ARTICLE

The Comoros Show the Earliest Austronesian Gene Flow into the Swahili Corridor

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At the dawn of the second millennium, the expansion of the Indian Ocean trading network aligned with the emergence of an outward-oriented community along the East African coast to create a cosmopolitan cultural and trading zone known as the Swahili Corridor. On the basis of analyses of new genome-wide genotyping data and uniparental data in 276 individuals from coastal Kenya and the Comoros islands, along with large-scale genetic datasets from the Indian Ocean rim, we reconstruct historical population dynamics to show that the Swahili Corridor is largely an eastern Bantu genetic continuum. Limited gene flows from the Middle East can be seen in Swahili and Comorian populations at dates corresponding to historically documented contacts. However, the main admixture event in southern insular populations, particularly Comorian and Malagasy groups, occurred with individuals from Island Southeast Asia as early as the 8th century, reflecting an earlier dispersal from this region. Remarkably, our results support recent archaeological and linguistic evidence-based suggestions that the Comoros archipelago was the earliest location of contact between Austronesian and African populations in the Swahili Corridor.

Introduction

The economic development of the Indian Ocean trading network led to the emergence of regional geopolitical powers, and the Swahili Corridor represented its African pole.[1–3] Eventually comprising a string of city-states along the East African coast and offshore islands, from southern Somalia in the north to the Comoros archipelago, Madagascar, and Central Mozambique in the south, this was a major zone of proto-globalization that, at various times, featured direct contact between populations from Africa, the Middle East, South Asia, and Island Southeast Asia. During cyclical periods of intense trading, this dense network of interactions drove the flow of goods, ideas, and crucially, genes.[4–6]

The Swahili culture began to emerge during the first millennium CE from small-scale coastal and island Bantu communities engaged in farming, fishing, hunting, pottery, iron production, and local as well as Indian Ocean trade.[1,7,8] As a result of their unique geographical position at a cross-road between Africa and the Indian Ocean world and their exploitation of maritime resources, the Swahili became merchant middlemen, providing inland African markets with iron, textiles, shell beads, and agricultural produce in return for gold, ivory, and slaves for inter-regional trade. With the intensification of the Indian Ocean trading network at the beginning of the second millennium, together with maritime technological developments, notably the emergence of larger boats, these coastal dwellers began sailing farther afield to far-distant locations in the Middle East and western India.[7] Urban centers were accordingly restructured with the extension of ports, the building of coral-rag "stonehouses," and the movement of mosques closer to the shore.[7] The intensity of exchanges between Swahili villages and trading towns over many centuries was a major driver of the cultural unity of the Swahili Corridor. Major entrepôts established on the East African coast and islands rapidly became cosmopolitan centers in which the Swahili cohabited at various times with merchants from the Middle East and Asia.[1–3,6]

While trade links to the Middle East played a key role in the emergence of the Swahili Corridor, the southern part of the region, particularly Madagascar, was shaped by contact with the Austronesian world far to the east.[1] Originating in Island Southeast Asia, the Austronesian dispersal across the Indian Ocean was mostly mediated by traders

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linked to Southeast Asian maritime polities. Dominating maritime routes, Island Southeast Asian traders were one of the main geopolitical powers of the region, notably during the reign of the Srivijaya Empire (6^{th}–13^{th} centuries).[4] Despite being centered on the Malaysian Peninsula, Sumatra, and Java islands, the empire established several trading posts around the Indonesian archipelago. In Southeast Borneo, they controlled the important strategic entrepôt of Banjarmasin, and their long-standing presence in this area put the Malay in contact with local groups such as the Ma'anyan, creating new population dynamics marked by long-distance migrations.[5,9] We have previously shown that the group who descended from this contact, the Banjar, are currently the closest population to the ancestors of the Asian genetic background found in the Malagasy, 7,500 km away.[10] This migration is also reflected in the Malagasy language, which is closely related to the Ma'anyan language but also borrows from Malay[11,12] and includes minor contributions from African languages (mainly Sabaki, a branch of Bantu).[13] This contact appears to have occurred during a time of peak activity in the Indian Ocean trading network, most likely after a migration following a direct route across the Indian Ocean.[5,14] However, the broader history of Austronesian settlement in East Africa remains unclear. The presence of Island Southeast Asians in Madagascar and the Comoros archipelago is supported by archaeological analyses of ancient crop remains, which reveal that Asian species, such as rice, dominated agricultural subsistence from the early stages of settlement on these islands.[15] On the continent and nearby coastal islands, Asian crops were only identified in minor proportions at a small number of sites (mainly trading ports) and only became dominant in rare cases several centuries later. This pattern suggests that long-term Austronesian settlement could have been limited to these two insular territories. Present-day populations on Madagascar and the Comoros have genetic inheritance from Island Southeast Asia, pointing to commonality in the genetic ancestry of Malagasy and Comorian groups.[16–21] Nonetheless, the two regions also possess important differences, notably linguistic ones: an Austronesian language, Malagasy, is spoken today on Madagascar, and a Bantu Sabaki language, Comorian, is spoken in the Comoros.[22] In addition, uniparental markers have shown higher Middle Eastern gene flow and more limited Austronesian inheritance in Comorians than in Malagasy.[18] Recent archaeological data suggest that Austronesian settlement might have occurred earlier in the Comoros (8^{th}–11^{th} centuries) than in Madagascar (11^{th}–13^{th} centuries), though data is limited.[15] All of these studies highlight the complex dynamics of the Austronesian dispersal into the Swahili Corridor.

By analyzing uniparental and genome-wide genetic diversities in several modern Kenyan Swahili communities together with Comorian groups, we have dual objectives: (1) to characterize the historical genetic interactions that took place along the Swahili Corridor and (2) to reconstruct the phases of Austronesian dispersal into East Africa.

Material and Methods

Sample Collection and Ethics

A total of 276 DNA samples were sampled from six groups in Kenya and the Comoros islands: Swahili communities from Mombasa (n = 31), Kilifi (n = 93), and the Lamu archipelago (n = 104) in Kenya, and Comorian communities from Anjouan (n = 16), Grande Comore (n = 18), and Moheli (n = 15) in the Comoros archipelago (Figure S1). All samples were collected from healthy unrelated adult donors, all of whom provided written informed consent. DNA from Comorians was extracted from blood samples with a standard salting-out procedure. DNA from Swahilis was extracted from saliva samples with the Oragene sampling kit according to the manufacturer's instructions. In each location, after a full presentation of the project to a wide audience, a discussion with each individual willing to participate ensured that the project was fully understood. Once participants had signed informed-consent forms, we interviewed them to obtain information on their date and place of birth, their spoken language(s), and similar data related to their genealogy (up to 2^{nd} or 3^{rd} generation) to establish local ancestry. This sampling strategy, for which we have long-standing experience, allows a relatively random sampling of anthropological interest. This study was approved by the French Ethics Committees (Committees of Protection of Persons) and the Lamu Council of Elders (Lamu County, Kenya). A subset of 140 individuals from our sampling was used for genome-wide genotyping: Swahili communities from Mombasa (n = 23), Kilifi (n = 37), and the Lamu archipelago (n = 31); and Comorian communities from Anjouan (n = 16), Grande Comore (n = 18), and Moheli (n = 15). Genome-wide SNP genotyping was performed with the Illumina Human Omni5 Bead Chip (Illumina), which surveys 4,284,426 single-nucleotide markers regularly spaced across the genome. See Accession Numbers.

Paternal lineages of the Swahili groups were characterized via a method described previously[23] (n = 109). DNA quantity for the Comorian samples prevented us from performing analyses on the non-recombining region of the Y chromosome (NRY). In brief, 96 binary markers on the NRY were analyzed with a nanofluidic dynamic array and the BioMark HD system (Fluidigm, USA). Haplogroups were assigned on the basis of the updated ISOGG Y-DNA haplogroup tree[24] and the Y-Phylotree[25] (Table S1). The full list of markers is described by Kusuma and colleagues.[23] We characterized maternal lineages for all samples by sequencing the complete mtDNA (n = 276). In brief, double bar-coded libraries were prepared and enriched for mtDNA as described previously.[26,27] Base calling, quality filtering, and further steps aimed at obtaining consensus sequences were carried out as described previously.[28] Sequences (see Accession Numbers) were then analyzed and aligned against the revised Cambridge Reference Sequence (rCRS)[29] with MAFFT aligner v7.[30] Mitochondrial haplogroups were determined with the HaploGrep program based on Phylotree build 17[31] (Table S2).

Dataset

We gathered genome-wide data from previously published studies of populations from Africa, Madagascar, the Middle East, Southeast Asia, South Asia, East Asia, and Europe (Table S3). Two datasets were compiled respective to their analytical use: a low-SNP-density dataset of populations covering a large geographical area and a high-SNP-density dataset of populations comprising a more

limited subset of the populations of the low-SNP-density dataset. To avoid any statistical bias that might result from the over-representation of some populations in the datasets, we randomly selected a maximum of 25 individuals for each group, such that each population had between 4 and 25 individuals. We applied quality controls by using Plink v1.9[32] to filter for and exclude (1) close relatives by using an identity-by-descent (IBD) estimation with an upper threshold of 0.25 (second-degree relatives); (2) SNPs that failed the Hardy-Weinberg exact test ($p < 10^{-6}$) within each group; (3) samples with a call rate < 0.99 and displaying missing rates > 0.05 across all samples in each population; and (4) variants in high linkage disequilibrium ($r^2 > 0.2$). After this filtering, the low-SNP-density dataset included 3,477 individuals from 193 populations genotyped for 171,728 SNPs, and the high-SNP-density dataset included 1,664 individuals from 83 populations genotyped for 411,432 SNPs. All genotypes in the high-SNP-density dataset were then phased with SHAPEIT v2.r790[33] with the 1000Genomes phased data[34] as a reference panel and the HapMap phase 2 genetic map.[35]

Comparative datasets of uniparental haplogroup data were compiled from published data. The NRY dataset comprises 4,831 individuals from 72 populations, and the mtDNA dataset comprises 4,281 individuals from 59 populations (Tables S4 and S5).

Statistical Analyses

The genetic diversity of our dataset pruned for LD was first analyzed by Principal Components Analysis (PCA) computed with EIGENSOFT v6.0.1.[36] We used EEMS v1[37] to define genetic barriers and corridors on a geographic map. We used approximate geographic coordinates and a genetic dissimilarity matrix between population and a map of the East African coast defining a grid of 500 modeled demes. Depending on their location, several populations can be included in one deme, whose size increases accordingly. We ran 3×10^6 MCMC iterations before checking for convergence of the MCMC chain (Figure S2). Plots were generated in R v3.2.2 according to instructions in the EEMS v1 manual.[37] Runs of homozygosity and inbreeding coefficient analyses were performed in PLINK v1.9. Uniparental genetic diversity of our datasets was analyzed by PCA with SPSS v20.0[38] and F_{ST} genetic distances were analyzed with ARLEQUIN v3.5.2.2.[39]

Three-population (*f*3) statistics[40] were computed for each trio of populations, comprising two populations from the low-SNP density dataset and either a Swahili or a Comorian group, so that groups showing potential admixture events could be identified. Genetic ancestries of the pruned dataset were estimated by ADMIXTURE v1.3[41], with default settings, for components K = 2 to K = 30 on both autosomal and X chromosome data. Ten iterations with randomized seeds were run and compiled with CLUMPAK v1.[42] We used the minimum average cross-validation value to define the most informative K components (here, K = 26 for autosomal data and K = 3 for the X chromosome data), and the major modes defined by CLUMPAK v1[42] are reported. We calculated sex-biased admixture by performing t tests between ancestries estimated for autosomes and the X chromosome at K = 3, which defines an Asian component, an African component, and a Middle Eastern component. Plots were obtained with Genesis v0.2.5.[43] TreeMix v1.12 analysis[44] was performed with all South African, East African, and Island Southeast Asian populations in the low-SNP-density dataset ($n_{pop} = 88$); setting blocks to 200 SNPs accounted for linkage disequilibrium, and migration edges were added sequentially until the model explained 99% of the variance.

Population structure of the phased high-density dataset was evaluated with the fineSTRUCTURE v2.07 package.[45] This package performs a model-based Bayesian clustering of genotypes based on the shared IBD fragments between each pair of individuals, without self-copying, calculated with Chromopainter v2.0.[45] From the results, a coancestry heatmap and a dendrogram were inferred to visualize the number of statistically defined clusters that describe the data (Figure S3). This procedure, along with PCA, is commonly used to identify individuals as potential genetic outliers. Genetic clustering, based on shared ancestry, reduces the noise that can result from having individuals with different ancestries in the same geographic population, such as in the case of recent migrants, in analyses regarding past demographic events.[45,46] Most of these correspond to anthropologically defined populations, such as those on each Comorian island. Each of these groups was analyzed individually in the IBD-based analyses. The one exception is the Swahili populations, which show no substructure between the three communities (Figure S3), leading us to include all Swahili individuals in a single cluster. However, for anthropological reasons, we also perform these analyses with their location as a clustering factor. Haplotype sharing between pairs of individuals was estimated from the phased high-SNP-density dataset by the Refined IBD algorithm in Beagle v4.0,[47,48] filtering for detected fragments with a logarithm of odds ratio greater than 3. Detected fragments between the same pairs of populations were summed, normalized by the number of individuals, and visualized with Cytoscape v3.2.1.[49] All maps used in the present study were generated with Global Mapper v15. Local ancestry analysis in Comorian and Malagasy individuals was performed via PCAdmix v1.0[50] with three parental metapopulations of 100 individuals with African ancestry (randomly selected from Yoruba, South African Bantu from Soweto, Baka Pygmy from Cameroon, Kenyan Luhya, and Swahili groups), Middle Eastern ancestry (randomly selected from UAE Dubai Arab, Saudi, Yemeni, and Iranian groups), and Asian ancestry (randomly selected from Chinese Han, Indian Brahmin, Indonesian Banjar, Bajo, Ma'anyan, Singaporean Malay, and Filipino Kankanaey "Igorot" groups). The phased Comorian and Malagasy data were screened with linkage disequilibrium information so that the probability of common ancestry of each haplotype with each "parental" metapopulation could be defined. The Viterbi algorithm was then used for masking all haplotypes according to Asian and Middle Eastern ancestries in the Comorian and Malagasy individuals. *f*3 statistics,[40] F_{ST} calculations with EIGENSOFT v6.0.1.,[36] and TreeMix v1.12 analyses[44] were then performed on this masked dataset (12,283 SNPs for 3477 individuals). Haplotype "painting" with Chromopainter v2[45] was performed on the high-density SNP dataset, and each cluster of populations was defined as a target or as either a donor or a surrogate according to the anthropological question addressed. Running an estimation-maximization algorithm in Chromopainter v2 on all 22 autosomes for the entire dataset with 10 iterations provided estimates of mutational rates and effective population size parameters.[45] The weighted average of these parameters, according to the SNP coverage of each chromosome and the number of individuals, was then used for computing the chromosomal painting. Each cluster of Swahili, Comorian, and Malagasy populations was successively identified as a target, and the others were identified as surrogates. Because common ancestry between Comorian and Malagasy individuals was a possibility, we ran two chromosomal paintings for each group and allowed one to be a surrogate of the other (unidirectionally only). For all Comorian and Malagasy population, both outputs were analyzed

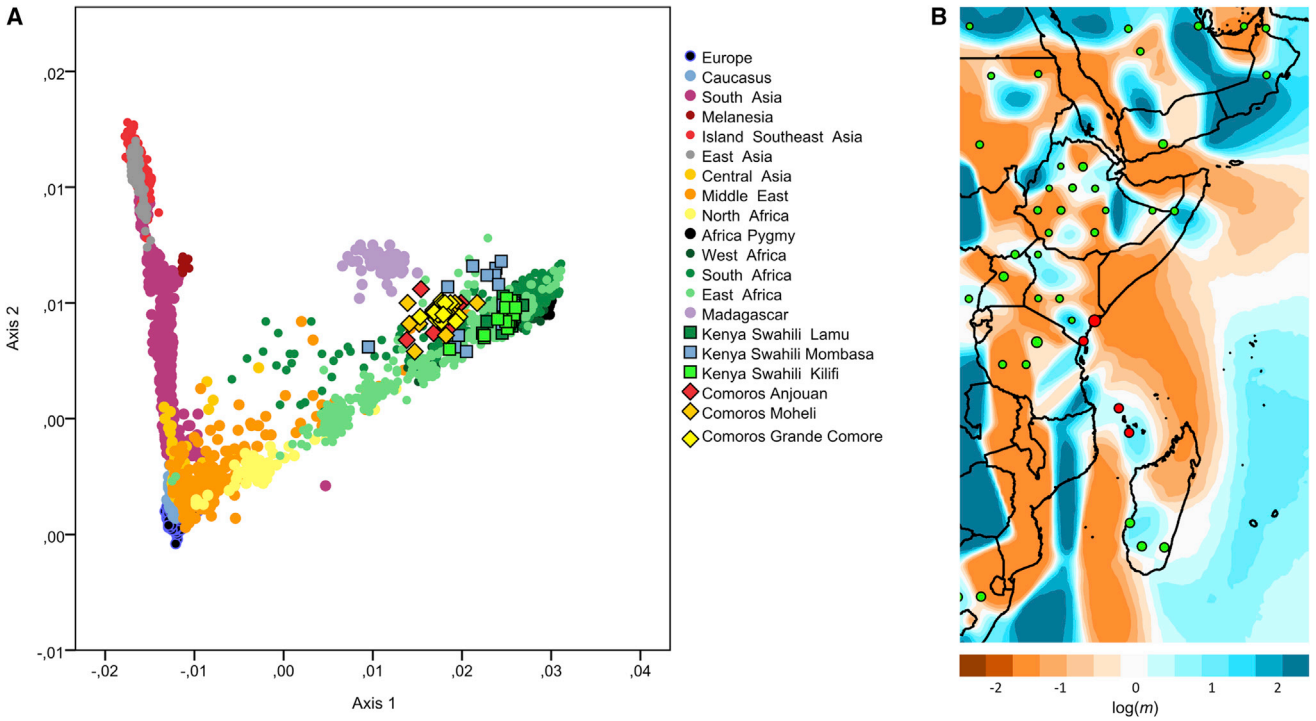

Figure 1. Genetic Diversity and Differentiation of Swahili and Comoros Populations Relative to Comparative Populations in the Low-SNP-Density Dataset

(A) Principal-component analysis of the low-SNP-density dataset with EIGENSOFT.[36] Swahili individuals are represented by squares, Comoros individuals are represented by diamonds, and all other individuals in the comparative dataset are represented by circles.
(B) An EEMS[37] gradient map is centered on populations along the East African coast (convergence of 3×10^6 MCMC iterations). The color scale reveals low (blue) to high (orange) genetic barriers between populations localized on a grid of 500 demes. Each dot is proportional to the number of populations included. Red demes represent Swahili and Comoros populations; and green demes represent Middle Eastern, East African, and South African populations in the low SNP-density dataset.

in parallel. We used the painted chromosomes obtained for each cluster in GLOBETROTTER v1.0[51] to estimate the ratios and dates of the potential admixture events characterizing them. We estimated coancestry curves with and without standardization by using a "NULL" individual, and we checked consistency between each estimated parameter. We performed 100 bootstrap resamplings to estimate the probability value of the admixture events (if we considered the "NULL" individual) and the 95% confidence interval for the obtained dates (if we did not consider the "NULL" individual). The "best-guess" scenario given by GLOBETROTTER v1.0[51] was considered for each target population. By using the parental populations given by GLOBETROTTER v1.0,[51] we also estimated dates of admixture with MALDER v1,[52] a modified version of the ALDER v1.3[52] software designed to allow observation of multiple admixture events. The estimated dates of genetic admixture most likely reflects the midpoint or endpoint of noticeable admixture, rather than the start of this contact.[53] Dates of admixture, given in generations, were converted to chronological time with a generation interval of 29 years.[54,55] A correlation test and t tests were performed with SPSS v20.0.[38]

Results

Population Structure

The genome-wide genetic diversity of the Comorian and Kenyan Swahili communities together with populations from a low-SNP-density comparative dataset (3,477 individuals genotyped for 171,728 SNPs) can be represented by a PCA (Figure 1A; Table S3). This analysis shows that the Kenyan Swahili individuals overlap with other mainland Sub-Saharan groups and that the Swahili communities cannot be distinguished from one another, except for a few outlying individuals. Comorian individuals fall between the Swahili and Malagasy, the latter group being pulled away from the African pole by their Asian ancestry. In analyses of African individuals alone, both the Swahili and Comorian individuals cluster together with Bantu-speakers and Malagasy (Figure S4). The same pattern is reflected on PCAs and F_{ST} genetic distances with both mtDNA and Y chromosome (NRY) data (Figure S5; Tables S2, S3, S6, and S7). Uniparental data show that the vast majority of lineages in these six groups belong to haplogroups frequent in Africa (mtDNA: L* haplogroup: 95.4%; NRY: E* and B* haplogroups: 99.1%), and there is only a limited presence of Asian lineages (mtDNA F3b1b in one individual from Grande Comore and NRY O2a in one Swahili individual from Kilifi) (Tables S1 and S2). Furthermore, Comorian and Kenyan Swahili groups show genome-wide diversity values (runs of homozygosity; Figure S6) similar to those observed in neighboring populations, but we note that Comorian groups have relatively less diversity than Malagasy groups, which could occur as a result of their smaller island environment or a lower level of admixture.

These results converge with a fineSTRUCTURE[45] analysis that characterizes the genetic structure of these individuals, together with samples from a high-SNP-density comparative dataset (1,664 individuals genotyped for 411,432 SNPs; Table S3; Figure S3). This analysis identifies 70 groups of individuals that can be statistically defined as genetically separated populations[45] according to their shared genetic profiles (IBD) (Figure S3). Whereas Comorians cluster together genetically according to their respective islands, the three Kenyan Swahili communities are undifferentiated and form a single cluster. Nine Swahili individuals fall outside this main cluster and instead group with Somali individuals and perhaps reflecting recent migrants (Figure S3). These individuals are also outliers in the PCA plot and were excluded from subsequent analyses of the Swahili because these data would bias analyses on past demographic processes. However, we note that they represent a non-negligible number of individuals in our sampling (9 out of 91), suggesting a relatively important number of recently integrated individuals of Somali origin, many of whom are present in Kenya,[56] into Swahili groups. Kenyan Swahili individuals have shared IBD fragments mainly with other Bantu speakers, notably the eastern and southern Bantu. This indicates that the three Swahili communities form a homogeneous genetic cluster that is differentiated from other sub-Saharan individuals and, notably, from other East Africans, thus emphasizing the uniqueness of the Swahili genome. The Kenyan Swahili show limited IBD sharing with individuals from Ethiopia and Somalia and non-Bantu-speakers in Kenya. Beyond continental Bantu speakers, Kenyan Swahili individuals share a substantial proportion of IBD fragments with Comorian and Malagasy individuals and thus cluster together with those groups (Figure S3). Comorian individuals also cluster into homogeneous genetic groups according to their respective island of origin: Anjouan, Moheli, or Grande Comore.

The shared genetic ancestry between Swahili, Comorian, and Malagasy groups was visualized by an EEMS[37] plot, which shows genetic differentiation between East African populations in the low-SNP-density comparative dataset (Figure 1B). Strong genetic barriers were identified between the Swahili communities and other continental African populations, particularly Ethiopian groups. The plot also reveals a striking genetic continuum from the Kenyan Swahili groups to the Comorians and the Malagasy. This pattern is reflected in F_{ST} genetic distances as well, and Comorian groups are as genetically close to the Swahili as they are to the Malagasy (Table S8). On the continent, Swahili groups show lower genetic differentiation (i.e., low F_{ST} values) with Bantu-speaking groups in Kenya and South Africa.

These observations agree with a RefinedIBD[47,48] analysis (Figure S7) that shows high IBD sharing between Swahili, Comorians, and Malagasy. It is particularly striking that Swahili individuals share more genetic material with Comorians than with other continental African groups such as the Luhya, another Bantu-speaking group from Kenya. The genetic continuity is also shown by the high level of mtDNA haplotype sharing between Comorian and Swahili groups (Figure S8; Table S2). All of these analyses emphasize the sea-oriented focus of Swahili populations, formalizing the Swahili Corridor as a genetic continuum.

Admixture Scenario

Having characterized the genetic continuum of the Swahili Corridor, we then analyzed the genetic ancestries that define it. All Swahili and Comorian communities result from admixture processes ($f3$-statistics Z score < -2; Table S9). The lowest significant $f3$ statistical results for Swahili communities are obtained for an admixture scenario between a South African Bantu group and a Eurasian group, and the most significant scenario for the Comorians, as well as for the Malagasy, involves a South African Bantu group and a Southeast Asian group. The genetic ancestries present in the low-SNP-density dataset were then decomposed with ADMIXTURE[41] (Figure 2; Figure S9). The lowest cross-validation values are obtained when 26 ancestries are defined (Figure S10). The Swahili populations have one major component (dark green in Figure 2) that is also present in other Bantu-speaking groups, but in higher percentages, similar those in South Africa. Other minor ancestries are shared with populations from the Horn of Africa (brown gradient) and western Bantu speakers (light green). No Asian or Middle Eastern genetic ancestry is distinguishable in the Kenyan Swahili, highlighting the indigenous African origins of the Swahili people. This absence is the main difference between the Kenyan Swahili and Comorians, who do share genetic ancestry with Middle Eastern (purple gradient: 6%–7%) and Island Southeast Asian individuals (yellow gradient: 8%–9%). Comorians show larger Middle Eastern and smaller Southeast Asian ancestral components than do the Malagasy. The main Swahili ancestry (dark green) is shared by both Comorian and Malagasy populations, confirming the previously outlined Swahili genetic continuum, albeit with increased complexity as a result of specific ancestries from the Middle East and Southeast Asia.

This pattern is confirmed by a PCAdmix[50] analysis in which the African ancestry of the Comorians and Malagasy was extracted and analyzed separately (Figure S11). In a TREEMIX[44] analysis on this African ancestry, alongside $f3$ outgroup statistics and F_{ST} distances, the Comorians and Malagasy are shown to be genetically linked to the African continent by the major ancestry components present in Bantu speakers, notably the Kenyan Swahili (Figure S11; Table S10). This African ancestry component differentiates Bantu-speaking groups from Cushitic-speaking groups, emphasizing the Bantu genetic origin of the Swahili Corridor (Figure S12).

As observed in the ADMIXTURE[41] plot, the Bantu genetic continuum of the Swahili Corridor is not defined by an IBD model but rather by differential gene flows,

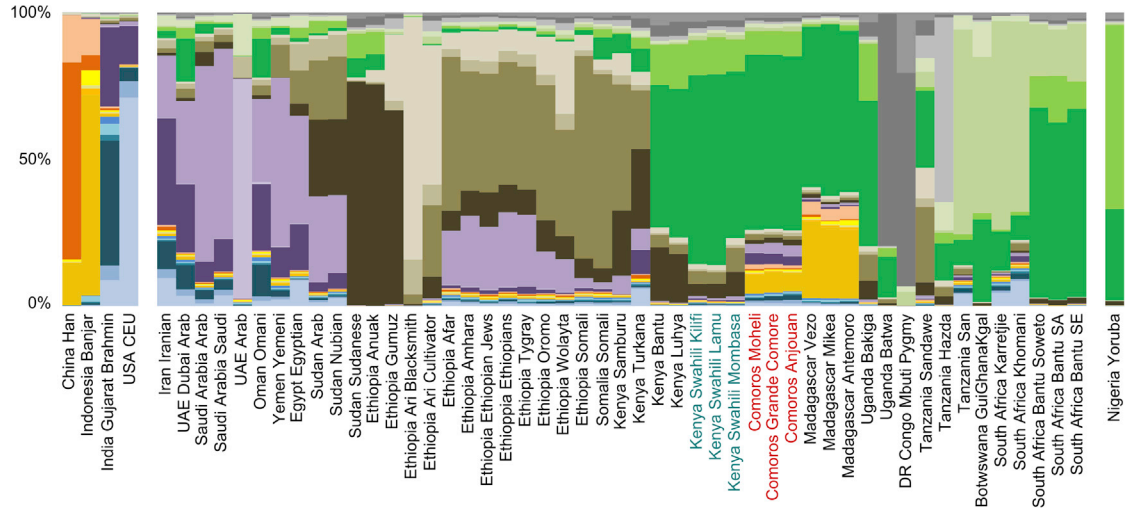

Figure 2. ADMIXTURE Plot of the Low-SNP-Density Comparative Dataset for the Major Mode of K = 26, as Defined by CLUMPAK
For clarity, only Near Eastern, Middle Eastern, East African, and South African populations as well as five representative populations from neighboring regions are represented (see Figure S9 for the full plot). Each colored line represents a sampled population whose genetic background can be decomposed into 26 genetic components.

notably from the Horn of Africa, the Middle East, and Southeast Asia (Figure 2). A TREEMIX[44] analysis shows that the Kenyan Swahili, Malagasy, and Comorian groups are all closely related (Figure S13). As expected, significant gene flow from island Southeast Asian populations into the Malagasy (33%–39%) was detected.

Admixture scenarios were then estimated with GLOBETROTTER[51] and MALDER,[52] giving highly correlated dates of admixture ($r^2 = 0.78$; $p = 0.002$). All of the estimated dates reflect the most recent detectable admixture events.[53] We computed the admixture scenario for the Kenyan Swahili by treating all three communities analyzed as single group. The best-fit scenario was obtained for two admixture events between, first, a South African Bantu population (South Africa from Soweto: 38%) and a Central African Bantu population (Namibia Kwangali: 62%) around 2193 YBP (95% CI: 1070–3312 YBP). This was followed by a second wave of gene flows from a South African Bantu population (South Africa from Soweto: 88%) and a population from the Horn of Africa (Ethiopian Oromo: 12%) around 577 YBP (95% CI: 200–682 YBP) (Figure 3; Table S11). These two waves of admixture are also inferred by MALDER[52] (1535 ± 235 YBP and 247 ± 61 YBP; Table S12). When each Swahili community is analyzed separately, only the most recent event—that is, between a South African Bantu group (87%–89%) and a population from the Horn of Africa or Middle East around 691–732 YBP (Table S11)—is inferred, although two waves of admixture are still inferred with MALDER[52] for the Swahili from Kilifi (1262 ± 197 YBP and 220 ± 67 YBP; Table S12).

Admixture scenarios were also estimated for the Comorian groups. When the Malagasy are excluded from being surrogates (so there is no potential bias because of their close ancestry), all Comorian communities have a best-fit scenario between a Swahili group (Swahili from Mombasa: 80%–87%) and an Island Southeast Asian group (Indonesian Banjar or Singaporean Malay: 17%–20%) around 792–1197 YBP (Table S11). These scenarios are confirmed by MALDER[52] (Table S12). However, Comorian communities from Anjouan and Moheli both show significant secondary gene flows (Figure 3; Table S11). Comorians from Anjouan result from a second admixture event between a Swahili group (Swahili from Mombasa: 74%) and a Middle Eastern group (UAE Dubai Arab: 26%) around 459 YBP (95% CI: 35–673 YBP). Comorians from Moheli have a second genetic input from a Swahili group (Swahili from Mombasa: 85%) and an Island Southeast Asian group (Indonesian Banjar or Singaporean Malay: 15%) around 145 YBP (95% CI: 41–258 YBP). We note that if Malagasy groups are allowed as surrogates, then this second admixture event in Comorians from Moheli appears to come from a Swahili group (Swahili from Mombasa: 74%) and a Malagasy group (Malagasy Antemoro: 26%) around 90 YBP (95% CI: 34–319 YBP) (Table S11), suggesting that this secondary gene flow could come from Madagascar.

All Malagasy groups result from a one-date admixture scenario between a Swahili group (Swahili from Mombasa: 63%–67%) and an Island Southeast Asian group (Indonesian Banjar: 33%–37%) around 742–876 YBP (Tables S11 and S12). If Comorians are allowed as surrogates, the scenario obtained is statistically unreliable, most likely as a result of Malagasy gene flow into Comorians from Moheli (Tables S11).

Finally, we tested for sex-biased admixture events by performing t tests based on the three genetic ancestries estimated by the ADMIXTURE[41] analyses (Figure 3;

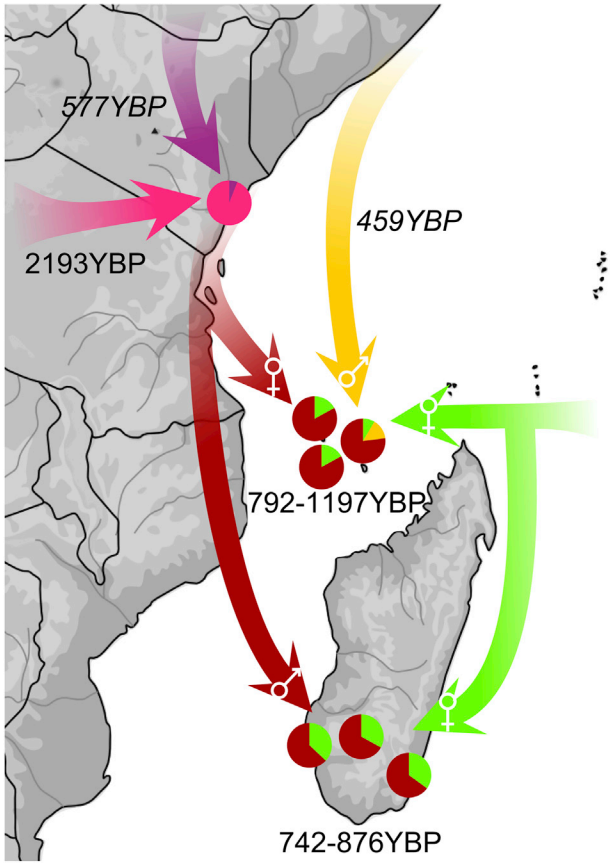

Figure 3. Admixture Scenario for Populations along the Swahili Corridor as Estimated by GLOBETROTTER and ADMIXTURE
Dark red arrows represent Swahili gene flow; light green arrows represent Island Southeast Asian Banjar or Malay; a yellow arrow represents Middle Eastern gene flow; and the purple arrow represents gene flow from the Horn of Africa. The pink arrow represents gene flow from central and southern Bantu speakers. Dates refer to the last detectable admixture event; dates below pie charts refer to the admixture event between the Swahili and Banjar or Malay; dates in italics represent secondary gene flow. Sex-biased gene flows are represented by male and female symbols in the tip of the arrows; note that they are not present in Malagasy Antemoro and Comorian Moheli.

Figure S14; Table S13). Although, consistent with uniparental data (Tables S1 and S2), no sex bias was observed in Kenyan Swahili populations, Comorian communities all show significant female-biased gene flow from Africa ($p_c < 0.05$) and Asia ($p < 0.05$). This contrasts with strong male-biased gene flow from the Middle East, significant in Anjouan and Grande Comore islands ($p_c < 0.01$), as previously reported from uniparental markers.[18] This pattern was not observed in the Malagasy, but male-biased African ancestry and female-biased Asian ancestry was observed in Malagasy Mikea ($p_c < 0.01$; Table S13) and nominally observed in Malagasy Vezo, as previously observed across Madagascar.[19] Although the main ancestral groups (Swahili and Banjar) are common to both Comorian and Malagasy populations, the timing and sex-bias are different, suggesting different population dynamics.

Discussion

The Swahili Corridor Is a Bantu Genetic Continuum

In concert with the expansion and intensification of the Indian Ocean trading network, the Swahili established multiple influential urban centers along the East African coast and offshore islands, from Somalia to Mozambique and the Comoros, along what is known as the Swahili Corridor.[2] We show that this exceptional cultural and historical entity represents a relatively homogeneous genetic group. Despite the cosmopolitan nature of these cities, which at various times might have incorporated merchants and migrants from the Middle East, South Asia, East Asia, and Island Southeast Asia, African genetic ancestry is the main characteristic of Kenyan Swahili groups, Comorians, and the Malagasy (Table S11; Figures S3, S7, and S11). These data suggest constant interaction between the Swahili communities and these African islands and thus define the Swahili Corridor as a genetic continuum (Figure 1; Figure S7). Although our sampling does not include Swahili communities from Tanzania or Mozambique, which could bring some complexity to the presently drawn genetic landscape, the high proportion of specific African genetic ancestries shared by populations from both ends of the Swahili Corridor supports the idea of a genetic continuum. This African genetic diversity has a major input from Bantu-speaking populations (Figure S12), especially those currently living in Central Africa, and most likely corresponds to the results of previous archaeological and genetic studies that identify a Bantu migration from the Congo River toward the eastern African coast at the end of the first millennium BCE, as identified in previous archaeological and genetic studies (Table S11 and S12).[57,58] The ancestors of the Swahili established prosperous fisher-farmer-hunter communities and increasingly engaged with the growing trading network of the Indian Ocean. Archaeological studies indicate that groups from the Lamu archipelago were key players in the early stages of the Indian Ocean trading network.[2,59,60] Contacts with the other populations brought new goods and social practices to East Africa.[7] However, in Kenya, this interaction did not drive intense gene flows, contrary to what is observed in many other groups around the Indian Ocean rim.[5] For example, our sampling from a Kenyan Swahili community of Lamu, whose tradition evokes marriages with Chinese sailors from Zheng He's expedition to Africa (1405–1433 CE), shows no significant Asian gene flow (Figure 2; Table S11).[61] The most noticeable genetic input in Kenya comes from the Middle East.

Middle Eastern gene flow is rather limited in the Swahili Corridor (Figure 2). It is detected in some Swahili and Comorian groups after admixture events dated from the mid-13th century in Mombasa and from the 15th century on Anjouan Island (Tables S11 and S12). Middle Eastern ancestry dating to around the 15th century has also been found previously in a Muslim group from Madagascar,

the Antemoro.[3,62] This contact was detected at a low level and only on the Y chromosome,[17] perhaps explaining its limited appearance in this study. Our analyses also show this sex-biased admixture, which is particularly significant in Anjouan ($p_c < 0.05$; Table S13). This male-driven gene flow from Middle Eastern groups, albeit limited, could coincide with their cultural influence in the Swahili Corridor, initiated since the end of the first millennium.[8] Particularly, the period around the 13th–14th centuries CE is characterized by migrations of peasants, merchants, and religious teachers, known as sharifs, mostly from Hadramawt (south Arabia) to East Africa and the Comoros.[1,63] They established culturally, politically, and economically influential families that integrated into the Swahili communities. Interestingly some of these family lineages were even present in both Comoros and Lamu archipelagos.[1,63] Overall, the Swahili genetic characteristics correspond well to the known history of their culture, and archaeological and linguistic evidence supports its emergence as an indigenous African phenomenon that experienced long-term contacts and exchanges with Middle Eastern groups.[1,64]

The Comoros Are the Earliest Meeting Point between African and Asian Genomes

The mechanism of Austronesian settlement in East Africa has long been unclear, and questions concerning the exact origin of Austronesian-speaking groups, route(s) taken, relative dates of migration, and admixture with local populations remain. We find here that the Comoros archipelago shows the earliest genetic contact between Austronesian and East African peoples and that this contact results from the dispersal of a group genetically close to the present Banjar population from southeast Borneo around the end of the first millennium.[10] Both Comorian and Malagasy groups derive from an admixture event between a Swahili community and a Malay or Banjar group (Figure 3; Tables S11 and S12). Remarkably, this Austronesian gene flow is not detected on the African continent or elsewhere in the Indian Ocean rim west of Southeast Asia (e.g., in southern Eurasia), confirming previous results that suggest this dispersal followed a relatively direct route toward the Comoros archipelago and Madagascar.[5,10] However, the dynamics of admixture strongly differ in these two insular territories. Whereas the proportion of the Banjar or Malay genetic ancestry reaches 37% in the studied Malagasy populations and can reach up to 64% in the Highlands,[19,65,66] its highest frequency in Comorians is 20% (Figures 2 and 3; Tables S11 and S12). This difference can be explained either by limited Asian gene flow into Comorian groups as compared to Malagasy groups or by a higher Swahili genetic input into Comorian populations (Figure S13). The latter hypothesis seems more likely, because the Comoros archipelago was host to major Swahili settlements and Comorian groups currently speak a Bantu language, as opposed to the Austronesian language spoken in Madagascar.

Another major difference lies in the timing of these admixture events. These dates do not track migration events per se but do illuminate strong anthropological interactions between individuals of Swahili and Austronesian ancestries. Confirming previous results,[10,16,19] the earliest detected admixture event in Madagascar occurred during the late 11th century in groups located on the easternmost coast of the island. This postdates the earliest date of admixture in the Comoros, which is estimated to be in the 8th century for the communities of Anjouan, the eastern island of the archipelago in our dataset (Tables S11 and S12). These dates coincide broadly with the time frame of Austronesian settlement in each territory as inferred from archaeological data. For example, analyses of ancient crop remains suggest older dates for Asian crops in the Comoros (8th–11th centuries) than in Madagascar (11th–13th centuries).[15] More archaeological and genetic data from the north of Madagascar, where Austronesians are thought to have first settled on the island, are currently lacking to ground this conclusion, but it is remarkable that genetic and archaeological analyses broadly converge chronologically. We cannot precisely determine whether Malagasy and Comorian populations are descendants of two separate admixture events involving similar ancestral populations, or whether they are instead daughter groups from an already admixed common ancestor. Some linguistic analyses of the Malagasy language suggest contact with African culture prior to its dispersal to Madagascar and thus support the latter option.[67–69] However, our analyses, which were based on testing of different admixture scenarios, do not show that populations currently present in the Comoros and Madagascar arose from a single admixed source population. On the other hand, we did find evidence that significant Malagasy gene flow occurred specifically into the Comorian community on Moheli Island as late as the 19th century (Table S11). This almost certainly reflects recent interactions between the two areas, rather than direct early ancestry, though, given that Moheli island, which belonged to the Ndzuwani Sultanate from Anjouan for centuries, was partially depopulated by the slave trade and only became independent in 1830 after the arrival of Malagasy migrants.[3] Because of the genetic similarity between populations from Madagascar and Comoros, other gene flows between the two cannot be ruled out, but our result suggests that, if there were any gene flows, they were limited. Overall, our analyses point to a shared genetic history between modern Comorians and Malagasy and suggest that this shared history is linked to the exceptional Austronesian migration to East Africa, but they also emphasize independent population dynamics that led to genetic diversification on each set of islands. Although more genetic data from northern Madagascar and mainland East Africa would help to test these hypotheses, the broad convergence of our results with recent findings from archaeology[15] point to the Comoros archipelago

as the primary gateway for Austronesian gene flow into the Swahili Corridor at the dawn of the second millennium.

Accession Numbers

The accession numbers for the 140 genotyping array data reported in this paper are EGA: S00001002565 and S00001002569. The accession numbers for the 276 complete mtDNA sequences reported in this paper are GenBank: MF695863–MF696138.

Supplemental Data

Supplemental Data include 14 figures and 13 tables and can be found with this article online at https://doi.org/10.1016/j.ajhg.2017.11.011.

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Web Resources

European Genome-phenome Archive, https://www.ebi.ac.uk/ega/home
Genesis. http://www.bioinf.wits.ac.za/software/genesis
Global Mapper v15, http://www.bluemarblegeo.com/products/global-mapper.php
Haplogrep, http://haplogrep.uibk.ac.at
ISOGG 2014 Y-DNA Haplogroup Tree, http://www.isogg.org/tree
SPSS, http://www.ibm.com/analytics/us/en/technology/spss/

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The American Journal of Human Genetics, Volume *102*

Supplemental Data

The Comoros Show the Earliest Austronesian Gene Flow into the Swahili Corridor

Nicolas Brucato, Veronica Fernandes, Stéphane Mazières, Pradiptajati Kusuma, Murray P. Cox, Joseph Wainaina Ng'ang'a, Mohammed Omar, Marie-Claude Simeone-Senelle, Coralie Frassati, Farida Alshamali, Bertrand Fin, Anne Boland, Jean-Francois Deleuze, Mark Stoneking, Alexander Adelaar, Alison Crowther, Nicole Boivin, Luisa Pereira, Pascal Bailly, Jacques Chiaroni, and François-Xavier Ricaut

Supplemental data

Figure S1. Location of the sampled groups. 1: Kenyan Swahili from Lamu (n=31); 2: Kenyan Swahili from Kilifi (n=37); 3: Kenyan Swahili from Mombasa (n=23); 4: Comorians from Anjouan island (n=16); 5: Comorians from Grande Comore island (n=18); 6: Comorians from Moheli island (n=15).

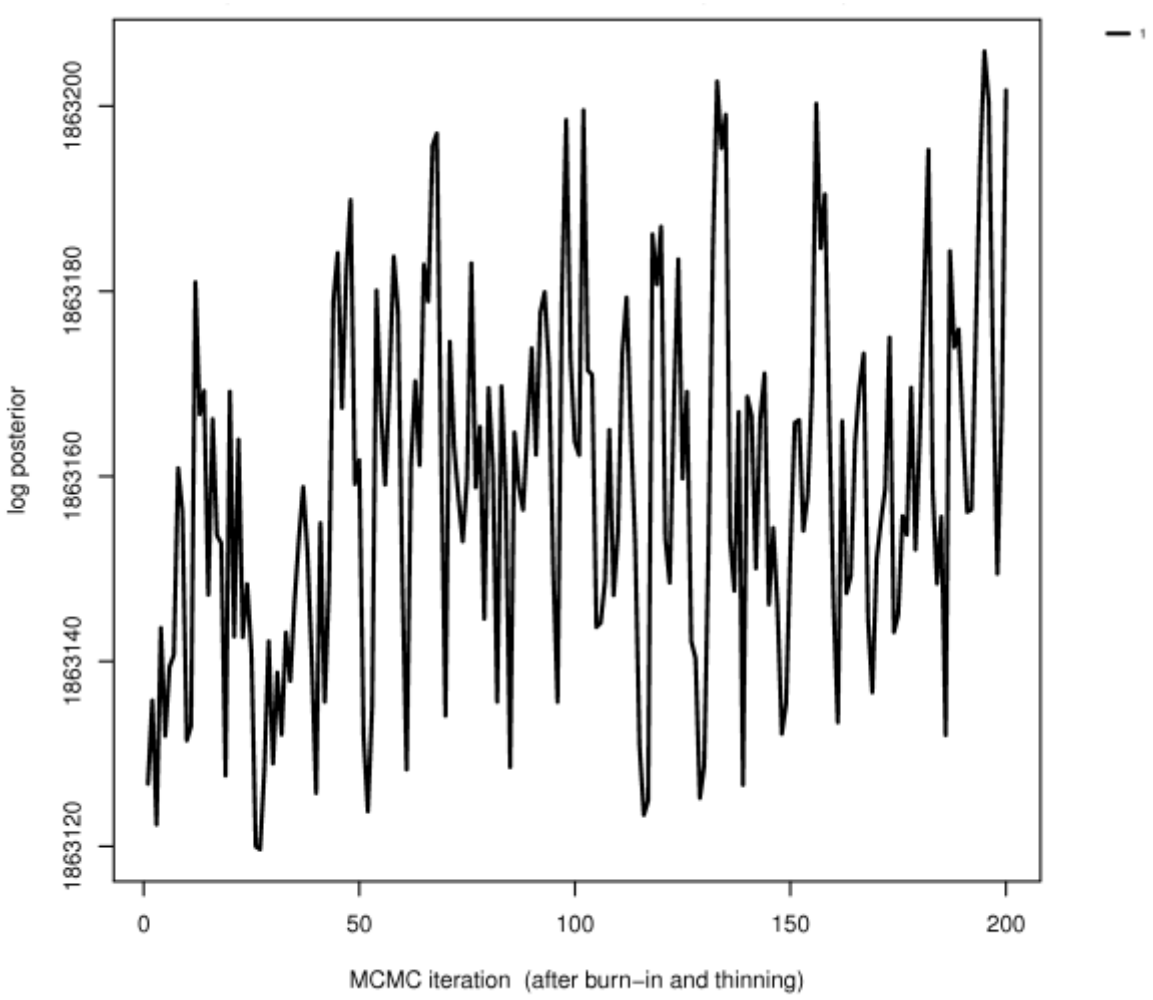


Figure S2. EEMS [1] posterior probability plot obtained after 3 x 10^6 MCMC iterations.

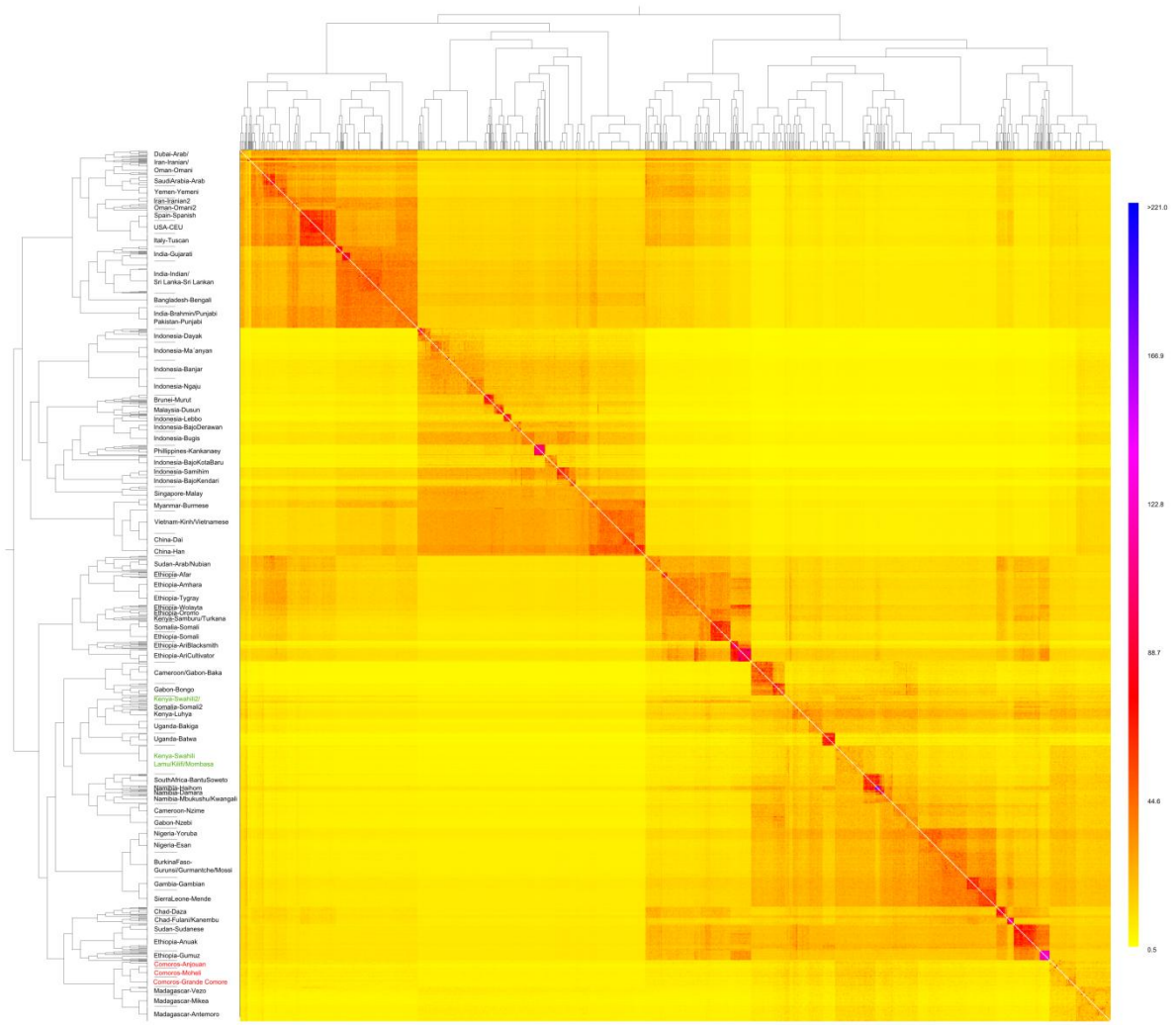


Figure S3. Coancestry heat map generated by fineSTRUCTURE [2] of the individuals included in the high SNP density dataset. The color scale indicates the chunk counts between each pair of individuals calculated by CHROMOPAINTER [2]. Red lettering highlights the Comoros clusters and green the Swahili clusters.

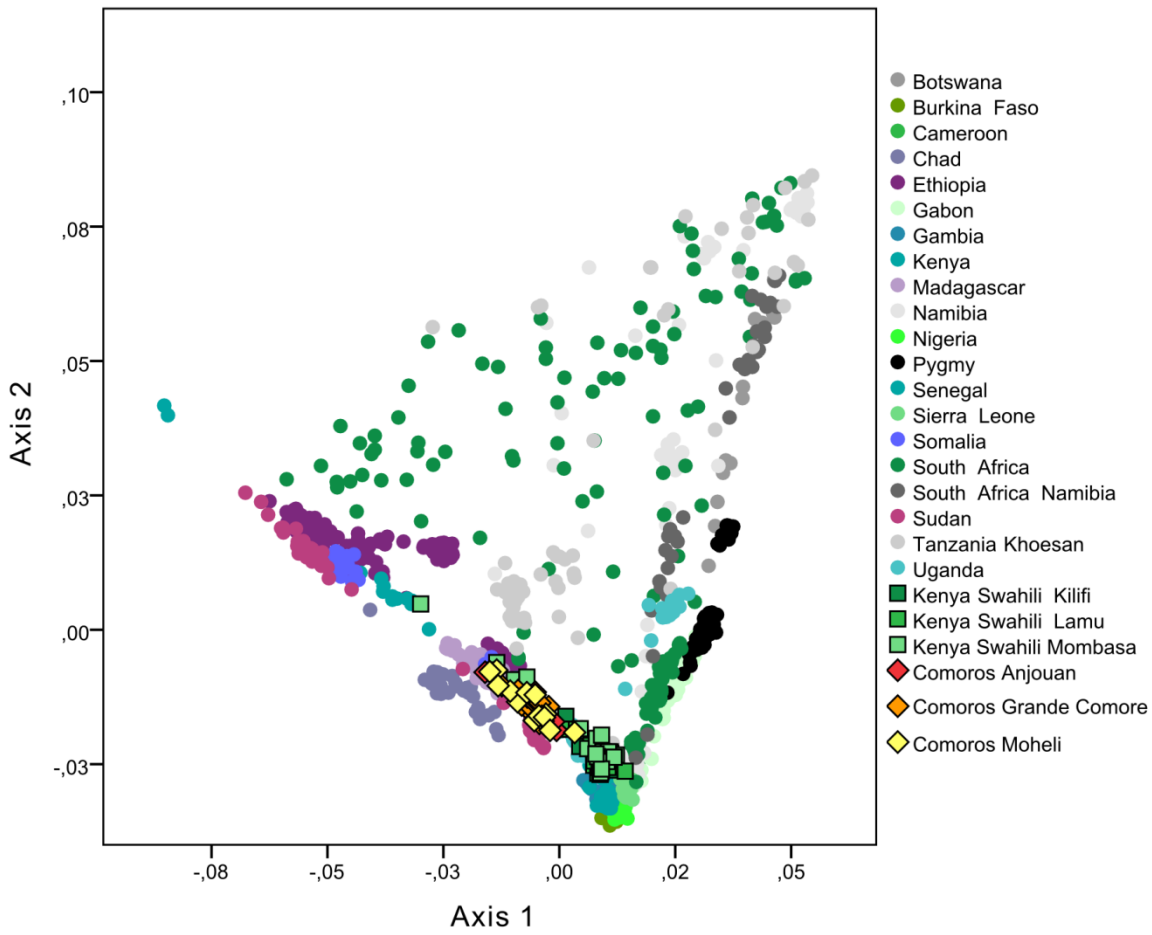
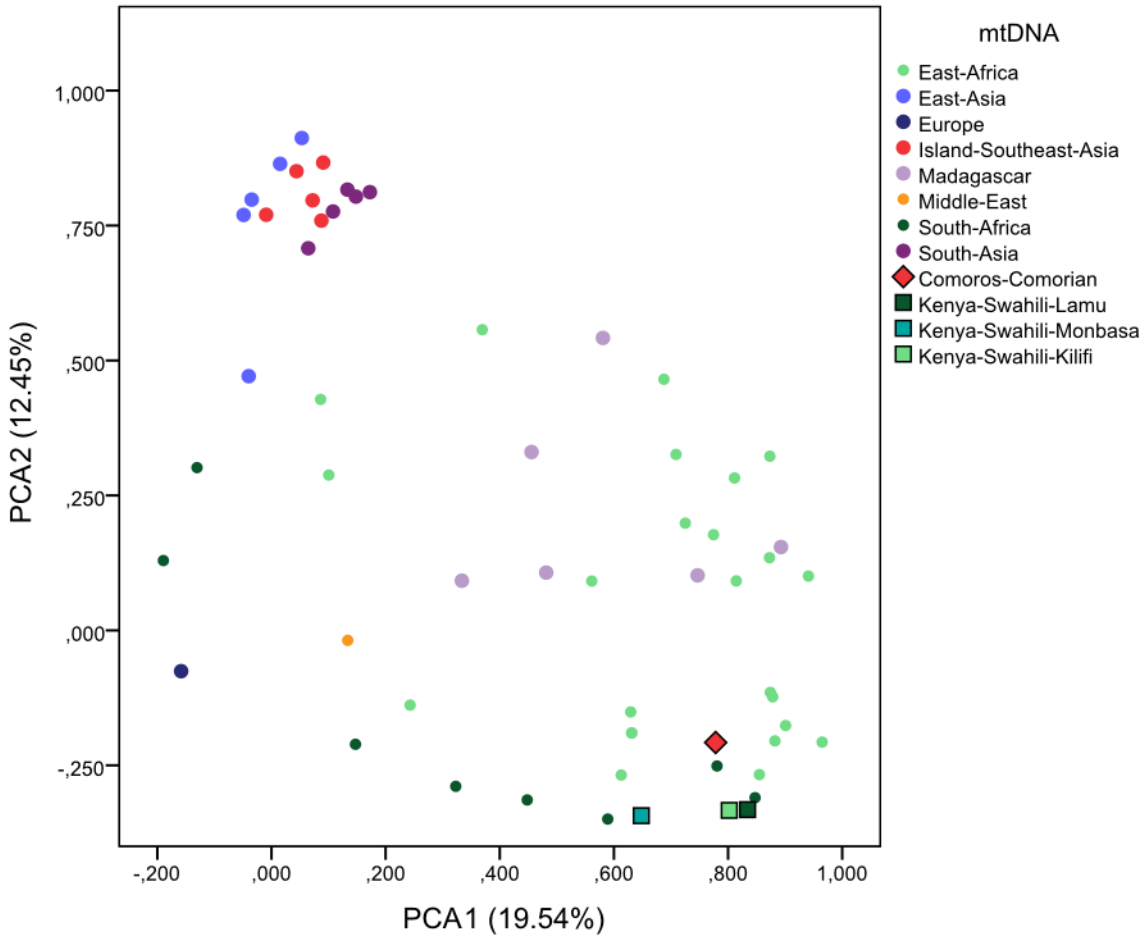


Figure S4. Principal Components Analysis of the African individuals in the 170K dataset using EIGENSOFT [3]. Swahili individuals are represented by squares; Comoros individuals by diamonds; all other African individuals from the 170K dataset by circles.

A


mtDNA
East-Africa
East-Asia
Europe
Island-Southeast-Asia
Madagascar
Middle-East
South-Africa
South-Asia
Comoros-Comorian
Kenya-Swahili-Lamu
Kenya-Swahili-Monbasa
Kenya-Swahili-Kilifi
PCA2 (12.45%)
1,000
,750
,500
,250
,000
-,250
PCA1 (19.54%)
-,200
,000
,200
,400
,600
,800
1,000

B

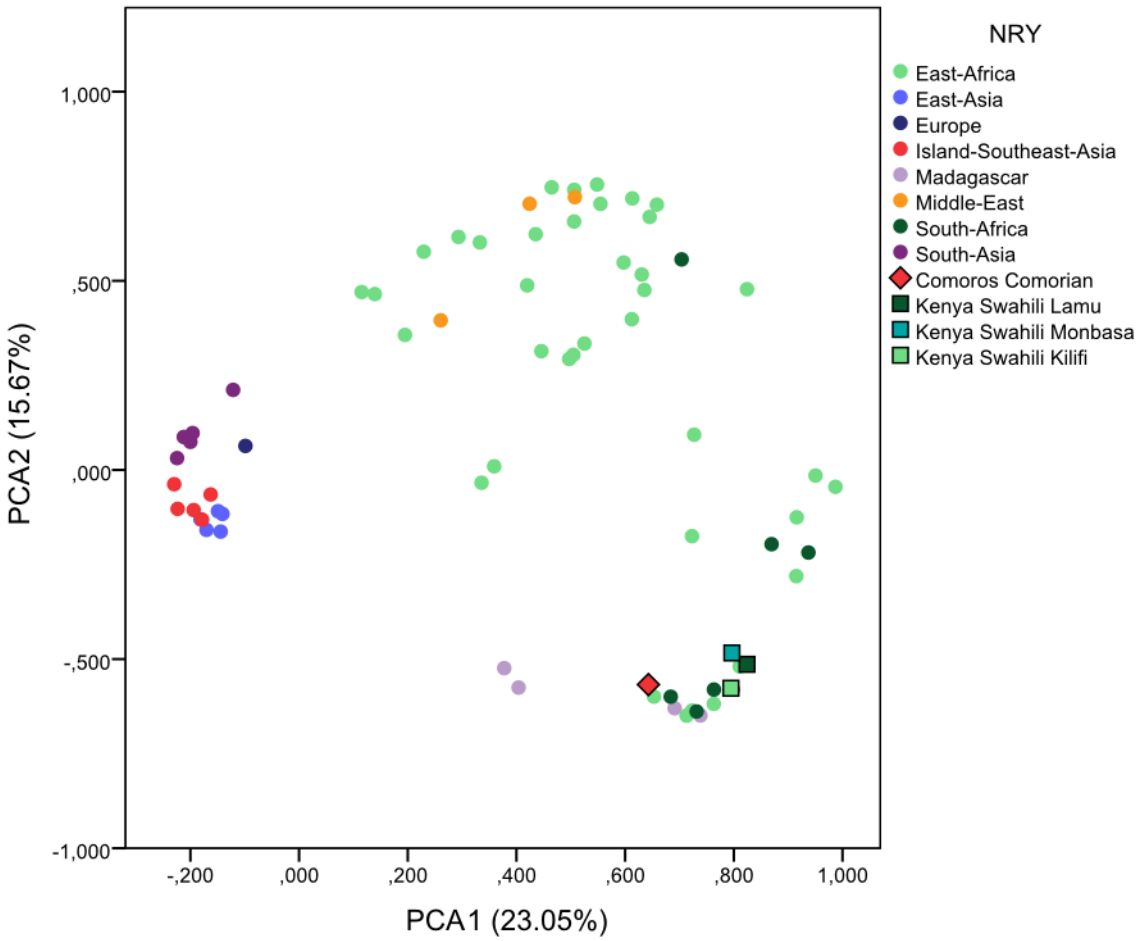


Figure S5. Principal Components Analyses of the uniparental datasets using SPSS [3]. (A) Scatterplot representing PCA 1 and 2 of the mtDNA data. (B) Scatterplot representing PCA 1 and 2 of the NRY data. Swahili populations are represented by squares; Comoros population from previously published data[4] by a diamond; all other groups by circles.

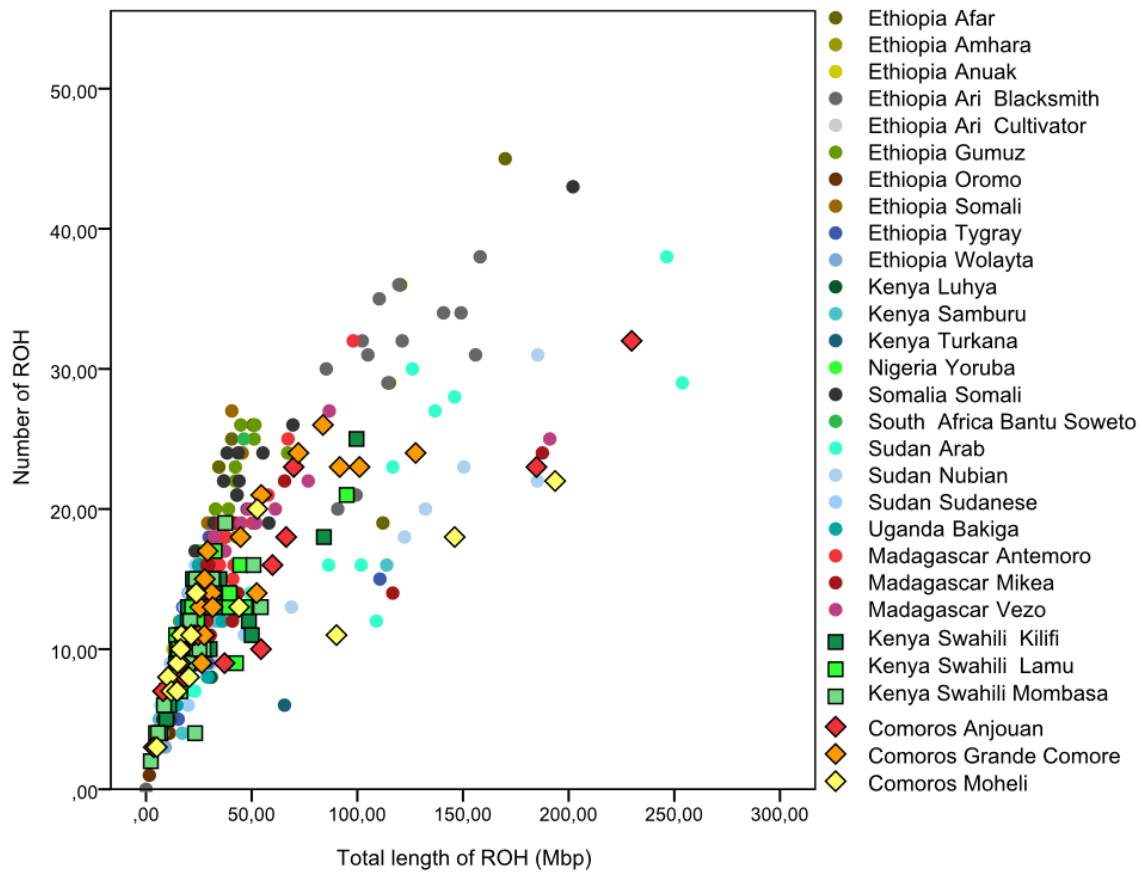
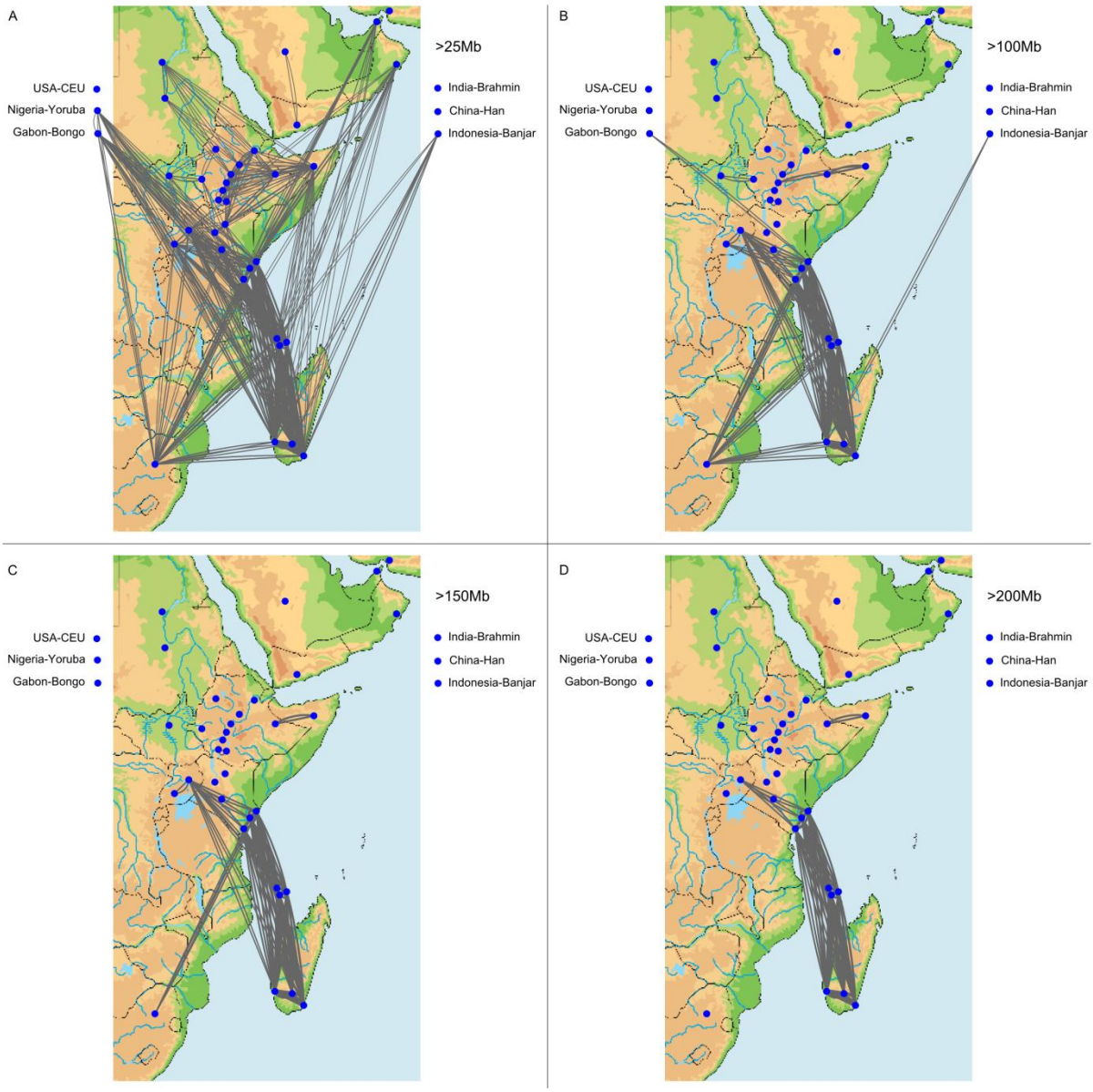


Figure S6. Scatterplot of Runs of Homozygosity (ROH) of East African individuals in the high SNP density dataset. Swahili individuals are represented by squares; Comoros individuals by diamonds; all East and South African individuals by circles.


A
>25Mb
USA-CEU
Nigeria-Yoruba
Gabon-Bongo
India-Brahmin
China-Han
Indonesia-Banjar
B
>100Mb
USA-CEU
Nigeria-Yoruba
Gabon-Bongo
India-Brahmin
China-Han
Indonesia-Banjar
C
>150Mb
USA-CEU
Nigeria-Yoruba
Gabon-Bongo
India-Brahmin
China-Han
Indonesia-Banjar
D
>200Mb
USA-CEU
Nigeria-Yoruba
Gabon-Bongo
India-Brahmin
China-Han
Indonesia-Banjar

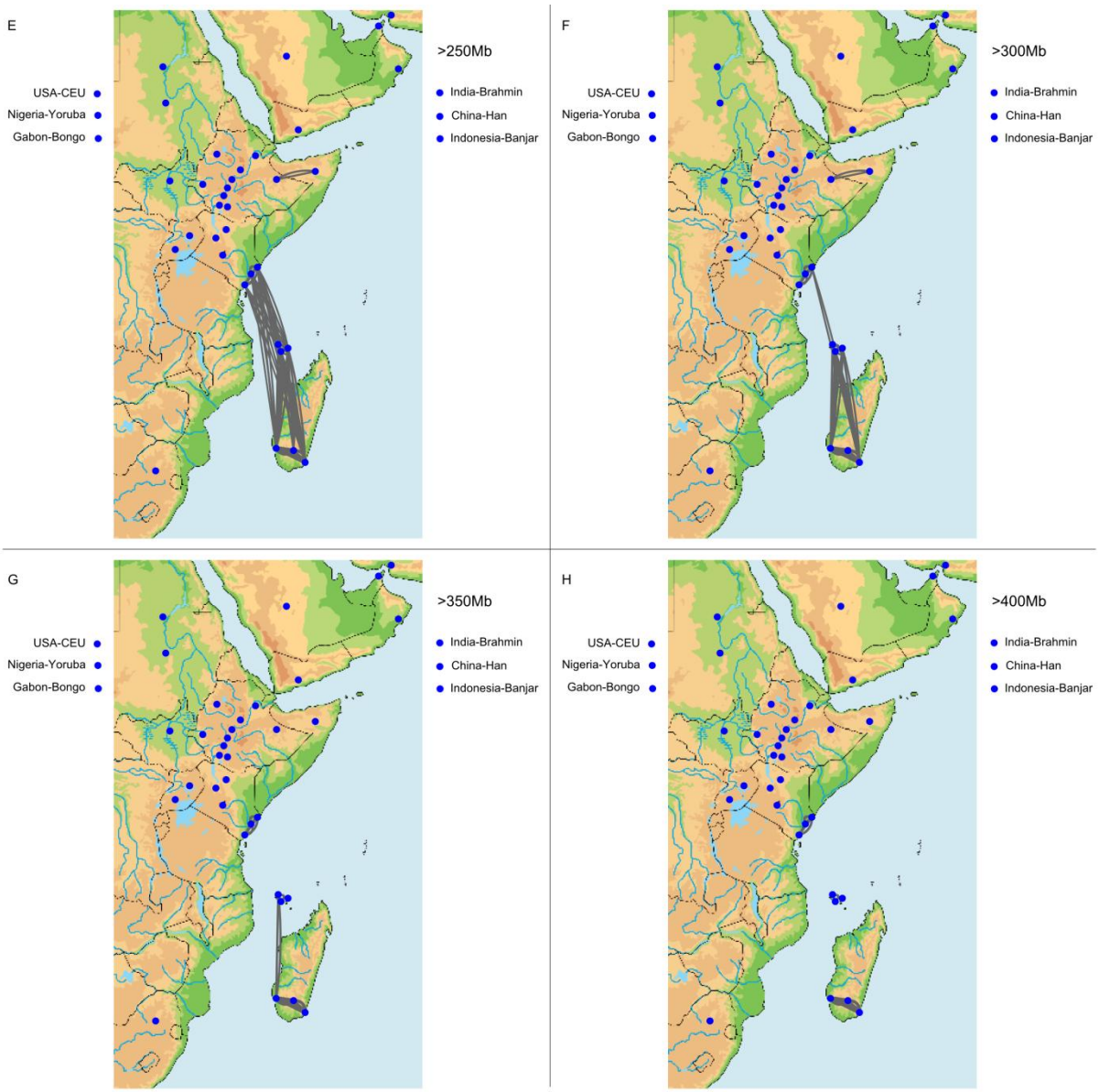
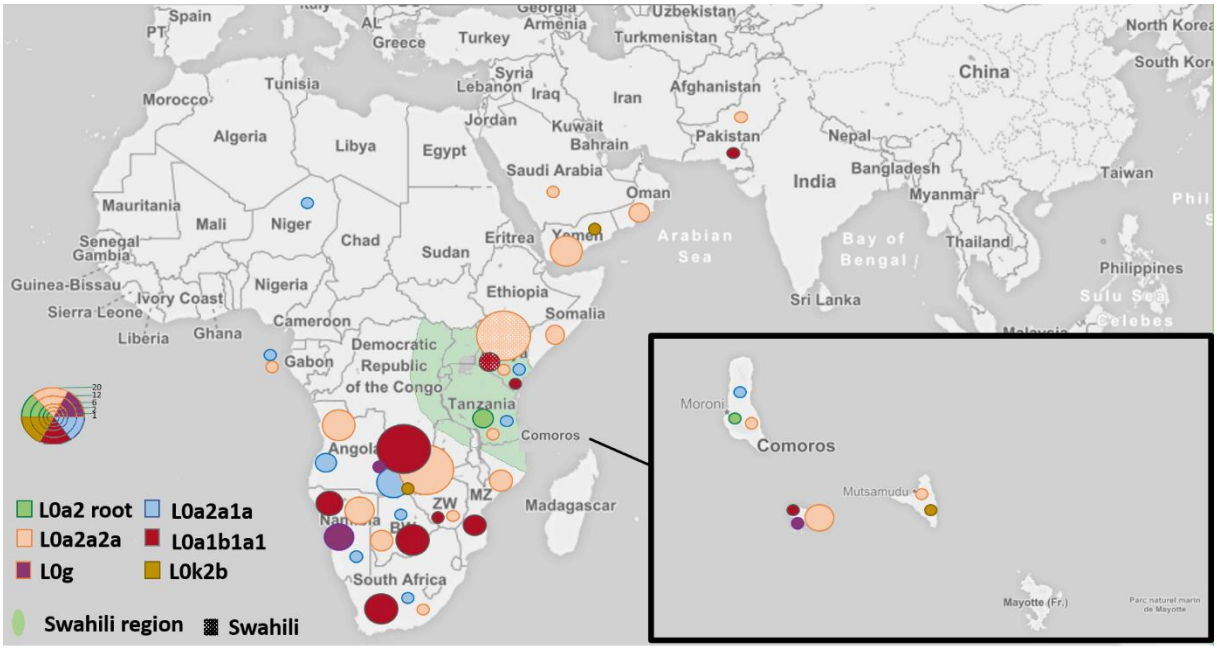
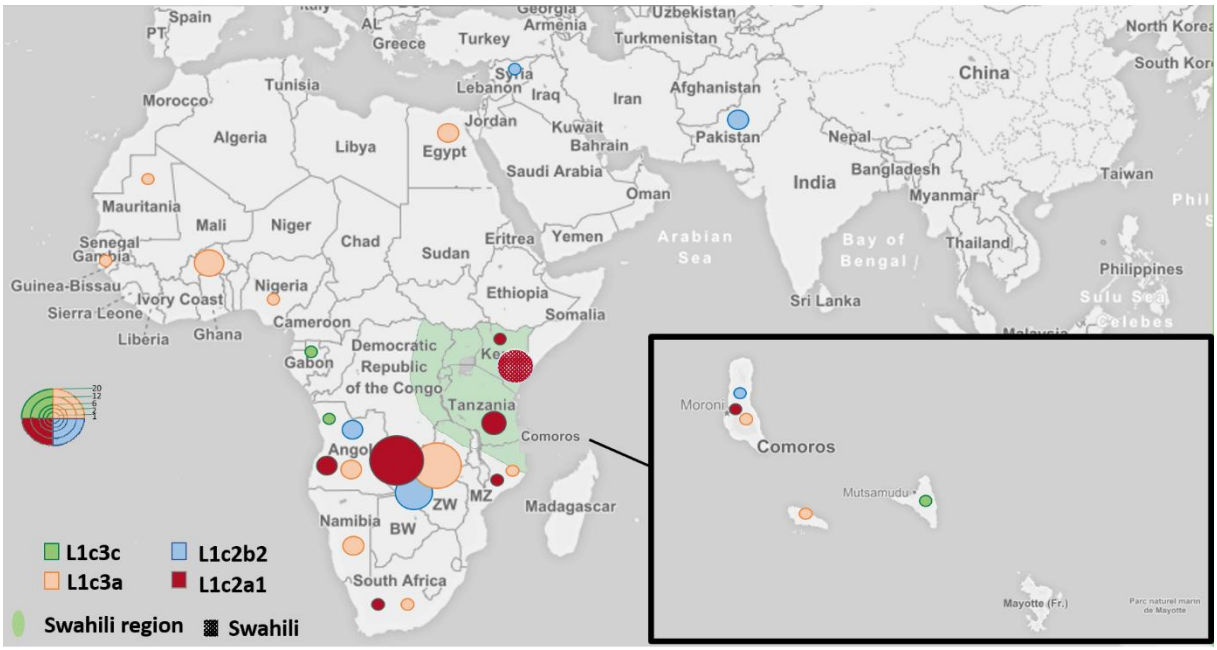


Figure S7. Map of the normalized sum of shared IBD fragments between East African populations and Middle Eastern populations and other populations of interest as estimated by RefinedIBD [5; 6]. The width of each edge is proportional to the normalized sum of shared IBD. Each map represents the normalized sum of shared IBD according to different thresholds: A: >25Mb; B: >100Mb; C: >150Mb; D: >200Mb; E: >250Mb; F: >300Mb; G: >350Mb; H: >400Mb.

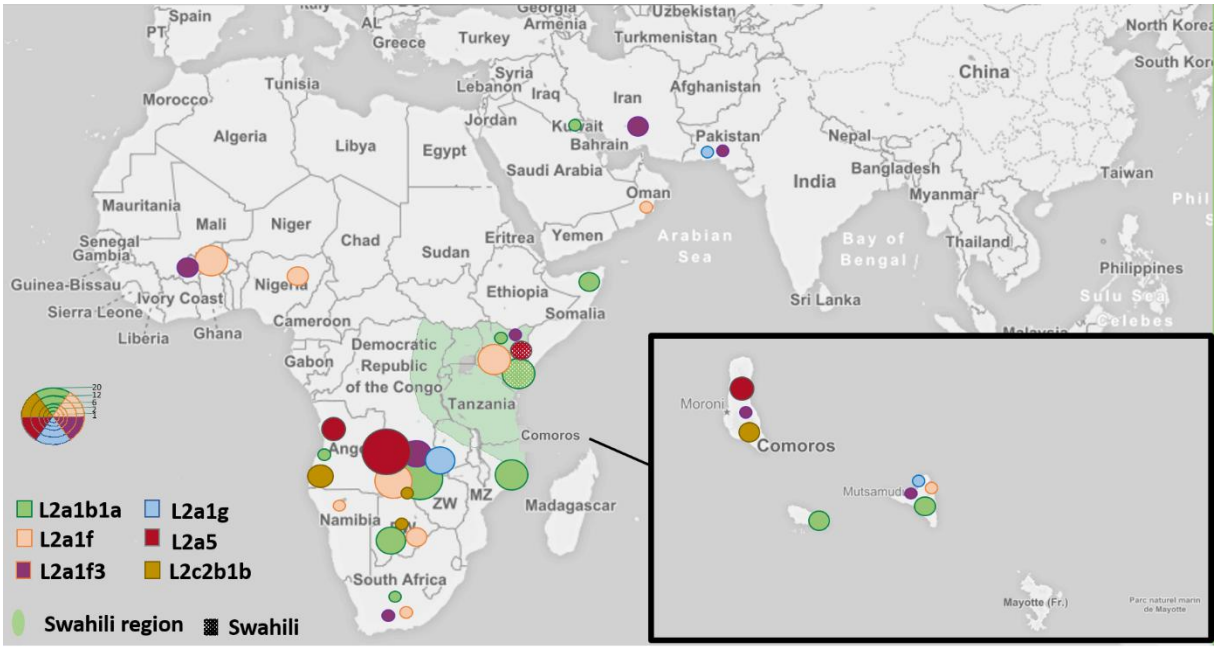
A


Spain
PT
AL
Greece
Turkey
Georgia
Armenia
Uzbekistan
Turkmenistan
North Korea
South Kor
China
Syria
Lebanon
Iraq
Iran
Afghanistan
Tunisia
Morocco
Jordan
Kuwait
Bahrain
Pakistan
Nepal
Algeria
Libya
Egypt
Saudi Arabia
India
Bangladesh
Taiwan
Oman
Myanmar
Mauritania
Mali
Niger
Chad
Eritrea
Yemen
Arabian Sea
Bay of Bengal
Thailand
Senegal
Gambia
Sudan
Philippines
Guinea-Bissau
Nigeria
Ethiopia
Sri Lanka
Sulu Sea
Ivory Coast
Sierra Leone
Somalia
Cameroon
Liberia
Ghana
Celebes
Gabon
Democratic Republic of the Congo
Tanzania
Moroni
Comoros
Angola
Mutsamudu
ZW
MZ
Madagascar
Namibia
BW
South Africa
Mayotte (Fr.)
Parc naturel marin de Mayotte
L0a2 root
L0a2a1a
L0a2a2a
L0a1b1a1
L0g
L0k2b
Swahili region
Swahili

B


Spain
PT
AL
Greece
Turkey
Georgia
Armenia
Uzbekistan
Turkmenistan
North Korea
South Kor
China
Syria
Lebanon
Iraq
Iran
Afghanistan
Tunisia
Morocco
Jordan
Kuwait
Bahrain
Pakistan
Nepal
Algeria
Libya
Egypt
Saudi Arabia
India
Bangladesh
Taiwan
Oman
Myanmar
Mauritania
Mali
Niger
Chad
Eritrea
Yemen
Arabian Sea
Bay of Bengal
Thailand
Senegal
Gambia
Sudan
Philippines
Guinea-Bissau
Nigeria
Ethiopia
Sri Lanka
Sulu Sea
Ivory Coast
Sierra Leone
Somalia
Cameroon
Liberia
Ghana
Celebes
Gabon
Democratic Republic of the Congo
Tanzania
Moroni
Comoros
Angola
Mutsamudu
ZW
MZ
Madagascar
Namibia
BW
South Africa
Mayotte (Fr.)
Parc naturel marin de Mayotte
L1c3c
L1c2b2
L1c3a
L1c2a1
Swahili region
Swahili

C



D

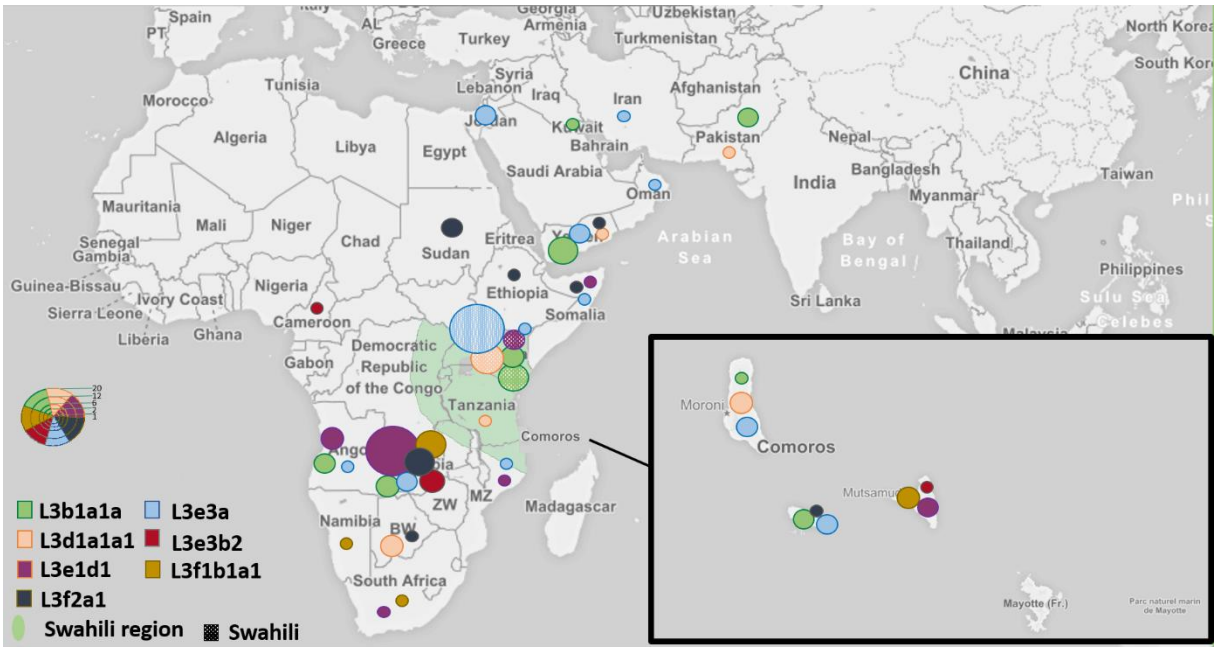


Figure S8. Geographic distribution of haplotype sharing of the most recent common ancestor with the Comorian haplotypes, separated by (A) L0 (B)L1 (C) L2 and (D) L3 haplogroups. The sizes of circles are proportional to the number of individuals.

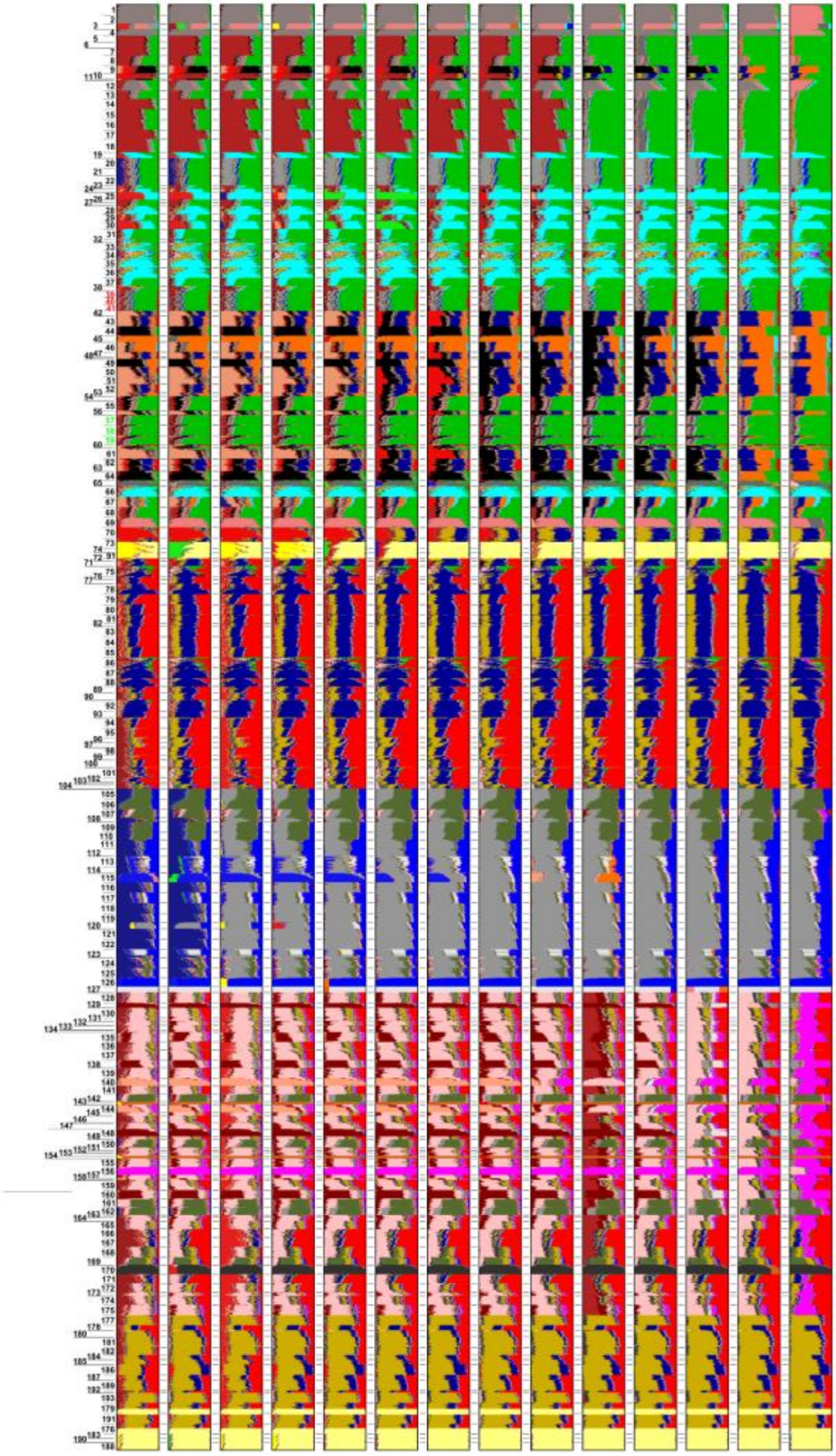


Figure S9. ADMIXTURE [7] plots obtained with CLUMPAK [8] (major modes) from K=2 to K=30 and visualized with Genesis [9]. Each colored line is an individual whose genetic background can be decomposed into K genetic components. Populations are coded as follows: 1: Cameroon Baka; 2: CAR Biaka Pygmy; 3: DR Congo Mbuti Pygmy; 4: Gabon Baka; 5: Burkina Faso Gurmantche; 6: Burkina Faso Gurunsi; 7: Burkina Faso Mossi; 8: Cameroon Nzime; 9: Chad Daza; 10: Chad Fulani; 11: Chad Kanembu; 12: Gabon Bongo; 13: Gabon Nzebi; 14: Gambia Gambian; 15: Nigeria Esan; 16: Nigeria Yoruba; 17: Senegal Mandenka; 18: Sierra Leone Mende; 19: Botswana GuiGhanaKgal; 20: Madagascar Antemoro; 21: Madagascar Mikea; 22: Madagascar Vezo; 23: Namibia Damara; 24: Namibia Haihom; 25: Namibia Juhoansi; 26: Namibia Kwangali; 27: Namibia Mbukushu; 28: Namibia Nama; 29: South Africa Namibia Khwe; 30: South Africa Namibia Xun; 31: South Africa Bantu Soweto; 32: South Africa BantuSA; 33: South Africa ColouredColesberg; 34: South Africa ColouredWellington; 35: South Africa Karretjie; 36: South Africa Khomani; 37: South Africa SEBantu; 38: South Africa SWBantu; 39: Comoros Anjouan; 40: Comoros Grande Comore; 41: Comoros Moheli; 42: Ethiopia Afar; 43: Ethiopia Amhara; 44: Ethiopia Anuak; 45: Ethiopia Ari Blacksmith; 46: Ethiopia Ari Cultivator; 47: Ethiopia Ethiopian Jews; 48: Ethiopia Ethiopians; 49: Ethiopia Gumuz; 50: Ethiopia Oromo; 51: Ethiopia Somali; 52: Ethiopia Tygray; 53: Ethiopia Wolayta; 54: Kenya BantuKenya; 55: Kenya Luhya; 56: Kenya Samburu; 57: Kenya Swahili Kilifi; 58: Kenya Swahili Lamu; 59: Kenya Swahili Mombasa; 60: Kenya Turkana; 61: Somalia Somali; 62: Sudan Arab; 63: Sudan Nubian; 64: Sudan Sudanese; 65: Tanzania Hazda; 66: Tanzania San; 67: Tanzania Sandawe; 68: Uganda Bakiga; 69: Uganda Batwa; 70: Algeria Mozabite; 71: Egypt Egyptian; 72: Lybia Lybian Jew; 73: Morocco Moroccan; 74: Tunisia Tunisian; 75: Dubai Arab; 76: Irak Kurd Jew; 77: Iraq Iraqi Jews; 78: Israel Bedouin; 79: Israel Druze; 80: Israel Palestinian; 81: Jordania Jordanian; 82: Lebanon Lebanese; 83: Lebanon Lebanese Christian; 84: Lebanon Lebanese Druze; 85: Lebanon Lebanese Muslim; 86: Oman Omani; 87: Saudi Arabia Arab; 88: Saudi Arabia Saudi; 89: Syria Syrians; 90: Turkey Turks; 91: UAE Arab; 92: Yemen Yemeni; 93: Yemen Yemenite Jews; 94: Armenia Armenian; 95: Georgia Abkhasian; 96: Georgia Balkar; 97: Georgia Chechen; 98: Georgia Georgian; 99: Iran Azeri; 100: Iran Iranian; 101: Iran Iranian Jew; 102: Kazakhstan Kurd; 103: Turkmenistan Turkmen; 104: China Dai; 105: China Han; 106: Burma Burmese; 107: Cambodia Cambodian; 108: Vietnam Kinh; 109: Vietnam Vietnamese; 110: Brunei Dusun; 111: Brunei Murut; 112: Indonesia Bajo; 113: Indonesia Bajo Derawan; 114: Indonesia Bajo Kotabaru; 115: Indonesia Banjar; 116: Indonesia Bugis; 117: Indonesia Dayak; 118: Indonesia Dayak Ngaju; 119: Indonesia Lebbo; 120: Indonesia Ma'anyan; 121: Indonesia Samihim; 122: Indonesia Warukin; 123: Malaysia Malay; 124: Philippines Igorot; 125: Singapore Malay; 126: Papua New Guinea Papuan; 127: Bangladesh Bengali; 128: India Birhor; 129: India Brahmin; 130: India Brahmins from; 131: Uttar Pradesh; 132: India Chamar; 133: India Dharkar; 134: India Dusadh; 135: India Gond; 136: India Gujarat Brahmin; 137: India Gujarati; 138: India Ho; 139: India Indian; 140: India Irula; 141: India Iyer; 142: India Jamatia; 143: India Jarawa; 144: India Kadar; 145: India Kanjars; 146: India Khatri; 147: India Kol; 148: India Korva; 149: India Kshatriya; 150: India Manipuri Brahmin; 151: India Maratha; 152: India Muslim; 153: India North Kannadi; 154: India Onge; 155: India Palian; 156: India Paniya; 157: India Piramalai Kallar; 158: India Pulliyar; 159: India Punjabi; 160: India Santal; 161: India Tharu; 162: India Tripuri; 163: India Uttar Pradesh; 164: Scheduled Caste; 165: India Velama; 166: India West Bengal Brahmin; 167: Pakistan Balochi; 168: Pakistan Brahui; 169: Pakistan Burusho; 170: Pakistan Hazara; 171: Pakistan Kalash; 172: Pakistan Makrani; 173: Pakistan Pathan; 174: Pakistan Punjabi; 175: Pakistan Sindhi; 176: Sri Lanka Sri Lankan; 177: Bulgaria Bulgarian; 178: Croatia Croatian; 179: Cyprus Cypriot; 180: Greece Greek; 181: Romania Romanian; 182: France French; 183: Hungary Hungarian; 184: Italy East Sicilian; 185: Italy Italian Abruzzo; 186: Italy Italian Bergamo; 187: Italy Sardinian; 188: Italy Sicilian; 189: Italy South Italian; 190: Italy Tuscan; 191: Italy West Sicilian; 192: Spain Spanish; 193: Russia Azeri; 194: USA CEU

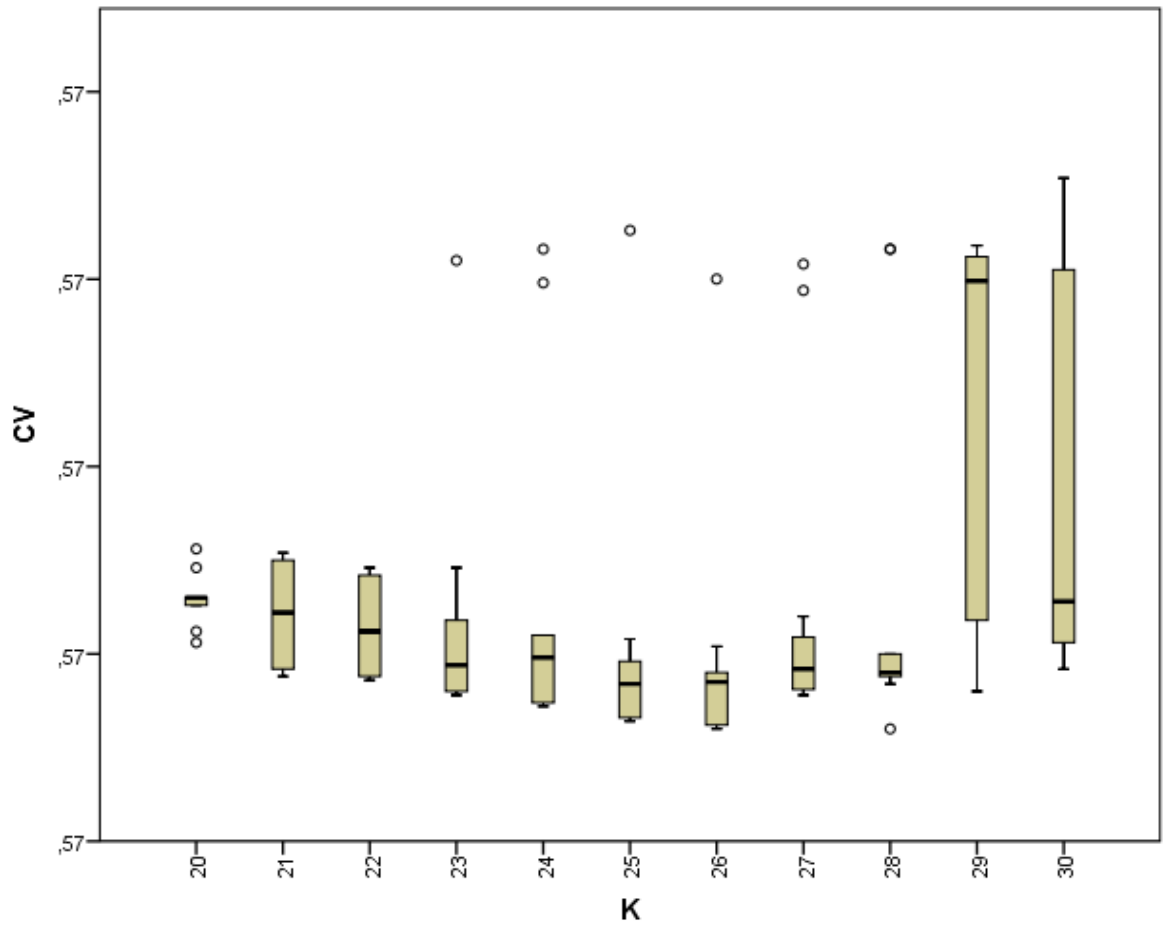


Figure S10. Box plots of cross-validation values obtained with ADMIXTURE [7] runs from K=20 to K=30 after 10 iterations.

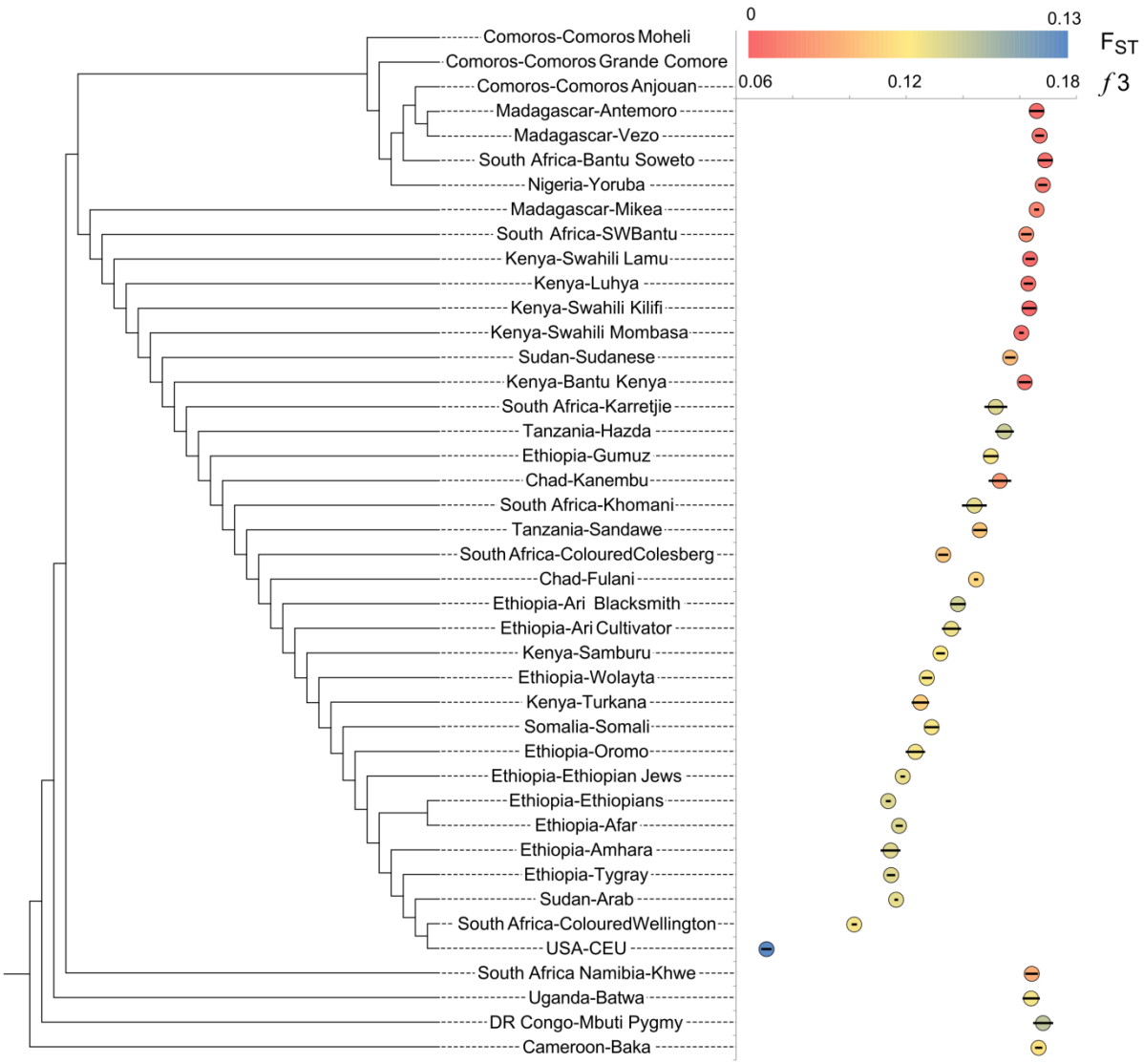


Figure S11. Comparison of the African genetic ancestry of the Comoros by a TREEMIX dendrogram [10], F_{ST} distances and *f*3 statistics, all based on the African-SNP dataset generated with PCAdmix [11]. The TreeMix dendrogram was inferred imposing no a priori assumptions of migration, displaying only the tree topology. (B) Values of the *f*3(African-SNP: Comoros-Anjouan, X; China-Han) statistics are represented by dots with standard error bars. The color of each dot corresponds to the F_{ST} distances between the African ancestry in the Comoros-Anjouan and each African population using a blue-yellow-red color scale from the highest (0.125) to the lowest values (0.006). All those values are provided in Table S10.

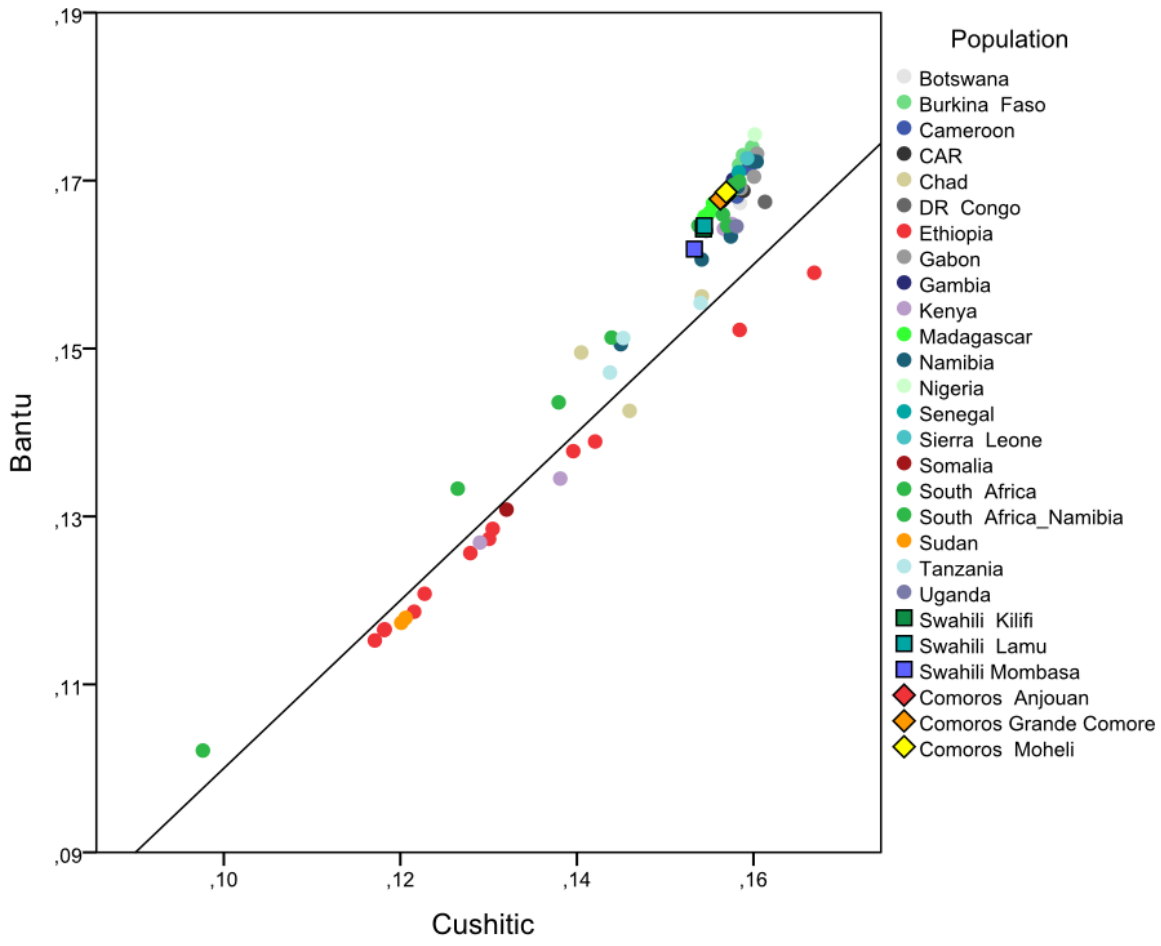
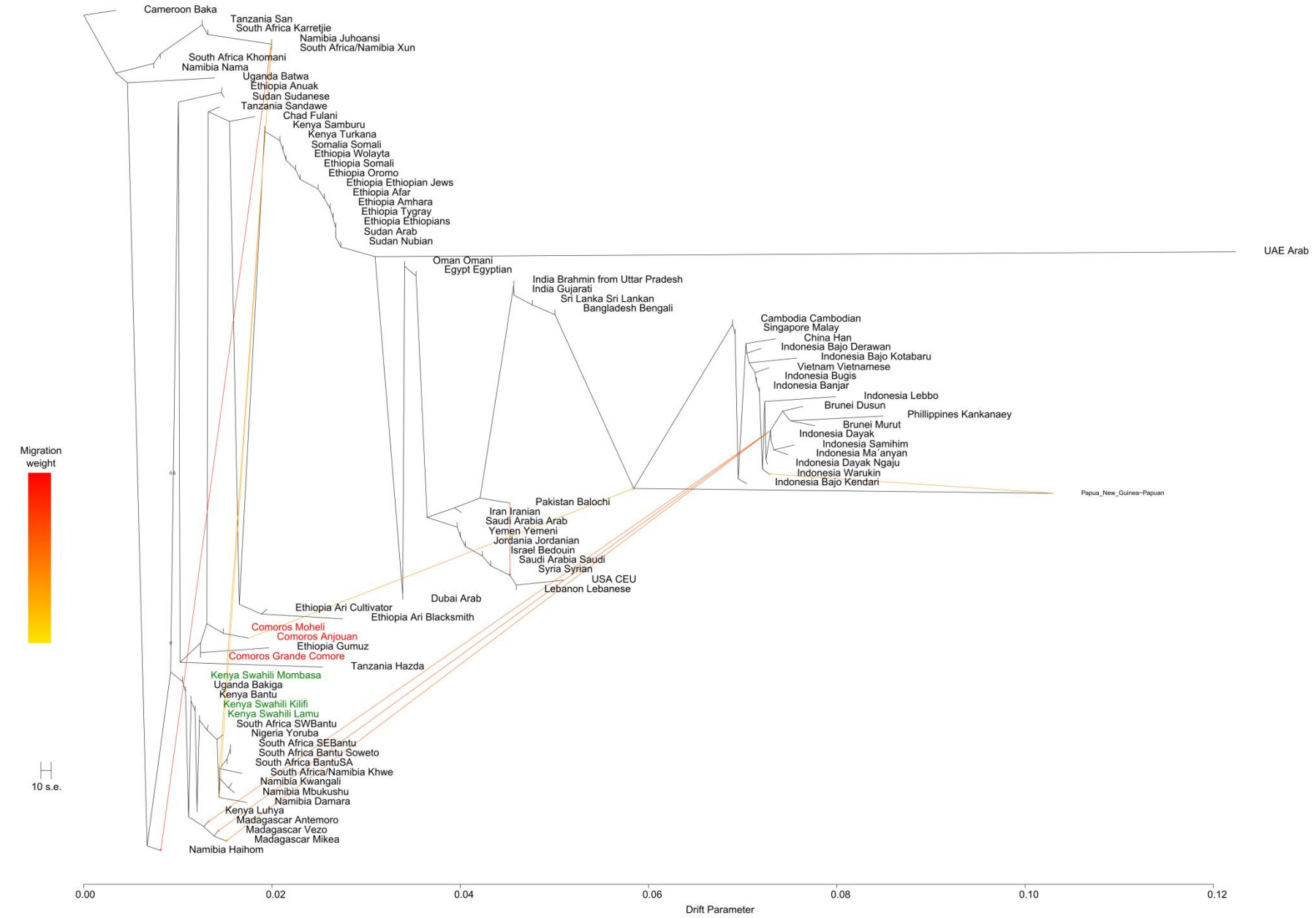


Figure S12. Scatterplot of the *f*3-outgroup statistics on the African-SNP dataset generated with PCAdmix [11]. The x-axis shows the values of *f*3(African-SNP: Sudan-Sudanese, X; China-Han), representing a Cushitic genetic ancestry. The y-axis shows the values of *f*3(African-SNP: Nigeria-Yoruba, X; China-Han), representing a Bantu genetic ancestry. Swahili populations are represented by a square; Comoros populations by a diamond; all other African population from the low SNP-density dataset by a circle.

A.


Cameroon Baka
Tanzania San
South Africa Karretjie
Namibia Juhoansi
South Africa/Namibia Xun
South Africa Khomani
Namibia Nama
Uganda Batwa
Ethiopia Anuak
Sudan Sudanese
Tanzania Sandawe
Chad Fulani
Kenya Samburu
Kenya Turkana
Somalia Somali
Ethiopia Wolayta
Ethiopia Somali
Ethiopia Oromo
Ethiopia Ethiopian Jews
Ethiopia Afar
Ethiopia Amhara
Ethiopia Tygray
Ethiopia Ethiopians
Sudan Arab
Sudan Nubian
UAE Arab
Oman Omani
Egypt Egyptian
India Brahmin from Uttar Pradesh
India Gujarati
Sri Lanka Sri Lankan
Bangladesh Bengali
Cambodia Cambodian
Singapore Malay
China Han
Indonesia Bajo Derawan
Indonesia Bajo Kotabaru
Vietnam Vietnamese
Indonesia Bugis
Indonesia Banjar
Indonesia Lebbo
Brunei Dusun
Phillippines Kankanaey
Brunei Murut
Indonesia Dayak
Indonesia Samihim
Indonesia Ma`anyan
Indonesia Dayak Ngaju
Indonesia Warukin
Indonesia Bajo Kendari
Papua_New_Guinea~Papuan
Pakistan Balochi
Iran Iranian
Saudi Arabia Arab
Yemen Yemeni
Jordania Jordanian
Israel Bedouin
Saudi Arabia Saudi
Syria Syrian
USA CEU
Lebanon Lebanese
Dubai Arab
Ethiopia Ari Cultivator
Ethiopia Ari Blacksmith
Comoros Moheli
Comoros Anjouan
Ethiopia Gumuz
Comoros Grande Comore
Tanzania Hazda
Kenya Swahili Mombasa
Uganda Bakiga
Kenya Bantu
Kenya Swahili Kilifi
Kenya Swahili Lamu
South Africa SWBantu
Nigeria Yoruba
South Africa SEBantu
South Africa Bantu Soweto
South Africa BantuSA
South Africa/Namibia Khwe
Namibia Kwangali
Namibia Mbukushu
Namibia Damara
Kenya Luhya
Madagascar Antemoro
Madagascar Vezo
Madagascar Mikea
Namibia Haihom
Migration weight
10 s.e.
0.00
0.02
0.04
0.06
0.08
0.10
0.12
Drift Parameter

B.

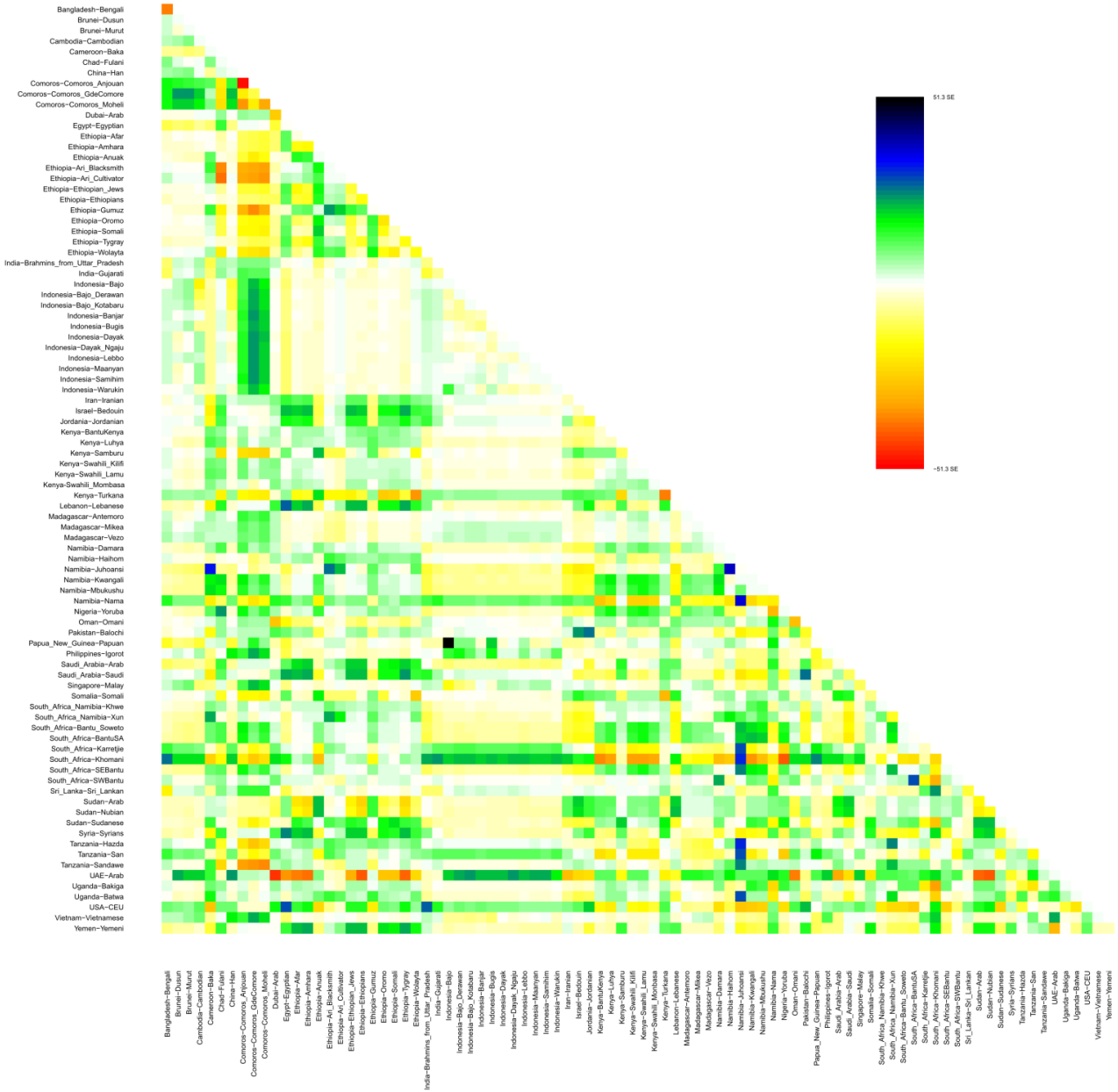


Figure S13. TREEMIX [10] plot of African and Asian populations in the low SNP-density dataset on 9 migration nodes (A), and its residual triangular matrix (B). Comorian populations are highlighted in red and Kenyan Swahili communities in green.

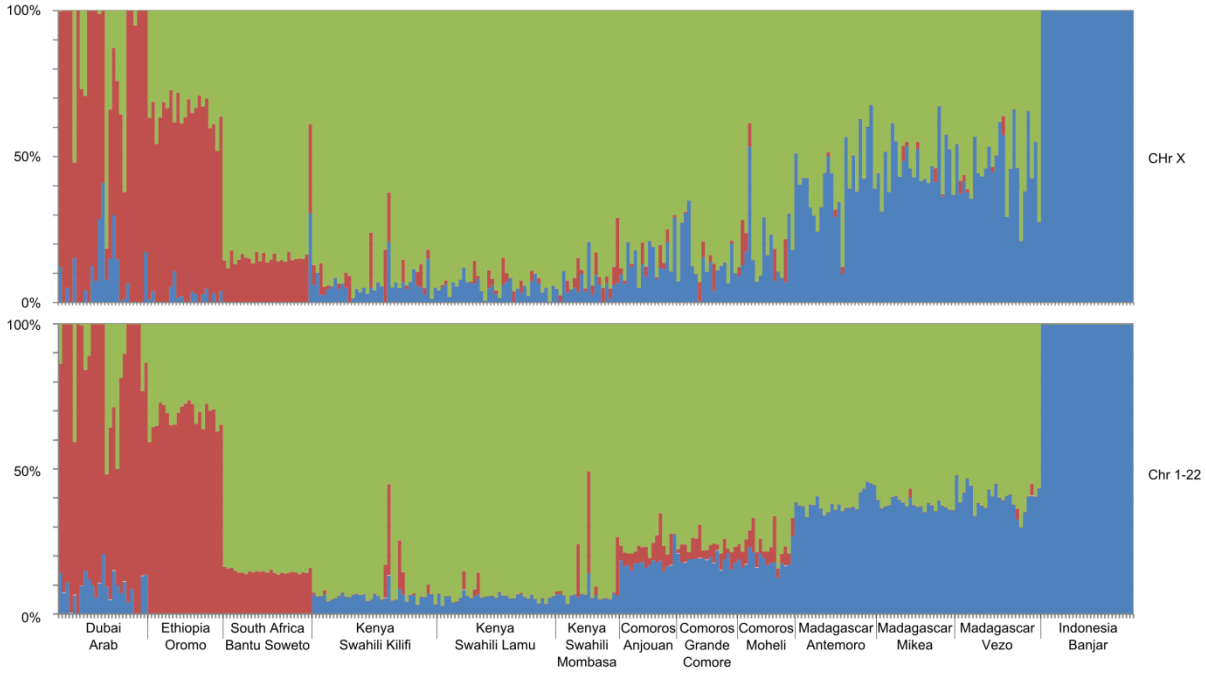


Figure S14. ADMIXTURE [7] plots obtained for chromosome X and autosomes at K=3. Each colored line is an individual whose genetic background can be decomposed into K genetic components.

	Swahili Kilifi	Swahili Lamu	Swahili Mombasa
B2A	6	4	0
B2B	3	1	0
BT	2	7	0
C	0	1	0
E	0	3	0
E1b1a1	1	0	0
E1b1a7a	25	9	2
E1b1a8a1a	1	1	0
E1b1a8a	16	16	2
E1b1b1	2	1	1
E2b	1	0	0
G2a	1	0	0
O2a	1	0	0
R1b	1	0	0

Table S1. NRY haplogroups found in Swahili communities.

	Kenya Swahili Lamu	Kenya Swahili Kilifi	Kenya Swahili Mombasa	Comoros Grande Comore	Comoros Moheli	Comoros Anjouan
F3b1b				1		
H2a2a1			1			
L0a		3	1			
L0a1'4	1	1	1			
L0a1a1	1					
L0a1b1a1					1	
L0a1b1a1a		1	1			
L0a1d			2			
L0a2		2	1	1		
L0a2a1a				2		
L0a2a1b			2			
L0a2a2a	14	10	4		5	1
L0a2d	1					
L0a3		1				
L0d1c	1					
L0d3	1					
L0f	4		2			
L0f1			2			
L0f2a	5	2				
L0f2a1		1				
L0g					1	
L0k2b						1
L1b1a	7	3				
L1b1a3		2				
L1b2a		1				
L1c1	1		1			
L1c2a1		8				
L1c2a1a	2			1		
L1c2a3		1	1			
L1c2b2				1		
L1c3a				1	1	
L1c3c						1
L2a1	1					

L2a1+143		2				
L2a1+143+@16309	1					
L2a1a	1					
L2a1a2			2			
L2a1b1a	4	3			2	2
L2a1c4a1	1					
L2a1f	2	5				1
L2a1f1		1				
L2a1f3				1		1
L2a1g						1
L2a1h	3	3				
L2a5	2			3		
L2b2a		1				
L2c2b1				1		
L2c2b1b				1		
L2d1a			1			
L3a1		1				
L3a2	1					
L3b1a11			1			
L3b1a1a	5		2	1	2	
L3b1a2	2					
L3d1a1a	9	5	1			
L3d1a1a1	3	5		3		
L3d1d		1				
L3e1a2	3					
L3e1d1		2				2
L3e1e	1	1				
L3e1e1	1	1				
L3e2b	1	1				
L3e3a	6	10	4	2	2	
L3e3b2						1
L3e5		1				
L3f	1					
L3f1b1a1						3
L3f1b4a1	2					
L3f2a1					1	
L3h1a2a1	3	1				
L3h1b2	1					
L3h2		1				
L3x1a2	3	2				
L4b2a2	1	8				
L4b2a2c	1					
L5a1	1					
L5b2	1					
M			1			
M1a1	1					
M1a1b		1				
M1a1f	2	1				
M1a5	1					
R0+16189	1					

Table S2. mtDNA haplogroups found in Swahili and Comorian communities.

Population	N LSD	N HSD	Reference
Cameroon Baka	25	25	[12]
CAR Biaka Pygmy	20	-	[13]
DR Congo Mbuti Pygmy	13	-	[13; 14]
Gabon Baka	16	16	[12]
Burkina Faso Gurmantche	15	15	[15]
Burkina Faso Gurunsi	16	16	[15]
Burkina Faso Mossi	17	17	[15]
Cameroon Nzime	25	25	[12]
Chad Daza	18	18	[15]
Chad Fulani	13	13	[15]
Chad Kanembu	4	4	[15]
Gabon Bongo	25	25	[12]
Gabon Nzebi	20	20	[12]
Gambia Gambian	25	25	[16]
Nigeria Esan	25	25	[14; 16]
Nigeria Yoruba	25	19	[13; 16]
Senegal Mandenka	22	-	[13]
Sierra Leone Mende	25	25	[13; 16]
Botswana GuiGhanaKgal	14	-	[17]
Madagascar Antemoro	24	24	[18]
Madagascar Mikea	18	18	[18]
Madagascar Vezo	24	24	[18]
Namibia Damara	8	8	[19]
Namibia Haihom	8	8	[19]
Namibia Juhoansi	18	-	[17]
Namibia Kwangali	7	7	[19]
Namibia Mbukushu	8	8	[19]
Namibia Nama	20	-	[17]
South Africa Namibia Khwe	17	-	[17]
South Africa Namibia Xun	19	-	[17]
South Africa Bantu Soweto	25	25	[20]
South Africa BantuSA	8	-	[13]
South Africa ColouredColesberg	20	-	[17]
South Africa ColouredWellington	20	-	[17]
South Africa Karretjie	20	-	[17]
South Africa Khomani	25	-	[17]
South Africa SEBantu	20	-	[17]
South Africa SWBantu	12	-	[17]
Comoros Anjouan	16	16	*Present study*
Comoros Grande Comore	17	17	*Present study*
Comoros Moheli	15	15	*Present study*
Ethiopia Afar	12	12	[21]
Ethiopia Amhara	25	19	[22]

Ethiopia Anuak	23	23	[21]
Ethiopia Ari Blacksmith	15	15	[21]
Ethiopia Ari Cultivator	24	24	[21]
Ethiopia Ethiopian Jews	12	-	[22]
Ethiopia Ethiopians	5	-	[22]
Ethiopia Gumuz	19	19	[21]
Ethiopia Oromo	25	20	[15; 21; 22]
Ethiopia Somali	17	17	[21]
Ethiopia Tygray	21	21	[21]
Ethiopia Wolayta	8	8	[21]
Kenya BantuKenya	10	-	[13; 14]
Kenya Luhya	25	25	[13; 16]
Kenya Samburu	10	10	[15]
Kenya Swahili Kilifi	25	25	*Present study*
Kenya Swahili Lamu	25	25	*Present study*
Kenya Swahili Mombasa	22	22	*Present study*
Kenya Turkana	8	8	[15]
Somalia Somali	26	26	[15; 21]
Sudan Arab	16	16	[15]
Sudan Nubian	14	14	[15]
Sudan Sudanese	22	22	[21]
Tanzania Hazda	14	-	[14]
Tanzania San	26	-	[14]
Tanzania Sandawe	25	-	[14]
Uganda Bakiga	25	25	[12]
Uganda Batwa	24	24	[12]
Algeria Mozabite	25	-	[13]
Egypt Egyptian	12	-	[22]
Lybia Lybian Jew	6	-	[23]
Morocco Moroccan	25	-	[22; 24]
Tunisia Tunisian	11	-	[24]
UAE Dubai Arab	25	25	Fernandes et al., unpublished
Irak Kurd Jew	8	-	[23]
Iraq Iraqi Jews	10	-	[22]
Israel Bedouin	25	-	[13]
Israel Druze	25	-	[13]
Israel Palestinian	25	-	[13]
Jordania Jordanian	20	-	[13]
Lebanon Lebanese	8	-	[22]
Lebanon Lebanese Christian	25	-	[25]
Lebanon Lebanese Druze	25	-	[25]
Lebanon Lebanese Muslim	25	-	[25]
Oman Omani	25	25	Fernandes et al., unpublished
Saudi Arabia Arab	25	25	Fernandes et al., unpublished
Saudi Arabia Saudi	20	-	[22]

Syria Syrians	16	-	[22]
Turkey Turks	17	-	[22]
UAE Arab	14	-	[24]
Yemen Yemeni	26	25	Fernandes et al., unpublished
Yemen Yemenite Jews	15	-	[22]
Armenia Armenian	25	-	[13; 22; 26]
Georgia Abkhasian	23	-	[23]
Georgia Balkar	13	-	[23]
Georgia Chechen	11	-	[26]
Georgia Georgian	25	-	[13; 22]
Iran Azeri	18	-	[26]
Iran Iranian	25	20	[13; 22], Fernandes et al., unpublished
Iran Iranian Jew	10	-	[23]
Kazakhstan Kurd	6	-	[26]
Turkmenistan Turkmen	11	-	[26]
China Dai	25	22	[16]
China Han	25	17	[13; 16]
Burma Burmese	20	20	[27]
Cambodia Cambodian	10	-	[13]
Vietnam Kinh	25	25	[16]
Vietnam Vietnamese	18	18	[27]
Brunei Dusun	22	22	[27]
Brunei Murut	18	18	[27]
Indonesia Bajo	25	25	[27]
Indonesia Bajo Derawan	16	16	[28]
Indonesia Bajo Kotabaru	22	22	[28]
Indonesia Banjar	25	25	[28; 29]
Indonesia Bugis	25	25	[28]
Indonesia Dayak	25	25	[30]
Indonesia Dayak Ngaju	22	22	[29]
Indonesia Lebbo	15	15	[27]
Indonesia Ma'anyan	25	25	[30]
Indonesia Samihim	25	25	[28]
Indonesia Warukin	20	20	[28]
Malaysia Malay	24	-	[27]
Philippines Igorot	21	21	[27]
Singapore Malay	25	25	[31]
Papua New Guinea Papuan	14	-	[13]
Bangladesh Bengali	25	25	[16]
India Birhor	12	-	[32]
India Brahmin	25	25	[27]
India Brahmins from Uttar Pradesh	7	-	[33]
India Chamar	10	-	[33]

India Dharkar	11	-	[33]
India Dusadh	6	-	[33]
India Gond	24	-	[33]
India Gujarat Brahmin	19	-	[32]
India Gujarati	25	25	[16]
India Ho	18	-	[32]
India Indian	25	25	[16]
India Irula	19	-	[32]
India Iyer	20	-	[32]
India Jamatia	18	-	[32]
India Jarawa	7	-	[32]
India Kadar	19	-	[32]
India Kanjars	8	-	[33]
India Khatri	17	-	[32]
India Kol	15	-	[33]
India Korva	18	-	[32]
India Kshatriya	7	-	[33]
India Manipuri Brahmin	20	-	[32]
India Maratha	7	-	[32]
India Muslim	5	-	[33]
India North Kannadi	8	-	[22]
India Onge	6	-	[32]
India Palian	20	-	[32]
India Paniya	20	-	[22]
India Piramalai Kallar	8	-	[33]
India Pulliyar	4	-	[33]
India Punjabi	25	25	[16]
India Santal	20	-	[32]
India Tharu	21	-	[33]
India Tripuri	19	-	[32]
India Uttar Pradesh Scheduled Caste	5	-	[33]
India Velama	10	-	[33]
India West Bengal Brahmin	18	-	[32]
Pakistan Balochi	21	-	[13]
Pakistan Brahui	23	-	[13]
Pakistan Burusho	25	-	[13]
Pakistan Hazara	18	-	[13]
Pakistan Kalash	23	-	[13]
Pakistan Makrani	22	-	[13]
Pakistan Pathan	22	-	[13]
Pakistan Punjabi	8	8	[13]
Pakistan Sindhi	22	-	[13]
Sri Lanka Sri Lankan	25	25	[16]
Bulgaria Bulgarian	25	-	[24]

Croatia Croatian	24	-	[23]
Cyprus Cypriot	12	-	[22]
Greece Greek	25	-	[23; 24]
Romania Romanian	16	-	[22]
France French	25	-	[13]
Hungary Hungarian	19	-	[22]
Italy East Sicilian	10	-	[24]
Italy Italian Abruzzo	11	-	[23]
Italy Italian Bergamo	12	-	[13]
Italy Sardinian	25	-	[13]
Italy Sicilian	13	-	[23]
Italy South Italian	18	-	[24]
Italy Tuscan	25	25	[16]
Italy West Sicilian	10	-	[24]
Spain Spanish	25	25	[16; 22; 24]
Russia Azeri	5	-	[26]
USA CEU	25	25	[16]
Total	3477	1664	

Table S3. Datasets used in the present study. LSD: Low SNP-density database HSD: High SNP-density database.

Population	N	Reference
Bangladesh Bengali	86	[16]
China Dai	99	[16]
China Han Beijing	103	[16]
China Han South	108	[16]
Comoros Comorian	577	[4]
Egypt Arab	74	[34]
Ethiopia Amharic	190	[35]
Ethiopia Misc.	20	[35]
Ethiopia Somali	3	[36]
India Gujarati	103	[16]
India Punjab	97	[16]
India Telugu	103	[16]
Indonesia Bajo	27	[37]
Indonesia Bali	487	[37; 38]
Indonesia Java	51	[37; 38]
Indonesia Ma'anyan	159	[37]
Indonesia Dayak	64	[37]
Japan Japanese	104	[16]
Kenya Swahili Kilifi	95	*present study*
Kenya Swahili Lamu	107	*present study*
Kenya Swahili Mombasa	33	*present study*
Kenya Kenya Misc.	3	[39]
Kenya Kikuyu	23	[36]
Kenya Somali	14	[36]
Kenya Swahili (2)	174	[40]
Kenya Turkana	34	[36]
Madagascar Antaisakaa	5	[41]
Madagascar Antandroya	19	[41]
Madagascar Antanosya	21	[41]
Madagascar Madagascar Misc.	33	[42]
Madagascar Merinaa	6	[41]
Madagascar Sihanaka Merina Betsileo Bezanozanob	19	[41]
Mozambique Misc.	258	[43]
Rwanda Bantu	40	[44]
Rwanda Hutu	97	[45]
Somalia Somali	1	[36]
South Africa !Xun Khwe	25	[46]
South Africa bantu	2	[47]
South Africa khoisan	2	[47]
South Africa Khwe	10	[48]
South Africa Kung	57	[48]
South Africa Misc.	3	[49]
Sri Lanka Tamil	102	[16]

Sudan Dinka	36	[34]
Sudan Nubia	76	[34]
Sudan Nuer	8	[34]
Sudan Shilluk	6	[34]
Tanzania Burunge	36	[46]
Tanzania Datog	35	[46]
Tanzania Datoga	17	[50]
Tanzania Hadza	24	[46]
Tanzania Hadzabe	13	[50]
Tanzania Iraqw	10	[50]
Tanzania Sandawe	80	[46]
Tanzania Sukuma	29	[46]
Tanzania Turu	28	[46]
USA European	99	[16]
Vietnam Kinh	101	[16]
Zimbabwe Shona	45	[45]

Table S4. mtDNA haplogroup dataset, based on the D-loop, used in the present study.

Population	N	Reference
Bangladesh Bengali	40	[16]
China Dai	40	[16]
China Han Beijing	41	[16]
China Han South	50	[16]
Comoros Comorian	370	[4]
Egypt Arab	97	[51]
Egypt Misc.	94	[52]
Ethiopia Amhara	48	[53]
Ethiopia Jew	101	[54]
Ethiopia Oromo	78	[53]
Ethiopia South Semitic	20	[52]
India Gujarati	58	[16]
India Punjab	48	[16]
India Telugu	60	[16]
Indonesia Bajo	27	[37]
Indonesia Bali	634	[37; 38]
Indonesia Java	61	[37; 38]
Indonesia Ma'anyan	159	[37]
Indonesia Dayak	85	[37]
Japan Japanese	56	[16]
Kenya Bantu	81	[51]
Kenya Kikuyu Kamba	44	[52]
Kenya Luo	9	[52]
Kenya Masai	26	[52]
Kenya Swahili Kilifi	60	*present study*
Kenya Swahili Lamu	44	*present study*
Kenya Swahili Mombasa	5	*present study*
Madagascar Antaisaka	8	[41]
Madagascar Antandroy	46	[41]
Madagascar Antanosy	46	[41]
Madagascar Merina	9	[41]
Mozambique Misc.	43	[55]
Oman Arab	91	[51]
Rwanda Hutu	98	[51]
Rwanda Tutsi	100	[51]
Somalia Misc.Danish	196	[56]
South Africa !Kung	100	[54]
South Africa Khwe	101	[54]
South Africa Sotho-Tswana	29	[52]
South Africa Xhosa	79	[52]
South Africa Zulu	29	[52]
Sri Lanka Tamil	55	[16]
Sudan Arakien	24	[57]
Sudan Beja	42	[57]

Sudan Borgu	26	[57]
Sudan Copte	33	[57]
Sudan Dinka	26	[57]
Sudan Fulani	26	[57]
Sudan Fur	32	[57]
Sudan Gaalien	50	[57]
Sudan Hausa	32	[57]
Sudan Masalit	32	[57]
Sudan Meseria	28	[57]
Sudan Nuba	28	[57]
Sudan Nubian	39	[57]
Sudan Nuer	12	[57]
Sudan Shilluk	15	[57]
Tanzania Burunge	31	[46]
Tanzania Datog	31	[46]
Tanzania Datoga	101	[50]
Tanzania Hadza	54	[46]
Tanzania Hadzabe	99	[50]
Tanzania Iraqw	100	[50]
Tanzania Mbugwe	14	[46]
Tanzania Sandawe	75	[46]
Tanzania Sukuma	130	[46]
Tanzania Turu	17	[46]
Tanzania Wairak	100	[51]
Uganda Ganda	26	[52]
USA European	49	[16]
Vietnam Kinh	44	[16]
Zimbabwe Shona	49	[52]

Table S5. NRY haplogroup dataset used in the present study.

	Comoros Comorian		Kenya Swahili Kilifi		Kenya Swahili Lamu		Kenya Swahili Mombasa	
	FST	*P*	FST	*P*	FST	*P*	FST	*P*
Egypt Arab	0.12212	0.00000 +- 0.0000	0.10684	0.00000 +- 0.0000	0.13284	0.00000 +- 0.0000	0.16927	0.00000 +- 0.0000
Ethiopia Amharic	0.09309	0.00000 +- 0.0000	0.08001	0.00000 +- 0.0000	0.09664	0.00000 +- 0.0000	0.13876	0.00000 +- 0.0000
Ethiopia Misc.	0.22634	0.00000 +- 0.0000	0.22338	0.00000 +- 0.0000	0.25987	0.00000 +- 0.0000	0.31933	0.00000 +- 0.0000
Somalia Ethiopia Somali	-0.02083	0.50450 +- 0.0433	-0.06107	0.74775 +- 0.0305	-0.07578	0.65766 +- 0.0451	-0.06837	0.63964 +- 0.0317
Kenya KenyaMisc.	-0.02083	0.48649 +- 0.0364	-0.06107	0.77477 +- 0.0454	-0.07578	0.62162 +- 0.0394	-0.06837	0.68468 +- 0.0364
Kenya Kikuyu	0.07339	0.00000 +- 0.0000	0.06142	0.00000 +- 0.0000	0.07216	0.02703 +- 0.0194	0.13688	0.00000 +- 0.0000
Kenya Somali	0.12860	0.00000 +- 0.0000	0.10814	0.00000 +- 0.0000	0.14358	0.00000 +- 0.0000	0.21749	0.00000 +- 0.0000
Kenya Swahili 2	0.04753	0.00000 +- 0.0000	0.03326	0.00000 +- 0.0000	0.03056	0.00000 +- 0.0000	0.09027	0.00000 +- 0.0000
Kenya Turkana	0.06750	0.00000 +- 0.0000	0.05485	0.00000 +- 0.0000	0.06324	0.00000 +- 0.0000	0.13269	0.00000 +- 0.0000
Madagascar Antaisakaa	0.19879	0.00000 +- 0.0000	0.21567	0.00901 +- 0.0091	0.25067	0.00901 +- 0.0091	0.32215	0.00000 +- 0.0000
Madagascar Antandroya	0.02861	0.11712 +- 0.0194	0.03617	0.05405 +- 0.0201	0.03522	0.06306 +- 0.0194	0.11984	0.00000 +- 0.0000
Madagascar Antanosya	0.12282	0.00000 +- 0.0000	0.14376	0.00000 +- 0.0000	0.16905	0.00000 +- 0.0000	0.23863	0.00000 +- 0.0000
Madagascar Madagascar Misc.	0.03439	0.00000 +- 0.0000	0.06631	0.00000 +- 0.0000	0.07984	0.00000 +- 0.0000	0.18291	0.00000 +- 0.0000
Madagascar Merinaa	0.05683	0.10811 +- 0.0264	0.11265	0.01802 +- 0.0121	0.14599	0.03604 +- 0.0201	0.24839	0.01802 +- 0.0121
Madagascar Sihanaka Merina Betsileo Bezanozanob	0.06955	0.01802 +- 0.0121	0.12519	0.00000 +- 0.0000	0.15322	0.00000 +- 0.0000	0.25399	0.00000 +- 0.0000
Mozambique Mozambique Misc.	0.13048	0.00000 +- 0.0000	0.12762	0.00000 +- 0.0000	0.12916	0.00000 +- 0.0000	0.18369	0.00000 +- 0.0000
Rwanda Bantu	0.01669	0.06306 +- 0.0194	0.02937	0.02703 +- 0.0139	0.04494	0.00000 +- 0.0000	0.12748	0.00000 +- 0.0000
Rwanda Hutu	0.02870	0.00000 +- 0.0000	0.01835	0.05405 +- 0.0242	0.02153	0.03604 +- 0.0148	0.04946	0.00000 +- 0.0000
SouthAfrica !XunKhwe	0.30937	0.00000 +- 0.0000	0.32025	0.00000 +- 0.0000	0.34563	0.00000 +- 0.0000	0.41410	0.00000 +- 0.0000
SouthAfrica bantu	0.13482	0.13514 +- 0.0412	0.16206	0.09009 +- 0.0303	0.20652	0.03604 +- 0.0148	0.28251	0.00901 +- 0.0091
SouthAfrica khoisan	0.13150	0.09009 +- 0.0192	0.16206	0.10811 +- 0.0297	0.20255	0.03604 +- 0.0201	0.28251	0.00901 +- 0.0091
SouthAfrica Khwe	0.28534	0.00000 +- 0.0000	0.25074	0.00000 +- 0.0000	0.23369	0.00000 +- 0.0000	0.10582	0.09009 +- 0.0235
SouthAfrica Kung	0.16380	0.00000 +- 0.0000	0.15260	0.00000 +- 0.0000	0.15422	0.00000 +- 0.0000	0.19110	0.00000 +- 0.0000
SouthAfrica Misc.	-0.02083	0.49550 +- 0.0434	-0.06107	0.69369 +- 0.0385	-0.07578	0.66667 +- 0.0389	-0.06837	0.65766 +- 0.0490
Sudan Dinka	0.06738	0.00000 +- 0.0000	0.05103	0.00901 +- 0.0091	0.05356	0.00000 +- 0.0000	0.11530	0.00000 +- 0.0000
Sudan Nubia	0.08044	0.00000 +- 0.0000	0.06538	0.00000 +- 0.0000	0.09050	0.00000 +- 0.0000	0.14232	0.00000 +- 0.0000
Sudan Nuer	0.01263	0.31532 +- 0.0654	0.02378	0.19820 +- 0.0466	0.03344	0.21622 +- 0.0309	0.14289	0.00901 +- 0.0091
Sudan Shilluk	0.05621	0.13514 +- 0.0203	0.04814	0.18018 +- 0.0359	0.07037	0.14414 +- 0.0242	0.17692	0.00901 +- 0.0091
Tanzania Burunge	0.09099	0.00000 +- 0.0000	0.05473	0.00000 +- 0.0000	0.06695	0.00901 +- 0.0091	0.06233	0.00000 +- 0.0000
Tanzania Datog	0.15665	0.00000 +- 0.0000	0.14592	0.00000 +- 0.0000	0.16387	0.00000 +- 0.0000	0.22336	0.00000 +- 0.0000
Tanzania Datoga	0.07724	0.00000 +- 0.0000	0.07069	0.02703 +- 0.0139	0.07258	0.00000 +- 0.0000	0.18643	0.00000 +- 0.0000
Tanzania Hadza	0.08148	0.00000 +- 0.0000	0.07875	0.00000 +- 0.0000	0.11482	0.00000 +- 0.0000	0.18562	0.00000 +- 0.0000
Tanzania Hadzabe	0.23082	0.00000 +- 0.0000	0.20826	0.00000 +- 0.0000	0.24851	0.00000 +- 0.0000	0.32232	0.00000 +- 0.0000

Tanzania Iraqw	0.08203	0.04505 +- 0.0203	0.08012	0.03604 +- 0.0201	0.08200	0.02703 +- 0.0139	0.19323	0.00000 +- 0.0000
Tanzania Sandawe	0.11053	0.00000 +- 0.0000	0.10376	0.00000 +- 0.0000	0.09470	0.00000 +- 0.0000	0.20716	0.00000 +- 0.0000
Tanzania Sukuma	0.08115	0.00000 +- 0.0000	0.07576	0.00000 +- 0.0000	0.08318	0.00000 +- 0.0000	0.17356	0.00000 +- 0.0000
Tanzania Turu	0.02446	0.04505 +- 0.0152	0.00625	0.30631 +- 0.0473	0.01873	0.11712 +- 0.0305	0.07053	0.02703 +- 0.0139
Zimbabwe Shona	0.09762	0.00000 +- 0.0000	0.08754	0.00000 +- 0.0000	0.08351	0.00901 +- 0.0091	0.13600	0.00000 +- 0.0000
Comoros Comorian	0.00000	*	0.01284	0.01802 +- 0.0121	0.02147	0.00000 +- 0.0000	0.08640	0.00000 +- 0.0000
Kenya Swahili Kilifi	0.01284	0.01802 +- 0.0121	0.00000	*	-0.00160	0.45045 +- 0.0489	0.04976	0.00000 +- 0.0000
Kenya Swahili Lamu	0.02147	0.00000 +- 0.0000	-0.00160	0.45045 +- 0.0489	0.00000	*	0.02873	0.01802 +- 0.0121
Kenya Swahili Mombasa	0.08640	0.00000 +- 0.0000	0.04976	0.00000 +- 0.0000	0.02873	0.01802 +- 0.0121	0.00000	*
China Dai	0.18206	0.00000 +- 0.0000	0.19785	0.00000 +- 0.0000	0.22294	0.00000 +- 0.0000	0.25758	0.00000 +- 0.0000
China Han Beijing	0.16500	0.00000 +- 0.0000	0.17022	0.00000 +- 0.0000	0.19531	0.00000 +- 0.0000	0.22658	0.00000 +- 0.0000
China Han South	0.16673	0.00000 +- 0.0000	0.17191	0.00000 +- 0.0000	0.19645	0.00000 +- 0.0000	0.22807	0.00000 +- 0.0000
Japan Japanese	0.20145	0.00000 +- 0.0000	0.20366	0.00000 +- 0.0000	0.22793	0.00000 +- 0.0000	0.26183	0.00000 +- 0.0000
Vietnam Kinh	0.19734	0.00000 +- 0.0000	0.21764	0.00000 +- 0.0000	0.24274	0.00000 +- 0.0000	0.27943	0.00000 +- 0.0000
USA European	0.25678	0.00000 +- 0.0000	0.26085	0.00000 +- 0.0000	0.28714	0.00000 +- 0.0000	0.32041	0.00000 +- 0.0000
Bangladesh Bengali	0.30562	0.00000 +- 0.0000	0.34119	0.00000 +- 0.0000	0.36229	0.00000 +- 0.0000	0.42565	0.00000 +- 0.0000
India Gujarati	0.23839	0.00000 +- 0.0000	0.24971	0.00000 +- 0.0000	0.27111	0.00000 +- 0.0000	0.31226	0.00000 +- 0.0000
India Telugu	0.27827	0.00000 +- 0.0000	0.30380	0.00000 +- 0.0000	0.32489	0.00000 +- 0.0000	0.37631	0.00000 +- 0.0000
India Punjab	0.26216	0.00000 +- 0.0000	0.28343	0.00000 +- 0.0000	0.30588	0.00000 +- 0.0000	0.35249	0.00000 +- 0.0000
Sri Lanka Tamil	0.24803	0.00000 +- 0.0000	0.26228	0.00000 +- 0.0000	0.28465	0.00000 +- 0.0000	0.32629	0.00000 +- 0.0000
Indonesia Ma'anyan	0.23512	0.00000 +- 0.0000	0.24875	0.00000 +- 0.0000	0.27672	0.00000 +- 0.0000	0.32811	0.00000 +- 0.0000
Indonesia SK Dayak	0.18114	0.00000 +- 0.0000	0.19856	0.00000 +- 0.0000	0.22854	0.00000 +- 0.0000	0.27229	0.00000 +- 0.0000
Indonesia Java	0.19635	0.00000 +- 0.0000	0.21896	0.00000 +- 0.0000	0.24905	0.00000 +- 0.0000	0.29619	0.00000 +- 0.0000
Indonesia Bali	0.22255	0.00000 +- 0.0000	0.23589	0.00000 +- 0.0000	0.26412	0.00000 +- 0.0000	0.31417	0.00000 +- 0.0000
Indonesia Bajo	0.21308	0.00000 +- 0.0000	0.22987	0.00000 +- 0.0000	0.25870	0.00000 +- 0.0000	0.30641	0.00000 +- 0.0000

Table S6. Pairwise F_{ST} values obtained for Comoros and Swahili groups and each population using haplogroup mtDNA data. Comorian data were published previously [4]. *P*: p-value and its standard deviation.

	Comoros Comorian		Kenya Swahili Kilifi		Kenya Swahili Lamu		Kenya Swahili Mombasa	
	FST	P	FST	P	FST	P	FST	P
Madagascar Antaisaka	0.22133	0.01802 +- 0.0121	0.16549	0.00901 +- 0.0091	0.15091	0.11712 +- 0.0273	0.03102	0.16216 +-0.0503
Madagascar Antandroy	-0.00639	0.50450 +- 0.0338	0.02152	0.09009 +- 0.0271	-0.03220	0.45045 +- 0.0525	0.06505	0.00000 +-0.0000
Madagascar Antanosy	0.05773	0.00901 +- 0.0091	0.04603	0.00901 +- 0.0091	0.00624	0.36036 +- 0.0332	0.01709	0.00000 +-0.0000
Egypt Arab	0.36067	0.00000 +- 0.0000	0.30245	0.00000 +- 0.0000	0.29023	0.00000 +- 0.0000	0.18852	0.00000 +-0.0000
Egypt Misc.	0.34917	0.00000 +- 0.0000	0.28957	0.00000 +- 0.0000	0.26889	0.00000 +- 0.0000	0.18947	0.00000 +-0.0000
Ethiopia Amhara	0.38191	0.00000 +- 0.0000	0.30044	0.00000 +- 0.0000	0.31607	0.00000 +- 0.0000	0.19845	0.00000 +-0.0000
Ethiopia Jew	0.35148	0.00000 +- 0.0000	0.26169	0.00000 +- 0.0000	0.33847	0.00000 +- 0.0000	0.24869	0.00000 +-0.0000
Ethiopia Oromo	0.45885	0.00000 +- 0.0000	0.39560	0.00000 +- 0.0000	0.39814	0.00000 +- 0.0000	0.30035	0.00000 +-0.0000
Ethiopia South Semitic	0.43549	0.00000 +- 0.0000	0.34789	0.00000 +- 0.0000	0.33907	0.00000 +- 0.0000	0.23906	0.00000 +-0.0000
Kenya Bantu	0.09131	0.00000 +- 0.0000	0.05072	0.00000 +- 0.0000	0.05055	0.18018 +- 0.0407	0.05653	0.00000 +-0.0000
Kenya Kikuyu Kamba	0.13237	0.00000 +- 0.0000	0.11928	0.00000 +- 0.0000	-0.00898	0.40541 +- 0.0455	0.10652	0.00000 +-0.0000
Kenya Luo	-0.03574	0.74775 +- 0.0385	-0.05623	0.89189 +- 0.0165	0.02477	0.32432 +- 0.0411	0.07027	0.01802 +-0.0121
Kenya Masai	0.34386	0.00000 +- 0.0000	0.24649	0.00000 +- 0.0000	0.28799	0.01802 +- 0.0121	0.22714	0.00000 +-0.0000
Kenya Swahili Kilifi	0.00000	*	0.00952	0.18018 +- 0.0507	-0.03299	0.57658 +- 0.0454	0.08712	0.00000 +-0.0000
Kenya Swahili Lamu	0.00952	0.18018 +- 0.0507	0.00000	*	0.02466	0.25225 +- 0.0466	0.07524	0.00000 +-0.0000
Kenya Swahili Mombasa	-0.03299	0.57658 +- 0.0454	0.02466	0.25225 +- 0.0466	0.00000	*	0.04074	0.18018 +-0.0507
Madagascar Merina	0.27619	0.00000 +- 0.0000	0.22339	0.00000 +- 0.0000	0.24013	0.13514 +- 0.0339	0.11562	0.02703 +-0.0194
Mozambique Misc.	0.46463	0.00000 +- 0.0000	0.39984	0.00000 +- 0.0000	0.41213	0.01802 +- 0.0121	0.30322	0.00000 +-0.0000
Oman Arab	0.35410	0.00000 +- 0.0000	0.29724	0.00000 +- 0.0000	0.30234	0.00000 +- 0.0000	0.15291	0.00000 +-0.0000
Rwanda Hutu	0.04280	0.00901 +- 0.0091	0.13471	0.00000 +- 0.0000	-0.04383	0.61261 +- 0.0446	0.13310	0.00000 +-0.0000
Rwanda Tutsi	-0.00033	0.28829 +- 0.0445	0.05995	0.01802 +- 0.0121	-0.01716	0.62162 +- 0.0252	0.11905	0.00000 +-0.0000
Somalia Misc.Danish	0.62284	0.00000 +- 0.0000	0.59062	0.00000 +- 0.0000	0.59915	0.00000 +- 0.0000	0.42005	0.00000 +-0.0000
South Africa !Kung	0.12598	0.00000 +- 0.0000	0.04914	0.04505 +- 0.0152	0.15879	0.03604 +- 0.0148	0.12848	0.00000 +-0.0000
South Africa Khwe	0.08188	0.00000 +- 0.0000	0.07327	0.00000 +- 0.0000	-0.02456	0.45946 +- 0.0394	0.08779	0.00000 +-0.0000
South Africa Sotho-Tswana	-0.02140	0.97297 +- 0.0125	-0.00652	0.44144 +- 0.0497	-0.04546	0.74775 +- 0.0305	0.06496	0.00000 +-0.0000
South Africa Xhosa	0.08866	0.00000 +- 0.0000	0.08041	0.00901 +- 0.0091	0.06092	0.12613 +- 0.0242	0.04852	0.00000 +-0.0000
South Africa Zulu	0.03821	0.06306 +- 0.0237	0.01385	0.23423 +- 0.0338	0.03785	0.17117 +- 0.0417	0.03979	0.00000 +-0.0000
Sudan Arakien	0.50857	0.00000 +- 0.0000	0.43355	0.00000 +- 0.0000	0.48571	0.00000 +- 0.0000	0.24207	0.00000 +-0.0000
Sudan Beja	0.46732	0.00000 +- 0.0000	0.39763	0.00000 +- 0.0000	0.40065	0.00000 +- 0.0000	0.25567	0.00000 +-0.0000
Sudan Borgu	0.43746	0.00000 +- 0.0000	0.33658	0.00000 +- 0.0000	0.39619	0.00000 +- 0.0000	0.28662	0.00000 +-0.0000
Sudan Copte	0.40387	0.00000 +- 0.0000	0.31621	0.00000 +- 0.0000	0.34840	0.00000 +- 0.0000	0.19083	0.00000 +-0.0000
Sudan Dinka	0.54042	0.00000 +- 0.0000	0.41771	0.00000 +- 0.0000	0.69076	0.00000 +- 0.0000	0.38289	0.00000 +-0.0000
Sudan Fulani	0.47947	0.00000 +- 0.0000	0.40452	0.00000 +- 0.0000	0.41974	0.00000 +- 0.0000	0.27325	0.00000 +-0.0000

Sudan Fur	0.46152	0.00000 +- 0.0000	0.36795	0.00000 +- 0.0000	0.43053	0.00000 +- 0.0000	0.30100	0.00000 +-0.0000
Sudan Gaalien	0.37250	0.00000 +- 0.0000	0.29725	0.00000 +- 0.0000	0.30816	0.00000 +- 0.0000	0.17020	0.00000 +-0.0000
Sudan Hausa	0.31504	0.00000 +- 0.0000	0.21682	0.00000 +- 0.0000	0.29703	0.00000 +- 0.0000	0.19687	0.00000 +-0.0000
Sudan Masalit	0.51606	0.00000 +- 0.0000	0.43749	0.00000 +- 0.0000	0.49377	0.00000 +- 0.0000	0.33334	0.00000 +-0.0000
Sudan Meseria	0.41778	0.00000 +- 0.0000	0.33750	0.00000 +- 0.0000	0.34647	0.00000 +- 0.0000	0.18777	0.00000 +-0.0000
Sudan Nuba	0.45964	0.00000 +- 0.0000	0.34225	0.00000 +- 0.0000	0.49133	0.00000 +- 0.0000	0.31958	0.00000 +-0.0000
Sudan Nubian	0.39674	0.00000 +- 0.0000	0.31737	0.00000 +- 0.0000	0.32903	0.00000 +- 0.0000	0.18439	0.00000 +-0.0000
Sudan Nuer	0.51236	0.00000 +- 0.0000	0.37588	0.00000 +- 0.0000	0.65383	0.00000 +- 0.0000	0.36358	0.00000 +-0.0000
Sudan Shilluk	0.50406	0.00000 +- 0.0000	0.37055	0.00000 +- 0.0000	0.62500	0.00000 +- 0.0000	0.35640	0.00000 +-0.0000
Tanzania Burunge	0.37516	0.00000 +- 0.0000	0.24614	0.00000 +- 0.0000	0.36418	0.00000 +- 0.0000	0.25015	0.00000 +-0.0000
Tanzania Datog	0.38448	0.00000 +- 0.0000	0.30390	0.00000 +- 0.0000	0.27472	0.00901 +- 0.0091	0.22676	0.00000 +-0.0000
Tanzania Datoga	0.48584	0.00000 +- 0.0000	0.43183	0.00000 +- 0.0000	0.42421	0.00000 +- 0.0000	0.31845	0.00000 +-0.0000
Tanzania Hadza	0.30662	0.00000 +- 0.0000	0.18914	0.00000 +- 0.0000	0.36678	0.00000 +- 0.0000	0.24174	0.00000 +-0.0000
Tanzania Hadzabe	0.39165	0.00000 +- 0.0000	0.29201	0.00000 +- 0.0000	0.42020	0.00000 +- 0.0000	0.28230	0.00000 +-0.0000
Tanzania Iraqw	0.36505	0.00000 +- 0.0000	0.28104	0.00000 +- 0.0000	0.31874	0.00000 +- 0.0000	0.23815	0.00000 +-0.0000
Tanzania Mbugwe	0.20190	0.00000 +- 0.0000	0.11269	0.00901 +- 0.0091	0.10026	0.19820 +- 0.0445	0.09437	0.00901 +-0.0091
Tanzania Sandawe	0.11981	0.00000 +- 0.0000	0.06333	0.00000 +- 0.0000	0.06718	0.23423 +- 0.0511	0.10737	0.00000 +-0.0000
Tanzania Sukuma	0.31457	0.00000 +- 0.0000	0.24579	0.00000 +- 0.0000	0.29826	0.00000 +- 0.0000	0.20164	0.00000 +-0.0000
Tanzania Turu	0.08225	0.00901 +- 0.0091	0.04188	0.11712 +- 0.0237	0.02985	0.39640 +- 0.0653	0.06510	0.00000 +-0.0000
Tanzania Wairak	0.13931	0.00000 +- 0.0000	0.10730	0.00000 +- 0.0000	0.04145	0.29730 +- 0.0508	0.11190	0.00000 +-0.0000
Uganda Ganda	0.00615	0.27027 +- 0.0359	0.05438	0.02703 +- 0.0194	-0.04457	0.69369 +- 0.0385	0.08516	0.00000 +-0.0000
Zimbabwe Shona	0.03028	0.06306 +- 0.0139	0.11362	0.00000 +- 0.0000	0.00952	0.19820 +- 0.0297	0.14341	0.00000 +-0.0000
Comoros Comorian	0.08712	0.00000 +- 0.0000	0.07524	0.00000 +- 0.0000	0.04074	0.18018 +- 0.0507	0.00000	*
China Dai	0.49799	0.00000 +- 0.0000	0.43285	0.00000 +- 0.0000	0.48923	0.00000 +- 0.0000	0.28925	0.00000 +-0.0000
China Han Beijing	0.45183	0.00000 +- 0.0000	0.38538	0.00000 +- 0.0000	0.42319	0.00000 +- 0.0000	0.27045	0.00000 +-0.0000
China Han South	0.60733	0.00000 +- 0.0000	0.55936	0.00000 +- 0.0000	0.67531	0.00000 +- 0.0000	0.38534	0.00000 +-0.0000
Japan Japanese	0.45257	0.00000 +- 0.0000	0.38223	0.00000 +- 0.0000	0.42575	0.00000 +- 0.0000	0.26225	0.00000 +-0.0000
Vietnam Kinh	0.45933	0.00000 +- 0.0000	0.39451	0.00000 +- 0.0000	0.43410	0.00000 +- 0.0000	0.26924	0.00000 +-0.0000
USA European	0.48312	0.00000 +- 0.0000	0.41541	0.00000 +- 0.0000	0.47299	0.00000 +- 0.0000	0.29936	0.00000 +-0.0000
Bangladesh Bengali	0.37850	0.00000 +- 0.0000	0.30633	0.00000 +- 0.0000	0.32001	0.00000 +- 0.0000	0.19014	0.00000 +-0.0000
India Gujarati	0.35382	0.00000 +- 0.0000	0.28611	0.00000 +- 0.0000	0.30344	0.00000 +- 0.0000	0.18798	0.00000 +-0.0000
India Telugu	0.36831	0.00000 +- 0.0000	0.30297	0.00000 +- 0.0000	0.31964	0.00000 +- 0.0000	0.20173	0.00000 +-0.0000
India Punjab	0.39609	0.00000 +- 0.0000	0.32845	0.00000 +- 0.0000	0.34838	0.00000 +- 0.0000	0.18738	0.00000 +-0.0000
Sri Lanka Tamil	0.37230	0.00000 +- 0.0000	0.30561	0.00000 +- 0.0000	0.32179	0.00000 +- 0.0000	0.19263	0.00000 +-0.0000
Indonesia Ma'anyan	0.44010	0.00000 +-	0.35350	0.00000 +-	0.38726	0.00000 +-	0.24043	0.00000 +-0.0000

		0.0000		0.0000		0.0000		
Indonesia SK Dayak	0.41224	0.00000 +- 0.0000	0.32750	0.00000 +- 0.0000	0.34642	0.00000 +- 0.0000	0.22078	0.00000 +-0.0000
Indonesia Java	0.43097	0.00000 +- 0.0000	0.35376	0.00000 +- 0.0000	0.37793	0.00000 +- 0.0000	0.23117	0.00000 +-0.0000
Indonesia Bali	0.48353	0.00000 +- 0.0000	0.41079	0.00000 +- 0.0000	0.46152	0.00000 +- 0.0000	0.28300	0.00000 +-0.0000
Indonesia Bajo	0.37479	0.00000 +- 0.0000	0.28730	0.00000 +- 0.0000	0.29482	0.00000 +- 0.0000	0.17628	0.00000 +-0.0000

Table S7. Pairwise F_{ST} values obtained for Comoros and Swahili groups and each population using haplogroup NRY data. Comorian data were published previously [4]. *P*: p-value and its standard deviation.

	Comoros Comoros Anjouan		Comoros Comoros Grande Comore		Comoros Comoros Moheli		Kenya Swahili Kilifi		Kenya Swahili Lamu		Kenya Swahili Mombasa	
	F_{ST}	S.D	F_{ST}	S.D	F_{ST}	S.D	F_{ST}	S.D	F_{ST}	S.D	F_{ST}	S.D
Algeria Mozabite	0.056	6.0E-04	0.058	6.2E-04	0.055	6.3E-04	0.073	6.4E-04	0.074	6.3E-04	0.067	6.2E-04
Armenia Armenian	0.08	7.1E-04	0.081	7.1E-04	0.078	7.6E-04	0.103	7.1E-04	0.105	7.4E-04	0.098	6.9E-04
Bangladesh Bengali	0.072	6.5E-04	0.073	6.6E-04	0.07	6.8E-04	0.097	6.4E-04	0.099	6.5E-04	0.093	6.5E-04
Botswana GuiGhanaKgal	0.052	6.7E-04	0.054	6.7E-04	0.051	6.9E-04	0.046	6.2E-04	0.047	6.4E-04	0.047	6.2E-04
Brunei Dusun	0.117	9.3E-04	0.117	9.6E-04	0.114	9.7E-04	0.146	9.8E-04	0.148	9.9E-04	0.143	9.6E-04
Brunei Murut	0.121	9.1E-04	0.12	9.6E-04	0.118	9.6E-04	0.15	9.6E-04	0.151	9.7E-04	0.146	9.4E-04
Bulgaria Bulgarian	0.111	7.2E-04	0.112	7.2E-04	0.109	7.4E-04	0.127	7.2E-04	0.128	7.4E-04	0.126	7.2E-04
Burkina Faso Gurmantche	0.014	3.5E-04	0.016	3.6E-04	0.014	3.5E-04	0.008	2.5E-04	0.008	2.4E-04	0.009	2.6E-04
Burkina Faso Gurunsi	0.015	3.4E-04	0.017	3.6E-04	0.014	3.4E-04	0.009	2.5E-04	0.009	2.5E-04	0.009	2.7E-04
Burkina Faso Mossi	0.015	3.5E-04	0.016	3.5E-04	0.014	3.6E-04	0.009	2.4E-04	0.009	2.4E-04	0.009	2.5E-04
Burma Burmese	0.09	8.0E-04	0.09	7.9E-04	0.087	8.2E-04	0.117	8.1E-04	0.118	8.1E-04	0.113	8.1E-04
Cambodia Cambodian	0.099	9.0E-04	0.099	9.4E-04	0.096	9.3E-04	0.127	9.3E-04	0.129	9.5E-04	0.124	9.4E-04
Cameroon Baka	0.038	5.2E-04	0.039	5.1E-04	0.037	5.2E-04	0.031	4.3E-04	0.032	4.4E-04	0.031	4.5E-04
Cameroon Nzime	0.012	3.0E-04	0.014	3.1E-04	0.012	3.1E-04	0.005	1.8E-04	0.006	1.8E-04	0.006	2.0E-04
CAR Biaka Pygmy	0.043	5.8E-04	0.044	5.5E-04	0.042	5.4E-04	0.036	5.1E-04	0.037	5.1E-04	0.037	5.3E-04
Chad Daza	0.025	3.9E-04	0.027	3.7E-04	0.024	4.1E-04	0.027	3.6E-04	0.027	3.6E-04	0.023	3.5E-04
Chad Fulani	0.023	4.5E-04	0.025	4.4E-04	0.022	4.5E-04	0.025	4.3E-04	0.026	4.3E-04	0.023	4.4E-04
Chad Kanembu	0.014	6.3E-04	0.016	6.3E-04	0.013	6.5E-04	0.012	6.0E-04	0.012	6.1E-04	0.01	6.1E-04
China Dai	0.111	8.9E-04	0.111	9.3E-04	0.108	9.1E-04	0.14	9.3E-04	0.141	9.5E-04	0.136	9.1E-04
China Han	0.11	9.0E-04	0.11	9.0E-04	0.107	9.4E-04	0.138	9.2E-04	0.14	9.4E-04	0.135	9.0E-04
Comoros Comoros Anjouan	-	-	0.007	2.9E-04	0.004	2.7E-04	0.008	2.6E-04	0.009	2.7E-04	0.008	2.8E-04
Comoros Comoros GdeComore	0.007	2.9E-04	-	-	0.004	2.7E-04	0.01	2.9E-04	0.01	2.8E-04	0.01	2.9E-04
Comoros Comoros Moheli	0.004	2.7E-04	0.004	2.7E-04	-	-	0.007	2.7E-04	0.008	2.8E-04	0.007	2.8E-04
Croatia Croatian	0.086	7.5E-04	0.087	7.3E-04	0.084	7.8E-04	0.11	7.6E-04	0.112	7.6E-04	0.105	7.5E-04
Cyprus Cypriot	0.081	7.7E-04	0.082	7.5E-04	0.079	8.0E-04	0.104	7.7E-04	0.106	7.8E-04	0.098	7.6E-04
DR Congo Mbuti Pygmy	0.078	8.5E-04	0.079	8.5E-04	0.077	8.6E-04	0.071	7.9E-04	0.072	7.9E-04	0.071	8.0E-04
Dubai Arab	0.04	4.9E-04	0.041	5.2E-04	0.039	5.5E-04	0.057	5.2E-04	0.059	5.3E-04	0.053	5.1E-04
Egypt Egyptian	0.054	6.6E-04	0.056	6.5E-04	0.053	7.1E-04	0.073	7.0E-04	0.074	6.9E-04	0.067	6.7E-04
Ethiopia Afar	0.037	5.3E-04	0.038	5.3E-04	0.035	5.6E-04	0.047	5.6E-04	0.047	5.7E-04	0.041	5.4E-04
Ethiopia Amhara	0.033	4.3E-04	0.035	4.5E-04	0.032	4.6E-04	0.044	4.5E-04	0.045	4.7E-04	0.038	4.4E-04
Ethiopia Anuak	0.026	3.7E-04	0.028	3.9E-04	0.025	3.7E-04	0.021	3.1E-04	0.021	3.1E-04	0.018	2.8E-04
Ethiopia Ari Blacksmith	0.055	6.8E-04	0.056	6.9E-04	0.054	6.8E-04	0.057	6.4E-04	0.058	6.5E-04	0.053	6.4E-04
Ethiopia Ari Cultivator	0.034	4.0E-04	0.035	4.0E-04	0.033	4.0E-04	0.037	3.8E-04	0.037	3.7E-04	0.032	3.6E-04
Ethiopia Ethiopian Jews	0.032	5.0E-04	0.033	5.0E-04	0.031	5.2E-04	0.042	5.1E-04	0.042	5.2E-04	0.036	4.9E-04
Ethiopia Ethiopians	0.035	6.8E-04	0.036	7.0E-04	0.033	6.9E-04	0.045	7.1E-04	0.046	7.2E-04	0.04	7.0E-04
Ethiopia Gumuz	0.037	4.6E-04	0.038	4.6E-04	0.036	4.6E-04	0.035	4.0E-04	0.035	4.2E-04	0.031	3.9E-04
Ethiopia Oromo	0.027	3.6E-04	0.028	3.8E-04	0.026	4.0E-04	0.034	3.6E-04	0.035	3.9E-04	0.029	3.6E-04
Ethiopia Somali	0.031	4.6E-04	0.032	4.5E-04	0.03	4.6E-04	0.038	4.6E-04	0.039	4.7E-04	0.032	4.2E-04
Ethiopia Tygray	0.034	4.4E-04	0.036	4.4E-04	0.032	4.7E-04	0.045	4.5E-04	0.046	4.7E-04	0.039	4.4E-04
Ethiopia Wolayta	0.027	5.2E-04	0.028	5.0E-04	0.025	5.2E-04	0.033	5.2E-04	0.034	5.1E-04	0.028	5.0E-04

France French	0.087	7.6E-04	0.088	7.4E-04	0.085	7.8E-04	0.11	7.5E-04	0.112	7.6E-04	0.105	7.5E-04
Gabon Baka	0.038	5.5E-04	0.04	5.4E-04	0.038	5.4E-04	0.031	4.6E-04	0.032	4.8E-04	0.032	4.7E-04
Gabon Bongo	0.024	3.9E-04	0.026	3.9E-04	0.024	4.1E-04	0.017	2.9E-04	0.017	2.9E-04	0.018	3.1E-04
Gabon Nzebi	0.012	3.0E-04	0.014	3.2E-04	0.011	3.2E-04	0.005	2.0E-04	0.005	2.0E-04	0.006	2.2E-04
Gambia Gambian	0.016	3.3E-04	0.018	3.2E-04	0.016	3.3E-04	0.011	2.2E-04	0.011	2.2E-04	0.011	2.4E-04
Georgia Abhkasian	0.083	7.4E-04	0.084	7.5E-04	0.081	7.9E-04	0.106	7.3E-04	0.108	7.5E-04	0.101	7.2E-04
Georgia Abkhasian	0.082	1.2E-03	0.083	1.2E-03	0.08	1.3E-03	0.105	1.2E-03	0.107	1.2E-03	0.1	1.2E-03
Georgia Balkar	0.079	7.8E-04	0.08	7.5E-04	0.077	8.0E-04	0.102	7.5E-04	0.105	7.9E-04	0.098	7.6E-04
Georgia Chechen	0.084	8.1E-04	0.085	8.2E-04	0.081	8.5E-04	0.107	8.2E-04	0.109	8.2E-04	0.102	8.1E-04
Georgia Georgian	0.084	7.5E-04	0.084	7.4E-04	0.081	7.9E-04	0.107	7.2E-04	0.109	7.5E-04	0.101	7.2E-04
Georgia Georgians	0.084	7.8E-04	0.084	8.0E-04	0.081	8.4E-04	0.107	7.7E-04	0.109	7.9E-04	0.102	7.7E-04
Greece Greek	0.091	6.4E-04	0.092	6.3E-04	0.089	6.7E-04	0.109	6.5E-04	0.11	6.7E-04	0.106	6.4E-04
Hungary Hungarian	0.086	7.6E-04	0.087	7.4E-04	0.084	8.1E-04	0.109	7.8E-04	0.111	8.0E-04	0.105	7.8E-04
India Birhor	0.098	8.9E-04	0.099	9.0E-04	0.096	9.2E-04	0.123	9.2E-04	0.125	9.1E-04	0.119	9.0E-04
India Brahmin	0.072	6.6E-04	0.073	6.6E-04	0.07	6.7E-04	0.096	6.5E-04	0.098	6.5E-04	0.091	6.5E-04
India Brahmins from Uttar Pradesh	0.073	7.9E-04	0.074	7.9E-04	0.071	8.4E-04	0.097	8.2E-04	0.099	8.2E-04	0.093	8.2E-04
India Chamar	0.078	7.4E-04	0.079	7.6E-04	0.076	7.9E-04	0.102	7.7E-04	0.104	7.6E-04	0.098	7.7E-04
India Dharkar	0.078	7.7E-04	0.078	8.0E-04	0.076	7.9E-04	0.102	7.9E-04	0.103	7.9E-04	0.098	8.0E-04
India Dusadh	0.075	8.6E-04	0.076	8.7E-04	0.073	9.0E-04	0.099	8.7E-04	0.101	8.8E-04	0.095	8.6E-04
India Gond	0.079	7.1E-04	0.08	7.1E-04	0.077	7.3E-04	0.103	7.1E-04	0.105	7.1E-04	0.1	7.2E-04
India Gujarat Brahmin	0.072	6.4E-04	0.073	6.6E-04	0.07	6.9E-04	0.096	6.6E-04	0.098	6.7E-04	0.092	6.4E-04
India Gujarati	0.071	6.3E-04	0.073	6.3E-04	0.07	6.9E-04	0.096	6.3E-04	0.097	6.5E-04	0.092	6.3E-04
India Ho	0.085	7.4E-04	0.086	7.6E-04	0.083	7.6E-04	0.111	7.6E-04	0.112	7.7E-04	0.107	7.6E-04
India Indian	0.074	6.6E-04	0.076	6.5E-04	0.073	6.8E-04	0.099	6.4E-04	0.1	6.5E-04	0.095	6.6E-04
India Irula	0.099	8.4E-04	0.1	8.6E-04	0.097	8.7E-04	0.123	8.8E-04	0.125	9.0E-04	0.119	8.7E-04
India Iyer	0.073	6.4E-04	0.073	6.7E-04	0.071	6.9E-04	0.097	6.5E-04	0.098	6.6E-04	0.092	6.5E-04
India Jamatia	0.098	8.5E-04	0.097	8.6E-04	0.095	9.0E-04	0.125	8.6E-04	0.126	8.8E-04	0.121	8.8E-04
India Jarawa	0.164	1.4E-03	0.165	1.4E-03	0.163	1.4E-03	0.187	1.4E-03	0.189	1.4E-03	0.184	1.4E-03
India Kadar	0.091	7.7E-04	0.092	8.1E-04	0.09	8.1E-04	0.115	8.0E-04	0.117	8.1E-04	0.112	8.1E-04
India Kanjars	0.079	8.1E-04	0.08	8.5E-04	0.077	8.7E-04	0.103	8.4E-04	0.104	8.3E-04	0.099	8.5E-04
India Khatri	0.073	6.7E-04	0.074	6.9E-04	0.071	7.2E-04	0.096	6.9E-04	0.099	6.9E-04	0.092	6.7E-04
India Kol	0.076	7.1E-04	0.077	7.2E-04	0.074	7.6E-04	0.1	7.1E-04	0.102	7.3E-04	0.096	7.2E-04
India Korva	0.097	8.5E-04	0.098	8.6E-04	0.095	8.5E-04	0.122	8.3E-04	0.124	8.5E-04	0.119	8.5E-04
India Kshatriya	0.073	7.9E-04	0.074	7.8E-04	0.071	8.0E-04	0.096	7.9E-04	0.098	8.0E-04	0.092	8.1E-04
India Manipuri Brahmin	0.081	7.4E-04	0.081	7.5E-04	0.078	7.6E-04	0.107	7.4E-04	0.109	7.6E-04	0.103	7.6E-04
India Maratha	0.075	8.1E-04	0.076	8.2E-04	0.073	8.6E-04	0.099	8.4E-04	0.101	8.4E-04	0.095	8.5E-04
India Muslim	0.074	8.8E-04	0.075	8.9E-04	0.072	9.1E-04	0.098	9.2E-04	0.1	9.2E-04	0.095	9.2E-04
India North Kannadi	0.083	8.3E-04	0.084	8.3E-04	0.081	8.5E-04	0.107	8.1E-04	0.11	8.4E-04	0.103	8.3E-04
India Onge	0.171	1.5E-03	0.172	1.5E-03	0.169	1.5E-03	0.194	1.5E-03	0.195	1.5E-03	0.191	1.5E-03
India Palian	0.076	6.9E-04	0.077	6.7E-04	0.074	7.0E-04	0.1	6.6E-04	0.102	6.8E-04	0.097	6.7E-04
India Paniya	0.108	9.6E-04	0.108	9.3E-04	0.106	9.4E-04	0.131	9.4E-04	0.133	9.5E-04	0.128	9.4E-04
India Piramalai Kallar	0.082	8.5E-04	0.082	8.4E-04	0.079	8.5E-04	0.105	8.4E-04	0.107	8.5E-04	0.102	8.5E-04
India Pulliyar	0.12	1.5E-03	0.121	1.5E-03	0.118	1.5E-03	0.143	1.5E-03	0.145	1.5E-03	0.14	1.5E-03
India Punjabi	0.072	6.5E-04	0.073	6.6E-04	0.07	6.9E-04	0.096	6.4E-04	0.098	6.5E-04	0.092	6.4E-04

India Santal	0.088	7.7E-04	0.088	7.7E-04	0.086	7.9E-04	0.113	7.7E-04	0.114	7.7E-04	0.109	7.8E-04
India Tharu	0.086	7.6E-04	0.087	7.8E-04	0.084	7.8E-04	0.112	7.7E-04	0.113	7.9E-04	0.108	7.9E-04
India Tripuri	0.093	8.4E-04	0.093	8.4E-04	0.09	8.7E-04	0.12	8.6E-04	0.122	8.8E-04	0.117	8.6E-04
India Uttar Pradesh Scheduled Caste	0.076	9.2E-04	0.077	9.6E-04	0.074	9.4E-04	0.1	9.7E-04	0.102	9.7E-04	0.096	9.6E-04
India Velama	0.079	7.7E-04	0.08	7.8E-04	0.077	8.1E-04	0.103	8.1E-04	0.105	8.1E-04	0.099	7.8E-04
India West Bengal Brahmin	0.071	6.6E-04	0.072	6.7E-04	0.069	7.0E-04	0.096	6.7E-04	0.097	6.9E-04	0.091	6.7E-04
Indonesia Bajo	0.103	8.3E-04	0.103	8.7E-04	0.1	8.7E-04	0.131	8.6E-04	0.132	8.7E-04	0.127	8.6E-04
Indonesia Bajo Derawan	0.107	9.0E-04	0.106	9.1E-04	0.104	9.3E-04	0.135	9.1E-04	0.136	9.2E-04	0.131	9.1E-04
Indonesia Bajo Kotabaru	0.116	9.3E-04	0.116	9.4E-04	0.114	9.6E-04	0.144	9.6E-04	0.146	9.8E-04	0.141	9.5E-04
Madagascar Antemoro	0.011	3.1E-04	0.013	3.3E-04	0.01	2.9E-04	0.02	3.6E-04	0.021	3.7E-04	0.019	3.5E-04
Madagascar Mikea	0.015	3.7E-04	0.016	3.7E-04	0.013	3.7E-04	0.024	4.5E-04	0.024	4.6E-04	0.023	4.5E-04
Madagascar Vezo	0.014	3.5E-04	0.014	3.5E-04	0.011	3.2E-04	0.022	3.9E-04	0.024	3.9E-04	0.022	4.1E-04
Indonesia Banjar	0.104	8.5E-04	0.104	8.7E-04	0.101	9.0E-04	0.133	8.8E-04	0.135	8.9E-04	0.129	8.8E-04
Indonesia Bugis	0.105	8.4E-04	0.105	8.8E-04	0.102	8.8E-04	0.133	8.6E-04	0.135	8.6E-04	0.13	8.5E-04
Indonesia Dayak	0.108	8.5E-04	0.108	8.9E-04	0.105	8.9E-04	0.137	8.8E-04	0.139	8.9E-04	0.134	8.8E-04
Indonesia Dayak Ngaju	0.107	8.7E-04	0.107	8.9E-04	0.105	9.0E-04	0.136	8.8E-04	0.138	8.9E-04	0.133	8.8E-04
Indonesia Lebbo	0.126	1.0E-03	0.126	1.0E-03	0.124	1.0E-03	0.155	1.0E-03	0.156	1.1E-03	0.151	1.0E-03
Indonesia Maanyan	0.113	8.8E-04	0.113	9.1E-04	0.11	9.2E-04	0.142	9.1E-04	0.144	9.2E-04	0.139	9.0E-04
Indonesia Samihim	0.114	9.4E-04	0.115	9.3E-04	0.112	9.5E-04	0.144	9.5E-04	0.145	9.6E-04	0.14	9.3E-04
Indonesia Samihin	0.101	8.4E-04	0.101	8.6E-04	0.098	8.5E-04	0.129	8.5E-04	0.131	8.6E-04	0.126	8.4E-04
Irak Kurd Jew	0.08	8.0E-04	0.08	8.2E-04	0.077	8.4E-04	0.102	8.1E-04	0.104	8.3E-04	0.097	8.2E-04
Iran Azeri	0.075	7.0E-04	0.076	7.1E-04	0.073	7.5E-04	0.098	6.9E-04	0.1	7.1E-04	0.093	6.9E-04
Iran Iranian	0.065	6.2E-04	0.066	6.3E-04	0.063	6.7E-04	0.087	6.3E-04	0.089	6.4E-04	0.082	6.2E-04
Iran Iranian Jew	0.085	8.1E-04	0.085	7.9E-04	0.082	8.4E-04	0.108	8.2E-04	0.109	8.3E-04	0.102	8.1E-04
Iraq Iraqi Jews	0.082	8.1E-04	0.083	8.1E-04	0.08	8.5E-04	0.105	8.2E-04	0.107	8.4E-04	0.099	8.1E-04
Israel Bedouin	0.072	7.0E-04	0.073	6.8E-04	0.07	7.3E-04	0.093	6.9E-04	0.095	7.1E-04	0.087	6.7E-04
Israel Druze	0.081	7.0E-04	0.082	7.0E-04	0.079	7.5E-04	0.104	7.0E-04	0.106	7.2E-04	0.098	6.9E-04
Israel Palestinian	0.071	6.7E-04	0.072	6.6E-04	0.069	7.3E-04	0.092	6.8E-04	0.094	7.0E-04	0.086	6.8E-04
Italy East Sicilian	0.234	1.3E-03	0.235	1.4E-03	0.233	1.4E-03	0.246	1.3E-03	0.247	1.3E-03	0.247	1.4E-03
Italy Italian Abruzzo	0.083	8.0E-04	0.084	7.8E-04	0.081	8.5E-04	0.106	8.1E-04	0.108	8.1E-04	0.101	8.0E-04
Italy Italian Bergamo	0.087	8.3E-04	0.088	8.1E-04	0.085	8.6E-04	0.11	8.2E-04	0.112	8.4E-04	0.105	8.1E-04
Italy Sardinian	0.095	7.6E-04	0.096	7.7E-04	0.093	8.2E-04	0.117	7.8E-04	0.119	8.1E-04	0.112	7.6E-04
Italy Sicilian	0.08	7.6E-04	0.081	7.5E-04	0.077	8.0E-04	0.102	7.5E-04	0.104	7.8E-04	0.097	7.4E-04
Italy South Italian	0.236	1.3E-03	0.237	1.3E-03	0.234	1.3E-03	0.247	1.3E-03	0.248	1.3E-03	0.248	1.3E-03
Italy Tuscan	0.084	7.5E-04	0.085	7.4E-04	0.082	7.8E-04	0.107	7.3E-04	0.109	7.5E-04	0.102	7.4E-04
Italy West Sicilian	0.235	1.4E-03	0.236	1.4E-03	0.234	1.4E-03	0.247	1.3E-03	0.248	1.3E-03	0.248	1.4E-03
Jordania Jordanian	0.065	6.5E-04	0.066	6.7E-04	0.063	7.2E-04	0.085	6.8E-04	0.087	7.1E-04	0.08	6.6E-04
Kazakhstan Kurd	0.079	8.8E-04	0.08	9.1E-04	0.078	9.3E-04	0.103	8.8E-04	0.104	8.9E-04	0.097	8.8E-04
Kenya BantuKenya	0.01	3.8E-04	0.012	3.9E-04	0.01	3.7E-04	0.004	2.8E-04	0.004	2.8E-04	0.003	2.9E-04
Kenya Luhya	0.01	2.8E-04	0.012	3.1E-04	0.01	2.8E-04	0.004	1.7E-04	0.004	1.7E-04	0.003	1.7E-04
Kenya Samburu	0.024	4.4E-04	0.025	4.5E-04	0.022	4.7E-04	0.027	4.6E-04	0.028	4.7E-04	0.023	4.3E-04
Kenya Swahili Kilifi	0.008	2.6E-04	0.01	2.9E-04	0.007	2.7E-04	-	-	0.001	1.5E-04	0.001	1.8E-04
Kenya Swahili Lamu	0.009	2.7E-04	0.01	2.8E-04	0.008	2.8E-04	0.001	1.5E-04	-	-	0.002	1.7E-04

Kenya Swahili Mombasa	0.008	2.8E-04	0.01	2.9E-04	0.007	2.8E-04	0.001	1.8E-04	0.002	1.7E-04	-	-
Kenya Turkana	0.017	4.5E-04	0.018	4.5E-04	0.016	4.6E-04	0.023	4.6E-04	0.024	4.6E-04	0.019	4.2E-04
Lebanon Lebanese	0.073	8.1E-04	0.074	8.3E-04	0.071	8.7E-04	0.095	8.2E-04	0.097	8.4E-04	0.089	8.3E-04
Lebanon Lebanese Christian	0.081	7.1E-04	0.081	7.0E-04	0.078	7.5E-04	0.103	6.9E-04	0.105	7.1E-04	0.097	6.9E-04
Lebanon Lebanese Druze	0.079	7.2E-04	0.08	7.0E-04	0.077	7.4E-04	0.102	7.0E-04	0.103	7.2E-04	0.096	6.9E-04
Lebanon Lebanese Muslim	0.074	6.7E-04	0.075	6.7E-04	0.072	7.2E-04	0.096	6.6E-04	0.098	6.8E-04	0.091	6.6E-04
Lybia Lybian Jew	0.082	9.8E-04	0.083	9.4E-04	0.08	9.8E-04	0.104	9.7E-04	0.106	9.8E-04	0.099	9.6E-04
Malaysia Malay	0.095	8.0E-04	0.095	8.2E-04	0.092	8.4E-04	0.123	8.4E-04	0.125	8.4E-04	0.12	8.3E-04
Morocco Moroccan	0.106	7.3E-04	0.107	7.4E-04	0.105	7.4E-04	0.119	7.3E-04	0.12	7.3E-04	0.118	7.2E-04
Namibia Damara	0.021	4.9E-04	0.023	5.1E-04	0.021	5.2E-04	0.015	4.4E-04	0.015	4.3E-04	0.015	4.6E-04
Namibia Haihom	0.036	6.6E-04	0.037	6.6E-04	0.035	6.5E-04	0.032	6.3E-04	0.033	5.9E-04	0.031	6.2E-04
Namibia Juhoansi	0.096	8.9E-04	0.098	8.4E-04	0.095	8.5E-04	0.092	8.1E-04	0.093	8.2E-04	0.092	8.4E-04
Namibia Kwangali	0.012	4.8E-04	0.014	4.9E-04	0.012	4.6E-04	0.005	3.8E-04	0.006	3.8E-04	0.006	4.1E-04
Namibia Mbukushu	0.014	4.6E-04	0.016	4.7E-04	0.013	4.7E-04	0.007	3.6E-04	0.007	3.7E-04	0.008	3.8E-04
Namibia Nama	0.039	5.0E-04	0.04	4.9E-04	0.038	4.8E-04	0.038	4.6E-04	0.039	4.7E-04	0.036	4.7E-04
Nigeria Esan	0.014	3.1E-04	0.015	3.2E-04	0.013	3.2E-04	0.007	1.9E-04	0.007	1.9E-04	0.008	2.2E-04
Nigeria Yoruba	0.013	3.1E-04	0.015	3.1E-04	0.013	3.1E-04	0.007	1.9E-04	0.007	1.9E-04	0.007	1.9E-04
Oman Omani	0.04	4.9E-04	0.041	5.2E-04	0.038	5.3E-04	0.057	5.1E-04	0.058	5.2E-04	0.053	4.9E-04
Pakistan Balochi	0.074	6.8E-04	0.075	6.9E-04	0.071	7.3E-04	0.097	6.9E-04	0.098	7.0E-04	0.092	6.7E-04
Pakistan Brahui	0.075	6.8E-04	0.076	6.9E-04	0.073	7.4E-04	0.098	7.0E-04	0.1	7.1E-04	0.093	6.7E-04
Pakistan Burusho	0.074	6.7E-04	0.075	6.7E-04	0.072	7.1E-04	0.098	6.7E-04	0.1	6.8E-04	0.094	6.8E-04
Pakistan Hazara	0.074	7.1E-04	0.074	7.2E-04	0.071	7.5E-04	0.099	7.0E-04	0.102	7.2E-04	0.095	6.9E-04
Pakistan Kalash	0.098	8.3E-04	0.1	8.2E-04	0.097	8.8E-04	0.122	8.5E-04	0.124	8.5E-04	0.118	8.5E-04
Pakistan Makrani	0.07	6.6E-04	0.071	6.6E-04	0.068	7.2E-04	0.093	7.0E-04	0.095	6.9E-04	0.088	6.7E-04
Pakistan Pathan	0.072	6.4E-04	0.073	6.6E-04	0.07	6.9E-04	0.096	6.5E-04	0.098	6.6E-04	0.092	6.4E-04
Pakistan Punjabi	0.076	7.9E-04	0.077	7.8E-04	0.074	8.1E-04	0.1	7.8E-04	0.102	8.0E-04	0.096	7.9E-04
Pakistan Sindhi	0.071	6.5E-04	0.072	6.4E-04	0.069	7.0E-04	0.095	6.5E-04	0.097	6.7E-04	0.091	6.5E-04
Papua New Guinea Papuan	0.192	1.5E-03	0.191	1.5E-03	0.19	1.6E-03	0.212	1.6E-03	0.215	1.6E-03	0.21	1.6E-03
Philippines Igorot	0.14	1.0E-03	0.14	9.8E-04	0.137	1.0E-03	0.169	1.0E-03	0.17	1.0E-03	0.166	1.0E-03
Romania Romanian	0.082	7.3E-04	0.082	7.2E-04	0.08	7.8E-04	0.105	7.4E-04	0.107	7.5E-04	0.1	7.3E-04
Russia Azeri	0.079	9.4E-04	0.079	9.1E-04	0.077	9.3E-04	0.102	9.4E-04	0.104	9.6E-04	0.097	9.4E-04
Saudi Arabia Arab	0.065	6.2E-04	0.066	6.5E-04	0.063	6.9E-04	0.084	6.6E-04	0.086	6.7E-04	0.078	6.5E-04
Saudi Arabia Saudi	0.073	6.9E-04	0.074	7.0E-04	0.071	7.6E-04	0.094	7.1E-04	0.096	7.3E-04	0.088	6.9E-04
Senegal Mandenka	0.019	3.3E-04	0.02	3.4E-04	0.018	3.4E-04	0.013	2.3E-04	0.013	2.4E-04	0.013	2.6E-04
Sierra Leone Mende	0.015	3.0E-04	0.017	3.0E-04	0.015	3.1E-04	0.009	1.9E-04	0.009	1.8E-04	0.009	2.0E-04
Singapore Malay	0.097	8.1E-04	0.097	8.3E-04	0.094	8.6E-04	0.125	8.4E-04	0.127	8.4E-04	0.122	8.4E-04
Somalia Somali	0.027	3.9E-04	0.028	3.9E-04	0.025	3.7E-04	0.032	3.8E-04	0.033	4.0E-04	0.028	3.6E-04
South Africa Namibia Khwe	0.024	4.2E-04	0.025	4.2E-04	0.024	4.2E-04	0.019	3.6E-04	0.019	3.6E-04	0.019	3.5E-04
South Africa Namibia Xun	0.064	7.4E-04	0.065	7.0E-04	0.063	7.1E-04	0.059	6.7E-04	0.059	7.0E-04	0.059	7.0E-04
South Africa Bantu Soweto	0.012	3.2E-04	0.014	3.1E-04	0.012	3.2E-04	0.006	1.9E-04	0.006	2.0E-04	0.007	2.1E-04
South Africa BantuSA	0.012	4.5E-04	0.014	4.6E-04	0.011	4.5E-04	0.005	3.6E-04	0.005	3.6E-04	0.006	3.7E-04
South Africa ColouredColesberg	0.018	3.7E-04	0.019	3.7E-04	0.017	3.5E-04	0.022	3.4E-04	0.023	3.6E-04	0.02	3.6E-04

South Africa ColouredWellington	0.021	3.6E-04	0.022	3.8E-04	0.019	4.1E-04	0.034	4.2E-04	0.035	4.4E-04	0.031	4.2E-04
South Africa Karretjie	0.054	6.3E-04	0.056	6.3E-04	0.053	6.4E-04	0.053	6.0E-04	0.054	6.1E-04	0.052	6.1E-04
South Africa Khomani	0.044	5.3E-04	0.045	5.1E-04	0.043	5.0E-04	0.045	4.8E-04	0.046	4.9E-04	0.044	4.9E-04
South Africa SEBantu	0.013	3.1E-04	0.015	3.3E-04	0.012	3.1E-04	0.006	2.1E-04	0.006	2.2E-04	0.007	2.2E-04
South Africa SWBantu	0.016	4.0E-04	0.018	4.2E-04	0.015	4.2E-04	0.012	3.4E-04	0.012	3.2E-04	0.012	3.4E-04
Spain Spanish	0.075	6.7E-04	0.076	6.6E-04	0.073	7.0E-04	0.096	6.6E-04	0.098	6.9E-04	0.092	6.6E-04
Sri Lanka Sri Lankan	0.074	6.7E-04	0.075	6.8E-04	0.072	7.0E-04	0.098	6.7E-04	0.1	6.8E-04	0.094	6.7E-04
Sudan Arab	0.032	4.6E-04	0.033	4.7E-04	0.03	4.8E-04	0.042	5.0E-04	0.043	5.0E-04	0.037	4.7E-04
Sudan Nubian	0.033	4.8E-04	0.035	5.1E-04	0.032	5.4E-04	0.044	5.4E-04	0.046	5.5E-04	0.039	5.4E-04
Sudan Sudanese	0.026	3.6E-04	0.027	3.9E-04	0.025	3.7E-04	0.021	3.0E-04	0.021	3.0E-04	0.017	2.7E-04
Syria Syrians	0.071	7.2E-04	0.072	7.2E-04	0.069	7.7E-04	0.093	7.3E-04	0.095	7.4E-04	0.088	7.2E-04
Tanzania Hazda	0.06	7.8E-04	0.061	7.6E-04	0.059	8.0E-04	0.057	7.4E-04	0.058	7.6E-04	0.055	7.6E-04
Tanzania San	0.052	6.0E-04	0.054	5.7E-04	0.052	5.9E-04	0.051	5.5E-04	0.052	5.6E-04	0.05	5.5E-04
Tanzania Sandawe	0.021	3.5E-04	0.023	3.5E-04	0.02	3.4E-04	0.02	2.9E-04	0.021	3.0E-04	0.018	3.0E-04
Tunisia Tunisian	0.228	1.4E-03	0.228	1.4E-03	0.226	1.4E-03	0.239	1.4E-03	0.24	1.4E-03	0.24	1.4E-03
Turkey Turks	0.076	7.2E-04	0.077	7.2E-04	0.074	7.8E-04	0.099	7.1E-04	0.102	7.4E-04	0.094	7.1E-04
Turkmenistan Turkmen	0.073	7.6E-04	0.073	7.7E-04	0.07	7.9E-04	0.096	7.5E-04	0.099	7.7E-04	0.092	7.7E-04
UAE Arab	0.228	1.4E-03	0.229	1.4E-03	0.227	1.4E-03	0.24	1.3E-03	0.241	1.4E-03	0.241	1.4E-03
Uganda Bakiga	0.011	2.7E-04	0.012	2.9E-04	0.009	2.6E-04	0.005	1.8E-04	0.005	1.9E-04	0.004	2.0E-04
Uganda Batwa	0.045	5.6E-04	0.047	5.9E-04	0.045	5.8E-04	0.04	5.3E-04	0.041	5.3E-04	0.04	5.3E-04
USA CEU	0.088	7.8E-04	0.089	7.5E-04	0.086	8.1E-04	0.111	7.6E-04	0.114	8.0E-04	0.107	7.5E-04
Vietnam Kinh	0.107	8.8E-04	0.107	8.9E-04	0.104	9.1E-04	0.135	9.0E-04	0.137	9.1E-04	0.132	8.9E-04
Vietnam Vietnamese	0.109	9.2E-04	0.108	9.3E-04	0.105	9.5E-04	0.137	9.4E-04	0.138	9.6E-04	0.133	9.4E-04
Yemen Yemeni	0.065	6.4E-04	0.067	6.4E-04	0.064	7.1E-04	0.085	6.4E-04	0.087	6.6E-04	0.079	6.2E-04
Yemen Yemenite Jews	0.08	7.7E-04	0.081	7.5E-04	0.078	8.0E-04	0.101	7.8E-04	0.103	8.0E-04	0.095	7.8E-04

Table S8. Pairwise F_{ST} values obtained for Comoros and Swahili groups and each population of the low SNP density dataset. S.D: standard deviation.

Target	Source1	Source2	*f*3	SE	Z
Comoros Comoros Anjouan	South Africa Bantu Soweto	Indonesia Lebbo	-0.014295	0.000336	-42.503
Comoros Comoros Anjouan	South Africa Bantu Soweto	Indonesia Banjar	-0.014289	0.000306	-46.694
Comoros Comoros Anjouan	South Africa Bantu Soweto	Brunei Dusun	-0.014259	0.000315	-45.288
Comoros Comoros Anjouan	South Africa Bantu Soweto	Indonesia Samihim	-0.014255	0.00032	-44.556
Comoros Comoros Anjouan	South Africa Bantu Soweto	Philippines Igorot	-0.01424	0.000342	-41.582
Comoros Comoros GdeComore	South Africa Bantu Soweto	Philippines Igorot	-0.013771	0.000348	-39.568
Comoros Comoros GdeComore	South Africa Bantu Soweto	Brunei Dusun	-0.013715	0.000331	-41.441
Comoros Comoros GdeComore	South Africa Bantu Soweto	Indonesia Samihim	-0.013666	0.000333	-41.079
Comoros Comoros GdeComore	South Africa Bantu Soweto	Brunei Murut	-0.013652	0.000331	-41.212
Comoros Comoros GdeComore	South Africa Bantu Soweto	Indonesia Banjar	-0.013615	0.000316	-43.064
Comoros Comoros Moheli	South Africa Bantu Soweto	Brunei Murut	-0.015918	0.000319	-49.966
Comoros Comoros Moheli	South Africa Bantu Soweto	Philippines Igorot	-0.01584	0.000344	-46.096
Comoros Comoros Moheli	South Africa Bantu Soweto	Brunei Dusun	-0.015838	0.000311	-51.003
Comoros Comoros Moheli	South Africa Bantu Soweto	Indonesia Banjar	-0.015802	0.000306	-51.611
Comoros Comoros Moheli	South Africa Bantu Soweto	Indonesia Dayak	-0.015794	0.000307	-51.402
Kenya Swahili Kilifi	Namibia Kwangali	Italy Tuscan	-0.005091	0.000341	-14.914
Kenya Swahili Kilifi	Gabon Bongo	Italy Tuscan	-0.005044	0.0003	-16.802
Kenya Swahili Kilifi	Gabon Nzebi	Italy Tuscan	-0.004989	0.000266	-18.748
Kenya Swahili Kilifi	Namibia Kwangali	Spain Spanish	-0.004981	0.000342	-14.553
Kenya Swahili Kilifi	South Africa Bantu Soweto	Italy Tuscan	-0.004956	0.000264	-18.782
Kenya Swahili Lamu	Gabon Nzebi	Italy Tuscan	-0.004002	0.00026	-15.405
Kenya Swahili Lamu	Gabon Bongo	Italy Tuscan	-0.003928	0.000295	-13.303
Kenya Swahili Lamu	South Africa Bantu Soweto	Italy Tuscan	-0.003797	0.000259	-14.645
Kenya Swahili Lamu	Gabon Nzebi	Spain Spanish	-0.003787	0.000261	-14.523
Kenya Swahili Lamu	Gabon Bongo	Spain Spanish	-0.003764	0.000302	-12.47
Kenya Swahili Mombasa	Gabon Nzebi	Italy Tuscan	-0.008843	0.00028	-31.567
Kenya Swahili Mombasa	Gabon Bongo	Italy Tuscan	-0.008788	0.000309	-28.407
Kenya Swahili Mombasa	Namibia Kwangali	Italy Tuscan	-0.008725	0.000343	-25.47
Kenya Swahili Mombasa	Namibia Mbukushu	Italy Tuscan	-0.008607	0.000351	-24.523
Kenya Swahili Mombasa	South Africa Bantu Soweto	Italy Tuscan	-0.008536	0.000275	-30.986
Madagascar Antemoro	South Africa Bantu Soweto	Philippines Igorot	-0.026794	0.0003	-89.298
Madagascar Antemoro	South Africa Bantu Soweto	Brunei Murut	-0.026499	0.000273	-96.966
Madagascar Antemoro	Gabon Nzebi	Philippines Igorot	-0.026363	0.00031	-85.073
Madagascar Antemoro	South Africa Bantu Soweto	Indonesia Samihim	-0.026347	0.000267	-98.628
Madagascar Antemoro	Namibia Kwangali	Philippines Igorot	-0.026346	0.000367	-71.883
Madagascar Mikea	South Africa Bantu Soweto	Philippines Igorot	-0.022797	0.000337	-67.718
Madagascar Mikea	South Africa Bantu Soweto	Brunei Murut	-0.022686	0.000305	-74.284
Madagascar Mikea	Namibia Mbukushu	Philippines Igorot	-0.022537	0.000406	-55.549
Madagascar Mikea	Gabon Nzebi	Philippines Igorot	-0.022434	0.000341	-65.867
Madagascar Mikea	South Africa Bantu Soweto	Brunei Dusun	-0.022404	0.000312	-71.731
Madagascar Vezo	South Africa Bantu Soweto	Philippines Igorot	-0.026676	0.0003	-88.99
Madagascar Vezo	South Africa Bantu Soweto	Brunei Murut	-0.026582	0.000276	-96.337
Madagascar Vezo	Gabon Nzebi	Philippines Igorot	-0.026381	0.000299	-88.128
Madagascar Vezo	South Africa Bantu Soweto	Indonesia Samihim	-0.026322	0.000273	-96.527

Madagascar Vezo	South Africa Bantu Soweto	Brunei Dusun	-0.026217	0.000282	-93.09

Table S9. *f*3-statistics for Comoros and Swahili populations. For each studied group, the 5-top lowest results are shown, with their respective standard error (SE) and Z-score (Z).

	Comoros Comoros Anjouan	Comoros Comoros GdeComore	Comoros Comoros Moheli	Kenya Swahili Kilifi	Kenya Swahili Lamu	Kenya Swahili Mombasa	Comoros Comoros Anjouan			Comoros Comoros GdeComore			Comoros Comoros Moheli			Kenya Swahili Kilifi			Kenya Swahili Lamu			Kenya Swahili Mombasa		
	Fst						f3	SE	Z	f3	SE	Z	f3	SE	Z	f3	SE	Z	f3	SE	Z	f3	SE	Z
Kenya Swahili Lamu	0,006	0,007	0,003	0,001	0,000	0,002	0,164	0,002	100,827	0,164	0,002	100,328	0,164	0,002	86,508	0,161	0,002	70,670	-	-	-	0,158	0,001	210,130
Kenya Swahili Kilifi	0,005	0,007	0,003	0,000	0,001	0,001	0,163	0,002	68,981	0,163	0,002	68,652	0,163	0,003	59,670	-	-	-	0,161	0,002	70,670	0,158	0,001	193,349
Kenya Swahili Mombasa	0,006	0,008	0,003	0,001	0,002	0,000	0,161	0,001	193,492	0,160	0,001	190,211	0,161	0,001	233,809	0,158	0,001	193,349	0,158	0,001	210,130	-	-	-
Comoros Comoros Moheli	0,003	0,006	0,000	0,003	0,003	0,003	0,169	0,002	86,230	0,168	0,002	85,266	-	-	-	0,163	0,003	59,670	0,164	0,002	86,508	0,161	0,001	233,809
Kenya BantuKenya	0,008	0,009	0,004	0,003	0,004	0,002	0,162	0,002	73,763	0,162	0,002	73,493	0,162	0,003	63,820	0,159	0,003	52,931	0,159	0,002	75,219	0,157	0,001	209,148
Kenya Luhya	0,007	0,010	0,006	0,004	0,004	0,002	0,163	0,002	100,013	0,162	0,002	98,570	0,163	0,002	85,322	0,160	0,002	69,537	0,160	0,002	102,972	0,158	0,001	199,907
Madagascar Antemoro	0,006	0,008	0,003	0,005	0,005	0,005	0,166	0,003	63,164	0,165	0,003	62,806	0,166	0,003	54,927	0,161	0,004	45,331	0,162	0,003	63,316	0,159	0,001	184,011
Gabon Nzebi	0,007	0,008	0,004	0,006	0,005	0,006	0,170	0,001	199,705	0,170	0,001	192,952	0,170	0,001	226,453	0,166	0,001	154,187	0,167	0,001	236,740	0,163	0,001	138,846
Uganda Bakiga	0,009	0,010	0,007	0,005	0,005	0,004	0,162	0,001	193,665	0,161	0,001	191,782	0,162	0,001	186,401	0,158	0,001	148,042	0,159	0,001	203,379	0,157	0,001	135,253
Comoros Comoros Anjouan	0,000	0,008	0,003	0,005	0,006	0,006	-	-	-	0,168	0,002	100,117	0,169	0,002	86,230	0,163	0,002	68,981	0,164	0,002	100,827	0,161	0,001	193,492
South Africa BantuSA	0,007	0,008	0,008	0,006	0,006	0,007	0,168	0,001	114,425	0,168	0,001	115,777	0,166	0,002	91,241	0,163	0,002	78,213	0,164	0,001	109,946	0,161	0,001	163,480
South Africa Bantu Soweto	0,007	0,010	0,005	0,005	0,006	0,006	0,169	0,003	67,603	0,168	0,003	67,136	0,169	0,003	58,737	0,165	0,003	48,562	0,165	0,002	68,272	0,162	0,001	190,650
Cameroon Nzime	0,007	0,010	0,007	0,005	0,006	0,006	0,168	0,001	149,563	0,168	0,001	150,533	0,167	0,001	119,873	0,164	0,002	102,644	0,164	0,001	142,309	0,161	0,001	150,546
Comoros Comoros GdeComore	0,008	0,000	0,006	0,007	0,007	0,008	0,168	0,002	100,117	-	-	-	0,168	0,002	85,266	0,163	0,002	68,652	0,164	0,002	100,328	0,160	0,001	190,211
Namibia Kwangali	0,007	0,009	0,006	0,006	0,007	0,006	0,170	0,001	196,929	0,170	0,001	199,967	0,170	0,001	179,343	0,166	0,001	181,417	0,166	0,001	184,233	0,163	0,001	119,373
Madagascar Vezo	0,008	0,010	0,007	0,007	0,007	0,007	0,167	0,002	108,468	0,166	0,002	107,788	0,166	0,002	91,434	0,162	0,002	73,899	0,163	0,001	108,948	0,160	0,001	186,237
South Africa SEBantu	0,008	0,010	0,007	0,006	0,007	0,007	0,168	0,002	100,445	0,168	0,002	100,064	0,167	0,002	85,122	0,164	0,002	69,380	0,164	0,002	101,181	0,161	0,001	191,501
Nigeria Yoruba	0,009	0,011	0,006	0,007	0,007	0,007	0,168	0,002	105,879	0,168	0,002	105,436	0,169	0,002	90,703	0,164	0,002	73,065	0,165	0,002	107,255	0,162	0,001	187,359
Nigeria Esan	0,009	0,012	0,006	0,007	0,008	0,008	0,170	0,001	170,295	0,169	0,001	170,887	0,170	0,001	140,380	0,165	0,001	119,330	0,166	0,001	161,935	0,162	0,001	143,250
Burkina Faso Gurmantche	0,009	0,013	0,008	0,008	0,008	0,008	0,166	0,001	177,731	0,165	0,001	184,755	0,166	0,001	151,494	0,162	0,001	199,083	0,163	0,001	154,315	0,159	0,001	106,666
Namibia Mbukushu	0,010	0,011	0,008	0,009	0,009	0,008	0,170	0,002	77,635	0,170	0,002	78,035	0,170	0,002	75,573	0,166	0,002	80,139	0,167	0,002	75,653	0,164	0,002	72,243
Burkina Faso Gurunsi	0,011	0,013	0,008	0,009	0,009	0,009	0,168	0,002	83,345	0,168	0,002	83,061	0,168	0,002	71,288	0,164	0,003	58,562	0,164	0,002	83,366	0,161	0,001	184,027
Burkina Faso Mossi	0,012	0,013	0,009	0,009	0,009	0,009	0,167	0,001	125,690	0,166	0,001	128,407	0,167	0,001	114,554	0,163	0,001	149,399	0,164	0,001	113,896	0,160	0,002	89,744
Sierra Leone Mende	0,010	0,015	0,008	0,009	0,010	0,009	0,168	0,001	165,093	0,167	0,001	165,652	0,168	0,001	130,019	0,163	0,001	114,688	0,164	0,001	151,603	0,161	0,001	141,944
Madagascar Mikea	0,012	0,016	0,010	0,011	0,011	0,012	0,166	0,001	194,634	0,165	0,001	205,097	0,166	0,001	142,706	0,161	0,001	175,532	0,162	0,001	157,361	0,158	0,001	115,884
Gambia Gambian	0,013	0,016	0,010	0,010	0,011	0,010	0,165	0,001	163,114	0,164	0,001	163,399	0,165	0,001	134,410	0,161	0,001	113,523	0,161	0,001	156,175	0,158	0,001	145,940
South Africa SWBantu	0,015	0,017	0,014	0,012	0,011	0,012	0,162	0,002	86,476	0,162	0,002	86,073	0,162	0,002	73,954	0,159	0,003	60,944	0,160	0,002	88,762	0,156	0,001	204,097
Chad Kanembu	0,016	0,019	0,014	0,013	0,013	0,011	0,153	0,004	38,164	0,152	0,004	37,904	0,153	0,005	33,737	0,150	0,005	28,915	0,150	0,004	38,574	0,148	0,001	108,278

Senegal Mandenka	0,016	0,019	0,013	0,014	0,015	0,013	0,165	0,001	193,251	0,165	0,001	195,438	0,166	0,001	165,267	0,161	0,001	149,493	0,161	0,001	181,557	0,159	0,001	129,865
Namibia Damara	0,016	0,018	0,015	0,015	0,017	0,016	0,168	0,002	83,566	0,168	0,002	83,410	0,168	0,002	70,520	0,164	0,003	58,459	0,164	0,002	82,238	0,161	0,001	177,922
Gabon Bongo	0,019	0,021	0,018	0,017	0,018	0,018	0,168	0,002	105,839	0,167	0,002	104,908	0,167	0,002	89,441	0,164	0,002	72,628	0,164	0,002	106,522	0,161	0,001	188,028
South Africa Namibia Khwe	0,021	0,021	0,019	0,018	0,018	0,017	0,164	0,002	73,807	0,165	0,002	74,411	0,164	0,003	63,932	0,161	0,003	52,856	0,161	0,002	75,230	0,159	0,001	194,753
Sudan Sudanese	0,025	0,027	0,022	0,019	0,020	0,017	0,157	0,002	84,144	0,156	0,002	83,460	0,157	0,002	71,743	0,154	0,003	60,025	0,154	0,002	86,641	0,153	0,001	227,167
Ethiopia Anuak	0,025	0,028	0,024	0,020	0,021	0,017	0,157	0,002	97,953	0,156	0,002	96,647	0,156	0,002	83,080	0,154	0,002	68,615	0,154	0,002	101,942	0,153	0,001	215,460
Tanzania Sandawe	0,027	0,027	0,024	0,020	0,022	0,017	0,146	0,002	61,781	0,146	0,002	61,893	0,146	0,003	53,978	0,144	0,003	45,601	0,144	0,002	63,316	0,143	0,001	178,316
Kenya Turkana	0,029	0,030	0,026	0,021	0,022	0,017	0,125	0,003	40,346	0,125	0,003	40,491	0,126	0,004	34,117	0,124	0,004	30,975	0,124	0,003	40,487	0,124	0,001	128,540
South Africa ColouredColesberg	0,027	0,028	0,025	0,021	0,023	0,019	0,133	0,002	74,610	0,134	0,002	75,108	0,133	0,002	64,407	0,131	0,002	53,886	0,131	0,002	76,169	0,130	0,001	203,159
Chad Fulani	0,031	0,031	0,026	0,024	0,025	0,022	0,145	0,001	188,103	0,145	0,001	190,909	0,146	0,001	163,256	0,143	0,001	144,561	0,143	0,001	181,100	0,142	0,001	130,621
Chad Daza	0,032	0,034	0,029	0,025	0,026	0,021	0,140	0,001	181,966	0,140	0,001	184,557	0,140	0,001	147,009	0,138	0,001	136,567	0,139	0,001	168,610	0,138	0,001	130,483
Kenya Samburu	0,036	0,037	0,035	0,026	0,027	0,021	0,132	0,002	84,817	0,132	0,002	84,464	0,132	0,002	71,580	0,132	0,002	62,131	0,132	0,001	90,472	0,132	0,001	225,970
Gabon Baka	0,032	0,034	0,030	0,030	0,030	0,030	0,169	0,001	115,432	0,168	0,001	115,198	0,168	0,002	94,955	0,164	0,002	78,974	0,165	0,001	113,036	0,162	0,001	168,011
Namibia Haihom	0,035	0,034	0,034	0,031	0,031	0,029	0,159	0,004	40,512	0,160	0,004	40,910	0,159	0,004	35,763	0,156	0,005	30,560	0,157	0,004	41,269	0,155	0,001	115,887
Cameroon Baka	0,034	0,037	0,032	0,032	0,032	0,031	0,167	0,001	130,905	0,166	0,001	130,188	0,166	0,002	108,151	0,162	0,002	88,999	0,163	0,001	128,567	0,160	0,001	163,344
Somalia Somali	0,040	0,040	0,037	0,031	0,032	0,026	0,129	0,002	52,052	0,129	0,002	52,468	0,129	0,003	44,474	0,128	0,003	39,464	0,129	0,002	53,414	0,129	0,001	182,116
Ethiopia Wolayta	0,040	0,041	0,038	0,032	0,033	0,026	0,127	0,002	69,102	0,127	0,002	69,150	0,127	0,002	59,820	0,127	0,002	50,952	0,127	0,002	71,744	0,128	0,001	185,534
Ethiopia Oromo	0,043	0,043	0,041	0,033	0,034	0,028	0,123	0,003	36,030	0,124	0,003	36,562	0,124	0,004	30,716	0,123	0,004	28,259	0,124	0,003	36,686	0,124	0,001	111,633
Ethiopia Gumuz	0,041	0,042	0,038	0,034	0,035	0,030	0,150	0,003	55,850	0,150	0,003	56,169	0,150	0,003	43,669	0,148	0,004	41,704	0,148	0,003	54,045	0,148	0,001	223,006
South Africa ColouredWellington	0,042	0,043	0,040	0,034	0,036	0,031	0,102	0,001	107,636	0,102	0,001	107,295	0,102	0,001	92,486	0,101	0,001	76,104	0,100	0,001	112,365	0,100	0,001	182,052
Ethiopia Ari Cultivator	0,045	0,044	0,042	0,035	0,037	0,031	0,136	0,003	40,189	0,137	0,003	40,748	0,136	0,004	34,966	0,135	0,004	31,109	0,135	0,003	41,244	0,135	0,001	125,687
Ethiopia Somali	0,045	0,045	0,043	0,036	0,037	0,030	0,125	0,002	70,002	0,126	0,002	70,600	0,125	0,002	56,170	0,125	0,002	51,963	0,125	0,002	71,390	0,126	0,000	280,353
CAR Biaka Pygmy	0,040	0,043	0,037	0,037	0,038	0,037	0,167	0,001	200,486	0,166	0,001	186,783	0,167	0,001	250,515	0,163	0,001	150,433	0,164	0,001	281,763	0,161	0,001	148,771
Namibia Nama	0,043	0,043	0,041	0,038	0,039	0,036	0,150	0,003	49,247	0,151	0,003	49,545	0,150	0,003	43,494	0,148	0,004	36,798	0,148	0,003	50,157	0,146	0,001	147,929
Uganda Batwa	0,042	0,045	0,040	0,039	0,040	0,039	0,164	0,003	53,654	0,163	0,003	53,231	0,164	0,004	45,965	0,160	0,004	39,472	0,161	0,003	53,538	0,158	0,001	175,384
Ethiopia Ethiopian Jews	0,049	0,050	0,047	0,040	0,040	0,034	0,119	0,001	145,671	0,119	0,001	140,678	0,119	0,001	127,280	0,118	0,001	101,512	0,119	0,001	176,140	0,120	0,001	183,709
Sudan Arab	0,050	0,052	0,049	0,042	0,043	0,037	0,116	0,001	169,534	0,116	0,001	164,059	0,116	0,000	258,970	0,116	0,001	191,649	0,116	0,001	196,091	0,117	0,001	106,671
Ethiopia Amhara	0,053	0,054	0,051	0,044	0,044	0,037	0,114	0,004	32,471	0,115	0,004	32,650	0,115	0,004	27,874	0,114	0,004	25,571	0,115	0,003	33,131	0,116	0,001	96,234
Sudan Nubian	0,053	0,054	0,050	0,044	0,045	0,037	0,115	0,001	78,973	0,116	0,001	79,194	0,116	0,002	67,780	0,115	0,002	58,022	0,115	0,001	83,133	0,116	0,001	221,854
Ethiopia Tygray	0,053	0,055	0,050	0,044	0,045	0,037	0,115	0,001	78,227	0,114	0,001	77,481	0,115	0,002	65,571	0,115	0,002	57,469	0,115	0,001	82,200	0,116	0,000	249,575

Botswana GuiGhanaKgal	0,048	0,051	0,048	0,045	0,046	0,045	0,167	0,004	41,640	0,167	0,004	41,495	0,166	0,005	35,857	0,164	0,005	31,336	0,164	0,004	41,592	0,161	0,001	122,103
Ethiopia Ethiopians	0,055	0,056	0,053	0,045	0,046	0,040	0,114	0,001	134,763	0,114	0,001	129,500	0,114	0,001	108,003	0,114	0,001	95,312	0,114	0,001	156,668	0,115	0,001	210,987
South Africa Khomani	0,050	0,051	0,048	0,045	0,047	0,043	0,144	0,004	32,956	0,144	0,004	33,013	0,144	0,005	28,952	0,141	0,006	25,296	0,141	0,004	33,021	0,140	0,002	89,722
Ethiopia Afar	0,054	0,057	0,054	0,047	0,047	0,040	0,118	0,001	93,319	0,117	0,001	91,857	0,116	0,001	111,012	0,117	0,001	99,920	0,117	0,001	99,841	0,118	0,001	80,832
South Africa Karretjie	0,055	0,056	0,054	0,051	0,052	0,050	0,152	0,004	37,676	0,152	0,004	37,721	0,151	0,005	33,529	0,148	0,005	28,571	0,148	0,004	38,190	0,146	0,001	104,129
Tanzania San	0,057	0,057	0,055	0,052	0,054	0,051	0,151	0,004	35,415	0,152	0,004	35,491	0,151	0,005	31,405	0,149	0,005	27,047	0,148	0,004	35,808	0,147	0,002	97,531
Ethiopia Ari Blacksmith	0,061	0,061	0,060	0,053	0,055	0,049	0,138	0,003	49,790	0,139	0,003	50,278	0,138	0,003	42,767	0,137	0,004	37,727	0,137	0,003	50,783	0,137	0,001	166,507
South Africa Namibia Xun	0,061	0,063	0,060	0,057	0,058	0,058	0,164	0,003	50,011	0,164	0,003	49,904	0,164	0,004	43,510	0,161	0,004	37,145	0,161	0,003	50,577	0,158	0,001	151,603
Tanzania Hazda	0,065	0,065	0,063	0,059	0,060	0,054	0,155	0,003	46,587	0,155	0,003	46,842	0,155	0,004	41,194	0,153	0,004	35,175	0,153	0,003	47,949	0,153	0,001	140,401
Dubai Arab	0,067	0,069	0,066	0,059	0,060	0,054	0,097	0,001	71,288	0,096	0,001	70,575	0,096	0,002	61,210	0,096	0,002	52,452	0,096	0,001	73,759	0,097	0,001	178,898
Oman Omani	0,068	0,070	0,066	0,059	0,060	0,054	0,096	0,001	81,294	0,095	0,001	80,463	0,096	0,001	69,699	0,096	0,002	59,772	0,096	0,001	86,068	0,096	0,000	196,907
DR Congo Mbuti Pygmy	0,071	0,074	0,070	0,070	0,070	0,069	0,168	0,004	47,466	0,168	0,004	47,242	0,168	0,004	41,243	0,163	0,005	35,030	0,164	0,003	47,448	0,162	0,001	142,946
Egypt Egyptian	0,084	0,084	0,082	0,074	0,075	0,067	0,092	0,001	65,077	0,093	0,001	65,901	0,093	0,002	55,001	0,093	0,002	49,309	0,093	0,001	68,880	0,095	0,000	236,702
Algeria Mozabite	0,084	0,085	0,081	0,073	0,075	0,067	0,098	0,001	85,724	0,098	0,001	85,347	0,099	0,001	73,259	0,099	0,002	63,221	0,099	0,001	91,990	0,101	0,000	218,004
Saudi Arabia Arab	0,097	0,098	0,094	0,085	0,087	0,079	0,087	0,001	80,766	0,087	0,001	81,674	0,088	0,001	69,266	0,089	0,001	61,004	0,088	0,001	85,326	0,090	0,001	165,124
Jordania Jordanian	0,099	0,099	0,096	0,087	0,089	0,081	0,082	0,002	35,079	0,083	0,002	35,479	0,083	0,003	31,250	0,084	0,003	28,199	0,084	0,002	37,108	0,086	0,001	113,861
Iran Iranian	0,099	0,099	0,095	0,088	0,090	0,082	0,076	0,002	48,093	0,077	0,002	48,683	0,077	0,002	42,304	0,077	0,002	37,728	0,077	0,002	50,697	0,079	0,000	176,194
Yemen Yemeni	0,099	0,100	0,096	0,088	0,090	0,081	0,086	0,001	58,939	0,086	0,001	59,201	0,087	0,002	52,190	0,087	0,002	45,308	0,087	0,001	62,958	0,089	0,000	178,654
Namibia Juhoansi	0,097	0,099	0,096	0,094	0,095	0,094	0,165	0,005	36,002	0,164	0,005	35,940	0,164	0,005	30,580	0,161	0,006	27,337	0,161	0,005	35,433	0,158	0,002	100,251
Pakistan Makrani	0,104	0,105	0,101	0,094	0,095	0,089	0,073	0,001	51,054	0,074	0,001	51,162	0,075	0,002	45,203	0,074	0,002	39,632	0,074	0,001	54,041	0,075	0,000	177,810
Israel Bedouin	0,106	0,107	0,103	0,095	0,097	0,088	0,084	0,001	75,645	0,084	0,001	75,348	0,084	0,001	61,831	0,085	0,001	57,195	0,085	0,001	80,148	0,087	0,000	266,892
Syria Syrians	0,106	0,107	0,103	0,095	0,097	0,088	0,078	0,003	28,688	0,078	0,003	28,697	0,079	0,003	25,843	0,080	0,003	23,368	0,079	0,003	30,411	0,081	0,001	86,543
Israel Palestinian	0,106	0,108	0,104	0,095	0,097	0,089	0,083	0,002	43,468	0,082	0,002	43,156	0,083	0,002	38,674	0,084	0,002	34,265	0,084	0,002	46,646	0,086	0,001	140,974
Saudi Arabia Saudi	0,106	0,108	0,104	0,096	0,098	0,090	0,081	0,002	43,364	0,081	0,002	43,198	0,081	0,002	38,298	0,082	0,002	33,934	0,081	0,002	45,571	0,084	0,001	144,566
India Maratha	0,107	0,108	0,104	0,096	0,099	0,092	0,059	0,001	66,542	0,059	0,001	64,090	0,059	0,001	83,720	0,060	0,001	66,339	0,059	0,001	77,271	0,060	0,001	68,872
India West Bengal Brahmin	0,107	0,108	0,104	0,097	0,099	0,093	0,059	0,002	26,862	0,059	0,002	26,877	0,060	0,002	24,060	0,060	0,003	21,742	0,060	0,002	27,914	0,061	0,001	76,836
Bangladesh Bengali	0,108	0,108	0,105	0,097	0,099	0,093	0,052	0,001	59,055	0,052	0,001	60,228	0,052	0,001	51,958	0,053	0,001	46,069	0,052	0,001	63,579	0,053	0,000	189,610
India Brahmin	0,107	0,109	0,104	0,097	0,099	0,092	0,062	0,001	46,110	0,062	0,001	45,895	0,063	0,002	41,652	0,063	0,002	36,100	0,062	0,001	48,601	0,064	0,000	149,656
India Kshatriya	0,107	0,110	0,103	0,096	0,099	0,092	0,062	0,002	29,875	0,061	0,002	29,155	0,063	0,002	27,740	0,063	0,003	24,248	0,062	0,002	31,605	0,063	0,001	85,986
Lebanon Lebanese	0,108	0,110	0,106	0,098	0,099	0,092	0,080	0,002	33,411	0,079	0,002	33,399	0,080	0,003	27,270	0,081	0,003	26,679	0,081	0,002	33,580	0,083	0,001	107,810
India Khatri	0,107	0,108	0,104	0,097	0,100	0,092	0,065	0,001	62,973	0,065	0,001	63,298	0,066	0,001	54,185	0,066	0,001	48,082	0,065	0,001	65,839	0,067	0,000	227,158

India Brahmins from Uttar Pradesh	0,109	0,108	0,104	0,097	0,100	0,093	0,061	0,001	44,995	0,062	0,001	46,088	0,063	0,002	40,615	0,063	0,002	35,842	0,062	0,001	47,604	0,063	0,000	162,553
Pakistan Pathan	0,108	0,109	0,105	0,098	0,100	0,093	0,065	0,002	26,342	0,064	0,002	26,324	0,066	0,003	23,986	0,066	0,003	21,394	0,065	0,002	27,513	0,067	0,001	75,882
Turkmenistan Turkmen	0,109	0,109	0,106	0,098	0,100	0,093	0,060	0,001	43,617	0,060	0,001	44,332	0,060	0,002	39,335	0,061	0,002	34,612	0,061	0,001	47,011	0,062	0,000	137,122
Pakistan Sindhi	0,108	0,110	0,105	0,098	0,100	0,093	0,065	0,001	97,949	0,065	0,001	97,926	0,066	0,001	83,556	0,067	0,001	72,959	0,066	0,001	101,810	0,067	0,000	152,609
India Gujarat Brahmin	0,108	0,110	0,105	0,098	0,100	0,094	0,062	0,002	38,395	0,061	0,002	37,964	0,063	0,002	34,244	0,063	0,002	30,387	0,062	0,002	40,019	0,063	0,000	126,464
India Indian	0,109	0,110	0,105	0,098	0,101	0,094	0,059	0,001	96,866	0,059	0,001	95,988	0,061	0,001	81,357	0,060	0,001	71,556	0,060	0,001	105,307	0,061	0,000	222,996
India Iyer	0,109	0,110	0,106	0,098	0,101	0,094	0,060	0,000	167,985	0,061	0,000	141,760	0,061	0,000	372,826	0,062	0,000	177,534	0,061	0,000	494,744	0,062	0,001	113,082
Pakistan Hazara	0,110	0,110	0,106	0,099	0,101	0,094	0,037	0,000	157,814	0,038	0,000	161,292	0,039	0,000	133,632	0,039	0,000	170,453	0,038	0,000	134,787	0,040	0,000	89,712
India Gujarati	0,109	0,110	0,106	0,099	0,101	0,094	0,062	0,000	191,683	0,061	0,000	161,282	0,062	0,000	154,288	0,062	0,000	143,547	0,062	0,000	353,997	0,063	0,000	155,490
India Punjabi	0,110	0,110	0,107	0,099	0,101	0,094	0,061	0,002	34,898	0,061	0,002	35,204	0,062	0,002	30,845	0,063	0,002	28,124	0,062	0,002	36,434	0,063	0,001	114,583
India Muslim	0,110	0,111	0,105	0,099	0,101	0,095	0,058	0,001	78,458	0,058	0,001	75,224	0,060	0,001	104,542	0,059	0,001	80,571	0,058	0,001	92,724	0,059	0,001	74,521
Lebanon Lebanese Muslim	0,109	0,111	0,107	0,099	0,101	0,092	0,078	0,002	33,059	0,077	0,002	32,895	0,078	0,003	28,953	0,079	0,003	26,430	0,079	0,002	34,390	0,081	0,001	105,810
Pakistan Balochi	0,110	0,112	0,107	0,099	0,101	0,094	0,068	0,000	153,523	0,068	0,000	151,201	0,069	0,000	143,978	0,070	0,001	116,147	0,069	0,000	174,885	0,071	0,001	136,276
Iran Azeri	0,111	0,112	0,106	0,099	0,101	0,093	0,070	0,001	137,428	0,070	0,001	132,446	0,071	0,001	125,841	0,072	0,001	101,925	0,071	0,000	172,312	0,073	0,000	168,261
India Kol	0,110	0,110	0,107	0,099	0,102	0,096	0,056	0,001	54,410	0,057	0,001	53,222	0,057	0,001	63,101	0,058	0,001	52,875	0,057	0,001	60,729	0,057	0,001	60,854
Sri Lanka Sri Lankan	0,110	0,111	0,107	0,098	0,102	0,095	0,059	0,001	94,852	0,059	0,001	94,223	0,059	0,001	77,937	0,060	0,001	71,195	0,059	0,001	102,334	0,060	0,000	226,614
India Palian	0,110	0,111	0,107	0,100	0,102	0,097	0,057	0,001	61,878	0,057	0,001	62,139	0,058	0,001	53,217	0,058	0,001	47,244	0,057	0,001	65,010	0,057	0,000	226,438
India Dusadh	0,111	0,112	0,108	0,101	0,103	0,098	0,057	0,000	132,060	0,058	0,000	115,786	0,058	0,000	271,134	0,058	0,000	144,829	0,058	0,000	237,637	0,058	0,001	100,725
India Chamar	0,110	0,112	0,106	0,099	0,103	0,096	0,058	0,000	128,700	0,058	0,000	121,507	0,060	0,001	110,758	0,059	0,001	93,025	0,058	0,000	147,816	0,059	0,000	185,332
Turkey Turks	0,112	0,113	0,110	0,102	0,103	0,095	0,070	0,002	45,478	0,071	0,002	46,001	0,071	0,002	40,148	0,071	0,002	35,833	0,071	0,001	48,655	0,073	0,000	159,177
Pakistan Brahui	0,112	0,112	0,109	0,101	0,104	0,096	0,069	0,002	36,444	0,070	0,002	36,588	0,070	0,002	32,338	0,070	0,002	28,911	0,070	0,002	37,937	0,071	0,001	117,744
India Uttar Pradesh Scheduled Caste	0,111	0,113	0,110	0,101	0,104	0,097	0,058	0,000	128,798	0,058	0,000	121,658	0,058	0,001	103,541	0,059	0,001	91,927	0,058	0,000	146,686	0,059	0,000	186,263
India Gond	0,112	0,113	0,110	0,101	0,104	0,099	0,052	0,001	61,392	0,052	0,001	61,621	0,052	0,001	53,196	0,053	0,001	47,313	0,052	0,001	64,532	0,052	0,000	192,395
Pakistan Burusho	0,112	0,113	0,108	0,101	0,104	0,096	0,057	0,001	69,754	0,057	0,001	70,187	0,059	0,001	61,958	0,058	0,001	53,143	0,058	0,001	73,391	0,059	0,000	161,695
India Dharkar	0,112	0,114	0,109	0,101	0,104	0,098	0,060	0,001	64,396	0,060	0,001	64,080	0,061	0,001	45,927	0,061	0,001	49,589	0,060	0,001	61,741	0,061	0,000	392,325
Pakistan Punjabi	0,112	0,114	0,108	0,101	0,105	0,099	0,058	0,003	22,036	0,058	0,003	22,065	0,060	0,003	19,373	0,060	0,003	18,220	0,058	0,003	22,090	0,059	0,001	57,910
Spain Spanish	0,113	0,114	0,110	0,102	0,105	0,097	0,075	0,001	115,281	0,075	0,001	113,404	0,076	0,001	102,378	0,077	0,001	85,538	0,076	0,001	130,812	0,078	0,000	176,132
Russia Azeri	0,112	0,115	0,111	0,102	0,105	0,097	0,071	0,001	57,380	0,070	0,001	55,722	0,071	0,001	50,041	0,072	0,002	43,902	0,071	0,001	60,227	0,073	0,000	181,346
Yemen Yemenite Jews	0,114	0,115	0,111	0,103	0,105	0,096	0,082	0,002	46,395	0,082	0,002	46,524	0,083	0,002	41,277	0,084	0,002	36,459	0,083	0,002	49,492	0,086	0,001	158,105
India Kanjars	0,113	0,114	0,112	0,103	0,106	0,100	0,060	0,001	78,532	0,060	0,001	78,818	0,060	0,001	64,295	0,061	0,001	59,219	0,060	0,001	82,894	0,061	0,000	240,223

India Velama	0,115	0,115	0,110	0,103	0,106	0,099	0,059	0,001	47,299	0,060	0,001	47,489	0,061	0,001	46,843	0,061	0,001	45,797	0,060	0,001	47,863	0,061	0,001	53,634
Armenia Armenian	0,115	0,116	0,112	0,104	0,106	0,098	0,075	0,002	41,607	0,075	0,002	41,762	0,075	0,002	36,651	0,076	0,002	33,082	0,076	0,002	44,222	0,078	0,001	145,106
Italy Sicilian	0,115	0,117	0,113	0,104	0,106	0,098	0,077	0,004	19,963	0,077	0,004	19,955	0,078	0,004	18,212	0,079	0,005	16,472	0,078	0,004	21,105	0,080	0,002	52,873
Lebanon Lebanese Christian	0,116	0,117	0,112	0,104	0,106	0,099	0,077	0,003	30,018	0,077	0,003	30,070	0,079	0,003	27,045	0,079	0,003	24,607	0,079	0,002	31,908	0,081	0,001	92,985
Irak Kurd Jew	0,116	0,117	0,113	0,105	0,107	0,099	0,075	0,004	17,292	0,075	0,004	17,503	0,076	0,005	15,245	0,077	0,005	14,484	0,077	0,004	17,827	0,079	0,002	43,611
Lebanon Lebanese Druze	0,116	0,118	0,113	0,105	0,107	0,099	0,076	0,002	38,403	0,075	0,002	38,016	0,077	0,002	33,953	0,077	0,003	30,498	0,077	0,002	40,548	0,079	0,001	131,148
India Piramalai Kallar	0,116	0,117	0,114	0,106	0,108	0,103	0,059	0,000	174,249	0,058	0,000	180,963	0,059	0,000	127,631	0,059	0,000	145,011	0,059	0,000	146,579	0,059	0,001	109,865
Kazakhstan Kurd	0,118	0,119	0,116	0,107	0,108	0,100	0,073	0,002	35,818	0,074	0,002	36,137	0,074	0,002	31,397	0,075	0,003	28,896	0,075	0,002	38,234	0,077	0,001	122,428
Cyprus Cypriot	0,118	0,119	0,114	0,105	0,108	0,099	0,076	0,004	20,612	0,076	0,004	20,647	0,077	0,004	18,857	0,079	0,005	17,235	0,078	0,004	21,923	0,080	0,001	55,867
Georgia Balkar	0,117	0,117	0,113	0,106	0,109	0,100	0,067	0,002	27,292	0,067	0,002	27,695	0,068	0,003	24,540	0,068	0,003	22,307	0,067	0,002	28,321	0,069	0,001	81,084
Israel Druze	0,117	0,119	0,115	0,107	0,109	0,101	0,078	0,003	26,444	0,078	0,003	26,322	0,079	0,003	24,003	0,079	0,004	21,453	0,079	0,003	27,902	0,081	0,001	75,389
India Manipuri Brahmin	0,118	0,119	0,115	0,108	0,110	0,104	0,030	0,001	30,986	0,030	0,001	31,160	0,031	0,001	28,074	0,031	0,001	25,030	0,030	0,001	32,384	0,031	0,000	98,444
Lybia Lybian Jew	0,119	0,119	0,116	0,108	0,110	0,102	0,082	0,001	72,174	0,082	0,001	73,019	0,082	0,001	62,196	0,083	0,002	54,887	0,082	0,001	77,420	0,084	0,000	220,832
Iraq Iraqi Jews	0,119	0,120	0,116	0,108	0,110	0,101	0,075	0,001	133,489	0,075	0,001	133,430	0,076	0,001	142,599	0,077	0,000	154,574	0,076	0,001	128,847	0,079	0,001	89,161
India Ho	0,120	0,121	0,117	0,109	0,112	0,106	0,044	0,000	143,460	0,043	0,000	153,938	0,044	0,000	101,786	0,045	0,000	168,857	0,044	0,000	109,218	0,044	0,001	84,253
India Tharu	0,120	0,121	0,118	0,110	0,112	0,107	0,029	0,001	23,546	0,030	0,001	23,790	0,030	0,001	21,565	0,030	0,002	19,311	0,030	0,001	25,276	0,030	0,000	64,930
Romania Romanian	0,121	0,121	0,118	0,109	0,112	0,103	0,071	0,003	20,520	0,071	0,003	20,781	0,072	0,004	18,399	0,073	0,004	17,110	0,072	0,003	21,395	0,074	0,001	55,468
Iran Iranian Jew	0,122	0,122	0,117	0,110	0,112	0,104	0,076	0,005	16,092	0,076	0,005	16,199	0,078	0,005	15,189	0,078	0,006	13,537	0,077	0,005	17,167	0,080	0,002	40,787
Georgia Chechen	0,121	0,122	0,117	0,110	0,112	0,103	0,069	0,002	31,723	0,068	0,002	31,441	0,070	0,002	28,824	0,070	0,003	25,594	0,070	0,002	33,755	0,072	0,001	100,048
Georgia Georgian	0,122	0,122	0,118	0,110	0,112	0,105	0,072	0,001	48,780	0,073	0,001	49,498	0,074	0,002	41,801	0,074	0,002	38,851	0,074	0,001	51,360	0,076	0,000	199,510
India North Kannadi	0,120	0,121	0,117	0,110	0,113	0,104	0,055	0,002	22,717	0,055	0,002	22,455	0,056	0,002	23,300	0,056	0,003	20,398	0,055	0,002	24,280	0,057	0,002	34,309
Italy Italian Abruzzo	0,122	0,121	0,118	0,110	0,113	0,104	0,073	0,002	34,615	0,074	0,002	35,336	0,074	0,002	31,719	0,075	0,003	28,159	0,074	0,002	36,709	0,077	0,001	110,159
Georgia Abhkasian	0,122	0,122	0,118	0,110	0,113	0,104	0,070	0,002	30,589	0,071	0,002	30,988	0,071	0,003	26,972	0,072	0,003	24,932	0,071	0,002	31,803	0,074	0,001	97,264
Italy Tuscan	0,122	0,123	0,119	0,110	0,113	0,104	0,074	0,002	37,159	0,074	0,002	37,361	0,075	0,002	31,447	0,076	0,003	29,925	0,075	0,002	38,243	0,078	0,001	130,997
Georgia Georgians	0,123	0,123	0,119	0,111	0,113	0,105	0,070	0,001	56,248	0,071	0,001	57,257	0,072	0,001	50,073	0,073	0,002	44,486	0,072	0,001	61,097	0,074	0,000	202,947
India Santal	0,121	0,123	0,121	0,112	0,114	0,109	0,046	0,001	82,879	0,046	0,001	81,678	0,045	0,001	68,775	0,047	0,001	61,172	0,046	0,001	86,905	0,046	0,000	167,561
Croatia Croatian	0,124	0,123	0,120	0,112	0,114	0,106	0,072	0,001	69,039	0,073	0,001	70,880	0,073	0,001	60,956	0,074	0,001	53,394	0,073	0,001	74,904	0,075	0,000	209,972
France French	0,125	0,125	0,121	0,113	0,116	0,107	0,071	0,003	22,014	0,072	0,003	22,127	0,073	0,004	20,220	0,073	0,004	18,257	0,072	0,003	23,242	0,075	0,001	61,010
Italy Italian Bergamo	0,125	0,125	0,122	0,113	0,116	0,108	0,072	0,004	19,392	0,073	0,004	19,533	0,073	0,004	17,839	0,074	0,005	16,109	0,073	0,004	20,421	0,076	0,001	51,413
Hungary Hungarian	0,126	0,126	0,122	0,114	0,116	0,107	0,070	0,002	46,514	0,071	0,002	47,120	0,072	0,002	41,788	0,072	0,002	37,143	0,072	0,001	49,807	0,074	0,000	168,780
Burma Burmese	0,125	0,126	0,124	0,116	0,117	0,113	0,017	0,002	9,162	0,017	0,002	9,177	0,017	0,002	8,332	0,018	0,002	7,607	0,018	0,002	9,655	0,018	0,001	21,004

USA CEU	0,127	0,128	0,122	0,115	0,117	0,108	0,071	0,002	38,467	0,071	0,002	38,444	0,072	0,002	35,348	0,073	0,002	31,111	0,072	0,002	41,262	0,075	0,001	129,119
India Kadar	0,127	0,127	0,124	0,117	0,118	0,114	0,054	0,003	20,551	0,054	0,003	20,616	0,054	0,003	19,875	0,055	0,003	18,436	0,055	0,003	21,314	0,055	0,002	30,407
Georgia Abkhasian	0,126	0,127	0,123	0,116	0,118	0,109	0,068	0,001	115,431	0,068	0,001	110,657	0,069	0,000	175,066	0,069	0,001	128,845	0,069	0,001	135,570	0,071	0,001	87,565
India Korva	0,130	0,130	0,128	0,120	0,122	0,117	0,046	0,000	101,539	0,046	0,000	101,277	0,046	0,001	87,606	0,047	0,001	74,253	0,046	0,000	112,377	0,047	0,000	175,381
India Tripuri	0,130	0,131	0,128	0,120	0,122	0,117	0,017	0,000	54,349	0,017	0,000	54,068	0,017	0,000	44,808	0,017	0,000	41,508	0,017	0,000	58,581	0,017	0,000	179,734
India Birhor	0,129	0,131	0,128	0,119	0,122	0,116	0,049	0,000	138,925	0,049	0,000	135,236	0,049	0,000	201,405	0,050	0,000	160,699	0,049	0,000	154,599	0,049	0,001	91,244
Italy Sardinian	0,134	0,134	0,130	0,121	0,123	0,115	0,075	0,002	34,048	0,075	0,002	34,276	0,076	0,002	31,300	0,077	0,003	27,946	0,077	0,002	37,090	0,079	0,001	111,168
India Irula	0,133	0,133	0,131	0,123	0,125	0,120	0,055	0,002	34,721	0,055	0,002	34,517	0,055	0,002	35,413	0,055	0,002	32,149	0,055	0,002	36,514	0,055	0,001	44,808
India Jamatia	0,134	0,134	0,132	0,124	0,126	0,120	0,016	0,001	31,532	0,017	0,000	33,613	0,016	0,001	28,128	0,017	0,001	25,659	0,016	0,000	34,127	0,017	0,000	93,875
Greece Greek	0,134	0,135	0,131	0,124	0,126	0,122	0,080	0,003	29,422	0,080	0,003	29,309	0,081	0,003	26,345	0,081	0,003	23,712	0,081	0,003	30,556	0,081	0,001	84,756
Indonesia Samihin	0,134	0,135	0,132	0,125	0,127	0,122	0,020	0,001	14,792	0,019	0,001	14,345	0,020	0,001	13,590	0,020	0,002	11,961	0,020	0,001	15,327	0,019	0,001	35,514
Singapore Malay	0,134	0,135	0,132	0,125	0,127	0,122	0,016	0,001	24,391	0,016	0,001	24,085	0,016	0,001	21,597	0,016	0,001	18,800	0,015	0,001	24,941	0,015	0,000	63,083
Cambodia Cambodian	0,136	0,137	0,133	0,126	0,127	0,124	0,013	0,001	14,219	0,013	0,001	13,994	0,014	0,001	13,635	0,014	0,001	11,979	0,014	0,001	15,869	0,013	0,000	36,049
Indonesia Bajo	0,138	0,139	0,136	0,129	0,130	0,126	0,018	0,004	4,322	0,018	0,004	4,321	0,018	0,004	4,082	0,018	0,005	3,607	0,018	0,004	4,533	0,018	0,002	8,794
Pakistan Kalash	0,139	0,141	0,136	0,128	0,131	0,123	0,064	0,002	32,634	0,064	0,002	32,330	0,065	0,002	29,674	0,066	0,002	26,529	0,065	0,002	34,529	0,067	0,001	103,865
Indonesia Bugis	0,141	0,142	0,139	0,132	0,133	0,129	0,012	0,001	9,288	0,013	0,001	9,582	0,013	0,001	8,951	0,013	0,002	7,961	0,013	0,001	10,211	0,012	0,001	21,834
Indonesia Dayak Ngaju	0,142	0,143	0,141	0,133	0,135	0,131	0,013	0,000	69,548	0,013	0,000	78,057	0,012	0,000	36,746	0,013	0,000	84,075	0,013	0,000	44,626	0,012	0,000	45,200
Indonesia Banjar	0,143	0,143	0,141	0,134	0,135	0,131	0,011	0,002	5,136	0,011	0,002	5,258	0,011	0,002	4,907	0,011	0,003	4,331	0,011	0,002	5,560	0,011	0,001	11,011
Vietnam Kinh	0,143	0,143	0,142	0,134	0,135	0,131	0,005	0,000	62,923	0,005	0,000	96,046	0,005	0,000	17,100	0,005	0,000	61,962	0,005	0,000	25,852	0,005	0,000	30,294
India Paniya	0,143	0,143	0,140	0,133	0,135	0,131	0,052	0,001	56,985	0,052	0,001	57,930	0,053	0,001	50,806	0,053	0,001	56,959	0,052	0,001	53,307	0,052	0,001	56,791
Indonesia Bajo Derawan	0,143	0,144	0,140	0,134	0,135	0,130	0,013	0,002	8,242	0,014	0,002	8,454	0,014	0,002	8,167	0,014	0,002	6,991	0,014	0,002	9,075	0,014	0,001	20,033
Vietnam Vietnamese	0,145	0,146	0,143	0,135	0,137	0,133	0,004	0,001	4,403	0,004	0,001	4,643	0,004	0,001	4,588	0,005	0,001	4,094	0,004	0,001	5,179	0,004	0,000	9,883
Indonesia Dayak	0,146	0,147	0,144	0,137	0,138	0,134	0,010	0,001	12,953	0,010	0,001	12,584	0,010	0,001	11,608	0,010	0,001	10,149	0,010	0,001	14,038	0,010	0,000	31,561
China Han	0,147	0,148	0,145	0,138	0,140	0,135	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indonesia Maanyan	0,148	0,149	0,147	0,140	0,141	0,136	0,012	0,001	8,640	0,012	0,001	8,717	0,011	0,001	7,912	0,011	0,002	6,780	0,012	0,001	9,039	0,012	0,001	20,031
China Dai	0,148	0,149	0,147	0,140	0,141	0,136	0,004	0,001	3,406	0,004	0,001	3,523	0,004	0,001	3,266	0,004	0,001	2,905	0,004	0,001	4,009	0,003	0,000	7,415
Morocco Moroccan	0,150	0,151	0,146	0,142	0,143	0,139	0,093	0,001	109,857	0,093	0,001	110,169	0,094	0,001	94,534	0,093	0,001	79,302	0,093	0,001	114,045	0,093	0,001	162,961
Brunei Dusun	0,153	0,154	0,151	0,144	0,145	0,141	0,008	0,001	7,711	0,009	0,001	7,971	0,008	0,001	7,331	0,009	0,001	6,615	0,009	0,001	8,672	0,008	0,000	18,449
Indonesia Bajo Kotabaru	0,154	0,154	0,152	0,144	0,145	0,142	0,014	0,003	4,632	0,015	0,003	4,860	0,015	0,003	4,474	0,015	0,004	4,029	0,015	0,003	5,137	0,014	0,001	9,882
Brunei Murut	0,156	0,157	0,155	0,148	0,149	0,144	0,009	0,000	29,819	0,009	0,000	32,799	0,008	0,001	15,059	0,009	0,000	30,442	0,009	0,000	19,598	0,009	0,000	25,319
India Pulliyar	0,154	0,159	0,154	0,147	0,149	0,142	0,055	0,004	14,753	0,052	0,004	14,270	0,054	0,004	13,772	0,054	0,004	12,695	0,053	0,004	14,862	0,055	0,002	23,100

Bulgaria Bulgarian	0,157	0,159	0,154	0,149	0,151	0,146	0,080	0,001	83,486	0,080	0,001	83,174	0,081	0,001	73,107	0,081	0,001	62,024	0,080	0,001	87,322	0,081	0,000	175,962
Indonesia Lebbo	0,163	0,165	0,161	0,154	0,155	0,151	0,011	0,002	4,825	0,010	0,002	4,526	0,011	0,002	4,468	0,011	0,003	3,857	0,011	0,002	5,199	0,011	0,001	9,858
Philippines Igorot	0,178	0,178	0,175	0,168	0,170	0,166	0,002	0,001	2,263	0,003	0,001	2,599	0,003	0,001	2,466	0,003	0,001	2,071	0,002	0,001	2,366	0,002	0,000	4,920
India Jarawa	0,197	0,200	0,197	0,189	0,192	0,186	0,046	0,005	9,004	0,045	0,005	8,658	0,045	0,006	8,121	0,046	0,006	7,375	0,045	0,005	9,051	0,046	0,002	19,106
India Onge	0,204	0,207	0,205	0,196	0,199	0,192	0,045	0,006	7,861	0,043	0,006	7,483	0,043	0,006	6,937	0,045	0,007	6,418	0,043	0,006	7,831	0,045	0,003	16,594
Papua New Guinea Papuan	0,227	0,228	0,224	0,217	0,219	0,215	0,056	0,002	22,500	0,056	0,002	22,572	0,057	0,003	21,097	0,057	0,003	18,341	0,056	0,002	23,852	0,056	0,001	58,641
UAE Arab	0,292	0,292	0,290	0,284	0,287	0,285	0,085	0,002	47,693	0,086	0,002	48,271	0,086	0,002	41,494	0,086	0,002	36,908	0,085	0,002	48,856	0,083	0,001	157,702
Tunisia Tunisian	0,292	0,294	0,290	0,285	0,287	0,285	0,089	0,002	37,607	0,089	0,002	37,082	0,091	0,003	34,253	0,090	0,003	29,337	0,089	0,002	39,025	0,088	0,001	108,178
Italy West Sicilian	0,298	0,299	0,295	0,291	0,293	0,290	0,086	0,002	42,176	0,086	0,002	41,742	0,087	0,002	38,194	0,086	0,003	32,470	0,086	0,002	43,608	0,085	0,001	119,719
Italy East Sicilian	0,298	0,299	0,295	0,292	0,293	0,291	0,088	0,002	56,937	0,087	0,002	56,368	0,090	0,002	50,487	0,087	0,002	42,540	0,087	0,001	58,283	0,086	0,000	184,963
Italy South Italian	0,298	0,300	0,295	0,292	0,293	0,291	0,088	0,003	29,734	0,088	0,003	29,560	0,090	0,003	26,797	0,089	0,004	23,588	0,088	0,003	30,295	0,087	0,001	81,032

Table S10. F_{ST} and *f*3-statistics (African-SNP: Comoros-Anjouan, X; China-Han) results for Comoros and Swahili populations compared to other populations in the 170K dataset using African-SNPs identified by PCAdmix [11].

A-Comoros and Malagasy in the same cluster

Population	Null	Best-fit	p	R^2.1D	FQ1	FQ2	G.1D	G.1D	% 1D Source 1	1D Source 1	1D Source 2	% MW Source 1	MW Source 1	MW Source 2	M	G.2D.1	G.2D.1 95%CI	% 2D.1 Source 1	2D.1 Source 1	2D.1 Source 2	G.2D.2	G.2D.2	% 2D.2 Source 1	2D.2 Source 1	2D.2 Source 2
Comoros Anjouan	0	2D	<0.01	0.99	0.98	1.00	28.50	-	0.21	Indonesia Banjar	Kenya Swahili Mombasa	0.46	Kenya Swahili Lamu	Kenya Swahili Lamu	0.47	15.82	1.2-23.2	0.26	Dubai Arab	Kenya Swahili Mombasa	41.27	31.4-60.1	0.17	Indonesia Banjar	Kenya Swahili Mombasa
Comoros Anjouan	1	1D	<0.01	0.99	0.99	1.00	29.00	25.7-31.4	0.22	Indonesia Banjar	Kenya Swahili Mombasa	0.47	Kenya Swahili Lamu	Kenya Swahili Lamu	0.34	13.68	-	0.26	Kenya Swahili Kilifi	Kenya Swahili Mombasa	38.92	-	0.19	Singapore Malay	Kenya Swahili Mombasa
ComorosGrande Comore	0	1D	<0.01	0.99	1.00	1.00	27.33	26.5-29.3	0.17	Indonesia Banjar	Kenya Swahili Mombasa	0.37	Dubai Arab	South Africa Bantu Soweto	0.29	1.00	-	0.38	Kenya Swahili Lamu	Kenya Swahili Mombasa	30.31	-	0.17	Indonesia Banjar	Kenya Swahili Mombasa
ComorosGrande Comore	1	1D	<0.01	0.99	1.00	1.00	29.10	26.2-31.1	0.19	Indonesia Banjar	Kenya Swahili Mombasa	0.39	Kenya Swahili Lamu	South Africa Bantu Soweto	0.25	1.00	-	0.46	Kenya Swahili Lamu	Kenya Swahili Mombasa	31.54	-	0.19	Indonesia Banjar	Kenya Swahili Mombasa
Comoros Moheli	0	2D	<0.01	0.98	0.98	1.00	25.05	-	0.20	Singapore Malay	Kenya Swahili Mombasa	0.45	Kenya Swahili Lamu	Kenya Swahili Lamu	0.65	5.08	1.4-8.9	0.15	Indonesia Banjar	Kenya Swahili Mombasa	35.72	30.9-42.8	0.20	Singapore Malay	Kenya Swahili Mombasa
Comoros Moheli	1	2D	<0.01	0.98	0.98	1.00	25.53	-	0.21	Singapore Malay	Kenya Swahili Mombasa	0.47	Kenya Swahili Lamu	Kenya Swahili Lamu	0.63	5.57	1.3-11.9	0.20	South Africa Bantu Soweto	Kenya Swahili Mombasa	38.37	32.4-43.8	0.22	Singapore Malay	Kenya Swahili Mombasa
Madagascar Antemoro	0	1D	<0.01	1.00	1.00	1.00	30.21	28.8-31.8	0.35	Indonesia Banjar	Kenya Swahili Mombasa	0.31	Kenya Luhya	South Africa Bantu Soweto	0.22	5.87	-	0.35	Kenya Swahili Lamu	South Africa Bantu Soweto	31.00	-	0.35	Indonesia Banjar	Kenya Swahili Mombasa
Madagascar Antemoro	1	1D	<0.01	0.99	1.00	1.00	30.87	29.2-33.3	0.35	Indonesia Banjar	Kenya Swahili Mombasa	0.36	Cameroon Nzime	South Africa Bantu Soweto	0.21	28.99	-	0.34	Indonesia Banjar	Kenya Swahili Mombasa	119.66	-	0.15	Indonesia Bugis	Kenya Swahili Mombasa
Madagascar Mikea	0	1D	<0.01	0.99	1.00	1.00	27.58	25.9-29.6	0.33	Indonesia Banjar	Kenya Swahili Mombasa	0.33	Namibia Kwangali	South Africa Bantu Soweto	0.31	13.62	-	0.48	Indonesia Banjar	Kenya Swahili Mombasa	40.84	-	0.32	Indonesia Banjar	Kenya Swahili Mombasa
Madagascar Mikea	1	2D	<0.01	0.99	1.00	1.00	27.75	26.1-30.6	0.33	Indonesia Banjar	Kenya Swahili Mombasa	0.34	Gabon Nzebi	Kenya Swahili Lamu	0.41	7.25	-	0.40	Kenya Swahili Mombasa	Kenya Swahili Lamu	35.60	-	0.33	Indonesia Banjar	Kenya Swahili Mombasa
Madagascar Vezo	0	1D	<0.01	0.99	1.00	1.00	25.69	24.1-26.9	0.37	Singapore Malay	Kenya Swahili Mombasa	0.31	Uganda Bakiga	Kenya Swahili Lamu	0.17	22.34	-	0.35	Indonesia Banjar	Kenya Swahili Mombasa	89.37	-	0.45	Indonesia Banjar	Kenya Swahili Mombasa
Madagascar Vezo	1	2D	<0.01	0.99	1.00	1.00	25.97	23.7-27.1	0.37	Singapore Malay	Kenya Swahili Mombasa	0.32	Uganda Bakiga	Kenya Swahili Lamu	0.37	22.08	-	0.37	Indonesia Banjar	Kenya Swahili Mombasa	79.18	-	0.46	Indonesia Banjar	Kenya Swahili Mombasa

B-Comoros and Malagasy in different clusters

Population	Null	Best-fit	p	R^2.1D	FQ1	FQ2	G.1D	G.1D	% 1D Source 1	1D Source 1	1D Source 2	% MW Source 1	MW Source 1	MW Source 2	M	G.2D.1	G.2D.1 95%CI	% 2D.1 Source 1	2D.1 Source 1	2D.1 Source 2	G.2D.2	G.2D.2	% 2D.2 Source 1	2D.2 Source 1	2D.2 Source 2
Comoros Anjouan	0	2D	<0.01	0.98	0.99	1.00	28.48	-	0.19	USA CEU	Kenya Swahili Mombasa	0.37	Madagascar Antemoro	Kenya Swahili Mombasa	0.51	12.00	1.32-19,87	0.19	Dubai Arab	Kenya Swahili Mombasa	49.26	32.10-67.49	0.20	India Brahmin	Kenya Swahili Mombasa
Comoros Anjouan	1	2D	<0.01	0.99	0.99	1.00	28.33	-	0.20	USA CEU	Kenya Swahili Mombasa	0.36	Madagascar Antemoro	Kenya Swahili Mombasa	0.40	12.74	1.82-21.61	0.19	Dubai Arab	Kenya Swahili Mombasa	48.75	32.16-86.16	0.19	India Brahmin	Kenya Swahili Mombasa
ComorosGrande Comore	0	MW	<0.01	0.99	0.97	1.00	28.36	25.84-29.33	0.19	India Punjabi	Kenya Swahili Mombasa	0.42	Madagascar Antemoro	Kenya Swahili Mombasa	0.32	19.01	-	0.15	India Brahmin	Kenya Swahili Mombasa	52.99	-	0.24	Madagascar Vezo	Kenya Swahili Mombasa
ComorosGrande Comore	1	1D	<0.01	0.99	0.99	1.00	30.74	26.23-31.12	0.19	India Punjabi	Kenya Swahili Mombasa	0.41	Madagascar Antemoro	Kenya Swahili Mombasa	0.34	11.42	-	0.16	India Punjabi	Kenya Swahili Mombasa	42.44	-	0.18	Bangladesh Bengali	Kenya Swahili Mombasa
Comoros Moheli	0	2D	<0.01	0.98	0.98	1.00	26.57	-	0.19	India Punjabi	Kenya Swahili Mombasa	0.42	Madagascar Antemoro	Kenya Swahili Mombasa	0.55	3.11	1.17-11.01	0.26	Madagascar Antemoro	Kenya Swahili Mombasa	34.95	30.87-42.84	0.19	India Punjabi	Kenya Swahili Mombasa
Comoros Moheli	1	2D	<0.01	0.97	0.99	1.00	28.57	-	0.19	India Punjabi	Kenya Swahili Mombasa	0.42	Madagascar Antemoro	Kenya Swahili Mombasa	0.58	4.70	1.36-11.38	0.27	Madagascar Antemoro	Kenya Swahili Mombasa	38.83	32.40-43.84	0.20	India Punjabi	Kenya Swahili Mombasa
Madagascar Antemoro	0	2D	<0.01	0.99	1.00	1.00	31.73	-	0.26	Indonesia Banjar	Comoros Moheli	0.49	South Africa Bantu Soweto	Comoros Moheli	0.41	29.68	26.54-30.14	0.26	Indonesia Banjar	Comoros Moheli	183.35	31.16-205.06	0.21	Singapore Malay	Comoros Moheli
Madagascar Antemoro	1	2D	<0.01	0.99	1.00	1.00	32.83	-	0.27	Indonesia Banjar	Comoros Moheli	0.46	South Africa Bantu Soweto	Comoros Moheli	0.35	30.45	26.84-30.69	0.26	Indonesia Banjar	Comoros Moheli	152.77	34.24-161.06	0.16	Indonesia Bugis	Comoros Moheli
Madagascar Mikea	0	2D	<0.01	0.99	1.00	1.00	30.34	-	0.26	Indonesia Banjar	Comoros Moheli	0.45	Namibia Kwangali	Comoros Moheli	0.46	14.84	1.04-20.88	0.43	Indonesia Banjar	Kenya Swahili Mombasa	49.49	34.85-77.71	0.24	Indonesia Banjar	Comoros Moheli
Madagascar Mikea	1	2D	<0.01	0.99	1.00	1.00	30.73	-	0.25	Indonesia Banjar	Comoros Moheli	0.39	Namibia Kwangali	Comoros Moheli	0.39	5.57	1.09-29.24	0.36	Kenya Swahili Mombasa	Comoros Moheli	39.45	33.45-125.46	0.26	Indonesia Banjar	Comoros Moheli
Madagascar Vezo	0	2D	<0.01	0.99	1.00	1.00	26.88	-	0.27	Indonesia Banjar	Comoros Moheli	0.50	Comoros Moheli	South Africa Bantu Soweto	0.52	22.34	16.73-26.37	0.28	Indonesia Banjar	Comoros Moheli	101.31	44.66-148.64	0.21	Singapore Malay	Comoros Moheli
Madagascar Vezo	1	2D	<0.01	0.99	1.00	1.00	26.99	-	0.27	Indonesia Banjar	Comoros Moheli	0.44	South Africa Bantu Soweto	Comoros Moheli	0.48	21.17	18.51-26.98	0.30	Indonesia Banjar	Comoros Moheli	81.78	51.92-175.93	0.24	Singapore Malay	Comoros Moheli

C-All Swahili individuals in one 'target population'

Population	Null	Best-fit	p	R^2.1D	FQ1	FQ2	G.1D	G.1D 95%CI	% 1D Source 1	1D Source 1	1D Source 2	% MW Source 1	MW Source 1	MW Source 2	M	G.2D.1	G.2D.1 95%CI	% 2D.1 Source 1	2D.1 Source 1	2D.1 Source 2	G.2D.2	G.2D.2 95%CI	% 2D.2 Source 1	2D.2 Source 1	2D.2 Source 2
Kenya Swahili	0	2D	<0.01	0.99	0.98	0.99	24.16	-	0.12	Ethiopia Oromo	South Africa Bantu Soweto	0.49	Kenya Luhya	South Africa Bantu Soweto	0.44	19.91	6.9-23.5	0.12	Ethiopia Oromo	South Africa Bantu Soweto	75.63	36.9-114.2	0.38	South Africa Bantu Soweto	Namibia Kwangali
Kenya Swahili	1	2D	<0.01	0.99	0.99	1.00	27.69	-	0.14	Ethiopia Amhara	South Africa Bantu Soweto	0.45	South Africa Bantu Soweto	Kenya-Luhya	0.47	13.44	8.45-16.7	0.1	Ethiopia Amhara	South Africa Bantu Soweto	52.37	41.2-64.1	0.13	Ethiopia Amhara	South Africa Bantu Soweto

D-Each Swahili community analysed separately																								
Population	Null	Best-fit	p	R^2.1D	FQ1	FQ2	G.1D	G.1D 95%CI	% 1D Source 1	1D Source 1	1D Source 2	% MW Source 1	MW Source 1	MW Source 2	M	G.2D.1	G.2D.1 95%CI	% 2D.1 Source 1	2D.1 Source 1	2D.1 Source 2	G.2D.2	G.2D.2 95%CI	% 2D.2 Source 1	2D.2 Source 1	2D.2 Source 2
Kenya Swahili Kilifi	0	1D	<0.01	0.98	0.99	1.00	23.85	21.1-25.1	0.12	Ethiopia Tygray	South Africa Bantu Soweto	0.42	South Africa Bantu Soweto	Namibia Kwangali	0.26	19.39	-	0.12	Ethiopia Tygray	South Africa Bantu Soweto	66.97	-	0.37	Comoros Moheli	Namibia Kwangali
Kenya Swahili Kilifi	1	1D	<0.01	0.98	0.98	0.99	26.59	23.7-30.7	0.13	Ethiopia Oromo	South Africa Bantu Soweto	0.43	South Africa Bantu Soweto	Namibia Kwangali	0.24	14.73	-	0.09	Ethiopia Oromo	South Africa Bantu Soweto	56.27	-	0.13	Ethiopia Oromo	South Africa Bantu Soweto
Kenya Swahili Lamu	0	1D	<0.01	0.98	1.00	1.00	25.25	23.4-29.1	0.11	Ethiopia Tygray	South Africa Bantu Soweto	0.49	Comoros Moheli	Namibia Kwangali	0.17	1.00	-	0.10	Ethiopia Tygray	South Africa Bantu Soweto	28.71	-	0.49	Comoros Moheli	Namibia Kwangali
Kenya Swahili Lamu	1	1D	<0.01	0.97	0.99	1.00	28.33	25.4-30.9	0.12	Ethiopia Oromo	South Africa Bantu Soweto	0.49	South Africa Bantu Soweto	Namibia Kwangali	0.30	8.57	-	0.12	South Africa Bantu Soweto	South Africa Bantu Soweto	39.09	-	0.13	Ethiopia Oromo	South Africa Bantu Soweto
Kenya Swahili Mombasa	0	1D	<0.01	0.98	0.99	1.00	24.35	19.8-26.6	0.13	Yemen Yemeni	South Africa Bantu Soweto	0.46	Kenya Luhya	Comoros Moheli	0.16	13.46	-	0.13	Kenya Turkana	South Africa Bantu Soweto	41.37	-	0.13	Yemen Yemeni	Namibia Kwangali
Kenya Swahili Mombasa	1	1D	<0.01	0.97	0.99	1.00	26.84	20.8-32.2	0.15	Ethiopia Amhara	South Africa Bantu Soweto	0.39	Comoros Moheli	Namibia Kwangali	0.30	8.51	-	0.13	Kenya Turkana	South Africa Bantu Soweto	44.14		0.15	Ethiopia Amhara	South Africa Bantu Soweto

Table S11. GLOBETROTTER [24] inferred dates in generations from present (G) for each studied population. The table is separated into four sections according to the clustering defined in fineSTRUCTURE [2]: A-Comoros and Malagasy populations in the same cluster; B-Comoros and Malagasy in different clusters; C-All Swahili individuals in one 'target population'; D-Each Swahili community analyzed separately. The best-fit models of admixture are labeled as: 1D: one date; 2D: multiple dates; MW: multiway one date; U: uncertain. P: p-value of evidence of any detectable admixture event obtained after 100 bootstrap resamplings of the NULL procedure. Date confidence intervals are based on 100 bootstrap replicates of the date inference. M corresponds to the additional R^2 explained by adding a second date versus assuming only a single date of admixture (M>0.35 to infer multiple dates event). FQ1 and FQ2 correspond respectively to the fit of a single admixture event and the fit of the first two principal components capturing the admixture events.

A-Comoros and Malagasy in the same cluster														
Population	Source.A	Source.B	A.1	SD.A.1	Z.A.1	G.1	SD.G.1	Z.G.1	A.2	SD.A.2	Z.A.2	G.2	SD.G.2	Z.G.2
Comoros Anjouan	Namibia Kwangali	Philippines Igorot	6.332E-04	4.021E-05	15.748	23.873	1.789	13.343						
Comoros Grande Comore	Philippines Igorot	South Africa BantuSA	6.998E-04	3.813E-05	18.353	26.717	1.553	17.198						
Comoros Moheli	Namibia Kwangali	Philippines Igorot	5.795E-04	6.199E-05	9.348	17.250	2.664	6.475						
Madagascar Antemoro	Namibia Kwangali	Philippines Igorot	1.421E-03	4.798E-05	29.613	28.874	1.160	24.883						
Madagasca Mikea	Namibia Mbukushu	Philippines Igorot	1.336E-03	7.172E-05	18.628	24.226	1.797	13.478						
Madagascar Vezo	Namibia Kwangali	Philippines Igorot	1.375E-03	7.15E-05	19.218	22.171	1.413	15.678						
B-Comoros and Malagasy in different clusters														
Population	Source.A	Source.B	A.1	SD.A.1	Z.A.1	G.1	SD.G.1	Z.G.1	A.2	SD.A.2	Z.A.2	G.2	SD.G.2	Z.G.2
Comoros Anjouan	Namibia Kwangali	Philippines Igorot	6.339E-04	4.007E-05	15.821	23.906	1.783	13.408						
Comoros Grande Comore	Philippines Igorot	South Africa BantuSA	7.002E-04	3.796E-05	18.446	26.737	1.547	17.288						
Comoros Moheli	Namibia Kwangali	Philippines Igorot	5.817E-04	6.173E-05	9.423	17.341	2.656	6.528						
Madagascar Antemoro	Namibia Kwangali	Philippines Igorot	1.42E-03	4.76E-05	29.839	28.895	1.152	25.079						
Madagasca Mikea	Namibia Mbukushu	Philippines Igorot	1.337E-03	7.16E-05	18.676	24.242	1.794	13.512						
Madagascar Vezo	Namibia Kwangali	Philippines Igorot	1.376E-03	7.12E-05	19.324	22.19	1.406	15.775						
C-All Swahili individuals in one 'target population'														
Population	Source.A	Source.B	A.1	SD.A.1	Z.A.1	G.1	SD.G.1	Z.G.1	A.2	SD.A.2	Z.A.2	G.2	SD.G.2	Z.G.2
Kenya Swahili	Lybia Lybian Jew	Namibia Kwangali	1.563E-04	2.946E-05	5.303	52.903	8.130	6.507	3.210E-05	8.450E-06	3.796	8.458	2.138	3.956
D-Each Swahili community analysed separately														
Population	Source.A	Source.B	A.1	SD.A.1	Z.A.1	G.1	SD.G.1	Z.G.1	A.2	SD.A.2	Z.A.2	G.2	SD.G.2	Z.G.2
Kenya Swahili Lamu	Lebanon Lebanese	South Africa BantuSA	8.992E-05	1.500E-05	5.997	20.981	4.325	4.851						
Kenya Swahili Kilifi	Kenya Bantu Kenya	Syria Syrians	9.988E-05	1.368E-05	7.304	43.589	6.833	6.379	2.480E-05	7.761E-06	3.201	7.583	2.321	3.267
Kenya Swahili Mombasa	Lebanon Lebanese	Namibia Mbukushu	1.407E-04	2.792E-05	5.041	20.111	5.164	3.894						

Table S12. MALDER [58] inferred dates in generations (G) from present for each studied population. The table is separated into four sections according to the clustering defined in fineSTRUCTURE [2]: A-Comoros and Malagasy populations in the same cluster; B-Comoros and Malagasy in different clusters; C-All Swahili individuals in one 'target population'; D-Each Swahili community analyzed separately. A: amplitude of the weighted LD curve; SD: standard deviation; Z: Z-score; G: date in generations of the latest (1) or earliest (2) admixture event.

Population	t-test	Asian ancestry	Middle Eastern ancestry	African ancestry
Comoros Anjouan	t	-2,612	**-4,829**	**4,116**
	P	0,020	**>0,0001**	**0,001**
	P_c	0,529	**0,006**	**0,025**
Comoros Grande Comore	t	-2,128	**-4,873**	**3,769**
	P	0,048	**>0,0001**	**0,002**
	P_c	1,304	**0,004**	**0,041**
Comoros Moheli	t	-0,257	-1,741	**20,442**
	P	0,801	0,104	**>0,0001**
	P_c	21,632	2,798	**>0,0001**
Madagascar Antemoro	t	1,509	1,823	-1,658
	P	0,145	0,081	0,111
	P_c	3,911	2,195	2,994
Madagascar Mikea	t	**5,084**	1,420	**-5,213**
	P	**>0,0001**	0,171	**>0,0001**
	P_c	**0,002**	4,617	**0,001**
Madagascar Vezo	t	2,503	0,832	-2,607
	P	0,020	0,414	0,016
	P_c	0,536	11,175	0,426
Kenya Swahili Kilifi	t	-0,800	1,334	-0,853
	P	0,429	0,191	0,399
	P_c	11,588	5,147	10,778
Kenya Swahili Lamu	t	-0,989	1,718	-0,615
	P	0,331	0,096	0,543
	P_c	8,928	2,595	14,670
Kenya Swahili Mombasa	t	-0,788	-0,051	0,393
	P	0,441	0,960	0,699
	P_c	11,915	25,917	18,869

Table S13. Student's t-tests between genetic ancestries estimated by ADMIXTURE [7] (K=3) for chromosome X and autosomes of populations from Comoros, Madagascar and Kenyan Swahili. Each ancestry is represented in Figure S13: Asian ancestry in blue; African ancestry in green and Middle Eastern ancestry in red. t: value of the t-test; *P*: nominal p-value; P_c: corrected p-value after Bonferroni multiple test correction (n=27). Significant sex-bias ancestries are written in bold.

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