

# Bone Clones<sup>®</sup>

OSTEOLOGICAL REPRODUCTIONS

## Human Male Asian Skull BC-092



## Osteological Evaluation Report

*Prepared by*

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# Human, Male, Asian, Calvarium cut

**Product Number:** BC-092

**Specimen Evaluated:** Bone Clones® replica

**Skeletal Inventory:** 1 intact cranium  
1 intact mandible

## **General observations:**

The general shape and configuration of the skull is within normal limits. The ectocranial morphology of the individual cranial bones is within normal limits. The sutural patterns are of expected configuration; there is a complete metopic suture. There are no sutural bones. The foramina are of expected configuration. The skull is atraumatic. There are small “button” osteomas of the right squamous portion of the temporal bone (external table), the right facial portion of the frontal bone (external table), and the mid-left parietal bone (medial to the superior temporal line; external table).

## **Dentition:**

There are 16 teeth in the maxillary arcade and 16 teeth in the mandibular arcade. All teeth have an adult morphology and no deciduous dentition remains. The dentition is atraumatic. There are no dental restorations or prostheses. There is severe attrition.

There is generalized mild furcation involvement (periodontal disease).

## **Features of Race:**

The interocular distance is broad. The nasal root is flat and the nasal angle is obtuse. The zygomatic bones are broad. The nasal aperture is broad superiorly and inferiorly. The anterior nasal spine is short, and the inferior margin of the nasal aperture is blunt; there is the vague impression of bilateral nasal gutters. The maxillary dental arcade has a somewhat rounded shape. There is no alveolar prognathism. The maxillary incisors are prominently shovel-shaped. There is nearly an edge-on-edge incisal bite. There is no post-bregmatic depression. The calvarial sutures are predominantly simple.

*The totality of features is most in keeping with those of an Asian individual.*

### **Features of Sex:**

There is mild prominence of the cranial sites for musculofascial attachment including especially:

- the nuchal lines
- the external occipital protuberance
- the mastoid processes of the temporal bones
- the temporal lines (prominent)
- the supraorbital tori (prominent)
- the masseteric tuberosities of the mandible
- the occipital condyles
- the supramastoidal crest (prominent)

There is a broad ascending mandibular ramus. The nasion is somewhat rough (difficult assessment due to metopic suture), and the supraorbital margins are blunted. The inferior border of the mandible is square.

***The totality of features is most in keeping with male sex.***

### **Features of Age:**

There are no identifiable fontanelles. The spheno-occipital synchondrosis is fused.

Ten ectocranial osteologic landmarks are evaluated for degree of suture closure according to the Meindl and Lovejoy method\*.[1] Scores are assigned as follows:

1	1
2	1
3	1
4	1
5	1
6	1
7	2
8	2
9	2
10	3

\* As is always the case with casting, there is a tendency towards overscoring.

The sum of scores for the cranial vault (landmarks 1 through 7) is 8. This corresponds to an estimated age of 39.4 +/- 9.1 years.

The sum of scores for the anterior cranium (landmarks 6 through 10) is 10. This corresponds to an estimated age of 51.9 +/- 12.5 years.

### **SUMMARY:**

1. Asian.
2. Male.
3. 39.4 – 48.5 years; range 30.3 – 64.4 years.
4. No evidence of trauma.
5. Complete metopic suture.

### **EDUCATIONAL RESOURCES:**

1. This is an excellent example of an Asian male.
  - a. The concept of race assessment is controversial. It may be worthwhile to review the varying schools of thought on this issue. Short summaries from the perspective of the forensic anthropologist[2] and forensic pathologist[3] are readily available.
  - b. In many circumstances, the skull alone will allow an investigator to correctly determine sex.[4] However, the findings in the skull should never been treated in isolation; rather, they should be incorporated into your ‘whole case’ database. This database should include information obtained from all other aspects of the case. From an osteologic perspective, this includes (importantly) the bones of the pelvis.
2. It may be appropriate to use this specimen as a discussion piece for the concept of metopism.
3. Button osteomas are small, benign proliferations of bone. Generally, they are of no clinical relevance; when very large, they may be of cosmetic concern to living patients. It may be appropriate to use this specimen as a discussion piece for osteologic differential diagnoses of bony lumps and bumps.
4. By removing the calvarium, junior osteologists are able to learn the complex anatomy of the endocranium, especially including the pathways of the various foramina of the skull base, and the orbit.

## **REFERENCES:**

1. Meindl, R.S. and Lovejoy, C.O. (1985). Ectocranial suture closure: a revised method for the determination of skeletal age at death based on the lateral-anterior sutures. *American Journal of Physical Anthropology*, 68(1): 57-66.
2. 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).
3. Gill, G. (1998). Craniofacial criteria in the skeletal attribution of race. In *Forensic Osteology: Advances in the Identification of Human Remains*, K. Reichs, Editor. Springfield, IL: Charles C. Thomas.
4. Krogman, W. and Iscan, M. (1986). *The Human Skeleton in Forensic Medicine*. 2 ed. Springfield, IL: Charles C. Thomas.

## **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. Evaluation of osteologic material is best done with original specimens. My evaluation was based solely upon studies of a Bone Clones® replica. 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. 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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### **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.