

OSTEOLOGICAL EVALUATION

Prepared by
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Product No. BC-287

Human Male Asian Robust



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OSTEOLOGICAL REPRODUCTIONS

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Human Male Asian, Robust

Product Number: BC-287
Specimen Evaluated: Original Specimen
Skeletal Inventory: 1 Cranium
1 Mandible

Osteological Observations:

Dentition:

The skull exhibits full adult dentition with the exception of all four 3rd molars. The anterior maxillary incisors are shovel-shaped, a form common in Asian and American Indian populations. The teeth have wear facets but no carious lesions or significant dentin exposure. The enamel of the anterior teeth demonstrates the horizontal lines of enamel hypoplasia, an indication of interrupted enamel development during childhood – often interpreted as evidence of seasonal variation in nutrition level.

Tooth #19 was broken before death. The two lingual cusps are missing and the pulp cavity is exposed. The roots are exposed and appear to have developed an apical abscess.



Figure 1: Lingual Surface of Maxillary Incisors The lingual view of the maxillary incisors displays the characteristic Asian-origin shovel-shape.



Figure 2: Left Side of Mandible with Abscess

Evidence of an apical abscess is visible on the alveolar bone at the base of tooth #19 (lower left first molar). Infection probably occurred when the tooth was broken and the pulp was exposed during life. (See lingual side of tooth.)

Features of Race:

The discriminate function analysis program, FORDISC 3.0, classifies the skull as American Indian with a posterior probability of 0.996. This classification is further substantiated by the presence of shovel-shaped incisors and multiple Wormian bones in lambdoidal suture. The face is broad, and the nasal aperture is wide. The nasal sill is smooth and guttered. Differentiation of Asian and American Indian is difficult, if not impossible, given the information available.



Figure 3: Close-up of Nasal Aperture

The nasal aperture is somewhat rounded, not vertical as in persons of European origin. The nasal sill flows inward across a mild gutter from the alveolar ridge. The nasal spine is present but not prominent. These are traits associated with persons of non-European origin.



Figure 4: Posterior View of Skull Multiple Wormian bones (sutural bones) can be seen within the lambdoidal suture. This condition is typical in individuals of Asian origin. Note also the extremely large external occipital protuberance and crest-like inferior nuchal lines, both masculine traits.

Features of Sex:

Skull:

The skull displays extreme masculine traits. The supraorbital ridge is large, the supraorbital margin is rounded, and the jaw is massive. The gonial angle is close to 90 degrees and strongly flared.



Figure 5: Frontal View of Skull The skull displays extremely masculine traits. The supraorbital ridge is large, the supraorbital margin is well-rounded, and the jaw is massive. The gonial angle is strongly flared.



Figure 6: Lateral View of Neurocranium The lateral and posterior views of the skull are also impressively masculine. The suprameatal crest (also called a “zygomatic arch extension”) is sharply defined, and the mastoid processes are large. The external occipital protuberance is enormous, and the inferior nuchal lines are almost crest-like.

SUMMARY (Note: Based on analysis of postcranial skeleton as well as skull):

1. Race: Asian Origin (This includes the possibility of American Indian)
2. Sex: Male
3. Age: Upper 20's (range 23-35) this relatively narrow age range is based on the fact that all developmental changes are complete, but very few degenerative changes have begun.
4. Trauma: There is no bony evidence of trauma or disease other than the one broken molar tooth.

Educational Resources:

1. Educators may also want to use this skull as an opportunity to discuss the genetic closeness of Asians and American Indians and the resulting similarity in skeletal characteristics.
2. The dentition of this skull provides the opportunity to discuss the significance of enamel hypoplasia in relation to nutritional stress.
3. This skull provides an excellent example of extreme male characteristics including large supraorbital ridge, well-rounded supraorbital margins, massive mandible, square chin, large mastoid processes, projecting occipital protuberance, and almost crest-like nuchal lines.

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References:

Ousley, S.D., & R. L. Jantz. (2005). *FORDISC 3.0: Personal Computer Forensic Discriminant Functions*. Knoxville, TN: University of Tennessee, Department of Anthropology, Forensic Anthropology Center.

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 regarding race and sex are based only upon non-metric analyses. 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. My opinions regarding race and sex are based only upon non-metric analyses. Evaluation of cranial suture closure is most accurately assessed endocranially as the sutures are known to close from the endocranial table towards the ectocranium. My opinions regarding this skull were made without access to the postcranial skeleton.

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