

REVIEW

Candidate for the announced competition

One candidate participated in the competition, Diana Toneva, senior assistant professor at the Section "Anthropology and Anatomy" of IEMPAM-BANS.

The required complete set of administrative documents is presented according to the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria and the Regulation for occupying the academic position "Associate Professor" from the regulations of IEMPAM-BAS.

I. Analysis of the candidate's career profile

1. Education and qualification

The candidate Diana Toneva completed her higher education at Sofia University "Kliment Ohridski" in 2003 with a bachelor's degree in biology and chemistry. In 2005, she received a master's degree in general anthropology at Kliment Ohridski University. In 2010, after defending her dissertation, she received the Doctorate of the National Academy of Sciences.

She passed an intensive course on digitization and creation of replicas of cultural heritage objects and on the use of new technologies and mobile applications for museums /May 2015, Smart Fab Lab workshop, UACG/ (The course was held within the European project on 7th Framework Program AComIn: Advanced Computing for Innovation FP7-REGPOT-2012-2013).

She has computer skills and competencies including SPSS, SigmaPlot, PAST, MorphoJ (geometric morphometrics), InVesalius /segmentation of structures from 3D images/, MeshLab /processing of three-dimensional polygonal models/, ITK-snap /segmentation of structures from 3D images/, Geomagic Verify Viewer /visualization and digital measurements of 3D models/, VGStudio MAX /analysis and visualization of data obtained from industrial computed tomography/, ImageJ /processing and digital measurements of 2D and 3D images/.

She was awarded the "Professor Dimitar Kadanov" award of the Bulgarian Anatomical Society for publication activity in the period 2019-2021.

She received an award for the best poster at the XXV National Congress of the Bulgarian Anatomical Society (28-30.05.2021, Pleven)

2. Work experience and specializations

Senior assistant professor Diana Toneva has 13 years of work experience in the specialty at the Institute of Experimental Morphology, Pathology, and Anthropology with a museum of the BAS. From 2009 to 2011 she worked as a specialist biologist, from 2011 to 2012 she was an assistant professor, and from 2012 to now she has been the senior assistant professor.

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

I have no critical remarks about the materials presented in the competition. The documentation is complete and accurate, presented in a logical sequence according to the requirements of the competition.

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

1. General characteristics of scientific production and publication activity.

The candidate presents in the competition with 19 publications, of which 14 have been published in scientific publications with impact factor, 4 – in journals with impact rank. A chapter in a book chapter has also been published. All publications are in the period 2012 – 2022.

A report on participations in scientific forums (71) is presented, of which 26 participations are in scientific forums abroad.

2. Scientific activity - dissemination of the scientific and practical achievements of the candidates among the scientific community.

Of the presented communications at scientific forums, one was published in an international journal with Impact Factor (Journal of Peptide Science).

3. Scientific projects. During the period, D. Toneva participated in 6 scientific projects, of which 5 were national and 1 under the Program for Supporting Young Scientists at BAS. She was the manager of two of the projects.

4. Scientific and creative achievements (scientific authority).

Senior Assistant Professor Toneva is a member of the Bulgarian Anatomical Society and the European Anthropological Association.

IV. Evaluation of monographic work and publications submitted for participation in the competition.

The more substantial scholarly areas of research related to the publications and participation in scholarly forums are in the fields of forensic anthropology, virtual anthropology, and macroscopic anatomy. Scientific contributions of Ch. assistant Toneva can be divided into 3 groups: 1. Development of methods for identification of human bone remains, 2. Evaluation of the reliability and accuracy of digital data collection methods for osteological studies, 3. Study of anatomical variations.

1. In the field of human bone identification, gender determination models have been developed based on metric features of the whole skull by applying subsymbolic algorithms from the field of machine learning: support vector machines and artificial neural networks. Discriminant models have been developed for determining gender by the size of the so-called "mastoid triangle" and the size and shape of the foramen magnum by deriving discriminant functions and logistic regression models and evaluating their accuracy.

Research on facial soft tissue thicknesses, the data of which are used in cranial soft tissue reconstruction techniques, also makes a scientific contribution. An approach is proposed to calculate detailed data on soft tissue thicknesses through the use of polygonal models obtained by segmentation of cranial bone tissue and facial skin.

2. Evaluation of the reliability and accuracy of digital data collection methods for osteological studies. The reliability and accuracy of measurements performed on 3D skull models created by laser scanning, as well as measurements performed on digital radiography images generated with an industrial CT scanner, were investigated. The assessment of the reliability and accuracy of metric measurements is a key factor for the credibility of the obtained results when conducting morphometric studies on digital bone images.

3. In the field of anatomical variations, various anatomical variations of the skull have been studied, and the reasons and clinical significance of each variation have been discussed: absence

of the foramen spinosum and, accordingly, the origin of the middle meningeal artery in such cases; presence of additional bones in the scale of the occipital bone; presence of a bipartite condyle of the mandible; single finds of metopic skulls with the presence of multiple vomian bones organized in a mosaic pattern and the presence of a bregma bone; cases of prematurely closed scaly suture.

Summary: Senior assistant professor Diana Toneva has established herself over the years as an erudite scientist with the necessary training and skills to conduct quality scientific research. This has found expression in scientific production realized at a high theoretical and methodological level, with noticeable contributions - original and confirmatory, scientific-applied and scientific-educational.

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

Out of a total of 19 full-text publications, 14 are in journals with IF and 4 in journals with SJR. Publications in highly rated international journals such as The Anatomical Record-Advances in Integrative Anatomy and Evolutionary Biology, International Journal of Legal Medicine, Annals of Anatomy, Journal of Craniofacial Surgery, Folia Morphologica, Anthropologischer Anzeiger are impressive.

At the time of submitting the documents for the competition, the candidate has submitted a reference for 40 citations of scientific works in journals referenced in Scopus and/or Web of Science. The individual h-index is 5 (Scopus).

VI. Critical notes and recommendations.

I have no substantive critical remarks about the materials presented in the competition. As to the scientific essence of the works with which the candidate participates in the competition, I believe that they are written concisely, in good scientific language, and with high competence. I would recommend that in her future research activity, D. Toneva continues to deepen the theoretical interpretation of the observed morphological manifestations, which will help to develop the scientific foundations in the studied areas.

VII. General assessment of the applicant's compliance with the mandatory conditions, quantitative criteria, and metric indicators according to the Law of the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for the Implementation of this Law, the Regulations for the Terms and Procedures for Acquiring Scientific Degrees and for Occupying Academic Positions at IEMPAM-BAS.

Senior Assistant Professor Toneva meets the general conditions for completed higher medical education, PhD in the scientific specialty of Anthropology, as well as the mandatory quantitative metric criteria required for the occupation of academic position "Associate Professor" in IEMPAM-BAS.

VIII. Conclusion.

According to her overall performance in the competition, I believe that Senior assistant professor Diana Toneva is an indisputably high-quality scientist with valuable scientific output, high qualifications, and extensive experience and independence and meets the mandatory and

specific conditions and metric criteria for academic position "Associate Professor" in IEMPAM-BAS.

IX. Proposal for holding the academic position.

Based on the above and in accordance with the provisions of the Law on the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for the Implementation of the Law on the Development of the Academic Staff and the Regulations for the Development of the Academic Staff of IEMPAM-BAS, I recommend to the esteemed Scientific Jury to propose senior assistant Diana Toneva for the selection of the academic position "Associate Professor" in anthropology for the needs of IEMPAM-BAS.



PROF. STEFAN SIVKOV, MD, PhD

Department of "Anatomy, Histology, and Embryology"
Medical University - Plovdiv

22.09.2022

Plovdiv

Table of correspondence of indicators for the academic position associate professor

Group of indicators	Content	Minimal requirements in IEMPAM-BAS	Candidate
A	Indicator 1	50	50
Б	Indicator 2		
В	Indicator 4	100	100 2 publ. in Q1 x 25 pts. 1 publ. in Q2 x 20 pts. 2 publ. in Q3 x 15 pts
Г	Indicators 7 и 8	220	262 2 publ. in Q1 x 25 pts. 7 publ. in Q2 x 20 pts. 3 publ. in Q3 x 15 pts. 1 publ. in Q4 x 12 pts. Published book chapter or collective monograph x 15 pts.
Д	Indicator 11	60	80 40 citations in journals referenced in Scopus/WoS x 2 pts.
	Sum of indicators	440	492