributions include anatomical variations in the

construction of the cranium in medieval and modern cranial series (*foramen spinosum*, variations occurring in the area of the membranous part of the scale of the occipital bone, the incisal bone, the preinterparietal bone and the presence of additional bone at the posterior fontanelle). Of particular research interest to the candidate are: *the multiplication of the vomian bones, dolichocrania, moderate platybasia, the formation of a cleft along the posterior edge of the foramen magnum, underdeveloped and asymmetric frontal sinuses, underdeveloped mastoid air cells, cranial hyperostosis, moderate frontal prominence, persistent metopic suture, screening for delayed suture closure, hypoplasia of facial bones, early tooth loss, dental caries and hypoplastic enamel defects.*

Other important research of the candidate in the past years includes the screening of changes in macromorphological status in humans from emerging anatomical variations of the mandible and in anatomical variations in the postcranial skeleton.

Silvia Nikolova contributes with her work to the *introduction in anthropology* and (generally in morphology) of various research techniques of an applied nature. Here I can point out the introduction of *digital morphometry methods, methods for determining biological sex by size, determining biological age, studies of facial approximation*, as well as the overall activity of the candidate for the introduction of *micro-computed tomography (μCT)* in bioarchaeology (paleopathology).

A review of the topics of the established scientific projects on which the candidate has worked shows her interest in the practical problems of modern anthropology, representing an important part of the large biomedical morphological scientific direction.

IV. Recommendations and critical notes

I strongly recommend the continuation of the interesting research and applied activity in the areas of digitalization of anthropological studies and 3D visualization of objects **by creating a significantly larger collective** in the Section.

I believe that future training of graduates, doctoral students and involvement of other members of the Section of Anthropology and Anatomy to the interesting topic will be the basis for creating a **real team committed to modernizing anthropological research** in the institute. This, in addition to being necessary to date, is also mandatory to be carried out with a view to continuing the long-standing research traditions in the field of anthropology at IEMPAM.

V. Overall Assessment of Conformity

The candidate's compliance with the mandatory conditions and the mandatory quantitative criteria with regard to scientometric indicators, according to LDAS in the Republic of Bulgaria and the relevant regulations for occupying academic positions, **is complete.**

VI. Conclusion

Based on the submitted materials for the competition, I find that Silvia Yanakieva Nikolova, Ph.D., is an outstanding scientist, a specialist in the field of anthropology, anatomy and macromorphology with significant original fundamental and applied scientific contributions, which have a pronounced potential for digital practical application for visualization of anatomical structures and restitution of structures - objects of paleoanthropology.

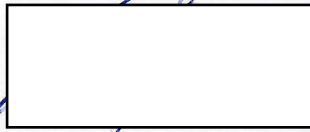
The scientific production of Silvia Nikolova, PhD, is of sufficient volume and quality, it has been published in valuable international journals and is available to the scientific community at our country and abroad. The candidate is distinguished by a high degree of organization of her work independently and with collaborations external to IEMPAM. She takes responsibility and precision in the research and in the implementation of established scientific projects.

I believe that Silvia Nikolova, PhD, fully meets the requirements of the regulatory documents for holding the academic position of "**associate professor**" in the specialty "Anthropology". The minimum national indicators for academic growth of LDAS the Republic of Bulgaria and its Regulations have been fulfilled, as well as the conditions and procedures for acquiring scientific degrees for occupying academic positions in IEMPAM - BAS.

All this gives me sufficient reason to confidently recommend to the honorable Scientific Jury to vote positively for a proposal before the National Council of IEMPAM - BAS, **Silvia Yanakieva Nikolova, doctor, to be elected to the academic position of "associate professor"** in the scientific specialty "Anthropology" (06.01.01).

Prepared the opinion:

Signature:



06.12.2022 Prof. Dr. Dimitar Kadiysky, PhD