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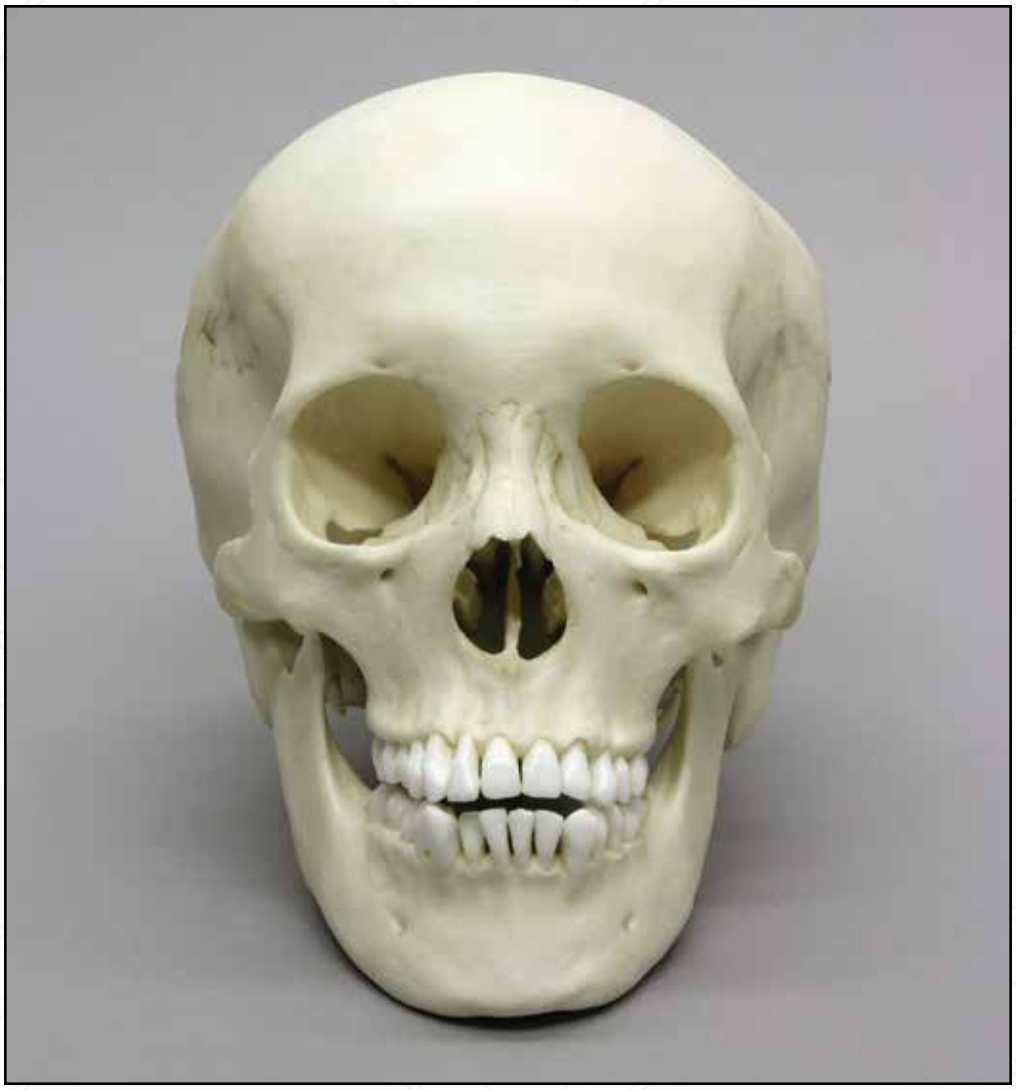
OSTEOLOGICAL REPRODUCTIONS

Human Adolescent Skull
BC-301



Osteological Evaluation Report

Prepared by

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Human, Adolescent (15-18 years)

PRODUCT NUMBER: BC-301

SPECIMEN EVALUATED: Original specimen

SKELETAL INVENTORY: 1 Cranium with 11 maxillary teeth
1 Mandible with 13 teeth

OSTEOLOGIC OBSERVATIONS:

General shape and configuration of the individual bones is within normal limits. There are no features suggestive of acute/recent or remote trauma.

Skull:

The general shape and configuration of the skull and the individual skull bones are within normal limits. The sutural patterns are of expected configuration. Wormian (sutural) bones are absent. The foramina are of expected configuration.

Dentition:

Eleven teeth are in the maxillary dental arcade, and 13 teeth are in the mandibular dental arcade. All teeth have an adult morphology and no deciduous dentition remains. The dentition is atraumatic and lacks dental restorations or prosthetic devices/appliances. Attrition is absent.

RACE DETERMINATION:

The interocular distance is not prominently widened. The nasal root is flat, and the nasal angle is obtuse. The nasal aperture is broad both superiorly and inferiorly. The anterior nasal spine is short, and the inferior margin of the nasal aperture is predominantly smooth. The zygomatic bones retreat posteriorly from the plane of the face. The maxillary dental arcade has a somewhat rounded shape. Maxillary prognathism is absent. Maxillary incisors have a shovel-shaped configuration. An edge-on-edge bite is pronounced. A post-bregmatic depression is absent. The lambdoid suture is focally complex; other calvarial sutures are simple.

The totality of available cranial features suggests that the individual is of Asian ancestry.

SEX DETERMINATION:

Sites for musculofascial attachment are mildly prominent; these include the mastoid processes of the temporal bone, and the supramastoidal crests. The mandibular ramus is narrow. The nasion is smooth. The supraorbital margins are not distinctively sharp or blunt (intermediate). The inferior border of the mandible is somewhat rounded.

The totality of available cranial features suggests that the individual might have been of male sex, but this determination must be viewed in the context of the developmental age (see below, and EDUCATIONAL RESOURCES).

AGE DETERMINATION:

Skull:

The fontanelles are closed, and the spheno-occipital synchondrosis is fused. The calvarial sutures are all open and unfused (Meindl and Lovejoy method score of ZERO for both cranial vault and anterior cranium).

Dentition:

All teeth have an adult morphology.

Radiologic evaluation of the upper and lower jaws:

Twelve periapical radiographs are available for evaluation.

Three teeth (1.2, 3.3, and 4.3) have the incorrect morphology (likely representative of erroneous tooth replacment by the educational distributor who supplied the original skeleton for casting).

The 1.7, 2.7, 3.7 and 4.6 teeth, and possibly the 1.8 tooth are absent. The 3.8 and 4.8 teeth are impacted. The roots of the 3.8 and 4.8 teeth are only one third to one half formed.

The totality of features (which included an analysis of the postcranial skeleton) is most in keeping with a sub-adult (adolescent) between 15 and 18 years of age at the time of death.

SUMMARY:

1. Sex

Features suggestive but not diagnostic of male sex.

Evaluation limited by the developmental age (maturational stage) of the individual at the time of their demise.

2. Age

Most likely 15 to 18 years of age at the time of their demise.

3. Race

Most likely of Asian ancestry.

4. Trauma

None.

EDUCATIONAL RESOURCES:

1. Age assessment of skeletal remains is best done in the context of the entire skeleton. Integration of data from a broad set of studies is optimal. Investigators should offer the age range most safely suggested by the totality of studies. Students must be cautioned that statistical data is based on **populations**, and may not necessarily be reflective of reality in an **individual**.

2. Race and sex cannot be reliably determined on subadult remains.[1]
   a. In this case, features of race are overwhelmingly Asian, and thus such an opinion is somewhat easy to offer. Furthermore, the individual was nearly an adult (or a young adult) at the time of their demise, and thus may have had nearly fully developed osteologic features of race.
   b. Sex can be impossible to determine from the non-metric analysis of subadult remains. In this circumstance, the totality of features is most in keeping with those of a slightly gracile young male who has not yet fully developed his sexual characteristics (osteologically speaking). Alternatively, the features might be those of a slightly robust female.

REFERENCES:

1. Matshes, E. and Lew, E. (2006). Forensic osteology. In *Forensic Pathology: Principles and Practice*, D. Dolinak, E. Matshes, and E. Lew, Editors. San Diego, CA: Elsevier (Academic Press).

DISCLAIMERS:

This report is meant only as a teaching tool for introductory level students of the anatomical, anthropology or forensic sciences who might be using this specimen to learn human and forensic osteology. My opinions are based solely upon the material presented to me. This is somewhat artificial as in real forensic investigations additional studies would be undertaken prior to the formulation of diagnoses, and the production of a report. These studies might include plain film radiography, computed tomography (CT) studies, histology, etc.

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Bone Clones Disclaimer on Ancestry Assessment

The assessment of ancestry from human skeletal remains, particularly the skull, is a component historically included in the creation of a biological profile for forensic purposes. This practice involves the analysis of morphoscopic traits and metric variables that may exhibit population-specific patterns of variation. However, it is important to recognize the significant scientific and ethical limitations of this practice.

Race is not a biologically valid concept. Contemporary biological anthropology holds that race is a social construct with no discrete biological basis. Human variation exists on a continuum, shaped by complex interactions between genetics, environment, and culture—not distinct "racial" categories. Therefore, the identification of "race" or "ancestry" based solely on skeletal features is scientifically problematic and cannot be performed with high accuracy or precision.

Although some morphological traits of the cranium may reflect broad population-level patterns due to shared evolutionary history, these traits do not map neatly onto socially defined racial categories. Furthermore, categories such as "Asian," "European," or "African" are socially constructed labels that do not fully capture genetic or phenotypic diversity, and they should not be interpreted as exact or absolute identifiers. As such, ancestry estimation based on skeletal features should not be interpreted as the identification of race, and results should be presented with appropriate caution and clear communication of limitations.

Historically, law enforcement agencies have requested ancestry estimations as part of forensic reports. However, many biological anthropologists today are increasingly hesitant to include this component, as doing so may inadvertently reinforce outdated and harmful typological thinking—the idea that humans can be classified into discrete biological "types" based on physical features. Such typologies have a long and problematic history and are not supported by modern science.

In cases where ancestry estimation is included, it is done with the understanding that it is a probabilistic assessment—not a definitive classification—and it must be contextualized within a broader ethical framework that prioritizes scientific integrity, individual dignity, and the avoidance of reinforcing racial stereotypes.