A Biocultural Perspective on the Prehistory of the Tarim Basin

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Outline of Talk

- Introduction
- Archeology
- Linguistics
- Craniometrics
- Genetics
- Current Research
- Conclusions
Xinjiang: Central Asia or China?
Xinjiang: Central Asia or China?
ARCHAEOLOGY
### North-South Asia Prehistory

<table>
<thead>
<tr>
<th>North</th>
<th>Mesolithic/Neolithic cultures, ca. 8000–3500 B.C.</th>
<th>Eneolithic culture, ca. 3500–2700 B.C.</th>
<th>Bronze Age, ca. 2700–1000 B.C.</th>
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<td></td>
<td>Hunting and fishing cultures in the tundra band, ca. 8000–2000 B.C.</td>
<td>Surtanda cultures, ca. 3500–2700 B.C.</td>
<td>Botai culture, ca. 3500–2700 B.C.</td>
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<td>Tersek culture, ca. 3500–2700 B.C.</td>
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<td>Afanasievo culture, ca. 3500/3000–3000/2000 B.C.</td>
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<td>South</td>
<td>Mesolithic culture, ca. 9000–6000 B.C.</td>
<td>Neolithic culture, ca. 6500–4000 B.C.</td>
<td>Eneolithic culture, ca. 4000–3000 B.C.</td>
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<td>Bronze Age, ca. 3000–1000 B.C.</td>
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<td>Djeitun culture, ca. 6500–5000 B.C.</td>
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<td>Kelteminar culture, ca. ?6000–?3000/2500 B.C.</td>
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Archeological Cultures of the Tarim Basin

Two Main Models of Xinjiang Population Origins

- Steppe Hypothesis
  - From Russo-Kazakh Steppes north of Tarim Basin

- Bactrian Oasis Hypothesis
  - From BMAX [Oxus] region west of Tarim Basin
1. Expansion from Russo-Kazakh steppe region by people related to Afansievo Culture in Altai-Minusinsk region north of Tarim Basin;
2. Later influx of people derived from Late Bronze Age Andronovo cultural complex from northwest (Pamir-Ferghana Valley)
1. Expansion by sedentary agriculturally based populations of Oxus [BMAC] civilization west of Xinjiang
2. Later influx of people derived from Late Bronze Age Andronovo cultural complex from northwest (Pamir–Ferghana Valley)
"Caucasian" Mummies in Tarim Basin
Cherchen Man
THE ANCIENT CORPSES
OF XINJIANG

THE PEOPLES OF
ANCIENT XINJIANG AND
THEIR CULTURE

The Bronze Age and Early Iron Age Peoples
of Eastern Central Asia

Volume I

edited by Victor H. Mair
Tarim Basin Plaids
FIG. 9.1 Map by Duval indicating notional Celtic lands.
West Eurasian mtDNA Phylogeny

Francalacci (1998)
Haplogroup H
Distribution In Eurasia
LINGUISTICS
Tocharian Language

Documents in the Tocharian languages on paper and wood collected by Sir Aurel Stein from Koucha and Turfan. 7th-8th centuries AD.
Tocharian Languages
CRANIOMETRICS
FIG. 2.3. THE FOUR INDICES OF FACIAL FLATNESS

A. A Buriat from Siberia (Mongoloid)

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B. An Ancient Etruscan (Caucasoid)

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Han Kangxin Cranial Typology
Distribution of Cranial Types in the Tarim Basin

The map shows the distribution of cranial types across the Tarim Basin, with different areas marked for the Pamir-Fergana, Proto-European, Mongoloid, and Mediterranean types. Specific locations such as Shambabay, Mongghul Kūrā, and Sampul-Lop are indicated with dates ranging from 300 BC to AD 100.
The Han Empire
Fig. 1. Geographic location of craniometric samples. Sample abbreviations from table 1. Xinjiang samples represented by complex stars; North Bactrian samples represented by simple stars; Iranian samples by pentagons, Turkmenian, Caucasus, and Tajik samples by triangles; Indus Valley samples by circles, and Russo-Kazakh samples by squares.
Hemphill and Mallory
Neighbor-joining Tree of Genetic Distances
GENETICS
Fig. 2. Contemporary worldwide distribution of Y chromosome groups in 22 regions. Each group is represented by a distinguishing colour. Coloured sectors reflect representative group frequencies. Pacific basin not to scale. With respect to Table 1 of Underhill et al. (2000), Hunza and Pakistan+India are combined. In addition the results of Native Americans have been subdivided in North ($N = 14$), Central ($N = 13$) and South ($N = 79$).
Uighurs
Kazakhs
Kirghiz
Comas et al. (1996) mtDNA Data
Y Chromosome PC Map
Why do we see these complex patterns of morphological and genetic variation in Xinjiang and Central Asia?
The Han Empire
Silk Road
Silk Road(s)
Silk Road

Ürümchi and Western China (outlined in red)
Extent of the Mongol Empire 1280

Mongol homeland

Site of Genghis Khan's death, 1227

Extent of Genghis Khan's conquests

Genghis Khan

Black Sea

Caspian Sea

AFGHANISTAN

PAKISTAN

South China Sea

Bay of Bengal

Indian Ocean
Y Chromosome Haplotypes in Central/East Asian Groups

[From Zerjal et al. (2003) AJHG]
Genetic Effects of Mongolian Expansion

Analysis of Y chromosome data showed that nearly 8% of the men living in the region of the former Mongol empire carry Y chromosomes that are nearly identical. This frequency translates to 0.5% of the male population in the world, or roughly 16 million descendants living today.
CURRENT RESEARCH
Native American Ancestors
Alexseev's Physical Type Map of Siberia
Haplogroup C Distribution In Eurasia
Haplogroup X
In Eurasia
Xinjiang: Central Asia or China?

- Earliest occupation by people showing biological and cultural similarities to populations from the west
- Biological and archeological influences from mostly west and south of Tarim basin until Han expansion; evidence for some continuity of populations in the region
- Turkic expansions across Eurasia spread common cultural and linguistic features; emergence of Uighurs
- Han expansion, Silk road, Mongolian empire brought East Asian biocultural influences into regions
- Interaction between west and east through time has created existing ethnic heterogeneity in Xinjiang
Acknowledgements

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http://www.sas.upenn.edu/~tgschurr/home.html