Root calibration

The first appearance of the subfamily *Suinae* in Africa is marked by *Kolpochoerus*, discovered at Kossom Bougoudi, Chad\(^1\) near the Plio-Miocene boundary 5-5.5 Mya. However, the monophyletic status of African Suinae is controversial. It has been suggested that *Kolpochoerus* and *Metridiochoerus* gave rise to *Hylochoerus* and *Phacochoerus* respectively and that *Potamochoerus* evolved as a separate lineage\(^2\). The first appearance of *Metridiochoerus* and *Phacochoerus* in the fossil record lies in the Shungura formation of Ethiopia\(^3\) (2.6-1.8 Mya). However, this time is likely to be too low to be used in our study. Moreover, the monophyletic relationship of extant African *Suinae* have been suggested in a recent phylogenetic study\(^4\) that place the age of the nodes *Sus* vs African *Suinae* at 7-14Mya. Therefore, we decided to use 5.5 Mya as a minimum soft bound for the calibration of the root of our tree.

*S. verrucosus*’ node

For evolution of Suids on Java, Hardjasasmita\(^5\) considered two possibilities: (1) *S. brachygnathus* is ancestral to *S. macrognathus*; (2) *S. macrognathus* evolved somewhere outside Java and immigrated together with several new faunal elements\(^6\). Hardjasasmita favoured the former possibility, and he hypothesized that *S. brachygnathus* became extinct after the arrival of *S. scrofa*\(^6\). Based on the shape of the mandible and dental morphology, Aimi (1989) suggested that *S. barbatus* is clearly different from all other taxa (*verrucosus*, *brachygnathus*, *macrognathus*, *terhaari* and *stremmi*). If this is correct, then all Javan species are chronospecies starting with *S. stremmi* in the Late Pliocene / Early Pleistocene, followed by *brachygnathus*, *macrognathus*, and *terhaari*. At the same time, *S. barbatus* would have evolved in the dipterocarp forests of Borneo and possibly Malaysia and Sumatra. Overall our Phylogenomic analysis supports the hypothesis of Text S1Hardjasasmita, as we found that *S. verrucosus* is very distinct to *S. barbatus*. The isolation of *S. verrucosus* on Java seems to be the first divergence to occur in ISEA. Together these evidences support the monophyly of Sus species in Java. The oldest fossil to occur on Java is *S. stremmi* from the Kali Glagah formation ~2Mya. Recent palaeogeographical
reconstruction of Java\footnote{Meijaard, E. Solving mammalian riddles. A reconstruction of the Tertiary and Quaternary distribution of mammals and their palaeoenvironments in island South-East Asia. PhD Thesis, The Australian National University, Camberra (2009).} shows that Java would have been the first island to be reachable, from Borneo and Sumatra, by large mammals \( \sim 2 \text{MY} \) ago. Taking into account this information, we decided to use a minimum soft bound at 1.5\text{My} to calibrate the node of \textit{S. verrucosus}.

**Asian / European node**

For the last calibration we used the first fossil appearance of \textit{S. scrofa} in Europe, in the late early Pleistocene\footnote{Vandermade, J. Ungulates from Atapuerca TD6. \textit{Journal of Human Evolution} 37, 389-413 (1999).}.

We calibrated the divergence between European and Asian \textit{S. scrofa} with a minimum soft bound at 0.8\text{Mya}.

**References**