POLYNESIAN ORIGINS: BIODISTANCE STUDIES OF CRANIA, MANDIBLES, AND SOME LAPITA SKELETONS

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Session: Theoretical and methodological issues for Oceanic colonization [Chair: Timothy Rieth]
“Biological distance, or biodistance, is the measure of biological relatedness between and within human groups, living and past, based on human skeletal and dental variation.”

Craniometric Variation

- Correlates with neutral genetic distance globally
- Consistent with an isolation by distance model
- Neurocranium vs. mandible
- Multivariate statistics
Geoff Irwin. 'Pacific migrations - East to the empty Pacific', Te Ara - the Encyclopedia of New Zealand, updated 15-Nov-12
Models

Express Train
Entangled-Bank/Voyaging Corridor
Others
The Human Genetic History of Oceania: Near and Remote Views of Dispersal

Figure 1. Distribution of mitochondrial DNA (mtDNA) lineages in human populations across Oceania.

Figure 2. Distribution of Y-chromosomal (NRY) lineages in human populations across Oceania.

Ancient Voyaging and Polynesian Origins

Pedro Soares,1,2 Theresa Rito,3,4 Juan Teixidor,5,6 Manu Mornima,5,6 Catherine Hill,1 Emma Tinikler-Hundal,7 Michelle Raudl,5 Dougis J. Clarke,7 Jun-Hun Loo,7 Noel Thornton,7 Tim Derham,7 Mark Donohue,7 Vincent Macdonald,7 Marie Lin,5,10 Stephen Oppenheimer,11 and Martin R. Richards11

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Objectives

Application of multivariate statistical procedures to measurements recorded in mandibles from the Reber-Rakival (SAC) site on Watom Island, New Britain, Bismarck Archipelago and other mandibles form the Pacific and SE Asia.
Lapita Skeletons

Denotes Lapita sites with skeletons
Watom Mandibles
Multivariate Statistical Procedures

- Mahalanobis’ s Generalize Distance
- Unweighted Pair Group Method (UPGMA)
- Stepwise Discriminant Function (Canonical) Analysis
- Jackknifed Classification
- Canonical Plots
Two Analyses

Analysis I
10 Pacific Groups
10 Measurements

Analysis II
16 Pacific-Asian Groups
4 Measurements
Analysis 1
10 Groups: Canonical Plots
<table>
<thead>
<tr>
<th></th>
<th>Watom - 7.492</th>
<th>New Zealand - 4.346</th>
<th>Namu - 4.364</th>
</tr>
</thead>
<tbody>
<tr>
<td>Namu</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Mariana</td>
<td>9.013</td>
<td>Ponape - 5.840</td>
<td>Hawaii - 7.143</td>
</tr>
<tr>
<td>NZ</td>
<td>9.878</td>
<td>Marianas - 7.518</td>
<td>Watom - 7.492</td>
</tr>
</tbody>
</table>
Canonical Plots: 16 Groups
Dendrogram-16 Groups

- Watom
- Sigatoka - 0.709
- Loyalty - 1.380
- New Caledonia - 2.397
- Tonga - 2.997
Conclusions

- Watom mandibles similar to near Oceania and western Remote Oceania
- Watom mandibles unlike Polynesians
- Polynesian homeland in island Southeast Asia/Wallacea
- Little or no admixture
- Intrusion/Innovation Models
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