

## CRANIOFACIAL MORPHOLOGY OF HUMAN REMAINS FROM ANCIENT BURIALS OF TSUVRAA MOUNTAIN, IN UGUUMUR AREA, KHULENBUIR SUM, DORNOD AIMAG, MONGOLIA

**D.Tumen**

*Department of Anthropology and Archaeology, School of Social Sciences, National University of Mongolia, Mongolia.  
tumen@num.edu.mn*

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The Paleoanthropological study of human remains from different prehistoric archaeological sites of Mongolia play an important role in solving the problem not only of the origin of Mongols, but the problem of prehistoric migrations and biocultural and historical relationship of ancient populations from Northeast Asia.

The goals of the paleoanthropological study are 1). To carry out craniological, studies of human remains obtained from archaeological excavation carried out in Eastern Mongolia: 2). To conduct comparative morphological analysis for ancient populations from Eastern Mongolian and Northeast Asian based on obtained craniofacial data on the ancient Mongolian populations

In the paper is given main results of craniological study of human remains discovered during archaeological excavations in Eastern Mongolia in 2002.

### **Material and methods:**

During archaeological expeditions conducted in Khentii, Dornod and Sukhbaatar aimags in 2002 several tombs belonging to Early Mongolian Periods (X-XII Century) were excavated and were found an important paleoanthropological specimens from ten burials excavated in mountain site, Uguumur area, Khulenbuir Sum, Dornod aimag. The bone preservations of the site are given in Table 1. All anthropological remains were studied from craniological and osteological point of view. Cranial and postcranial measurements were conducted by the methods widely using in Anthropological research (Alexeev and Debets; 1964, Alexeev, 1966.; Bass, 1987; Howells, 1973; Knusmann, 1988; Kharitinov and Perevozchikov, 1999).

### **Results and Discussions**

Craniofacial morphological data on studied anthropological remains from above mentioned archaeological sites are given in Table 2.

Sex and age estimation was carried out for ten individuals whose remains were found at excavation of Tsvuraa mountain site, Uguumur area, Khulenbuir sum, Dornod aimag. The preservation of these skeletons is various, so we used different techniques for sex and age estimation. The sex was determined by basic criteria of specific development of an osteal relief on a skull, under the form of a hip bone and general size of long bone ( Alexeev, 1966; Bass, 1987).

The aging of skulls was based on criteria of occlusal wear of teeth, obliteration of skull sutures, preservation of surface joints of long bones, pubic symphysis and on some other additional parameters (Alexeev, 1966 ; Bass, 1987).

### **Anthropological characteristics of Human remains from Uguumur site Dornod aimag, Khulenbuir sum, Tsvuraa Mountain, Grave 31 (9), AAT-549.**

The preservation of a skeleton of the individual from the burial was good. Due to results of measurements of skull size, especially of mandibles, and the details of form of the mandible frame we can say it is male. The condition of the teeth indicates the age of the individual as possible late adultus. The skull is typical dolichocranic (maximal length -

210mm, maximal breadth-153 mm, Basion-bregma height – 134 mm, cranial index-72.8), widths and slope forehead (Least frontal breadth –99 mm, frontal profile angle – 75 degree), superciliary arches (brow ridges) are developed prominent, and medium high and narrow face is orthognathic. The orbits are high and rectangular. The nose bones project very prominent. Such signs as dolichocrany, projecting nose resemble Caucasoid racial features. But such sign as sloped forehead, high orbits resemble Mongoloid racial features. Based on the morphological study can be concluded that the skull characterized by combination of Mongoloid and Caucasoid features.

**Dornod aimag, Khulenuir sum, Tsuvraa Mountain, Grave 20, AAT-551.** The skull belongs to male individual. The condition of teeth, cranial sutures indicate the age of the man as possible late maturity. The good preservation of skull and postcranial skeleton of the individual from the burial allowed us to do the craniometric measurements of the skull. The skull is typical brachcranial (maximal length - 210mm, maximal breadth-153 mm, Basion-bregma height – 134 mm, cranial index-72.8), The face is wide and high, and mesognathic (bizygomatic breadth-153 mm, upper facial height – 81 mm, upper facial index – 52.3), The nose bones project very prominent (nose projecting angle –31 degree). The orbits are high and mesoconchy (Orbit high-40 mm, orbit index –86.3). The combination of above mentioned features show that the skull morphologically belongs to Mongoloid race but the nose protrusion angle is very high and close to mean value of this trait in Caucasoid populations.

**Dornod aimag, Khulenuir sum, Tsuvraa Mountain, Grave 55, AAT-558** The skull belongs to male individual. The condition of teeth, cranial sutures indicate the age of the man as possible late maturity. The skull is very low and mesocranic (cranial index – 84.0 and Basion-Bregma height-124 mm), the face narrow, medium high (bizygomatic breadth-138 mm, upper facial height- 73 mm), the nose is narrow and its protrusion is not highly projected **Dornod aimag, Khulenuir sum, Tsuvraa Mountain, Grave 73, AAT-552.** The remain belongs to female individual. The main morphological features of skull and postcranial skeleton indicate the age of the individual as adultus. The skull is chamecranial and brachcranial (maximum length – 162 mm, maximal breadth-138, bregma-basion height-107 mm, cranial index-85.2). The broad and more vertical forehead (frontal breadth-89 mm, frontal angle-82 degree), The face is moderate high, broad and mesognathic (bizygomatic breadth – 128 mm, upper facial height – 65 mm and upper facial index –50.8),. The orbits are very high (orbital height – 38 mm) and the nose is broad and leptorrhinc (breadth of nasal aperture – 25 mm). The angle of the vertical profile, particularly the alveolar, are indicate of prognathy (alveolar profile angle 68 degree), The angle of protrusion of the nasal bones is small (nasal profile angle – 22 degree). The all signs show that the individual belongs to Mongoloid race. The alveolar prognathism of the individual can be explained in terms of his affiliation to the Eastasian ancient populations (from Amur river basin and Manjuria, Korea)

**Dornod aimag, Khulenuir sum, Tsuvraa Mountain, Grave 10, AAT-557.** The preservation of the skeleton was not good condition. We only have determinate the sex and age of the specimen. The features and relief of skeleton show that anthropological specimen belong to male individual. cranial sutures indicate the age of the male individual is adultus. The braincase is brachcranial (cranial index - 86.2)

**Dornod aimag, Khulenuir sum, Tsuvraa Mountain, Grave 11, AAT-553.** Preservation of The human specimen was in very bad condition. According to relief and some features of fragment of some long bones, the specimen belongs to female individual.

**Dornod aimag, Khulenuir sum, Tsuvraa Mountain, Grave 12, AAT-550.** There was found fragment of skull and postcranial skeleton without skull. Due to development of long bone relief the sex of the specimen can be indicated as male individual and the age is adultus.

**Dornod aimag, Khulenbuir sum, Tsuvraa Mountain, Grave 15, AAT-554.** There was found fragment of skull and postcranial skeleton without skull. Due to development of long bone relief the sex of the specimen can be indicated as female individual in early adultus age.

**Dornod aimag, Khulenbuir sum, Tsuvraa Mountain, Grave 72, AAT-555.** The humen skeleton from this grave was in very bad condition. There was discovered fragment of skull without postcranial skeleton. According to the development of mastoid process and teeth size, relief of occipital bone, the skull belong to male individual in early adult of age.

**Dornod aimag, Khulenbuir sum, Tsuvraa Mountain, Grave 22, AAT-556.** The preservation of skeleton (fragment of skull and postcranial skeleton) was in bad condition. The relief and surface development of long bones show that the human remain belongs to male individual, the age of the male is maturus.

**Craniometric measurements of human remains from ancient Mongolian burials from East Mongolia**

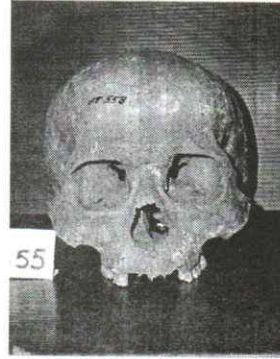
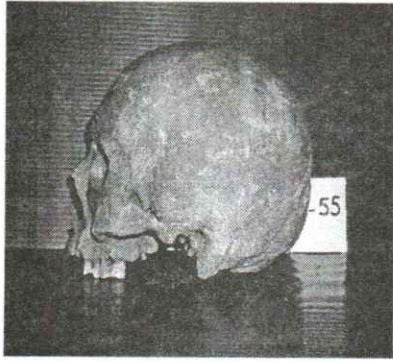
Specimen number in paleoatpopolo- gical collections at the Departmen od Anthropology and Archaeology	AT-549	AT-551	AT-558	AT-552	AT-557
Place of archaeological excavitions	Dornod aimag Hulenbuir sum Tsuvraa uul	Dornod aimag Hulenbui r sum Tsuvraa uul	Dornod aimag Hulenbuir sum Tsuvraa uul	Dornod aimag Hulenbui r sum Tsuvraa uul	Dornod aimag Hulenbuir sum Tsuvraa uul
Craniometric measurements (Martin's number)	Grave 31 (9)	Grave 20	Grave 55	Grave 55	Grave 55
Age	Adultus	adultus	maturus	maturus	maturus
Sex	male	male	male	male	male
1. Maximum cranial Length	210	189	175		
8. Maximum cranial breadth	153	152	147		
17. Cranial Height (Basion- Bregma)	134	130	124		
5. Basion- Nasion length	105	95	99		
9. Least frontal breadth	99	102	89		
10. maximum frontal breadth	119	127	114		
11. Biauricular breadth	136	122	134		
12. Biasrerionic breadth	117	112	111		
29. Nasion-bregma chord	115	109	103		
30. Bregma-lambda chord	109	113	111		
31. Occipital-saggital chord	94	100	87		
23a. Horizontal circumference ophrion-opictocranion-ophrion	575	550	520		
24. Auricular-bregmatic arc	320	310	300		
25. Total sagittal arc	400	380	330		
26. Frontal longitudinal arc	140	125	120		
27. Parietal longitudinal arc	120	130	130		
28. Occipital longitudinal arc	140	125	80		
45. Zygomatic breadth	138	153	138		
40. Basion-prosthion length	97	96	91		

48.Upper facial height	72	81	73		
47.Total facial height	122	131			
43.Biorbital breadth	106	116	102		
46. Bimaxillary breadth	104	108	105		
60. Maxillo-alveolar length	47	55	54		
61.external palate breadth	59	69	67		
62.Internal palatal length	31	34	44		
63.Internal palatal breadth	45	48	46		
55.Nasal height	57	64	53		
54.Nasal breadth	27	27	24		
52.Orbital breadth	41	48	42		
51. Orbital height	40	40	33		
32.Frontal angle (Nasion-metopion)	75	74	68		
- Frontal angle (Glabella-metopion)	65	62	61		
33(1). Upper occipital angle (Lambda-Inion )	74	78	100		
33(2). Occipital angle (Inion-opisthion)	22	27	26		
33(4). Total occipital angle (Lambda-opisthion)	71	56	51		
72. Angle facial total	85	83	76		
73. Angle facial profile	89	82	78		
74. Angle alveolare	75	79	67		
75. Angle nasal	60	52	55		
75(1). Angle nasal profile	25	31	21		
8/1*100. Cranial index	72.8	80.42	84.00		
17/1*100. Cranial length –height index	63.81	68.78	70.86		
17/8*100. Cranail breadth-height index	87.58	85.53	84.35		
48/45*100. Upper facial index	52.17	52.94	52.90		
52/51*100. Orbital index	97.56	83.33	78.57		
54/55*100. Nasal index	47.37	42.19	45.28		
68. Projective length of the corpus mandibulae		117			
79. Доод эрүүний салааны өнцөг		110			
70. Condylloid height		90			
71a. Least breadth of ramus ергөн	74	74			
65. Maximum breadth outside the condyles	37	37			
66. Bigonial breadth		123			
67. minimum chord between right and left mental foramina	98	115			
69. Height of mandibular symphysis	54	50			
69/1/. Height of mandibular corpus	31	37			
69/3/. Thickness of mandibular corpus	21	36			
	15	20			

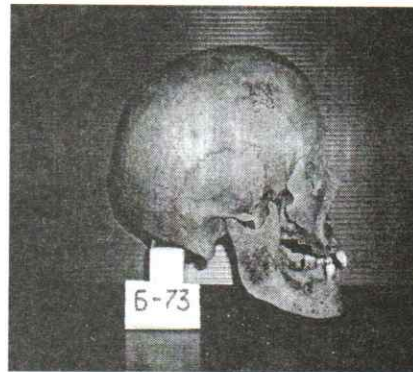
### Concluding remarks

Based on the results of the craniofacial study of human remains from Tsuvraa mountain site, Uguumur area, Khulenbuir sum, Dornod aimag (East Mongolia) we can conclude that some of the human remains belonging to ten individuals,

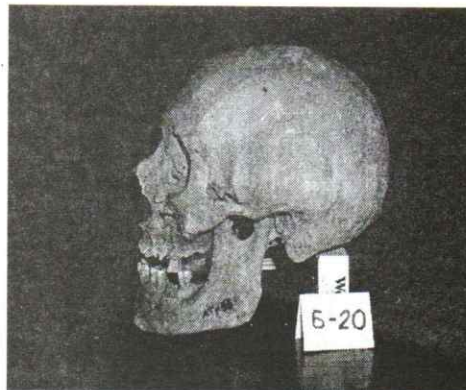
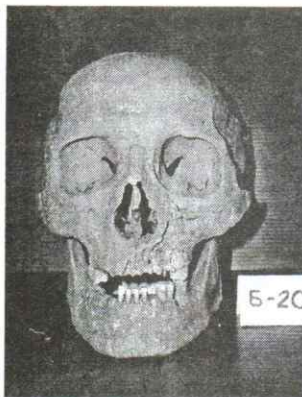
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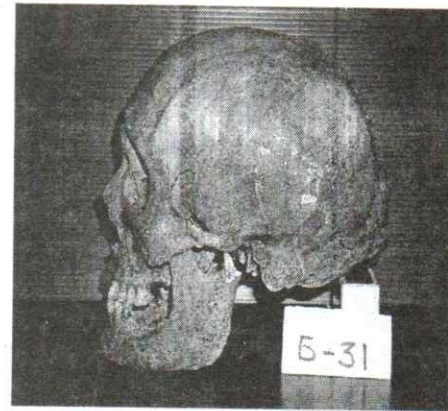
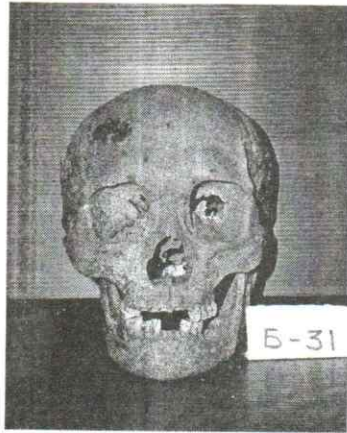
Grave No. 55. AT-558. Male, maturus. Uguumur area, Hulunbuir sum, Dornod aimag



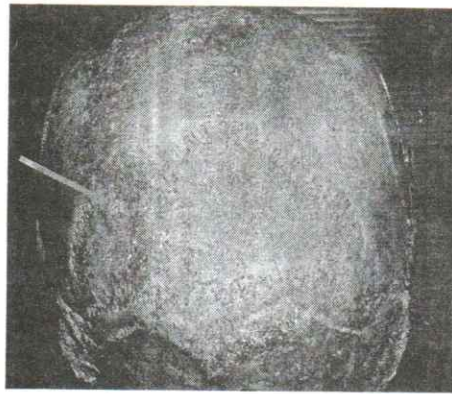
Grave No. 73. AT-552. Female, adultus. Grave No. 31. AT-549. Uguumur area, Hulunbuir sum, Dornod aimag



Grave No. 20. AT-551. Male, maturus. Uguumur area, Hulunbuir sum, Dornod aimag



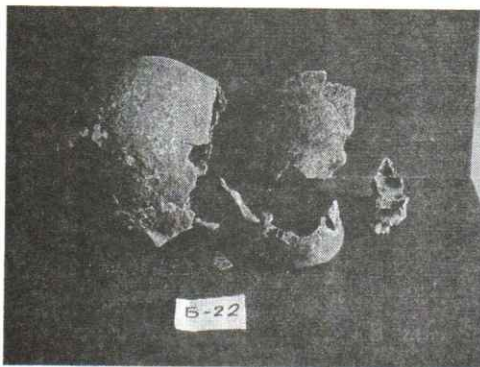
Grave No. 31. AT-549. Male, adultus . Uguumur area, Hulunbuir sum, Dornod aimag



Grave 31 . Uguumer mountain  
Wormian bone and Inka bone



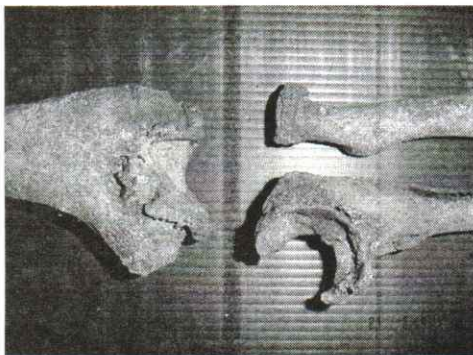
Grave 73. Uguumer mountain  
Hulunbuir sum, Dornod aimag,  
Metopic suture on the frontal bone



Grave 22. Uguumer mountain,  
Hulunbuir sum, Dornod aimag



Grave 20. Uguumer mountain,  
Hulunbuir sum, Dornod aimag  
pathology on Maxiilla



Grave 20. AT-551. Uguumer mountain, Hulenbuir sum, Dornod aimag,  
Pathology (Torus mandibula and Arthritis on Humerus, Ulna, Radius)

anthropologically, are very close to ancient populations of Eastern Asia, especially, from Amur river basin, Manjuria and Korea.

According to individual morphological characteristics of the human remains, discovered in the site, it can be concluded that the population of the archaeological site, anthropologically, was heterogeneous.

### **Acknowledgment**

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### **Abstract**

**D.Tumen**

***Craniofacial morphology of human remains from ancient burials  
of Tsvuraa mountain, in Uguumur area, Khulenbuir sum,  
Dornod aimag, Mongolia***

***In the paper are given main results of craniological study of human remains discovered during archaeological excavations of ten graves from Mongolian period in Tsvuraa mountain site, Uguumur area, Khulenbuir Sum, Dornod aimag in Eastern Mongolia in 2002.***

***Based on the results of the craniofacial study of human remains we can conclude that some of the human remains are anthropologically, very close to ancient populations of Eastern Asia, especially, from Amur river basin, Manjuria and Korea. According to individual morphological characteristics of the human remains, discovered in the site, it can be concluded that the population of the archaeological site was anthropologically very heterogeneous.***