

Fig. S1. Anatomical landmarks used in morphometric analysis from frontal, superior, lateral and inferior views. First column illustrates landmarks collected in each mouse skull. Second column illustrates landmarks collected in each hominoid skull.

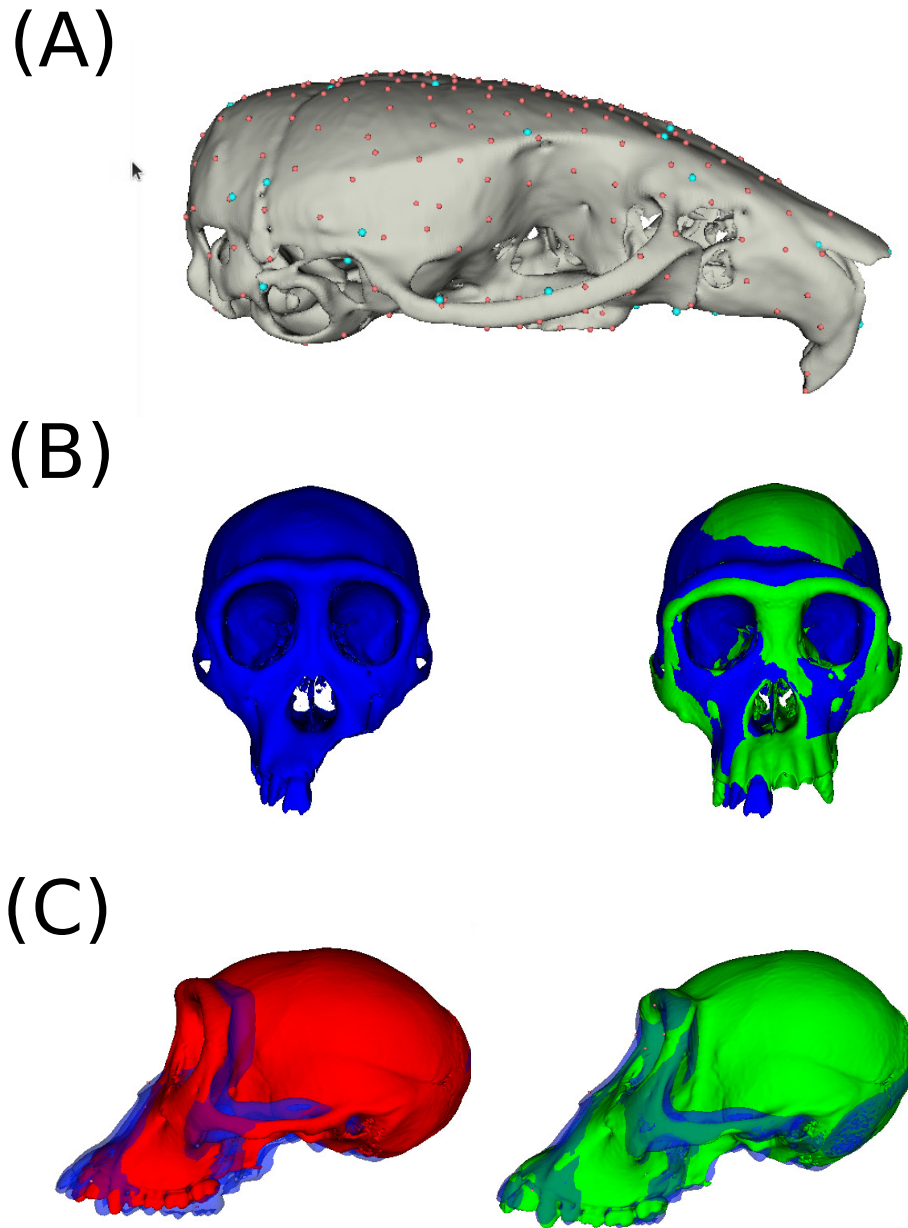


Fig. S2. Non-standard uses of the ALPACA pipeline. (A) ALPACA can be used synergistically with other SlicerMorph modules to densely characterize the skull shape differences across individuals. In this case, a mouse skull mesh is illustrated with 51 type I landmarks (blue) plus 200 semi-landmarks automatically generated with PseudoLMGenerator from SlicerMorph. These landmark sets can be directly transferred to another specimen using ALPACA, therefore greatly reducing the landmarking effort. (B) When properly tuned, the ALPACA deformable registration step is able to deal (to some extent) with extra/missing parts. In this case, a Pan target mesh is missing a large part of the premaxilla and the maxilla. The warped source mesh is illustrated in green. Note that no significant artifact is present in the warped source mesh due to the missing craniofacial elements. Such scenario (missing elements) would be expected in a paleontological context. (C) Another possible use of ALPACA would be in an macroevolutionary context. In this case, we are illustrating the use of a source mesh from one genus (Pan; red) to predict landmark positions for another genus (Gorilla, blue). Note how the warped source mesh (green) has much clearer facial prognathism, matching the Gorilla mesh.