

TO
THE CHAIRMAN OF THE SCIENTIFIC JURY,
DETERMINED BY ORDER NO. RD-09-49/17.08.2022
OF THE DIRECTOR OF IEMPAM-BAN

REVIEW

by Professor Slavi Dimitrov Delchev, MD, PhD
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elected member of the Scientific jury

Regarding: Conducting a procedure for the selection of an "Associate Professor" in the scientific specialty "Anthropology" (01.06.01), Professional direction 4.3 "Biological Sciences", announced in SG no. 60/29.07.2022 for the needs of the "Anthropology and Anatomy" section of IEMPAM-BAS.

I. Analysis of the candidate's career profile.

For participation in the announced competition for the academic position of "Associate Professor" in direction 4.3. "Biological Sciences", scientific specialty 01.06.01 "Anthropology", for the needs of the "Anthropology and Anatomy" section, as the only candidate, **chief assistant Silviya Yanakieva Nikolova, PhD, from the "Anthropology and Anatomy" section of IEMPAM - BAS** submitted documents.

Chief assistant Silviya Nikolova graduated with a master's degree in Biology and Chemistry from the Faculty of Biology of SU "St. Kliment Ohridski" in 2003, and in 2005 she graduated with a Master's degree in General Anthropology, majoring in Biology at the "St. Kliment Ohridski". In 2011, he obtained the educational and scientific degree "Doctor", in the scientific specialty of Anthropology (01.06.01) at the Institute of Experimental Morphology, Pathology and Anthropology with a Museum - BAS. Her career progressed successively through holding the positions of "biologist specialist" (since 2009) and "assistant", and from 2012 until now she worked as a " chief assistant" in the same institute of the BAS. All stages of her professional development, as well as her qualification characteristics, are presented in her CV.

II. General description of the submitted materials for the competition.

The candidate submitted the following documents and materials for the competition:

1. Application for participation in the competition
2. Copy of master's degree diploma
3. Copy of diploma for ONS "Doctor"

4. Copy of the contract for the position of "chief assistant"
5. Certificate of internship in the specialty
6. Professional curriculum vitae (EU model)
7. List of scientific publications
8. Copies of scientific publications
9. List of citations
10. List of participations in scientific forums
11. List of participations in scientific projects
12. Abstracts in Bulgarian and English
13. Reference for scientific contributions
14. Certificate of compliance with minimum national requirements

The materials provided to me were of high quality of the copies recorded on electronic media.

III. Evaluation of the scientific works of the candidate for the overall academic development.

✓ **General characteristics of scientific production and publication activity**

Chief assistant Silviya Nikolova submitted a total of 21 scientific publications for participation in the competition. They are distributed as follows: publications with an impact factor - 14, publications in referenced and indexed in world-famous databases with scientific information without an impact factor - 6, a chapter of a monograph - 1. Silviya Nikolova is the first author of most of the presented publications (11 articles) and is the second author of 10, which is indicative of her competence in preparing and publishing scientific materials.

The candidate has a high publication activity in specialized journals. Among those in which most of her articles are published, renowned publications with an impact factor such as: Forensic Science International (IF-2.395), Anatomical Record: Advances in Integrative Anatomy and Evolutionary Biology (IF-2.227), Legal Medicine (IF-1.404), Anatomical Science International (IF-1.693), Anthropologischer Anzeiger (IF-0.866) and others.

From the report submitted for the competition, it is clear that the candidate's total impact factor of 14 articles is 15.956.

Silviya Nikolova was awarded the "Professor Dimitar Kadanov" award for publication activity in the period 2019-2021 by the Bulgarian Anatomical Society. There are also awards for the best poster at the XXV National Congress of the Bulgarian Anatomical Society 28-30.05.2021, Pleven, Bulgaria, as well as an award for the excellently reported first stage of the project DFNP 73/27.04.2016, under the Assistance Program of young scientists at BAS, 2016

✓ **Scientific activity - dissemination and application of the candidate's scientific and practical achievements among the scientific community**

The scientific contributions of chief assistant Silviya Nikolova are in the field of anthropology and can be systematized in two main directions:

1. Contributions of a theoretical nature. In this group are combined the studies related to the study of anatomical variations in the structure of the skull, lower jaw and the postcranial skeleton. The study of the reorganization of the cranial sutures - the sagittal suture during its closure and the study of the configuration of the skull during premature closure of the squamous suture - is also advocated. The theoretical contribution of the presented publications (8 articles) is related to researching the frequency of the described findings, discussing the etiology and discussing the potential clinical complications of the investigated variations.

2. Contributions of an applied nature. Publications aimed at the application of modern information and communication technologies and the transfer of conventional morphometric studies to digital ones are included here. This includes generating and processing 2D and 3D images, capturing morphometric data from images and verification, i.e. comparison and evaluation of the reliability of digital morphometry. This approach enables the application of methods from the field of artificial intelligence, such as extracting knowledge from data (data mining) and machine learning to analyze the data and create mathematical models to solve the problems.

The developed directions in this group are: 1. Validation of digital morphometry methods - direct measurements were compared with those taken from 3D models of skulls generated by laser scanning, thereby assessing the reliability of digital morphometry. 2. Development of methods for determining sex, age and facial approximation with application in forensic medicine (forensic anthropology) and bioarchaeology. Here, the topics are biological sex determination by measurements of the entire skull or parts of the skull, biological age determination - whether the degree of closure of the sagittal suture is a reliable indicator of age determination, facial approximation - the reconstruction of soft tissues on the skull.

In this direction, the candidate presented 11 articles.

✓ **Participation in the implementation and management of projects**

The candidate presented a list of a total of 6 projects in which she was a leader or participant. Four projects were financed by the "Scientific Research" Fund - MES, she was the head of 2 of them, and she was a participant in the other two. Chief assistant Silviya Nikolova was also the head of a project financed under a program to support young scientists at the BAS. She is a member of a task group on a project under the Operational Program: Development of Human Resources.

The activities of the candidate listed above in projects of different scale and scientific direction show her ability to organize and lead research activities. Her work as the leader of two scientific projects and as a team member of two other projects at the National Institute of Scientific Research, is proof that she possesses the necessary qualities for successful coordination and team management.

IV. Evaluation of the monographic work or equivalent publications submitted by the candidate for participation in the "Associate Professor" competition.

According to the competition's requirement for the candidate to submit a habilitation thesis or substitute scientific publications in publications that are referenced and indexed in world-renowned databases with scientific information, chief assistant Silviya Nikolova has prepared a list of 5 publications with an impact factor. All of them are indexed in Scopus or Web of Science, and some in both databases. One of the posts is in Q1 and the other 4 are in Q2. The points that the applicant receives according to the minimum number requirements are a total of 105. This score exceeds the required minimum of 100 points. The publications submitted according to this criterion were cited a total of 44 times, which is a very good indicator of their scientific value and their impact in the international scientific community.

V. Reflection (citation) of the candidate's publications in national and foreign literature (publication image).

Chief assistant Silviya Nikolova has submitted a citation report for 38 of her publications in the scientific literature. The total number of citations is 172. The main part of the citations are in foreign journals, only 4 are cited by Bulgarian authors. The list of 35 citations of publications for participation in the competition is given in the Reference for the fulfillment of the minimum requirements of IEMPAM-BANS for occupying the academic position "Associate Professor". From the reference thus presented, it is clear that the main part of the candidate's citations are in authoritative scientific publications, with a high rating, which is proof of the quality of her scientific production and of the evaluation that her works have received among the scientific community.

According to the minimum requirements for the acquisition of the academic position "Associate Professor", applicants need 60 points under indicator "D". The total sum of the candidate's points, according to the 35 citations indicated by her under this criterion, is 70 points, which exceeds the required minimum.

VI. General assessment of the applicant's compliance with the mandatory conditions and the mandatory quantitative criteria and scientometric indicators.

Indicators	Minimum national requirements	Silviya Nikolova
A) Indicator 1, Dissertation work for the award of ONS "Doctor".	50 pts.	50 pts.
B) Indicator 4. Habilitation work - scientific publications in publications that are referenced and indexed in world-famous databases (Web of Science and Scopus)	100 pts.	5 publications with a total number of points = 105 pts.

<p>Г) Indicator 7. Scientific publication in publications that are referenced and indexed in world-renowned databases with scientific information (Web of Science and Scopus), outside of the habilitation thesis.</p> <p>Indicator 8. Scientific publication in non-refereed peer-reviewed journals or in edited collective volumes.</p>	<p>Indicators 7 and 8; 220 pts.</p>	<p>15 publications with a total number of points = 264 pts. 1 publication with number of points = 15 pts. Indicator 7 + Indicator 8 = 264 + 15 = 279 pts.</p>
<p>Д) Indicator 10. Citations in scientific publications, referenced and indexed in world-renowned databases of scientific information or in monographs and collective volumes. 1 quote = 5 pts.</p> <p>Indicator 11. Citations in peer-reviewed monographs and collective volumes. 1 quote = 3 pts.</p> <p>Indicator 12. Citations in non-refereed peer-reviewed journals. 1 quote = 2 pts.</p>	<p>Indicators 10, 11 and 12; 60 pts.</p>	<p>According to indicator 12: 35 citations x 2 points = 70 pts. Indicator 10 + Indicator 11 + Indicator 12 = 70 pts.</p>

It is evident from the attached table that the scientific production of the candidate fully covers and exceeds all indicators of the minimum requirements of IEMPAM for occupying the academic position " Associate Professor ".

VII. Critical notes and recommendations.

I have no objections to the scientific works and materials presented by the candidate. The area of scientific interests of chief assistant Silviya Nikolova is entirely focused on the field of anthropological research of healthy and pathologically changed structures of the human body, which gives an excellent perspective for the further development and expansion of scientific research. The results of current and future research could be published as a monograph at a later stage.

VIII. Conclusion:

The career development of chief assistant Silviya Nikolova, the obtained scientific and educational degree "Doctor", her scientometric indicators, contributions from her scientific research activity, participation in scientific projects, **fully correspond** to the requirements laid down in the Law on the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for the Implementation of ZRASRB and the regulations of IEMPAM-BAS for occupying the academic position "Associate Professor". The candidate's works include original scientific and applied contributions that have received international recognition, the main part of which has been published

in journals issued by international academic publishing houses. Her scientific works also have significant practical applicability.

Getting to know the materials and scientific works presented in the competition, the analysis of their significance and the scientific and scientific-applied contributions contained in them, gives me the foundation to give a **positive assessment** to Silviya Yanakieva Nikolova and to recommend the members of the esteemed scientific jury **to support** her selection for the academic position "Associate Professor" at the "Anthropology and Anatomy" section of IEMPAM - BAS, by professional direction 4.3. Biological sciences, scientific specialty 01.06.01 "Anthropology".

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