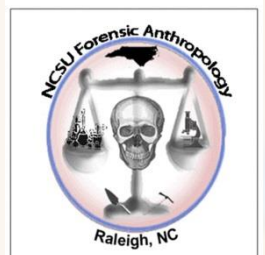
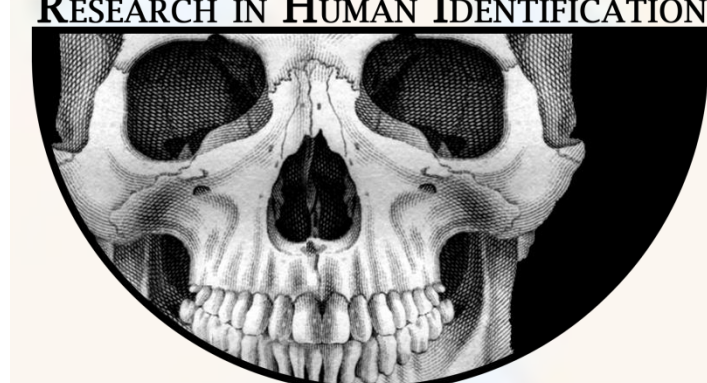


Craniofacial Variation Among American, African and Diaspora Populations



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- Research into the genetic admixture proportions from different geographic areas in the United States through autosomal markers demonstrates a complex process with differences in the extent of European contributions to Southern and Non-Southern African Americans.
- Recent demographic shifts and migration have further increased this diversity.
- What contribution can 3D craniofacial morphometrics make to this discussion?
- The purpose of this project is to examine West African variation as it relates to African Americans and to examine if a more precise geographic origin can be identified.

Materials and Methods

- Five samples from Diaspora populations including modern African Americans (n=18), West African (Angola n= 18, Ghana n=19, and Nigeria n=17) and African Slaves from Cuba (n=20) were analyzed using eleven traditional anatomical craniofacial landmarks (Table 1 and Figure 1) using the software MorphoJ (Klingenberg 2011).

Table 1. Landmarks	
Asterion l/r	Ectoconchion l/r
Basion	Lambda
Bregma	Nasion
Dacryon l/r	Subspinale

Results and Conclusions

- The plot of the Canonical Variates show a distinct cluster for the African American, African Slave and the Angolan sample, while the samples from Nigeria and Ghana cluster together. CAN1 and CAN2 account for 82% of the total variation (Figure 2).

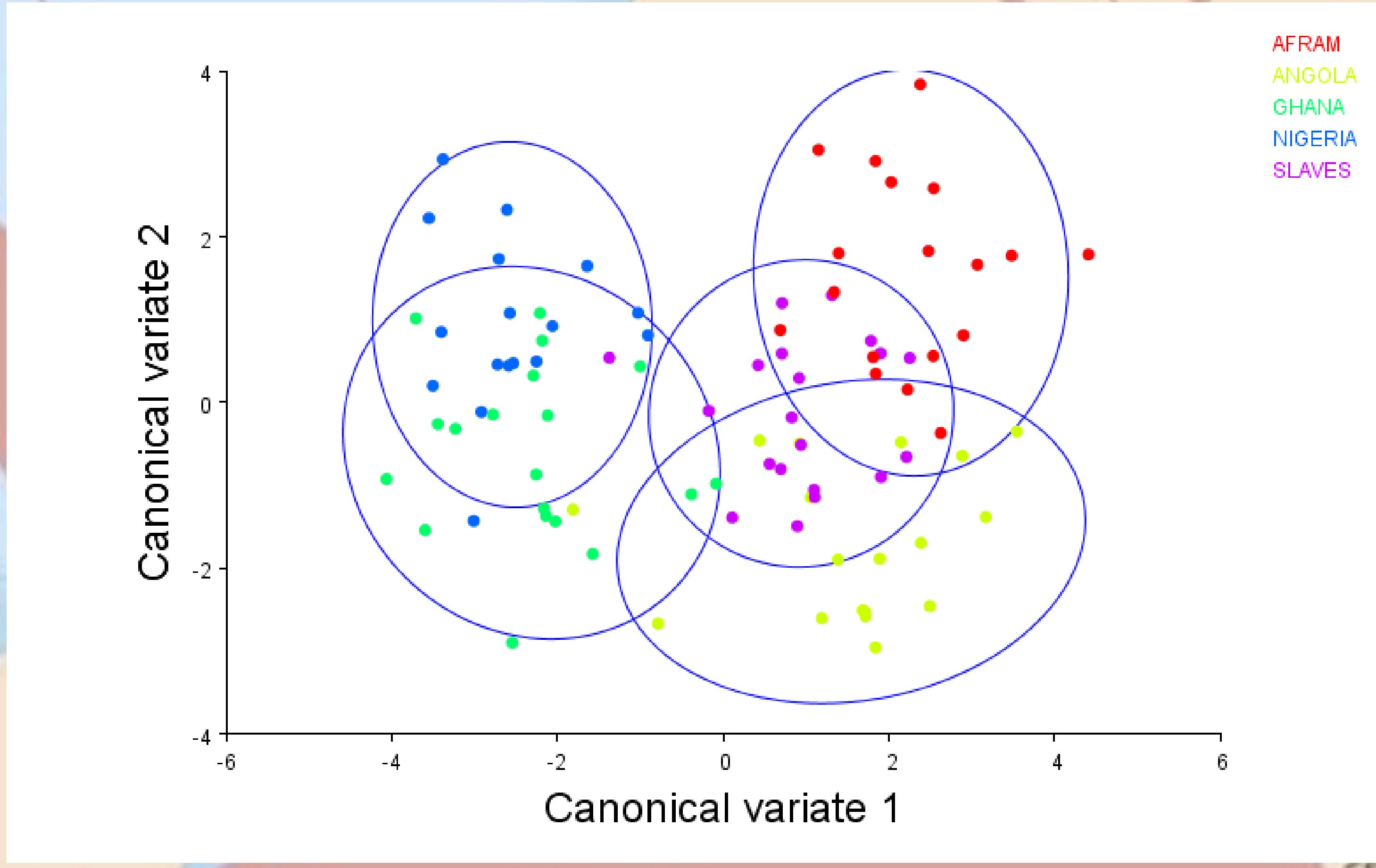


Figure 2. Plot of CAN1 and CAN2 (82% of variation).

- Interestingly, the Mahalanobis Distance results demonstrate that African Americans ($D = 4.72$, $p\text{-value} = 0.13$) and the African Cuban slave ($D = 4.43$, $p\text{-value} = 0.09$) sample do not differ significantly from the Angolan sample, while they are significantly different from the other two West African samples.
- The vector plots display the magnitude and direction of shape change and illustrate the variation observed between African Slaves and the Angolan sample, between the African Slaves and the Nigerian sample and between the African American sample and African Slave sample (scale X4). The plots show that bregma is more superiorly placed in the African slave sample. Subspinale is more anteriorly placed, ectoconchion is more infero-anteriorly placed and dacryon is more posteriorly placed in the African Slaves (Figure 3).

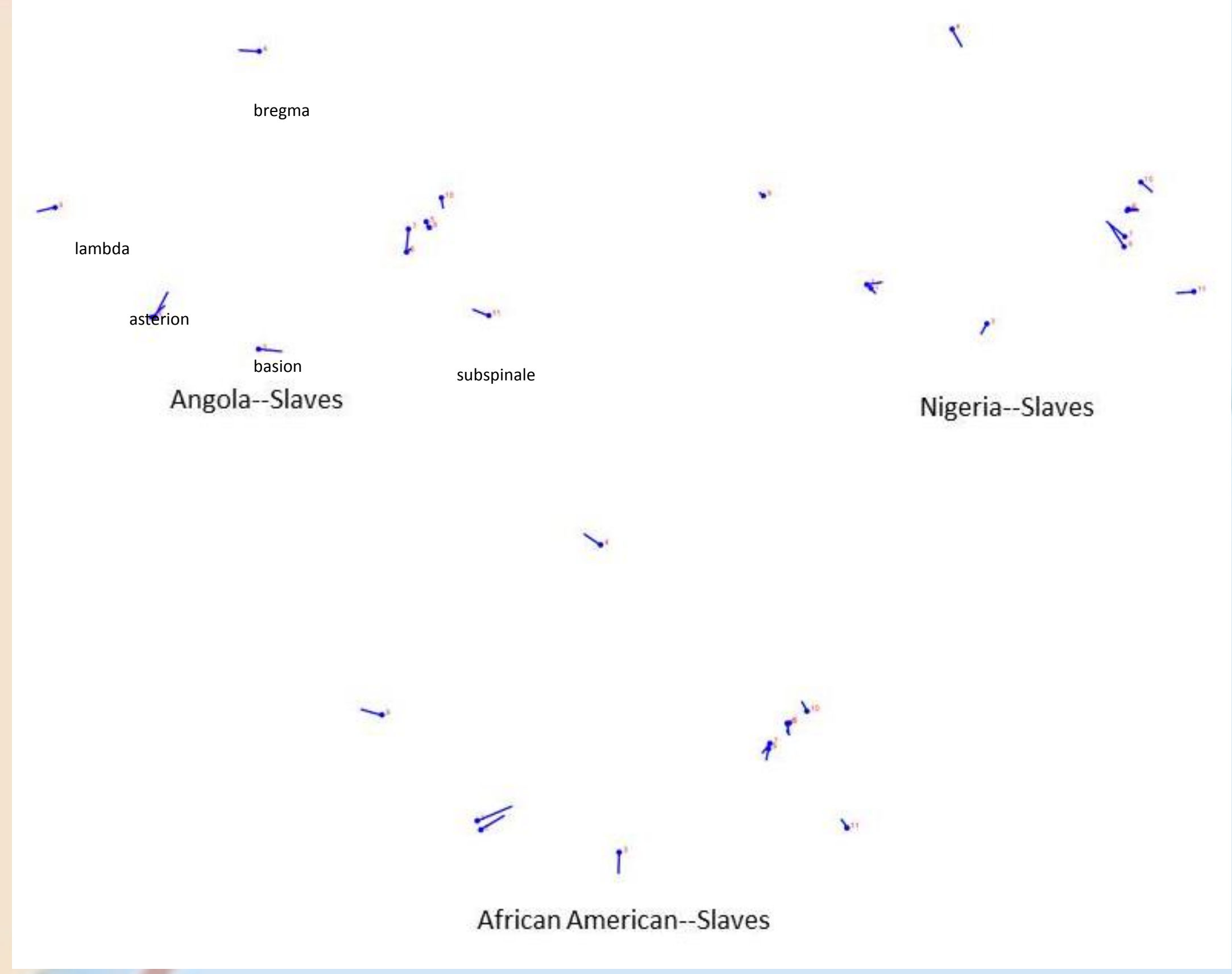


Figure 3. Lateral View of the Vector Plots (X 4 scale factor)

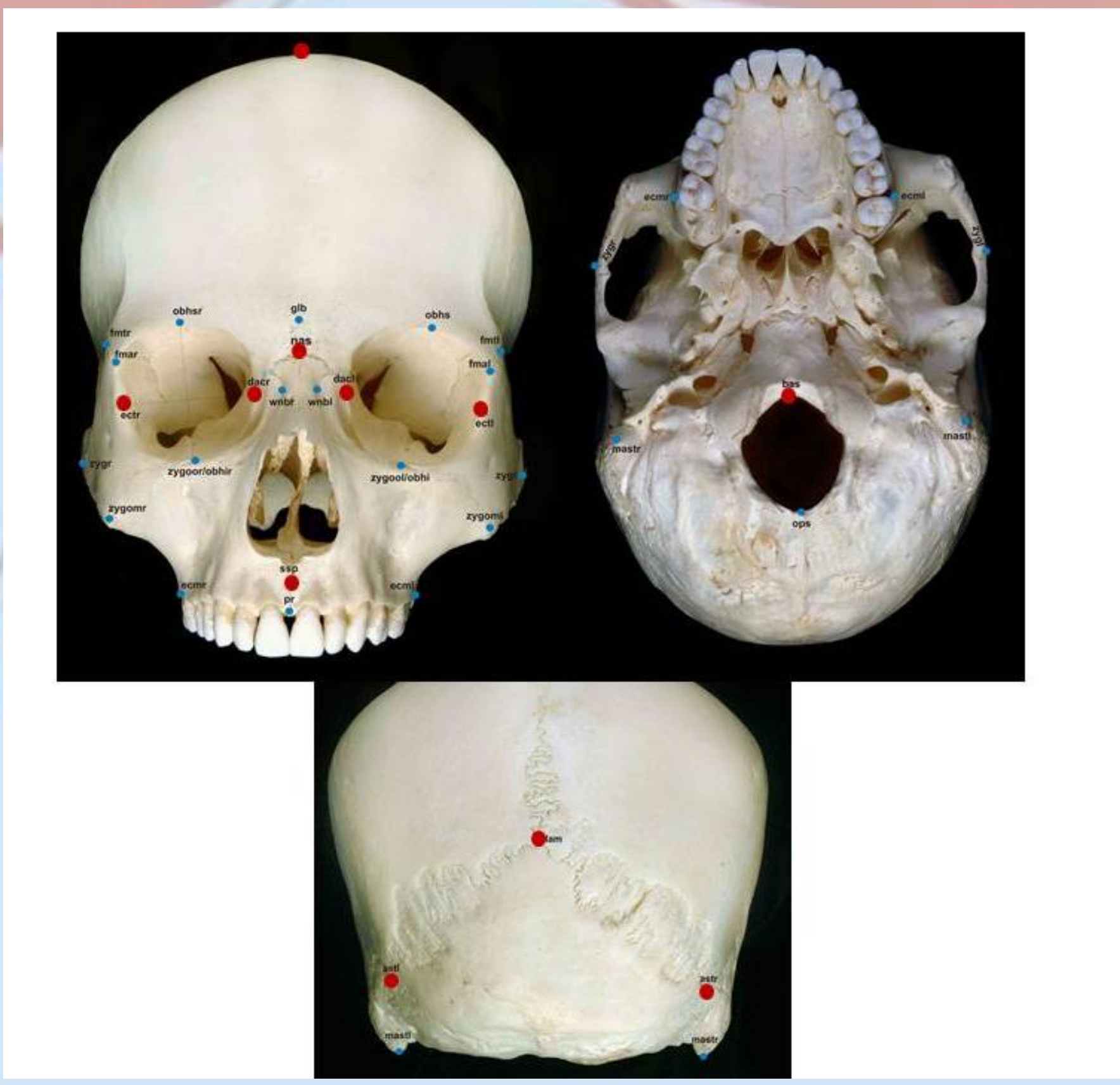


Figure 1. Craniofacial Landmarks used in study in red.

- These results suggest a stronger Angolan contribution resulting from the Trans-Atlantic Slave trade than other West Africans to New World Diaspora populations.

