

## Academic Assessment

**by Assoc. Prof. Dr. Desislava Marinova Marinova, MD, PhD Department of Anatomy and Cell Biology, Faculty of Medicine Medical University "Dr. Paraskev Stoyanov" – Varna**

Regarding a dissertation for the award of the educational and scientific degree "Doctor" (PhD)

**Professional Field:** 7.1 Medicine

**Doctoral Program:** "Anatomy, Histology, and Cytology"

**Author:** Dr. Zlatizara Hristova Todorova

**Form of Doctoral Study:** Independent Study (Self-preparation)

**Department:** Department of Anatomy, Histology, and Embryology, Faculty of Medicine, Medical University of Plovdiv

**Topic:** "Anthropological Characteristics of the Facial Skeleton and the Apertura Pyriformis in the Bulgarian Population from Southern Bulgaria—Measurements on 3D Reconstructions of Computed Tomography Scans"

**Scientific supervisor:** Assoc. Prof. Dr Ferihan Ahmed-Popova PhD, Department of Anatomy, Histology, and Embryology, Faculty of Medicine, Medical University of Plovdiv

### 1. General Presentation of the Procedure and the Doctoral Candidate

The presented set of materials in paper copy and electronic format is in accordance with Art. 70 (1) of Section I, "Acquisition of the Educational and Scientific Degree 'DOCTOR'" at the Medical University of Plovdiv, and includes the following documents:

- Application to the Rector of MU-Plovdiv for the initiation of the dissertation defense procedure;
- Curriculum Vitae (CV) in European format, signed by the doctoral candidate;
- Notarized copy of the higher education diploma;
- Administrative orders for enrollment in the doctoral program, interruption of studies (due to maternity leave), continuation of studies, and dismissal with the right to defense;
- Order for the individual plan examination and the corresponding protocol for passing the examination or the "doctoral minimum" in the specialty;
- Protocol from the Departmental Council regarding the preliminary discussion of the dissertation and the decisions made to initiate the procedure and propose the composition of the Scientific Jury;
- Dissertation thesis;
- Author's summary (Abstract);

- List of scientific publications on the topic of the dissertation;
- Copies of the scientific publications;
- List of participations in scientific forums/conferences;
- List of noticed citations;
- Declaration of originality and authenticity of the attached documents;
- Other documents related to the progress of the procedure.

The doctoral candidate has submitted 4 publications related to the dissertation. The presented documents meet the requirements of the Development of Academic Staff in the Republic of Bulgaria Act and the Regulations of the Medical University of Plovdiv for admission to a public defense for the acquisition of the Educational and Scientific Degree 'Doctor' (PhD).

Dr. Zlatizara Hristova Todorova was born on July 3, 1984. She graduated from the Medical University of Plovdiv in 2009 with a degree in Dental Medicine. From August 2009 to December 2020, she practiced her specialty in the city of Haskovo. From September 2020 to September 2021, she was appointed as a Part-time Assistant Professor in the Department of Anatomy, Histology, and Embryology at the Faculty of Medicine, MU-Plovdiv. Since September 2021, Dr. Zlatizara Hristova Todorova has been a full-time Assistant Professor in the same department. She has excellent command of both written and spoken English and French. She possesses strong communication and organizational skills, as well as the ability to work effectively in a team. She is a member of the Bulgarian Anatomical Society, the Bulgarian Anthropological Society, the Union of Scientists in Bulgaria, and the Bulgarian Dental Association.

## **2. Relevance of the Topic .**

The research topic is highly relevant as it provides an opportunity to verify and expand the data obtained from studies of the facial skeleton and cranial bones within the Bulgarian population. Historically, this was achieved using direct craniometric instruments. Scientific and technological progress now enables the implementation of craniometric research methods in living subjects through the capabilities of Computed Tomography (CT), which significantly increases the sample size while expanding and refining the database.

The use of 3D reconstructions of the acquired images allows for the description and refinement of sex-related differences among individuals in the contemporary Bulgarian population and their comparison with other populations. The resulting data are applicable in other scientific fields such as anthropology and archaeology. Furthermore, this research enriches the information used in forensic anthropology, where the subjects of study are often skulls, individual cranial bones, or their fragments. This enables the precise determination of ethnicity, sex, and approximate age of the individuals whose remains are being analyzed. Morphometric indicators, particularly those of

the apertura piriformis and the nasal region, can be successfully applied in sex determination and utilized in forensic medical practice.

The significance of facial morphology for reconstructive surgery is indisputable, as it aims to restore normal anatomy and function disrupted by congenital or acquired deformations. Plastic interventions in the facial region, for both reconstructive and aesthetic purposes, must account for both the soft-tissue relief of the face and the underlying bone structures.

Surgical manipulations in the nasal region must be performed with an excellent knowledge of the anatomical structures. The introduction of specific anthropometric indicators is very useful for superior preoperative preparation, the use of maximally atraumatic surgical techniques, and the minimization of postoperative complications. That is why the dissertation is highly useful, making the data obtained from the study applicable across a range of surgical disciplines: neurosurgery, Otolaryngology, ophthalmology, and orthognathic surgery.

Several dental disciplines can also benefit from the enriched database regarding the dimensions of the apertura piriformis and the nasal region. In prosthetic dentistry, for example, determining the size of artificial teeth in the absence of information about the natural dentition is a true challenge. The individual anatomical characteristics of the patient must be considered in combination with anthropometric data specific to their sex, age, and ethnicity.

In orthodontics it is a well-known that the width of the apertura piriformis corresponds to the total width of the four incisors located on the maxilla. Morphometric data for the apertura piriformis, combined with data on tooth crown dimensions adjusted for sex, population, and ethnicity, allows for the prediction of the need for appliances that help create additional space by expanding the dental arches or maintaining gaps for erupting teeth.

All these facts make the doctoral thesis of Dr. Zlatozara Hristova Todorova highly relevant, with significant multidisciplinary applications.

### **3. Knowledge of the Problem**

The literature review is conducted in depth, providing a clear, multifaceted, and representative examination of the research hypothesis. This demonstrates that the doctoral candidate is well-informed and possesses the ability to derive appropriate research goals and objectives. The review is methodically structured and highly informative, consistently and detailedly outlining the characteristics of the phylogenetic and ontogenetic development of the skull, as well as the influence of various factors on the prenatal and postnatal formation of the human cranium. A total of four tasks have been precisely formulated to ensure the fulfillment of the set objective.

#### **4. Research Methodology**

The study described in the dissertation was conducted using a 64-slice multi-detector spiral computed tomography scanner. As a result, 120 conventional CT scans were obtained from individuals of Bulgarian ethnic origin (55 males and 65 females), aged 20 to 60 years. The analyzed linear dimensions and the calculated cranial indices are described with detail. The methods for data qualification, quantification, and analysis correspond to the set goals and objectives; they have been selected in a manner that ensures the acquisition of valid and reliable results.

#### **5. Characteristics and Evaluation of the Dissertation and its Contributions**

The dissertation submitted for review by Dr. Zlatozara Hristova Todorova consists of 146 standard printed pages and is structured as follows: Introduction: 1 page, Literature Review: 25 pages, Aim and Objectives: 1 page, Materials and Methods: 19 pages, Results: 42 pages, Summary and Discussion: 28 pages, Conclusions: 1 page, Contributions: 2 pages. The work is illustrated with 27 tables and 57 figures. The bibliography includes 269 literary sources. The structure and volume of the dissertation are in accordance with the standards for the Educational and Scientific Degree "Doctor."

By comparing the results of Dr. Todorova's work with existing literature data, the Discussion emphasizes the relevance, significance, and scope of the research conducted. The presented results are of high scientific value and allow for the derivation of 6 conclusions. These conclusions correspond to the established objectives and are formulated with precision and accuracy.

Six contributions are presented, categorized as follows: 2 of them are original, 2 are theoretical-methodological and 2 are scientific. These contributions confirm the scientific-theoretical and clinical-applied significance of the dissertation.

#### **6. Assessment of Publications and the Doctoral Candidate's Personal Contribution**

Dr. Zlatozara Hristova Todorova has presented 4 publications on the topic, thereby meeting the requirements of the Act on Development of the Academic Staff in the Republic of Bulgaria and the Regulations of the Medical University of Plovdiv.

The dissertation is written professionally, adhering to linguistic norms, and is easy and pleasant to read. It is noted that there is an absence of figures and diagrams in the "Summary and Discussion" chapter; however, this does not diminish the value of the work.

In the presented work, it is clearly evident that it is the personal endeavor of the doctoral candidate, and the results obtained, as well as the formulated contributions, are her personal merit.

## 7. Abstract assessment

The abstract meets the requirements and summarizes the main results described in the dissertation

### CONCLUSION

The dissertation contains scientific-applied results that represent an original contribution to science and meet all requirements of the Act on the Development of the Academic Staff in the Republic of Bulgaria (ADASRB), the Regulations for the Implementation of the ADASRB, and the Regulations of the Medical University of Plovdiv. The submitted materials and dissertation results fully comply with the specific requirements adopted in connection with the MU-Plovdiv Regulations for the application of the ADASRB.

The dissertation demonstrates that the doctoral candidate, Dr. Zlatozara Hristova Todorova, possesses in-depth theoretical knowledge and professional skills in the scientific specialty "Anatomy, Histology, and Cytology," showing the qualities and skills necessary for conducting independent scientific research.

I confidently give my positive assessment of the research presented by the dissertation, abstract, results, and contributions reviewed above, and I propose to the honorable Scientific Jury to award the educational and scientific degree "Doctor" (PhD) to Dr. Zlatozara Hristova Todorova in the doctoral program "Anatomy, Histology, and Cytology."

17. 03. 2026 г.

Prepared an evaluation statement:

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