

**TO
THE CHAIRMAN OF THE SCIENTIFIC JURY,
DETERMINED BY ORDER No RD-09-34/28.06.2022
OF THE DIRECTOR OF THE IEMPAM, BAS**

S T A T E M E N T

by Assoc. Prof. Dimitrinka Yordanova Atanasova-Dimitrova, PhD

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Higher education field 4. Natural sciences, mathematics and informatics,

Professional direction 4.3 Biological sciences,

Elected as a member of the scientific jury

Regarding: Conducting a competition for the occupation of an academic position "Associate Professor" in a field of Higher education 4. Natural sciences, mathematics and informatics, professional direction 4.3. Biological sciences, scientific specialty "Anthropology" (01.06.01) announced for the needs of the Department of Anthropology and Anatomy at the Institute of Experimental Morphology, Pathology and Anthropology with a Museum at the Bulgarian Academy of Sciences (IEMPAM-BAS). The competition was announced in the State Gazette, issue 43 of 10.06.2022, according to the Order of the Director of IEMPAM-BAS

A candidate for the announced competition

One candidate participated in the competition – **Diana Hristova Toneva**, PhD in Anthropology, Chief Assistant Professor in the Department of Anthropology and Anatomy at IEMPAM-BAS.

The necessary complete set of administrative documents is presented according to the requirements of the Law on the Development of the Academic Staff of the Republic of Bulgaria and the Regulations for occupying the academic position "Associate Professor" of the Rules of IEMPAM-BAS.

I. Analysis of the candidate's career profile

1. Education and qualification

Candidate Diana Hristova Toneva completed her higher education at the Faculty of Biology of Sofia University "St. Kliment Ohridski" in 2005, Specialty "Biology" and obtained a master's degree in "General Anthropology". In 2010, after successfully defending a PhD thesis on the topic: "Anthropological characterization of the sternum, clavicle, scapula and proximal end of the humerus and evaluation of their gender differences", she was awarded the educational and scientific degree "Doctor of Philosophy" in the specialty " Anthropology " in IEMPAM-BAS.

2. Work experience and specializations

In 2006, immediately after completing her higher education, Diana Toneva joined the Institute of Experimental Morphology, Pathology and Anthropology with a Museum at the Bulgarian Academy of Sciences as a full-time doctoral student. Since 2009, the candidate has gone through the entire academic path from Biologist-specialist (2009-2011) Assistant Professor (2011-2012), and since 2012 she has been the Chief Assistant Professor at the same Institute. Diana Toneva has 13 years of **work experience in the specialty**.

She improved her knowledge of digitization, replica creation of cultural heritage objects, and use of new technologies and mobile applications for museums in May 2015 through her participation in an intensive course held within the framework of a European project under the 7th Framework Program AComIn: Advanced Computing for Innovation FP7-REGPOT-2012-2013).

II. Fulfillment of the requirements for occupying the academic position "Associate Professor"

To participate in the current competition, Chief Assistant Professor Diana Toneva applied 19 scientific works (18 publications and one book Chapter) for 2012-2022, of which five scientific publications are the equivalent of a habilitation thesis (indicator V, item 4). Of these five publications, two are in journals falling in Q1, one article in journal with Q2 and two publications in journals with quartile Q3. Of the 14 publications attached (indicator D, item 7 and item 8), two publications are in journals falling in Q1, seven are in journals with quartile Q2, three articles in Q3, one publication in a journal with quartile Q4, and one book chapter. All publications applied for participation in the competition are indexed in *Web of Science* and *Scopus*, printed in English and published in refereed international journals such as *International Journal of Legal Medicine*, *Anatomical Record-Advances in Integrative Anatomy and Evolutionary Biology*, *Anthropologischer Anzeiger*, *Anthropological Science*, *Journal of Craniofacial Surgery*, *Folia Morphologica*, *Annals of Anatomy*.

GROUP OF INDICATORS	CONTENTS	Mandatory quantitative criteria for holding the academic position "Associate Professor"	Scientometric indicators of Chief Assistant Professor Diana Toneva
A	1. Dissertation for educational and scientific degree "Doctor of Philosophy "	50	50
V	4. Habilitation work - monograph, or scientific publications in journals that are referenced and indexed in world famous databases with scientific information (Web of Science and Scopus)	100	100
G	7. Scientific publications in peer-reviewed and indexed scientific journals (Web of Science and Scopus), outside the habilitation thesis. 8. Published chapter of a collective monograph	Total: 220	Total: 262
D	11. Citation in scientific journals, monographs, collective volumes and patents, referenced and indexed in world-famous databases of scientific information (Web of Science and Scopus).	60	80

The candidate applies 40 citations (indicator D) to participate in the competition. According to the attached general reference for citations, it can be seen that 37 of the scientific articles of Chief Assistant Professor Diana Toneva have been cited 168 times in peer-reviewed journals of WoS and Scopus. According to the Regulations for the development of the academic staff at IEMPAM–BAS, the scientometric indicators of the candidate in the competition exceed the mandatory minimum requirements (indicators D, E from the attached table) and meet the quantitative criteria for occupying the academic position "Associate Professor".

III. Participation in projects and scientific and creative accomplishments

Diana Toneva is actively involved in developing an ongoing national project funded by the Bulgarian National Science Fund (BNSF). The candidate was the head of one project, a participant in two completed projects on BNSF and a young scientist-leader of a project under a program to support young scientists at the BAS. She was a target group member under project /Contract No BG051PO001-3.3.06-0048/04.10.2012/ carried out with the financial support of the Operational Program "Development of Human Resources" 2007-2013, co-financed by the European Social Fund of the European Union.

Chief Assistant Professor Diana Toneva was awarded the "Professor Dimitar Kadanov" award for high publication activity in 2019-2021 by the Bulgarian Anatomical Society. She was awarded the best poster presentation at the XXV National Congress of the Bulgarian Anatomical Society (28-30.05.2021, Pleven, Bulgaria).

Diana Toneva is a member of the Bulgarian Anatomical Society and the European Anthropological Association.

IV. Brief description of the scientific works/publications presented

The more important scientific works in connection with the publication activity of the Chief Assistant Professor Diana Toneva can conditionally be divided into three 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.

A study using computed tomography images was conducted for the first time in Bulgaria. Models have been developed to determine the biological gender based on metric characteristics of the skull by applying subsymbolic algorithms from machine learning: support vector machines (SVM) and artificial neural networks (ANN). Discriminant models have been developed for determining gender by the so-called "mastoid triangle" size. Sexual dimorphism in the size and shape of the large occipital foramen was investigated, applying a new approach to calculate the area of the foramen based on the 3D coordinates of a series of semilandmarks.

The first metric data on the thicknesses of the soft tissues of the face in the Bulgarian population were collected. Head images generated by medical computed tomography were used for this purpose. Gender and obesity have been found to influence soft tissue thicknesses in different areas of the face. Differences between both sexes were concentrated in soft tissue thicknesses in the midline plane, while those between normal and overweight groups were strongest in the soft tissues located in the lateral part of the face. A revolutionary approach is proposed to calculate data on soft tissue thicknesses using polygonal models obtained by segmentation of cranial bone tissue and facial skin. To calculate the distances between the two polygonal models, the M3C2 plugin in the CloudCompare software was used, and the measurements were calculated perpendicular to the local surface of the skull model.



The reliability and accuracy of measurements performed on 3D skull models generated by laser scanning, as well as measurements performed on digital radiography images generated by an industrial computed tomography scanner, were investigated.

Different anatomic variations of the skull were investigated, and for each variation, the etiology and possible clinical consequences were discussed. A number of original results were obtained by studies on a series of skulls with a persistent metopic suture

V. Conclusion

According to the overall presentation of the candidate in the competition, I believe that Chief Assistant Professor Diana Toneva is an established scientist-anthropologist with extensive experience and high qualifications, with a valuable scientific output and meets the mandatory and specific conditions and scientometric criteria for occupying the academic position of "Associate Professor".

Based on the above and in accordance with the Law on the Development of the Academic Staff in the Republic of Bulgaria, the Rules for its Implementation and the Regulations for the Development of the Academic Staff of the Institute of Experimental Morphology, Pathology and Anthropology with a Museum. I recommend to the esteemed Scientific Jury to propose a Chief Assistant Professor Diana Toneva for the selection of the academic position "Associate Professor" in Anthropology for the needs of the Department of Anthropology and Anatomy at IEMPAM–BAN.

Prepared the statement,  

Assoc. Prof. Dimitrinka Atanasova-Dimitrova, PhD

25.09.2022

Sofia