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Supplemental Data

Genetic Consequences of the Transatlantic Slave Trade in the Americas

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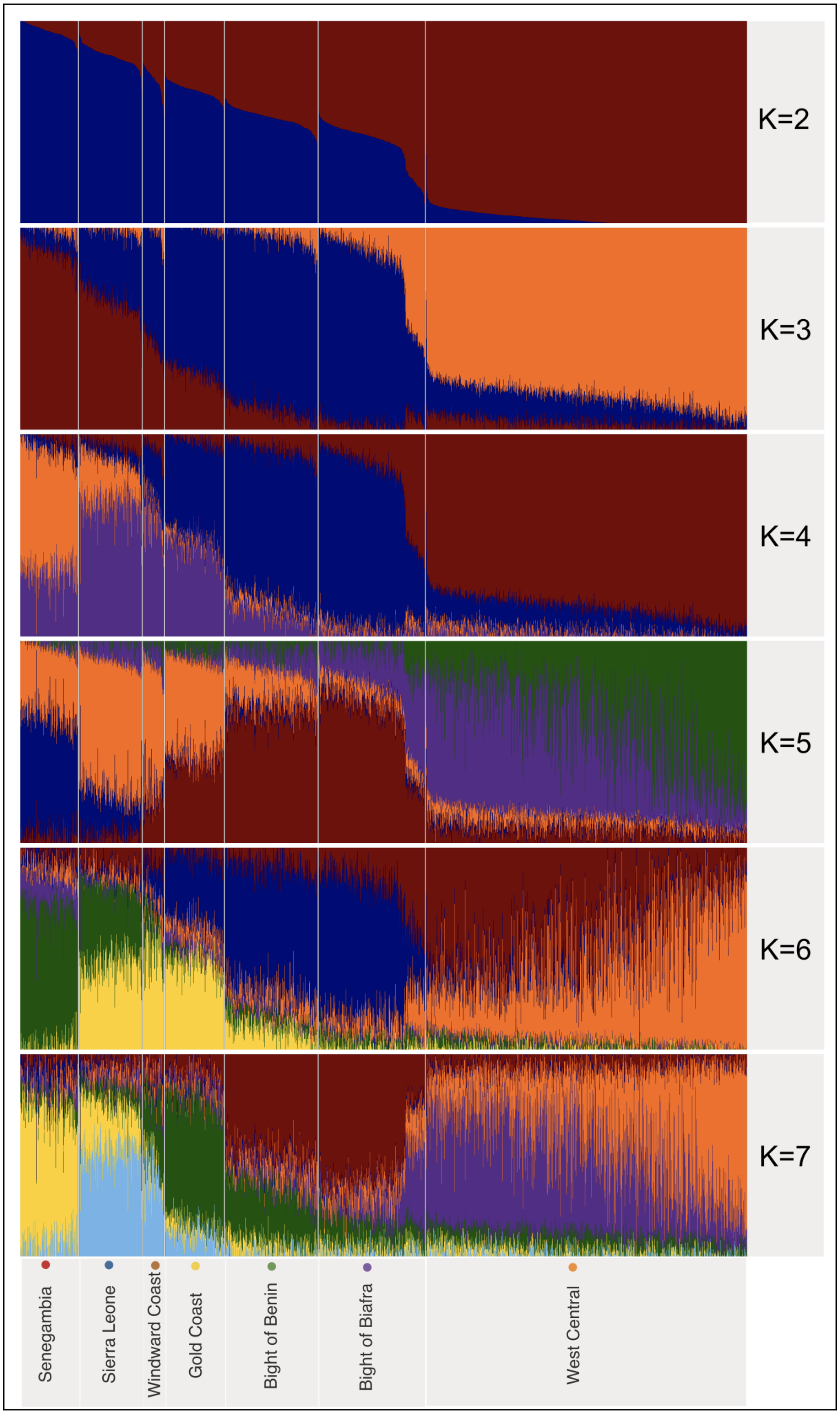

Figure S1. ADMIXTURE plot within Atlantic Africa (K2 - K7).

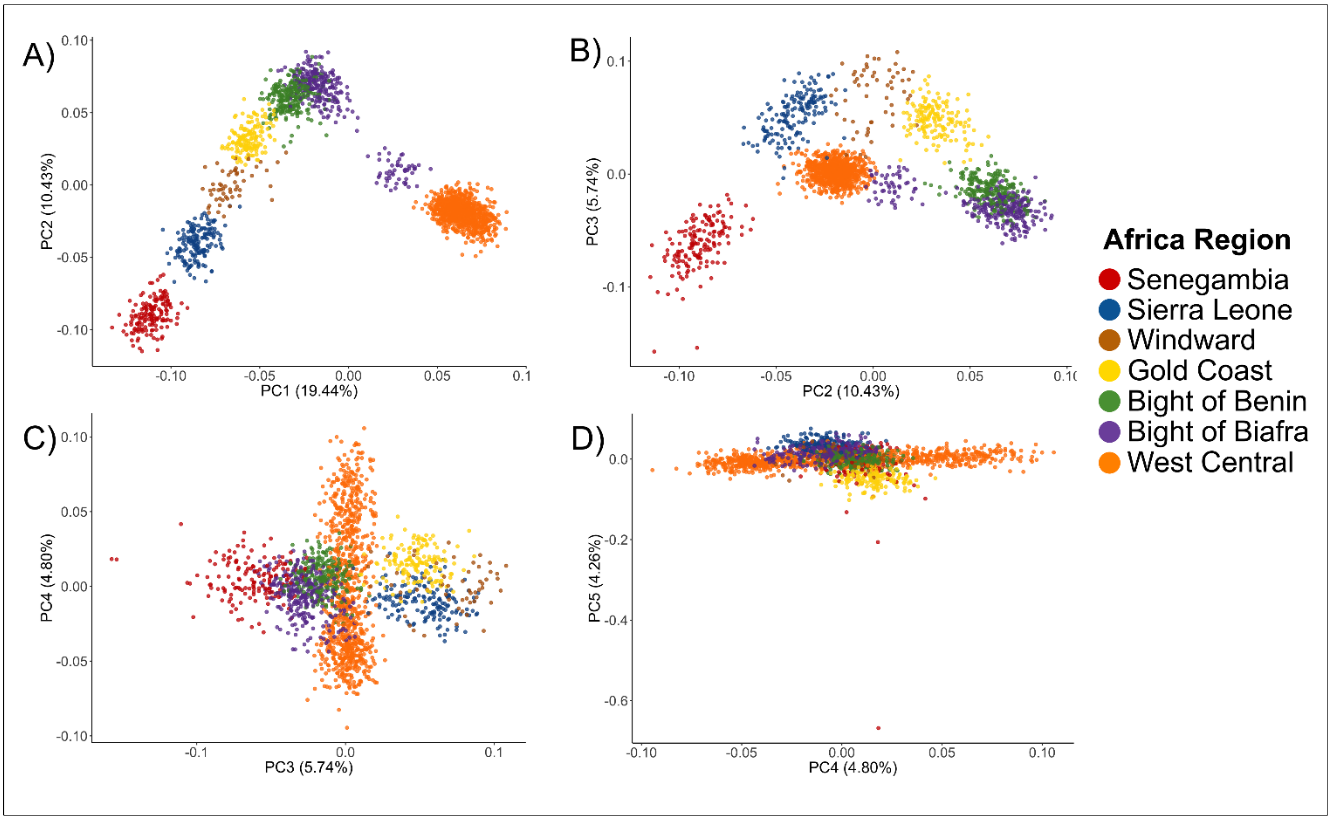

Figure S2. **Principal Component Analysis (PCA) within regions of Atlantic Africa for combinations of PC1(A) – PC4 (D).** Regions in the legend are organized by latitude from north to south.

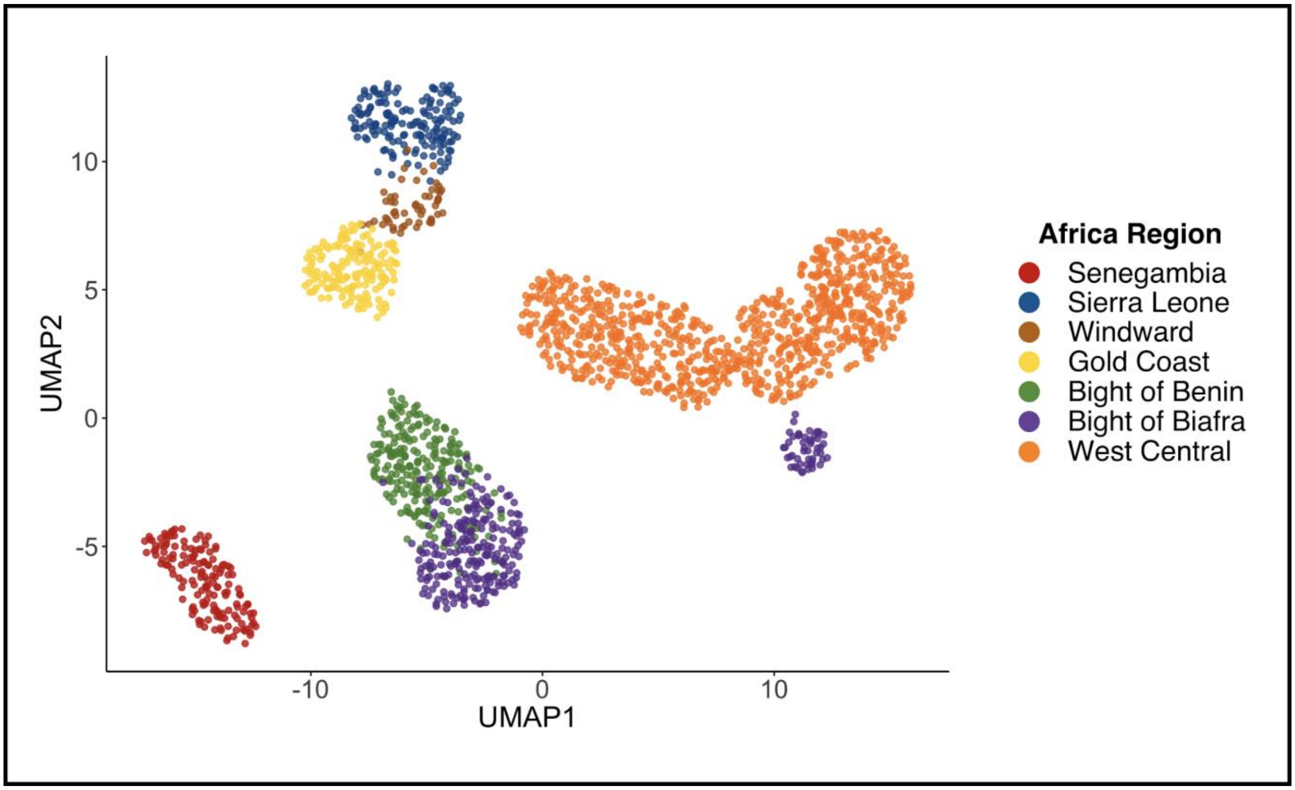

Figure S3. Uniform Manifold Approximation and Projections (UMAP) within Atlantic Africa. Regions in the legend are organized by latitude from north to south. The eastern and western split of Nigeria is illustrated in the shared Bight of Benin and Bight of Biafra cluster with the Bight of Benin component being represented by the Yoruba (green) and the Bight of Biafra component being represented by the Igbo and Esan (purple).

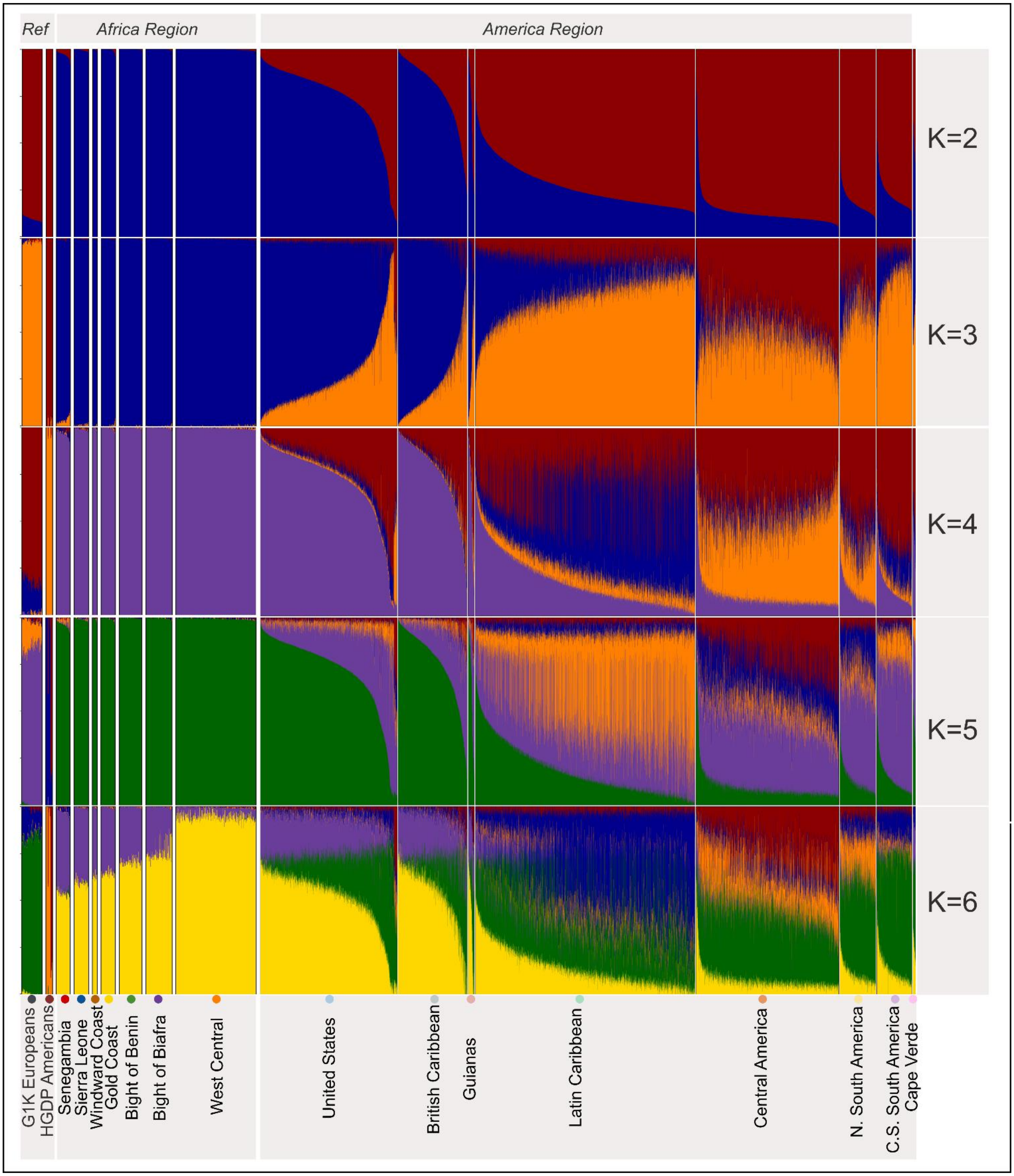

Figure S4. **ADMIXTURE (K2 - K6) plot for participants from the Americas, Atlantic Africa participants, 1000 Genomes Europeans and HGDP Native Americans.**

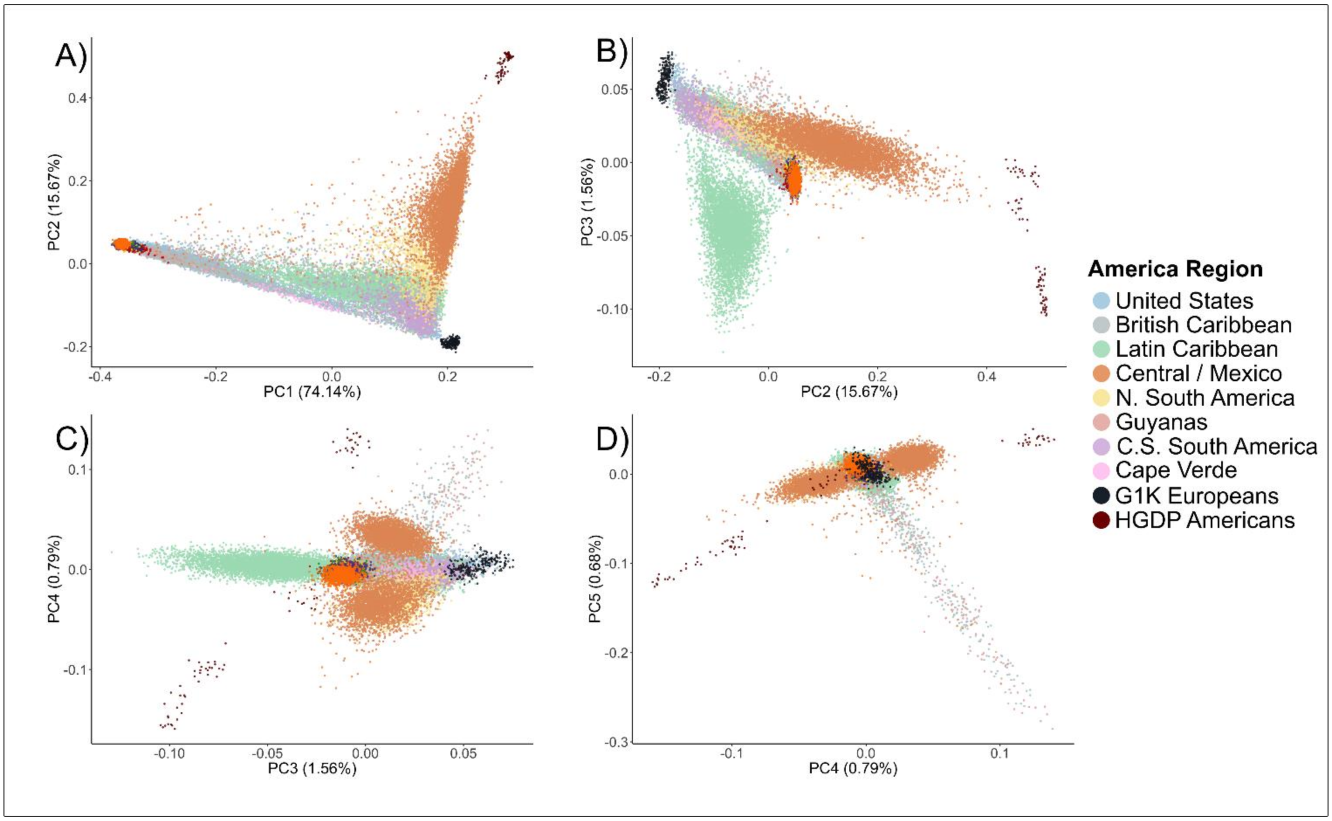

Figure S5. **Principal Component Analysis (PCA) for individuals representing the Americas, Atlantic Africa, 1000 Genomes Europeans and HGDP Americans for combinations of PC1(A) – PC4 (D).**

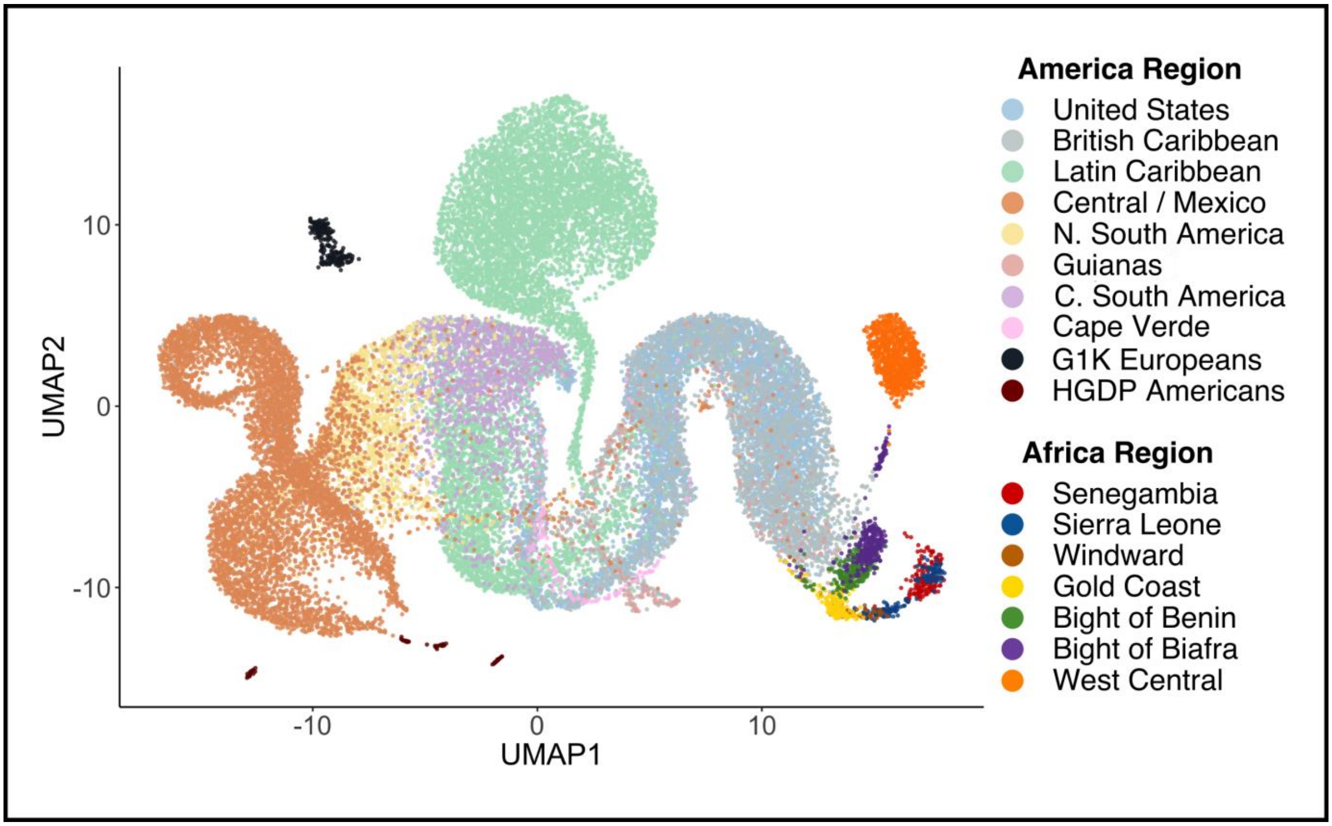

Figure S6. **Uniform Manifold Approximation and Projections (UMAP) including individuals representing the Americas, Atlantic Africa, 1000 Genomes Europeans and HGDP Native Americans.**

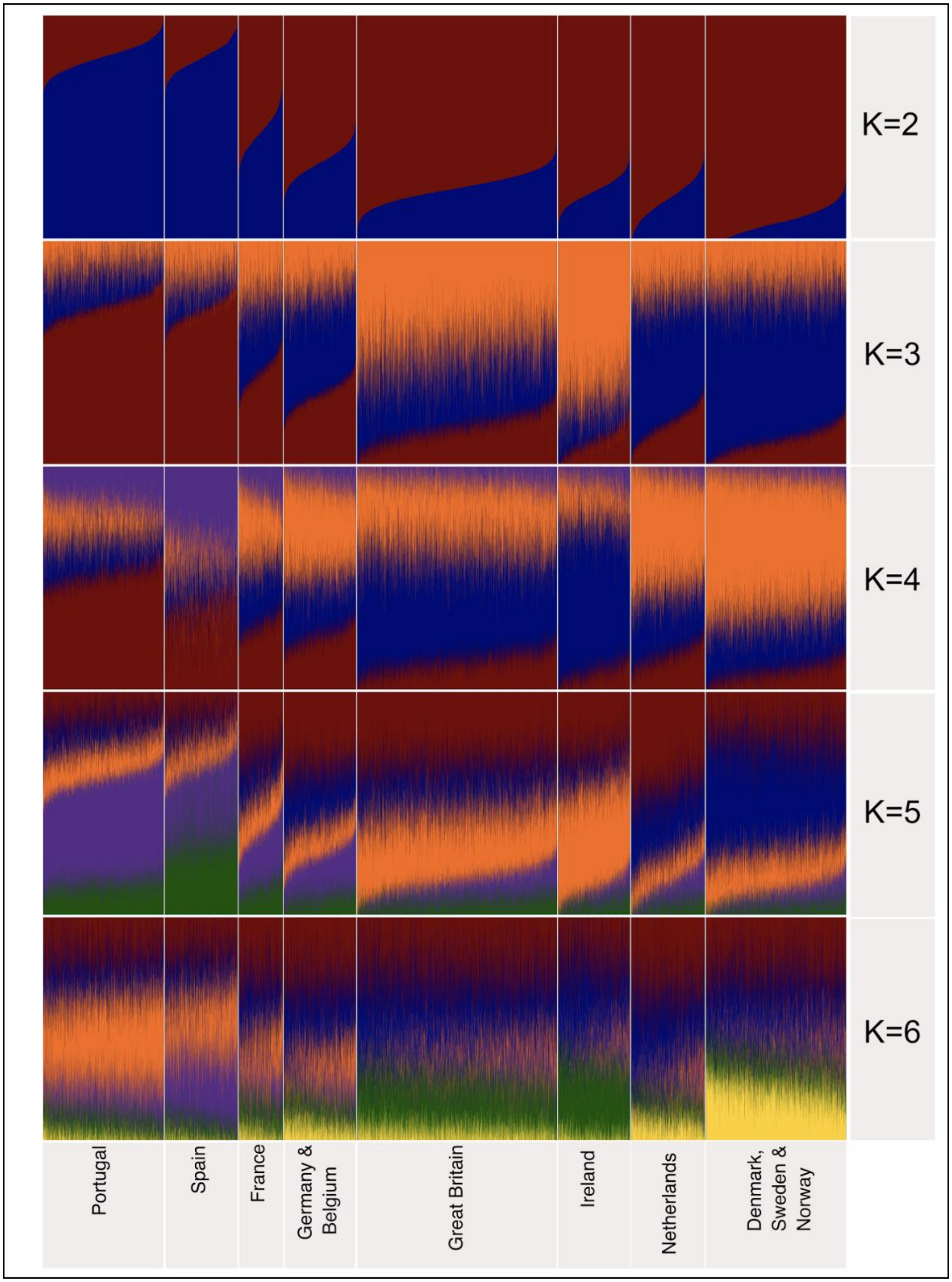

Figure S7. **ADMIXTURE (K2 - K6) plot including individuals from western European regions.**

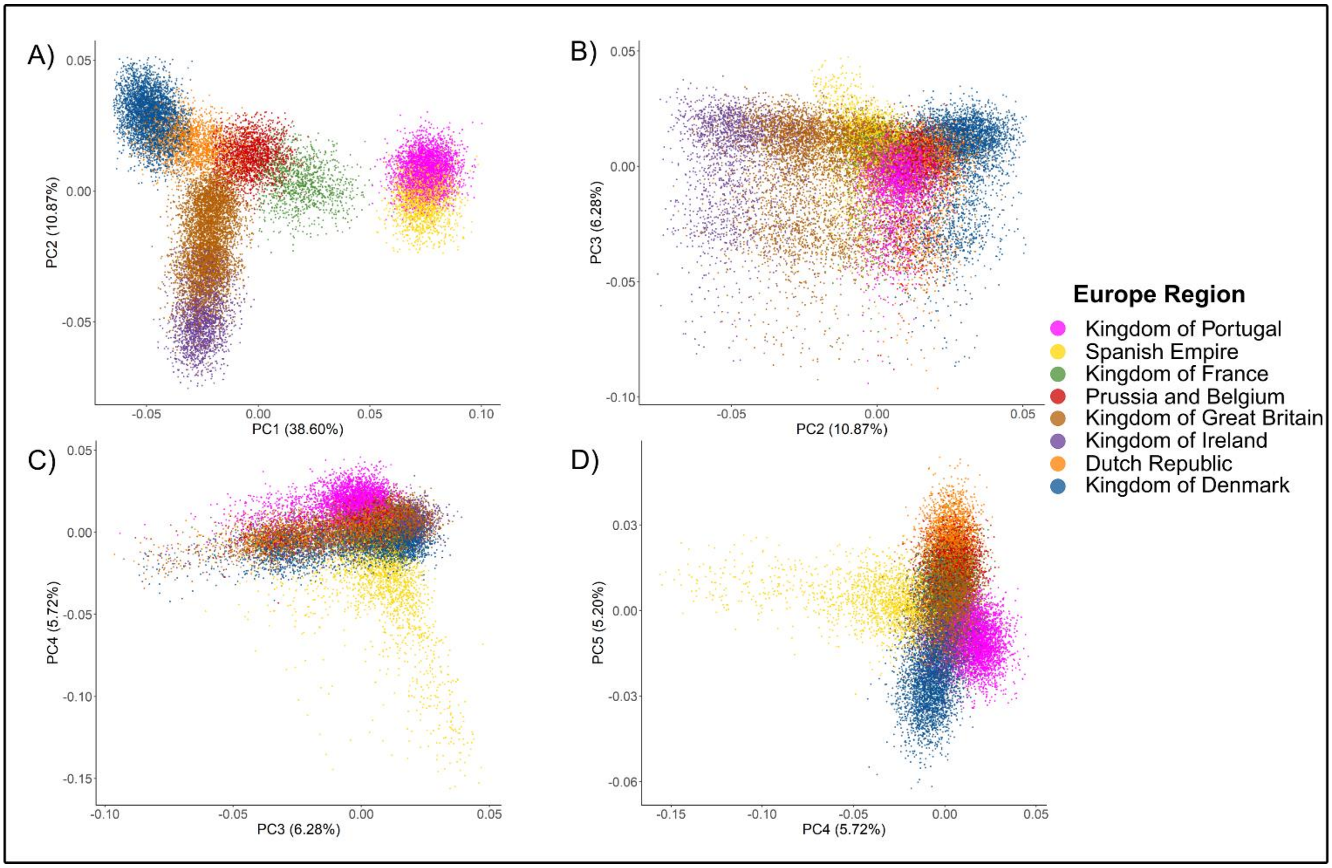

Figure S8. **Principal component analysis (PCA) including European participants for combinations of PC1(A) – PC4 (D).**

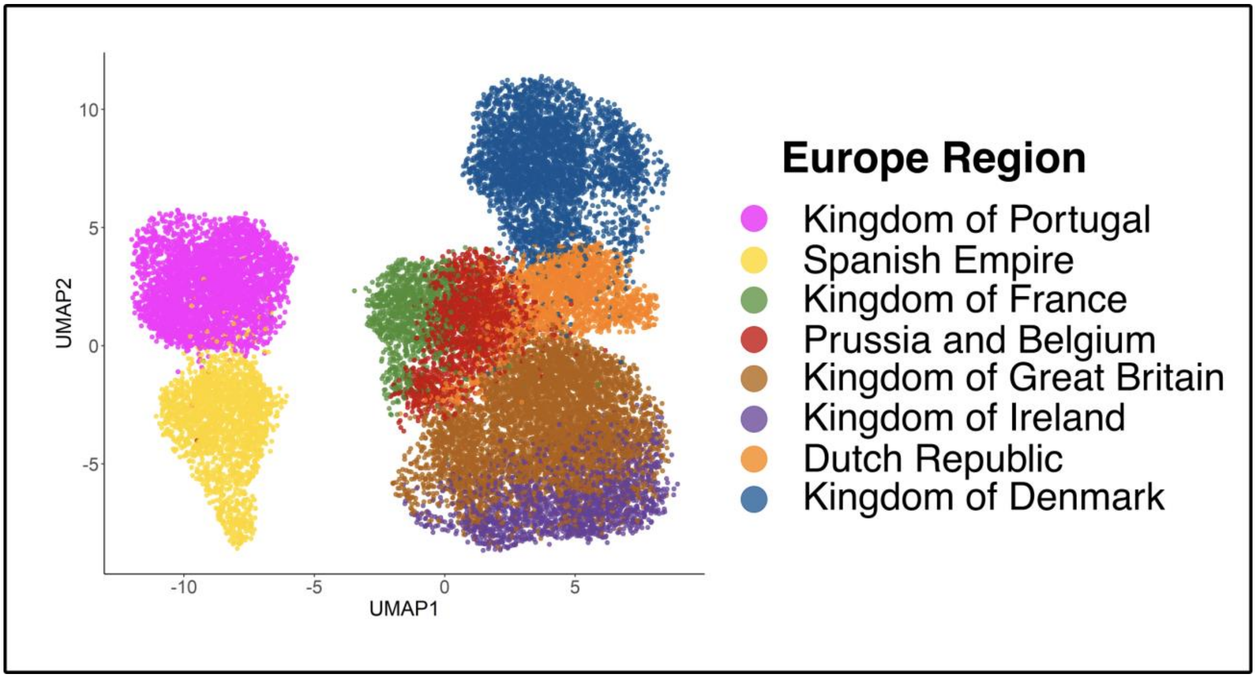

Figure S9. **Uniform Manifold Approximation and Projection (UMAP) for European participants.** European participants have > 95% European ancestry and indicated that all four grandparents were born within the same country.

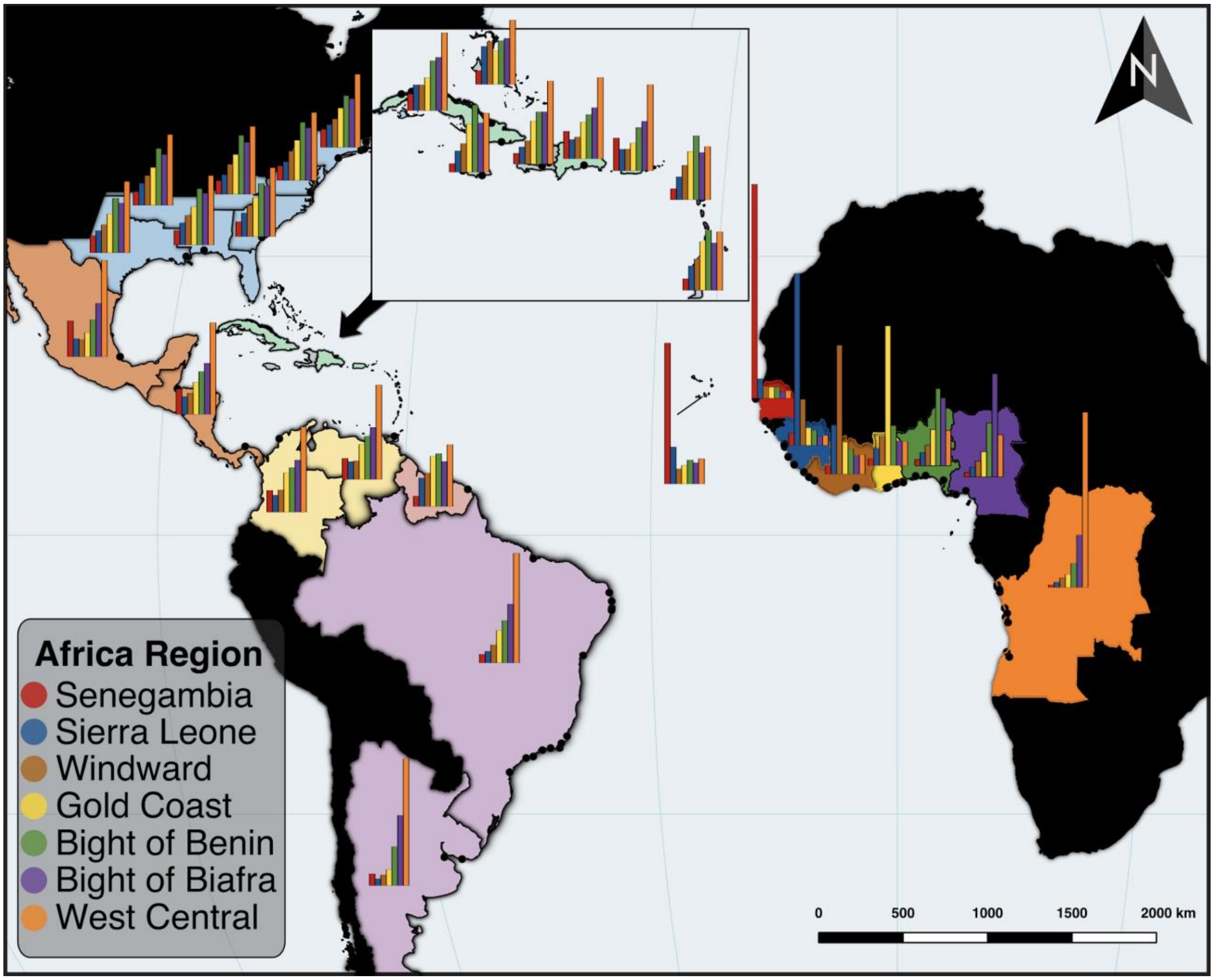

Figure S10. **Mean proportion IBD sharing ($_{\text{ms}}$IBD) by region.** Circles indicate main trading ports used during the transatlantic slave trade.

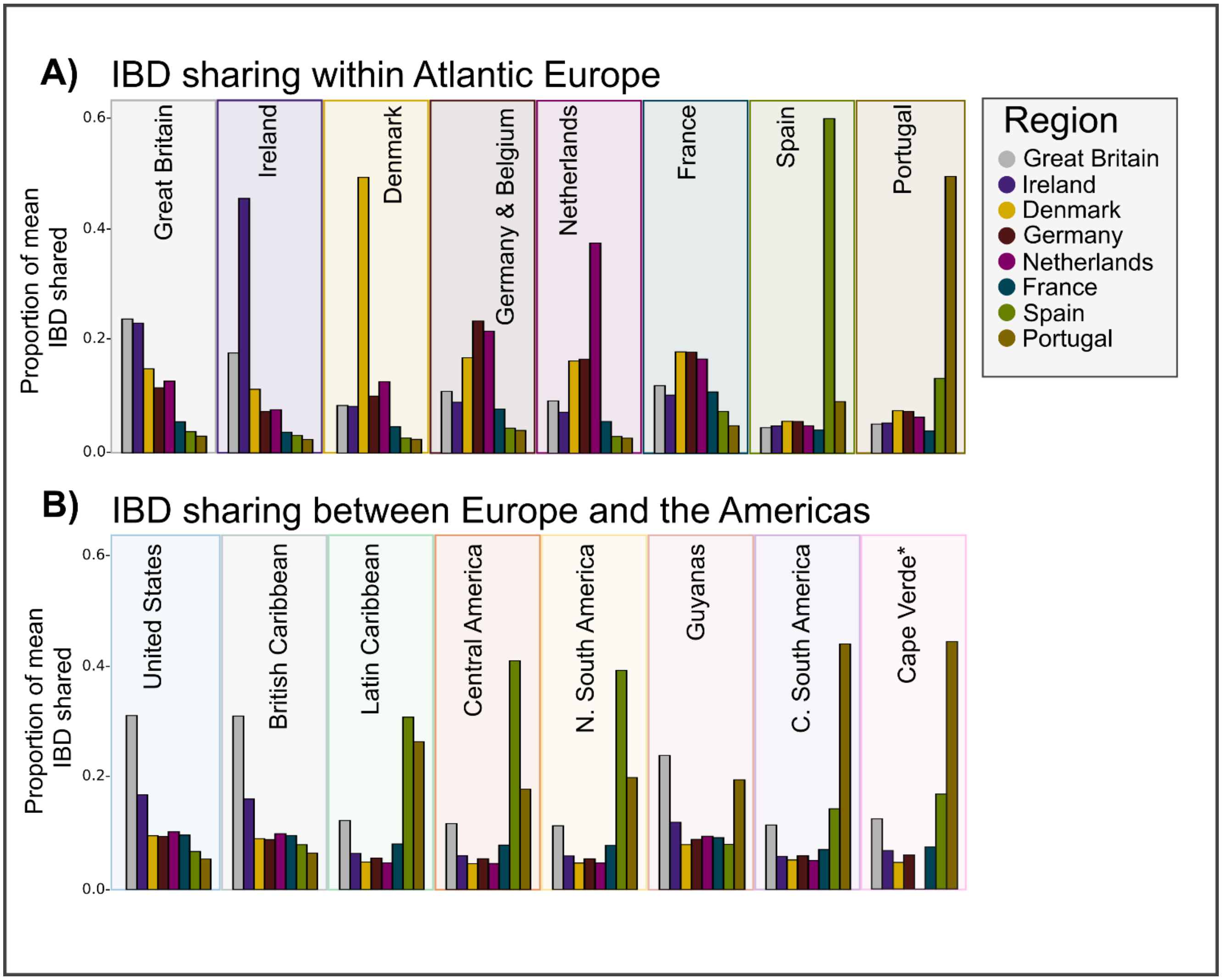

Figure S11. Mean proportion IBD sharing ($_{ms}$IBD) (A) between the Americas and European regions and (B) within European regions.

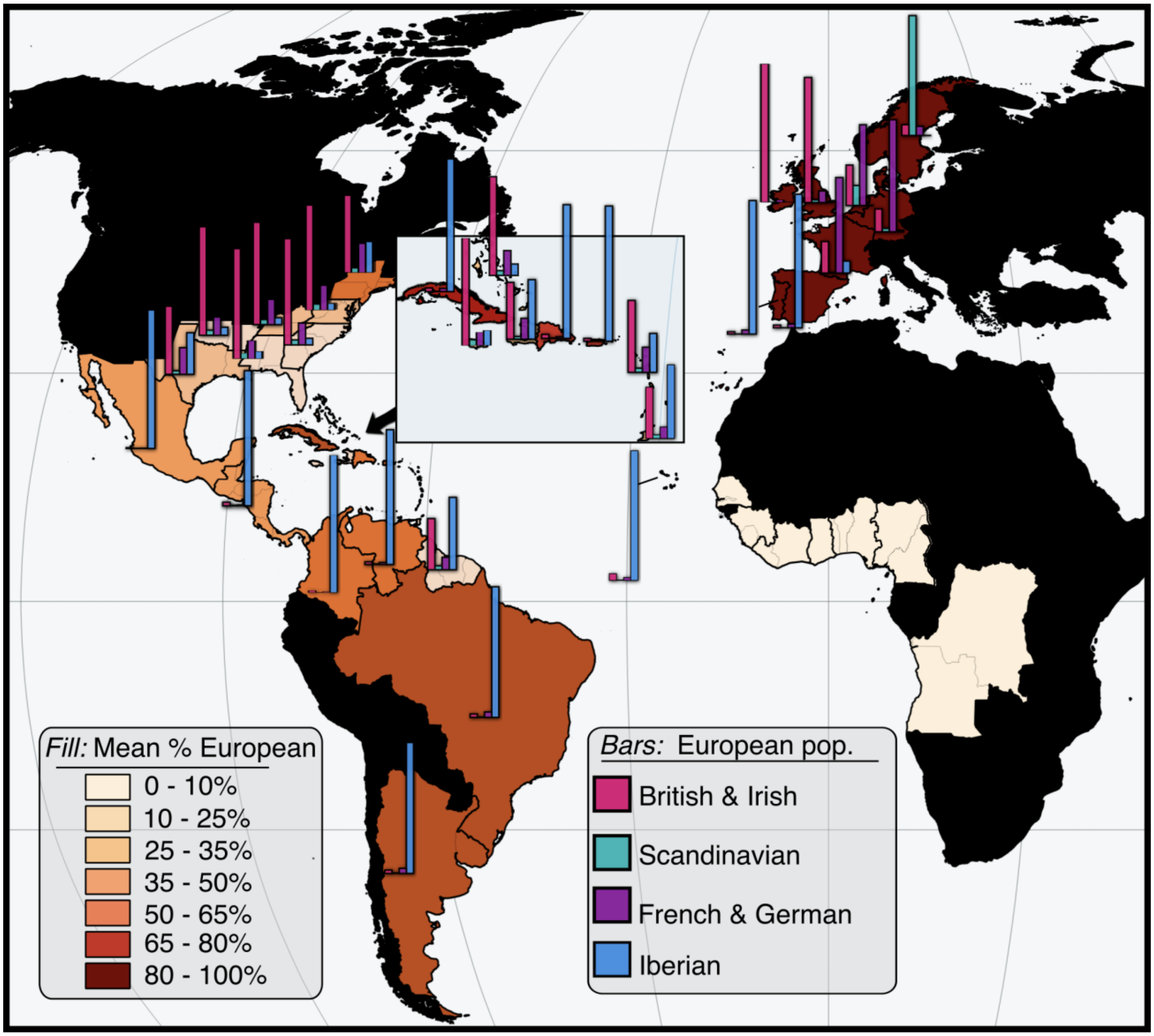

Figure S12. Estimated proportions of European ancestry across Atlantic Africa, the Americas, and Europ. Fill: Mean proportion of continent-level European Ancestry in each region. Bars: Mean local ancestry proportions of the four western European populations 23andMe identifies.

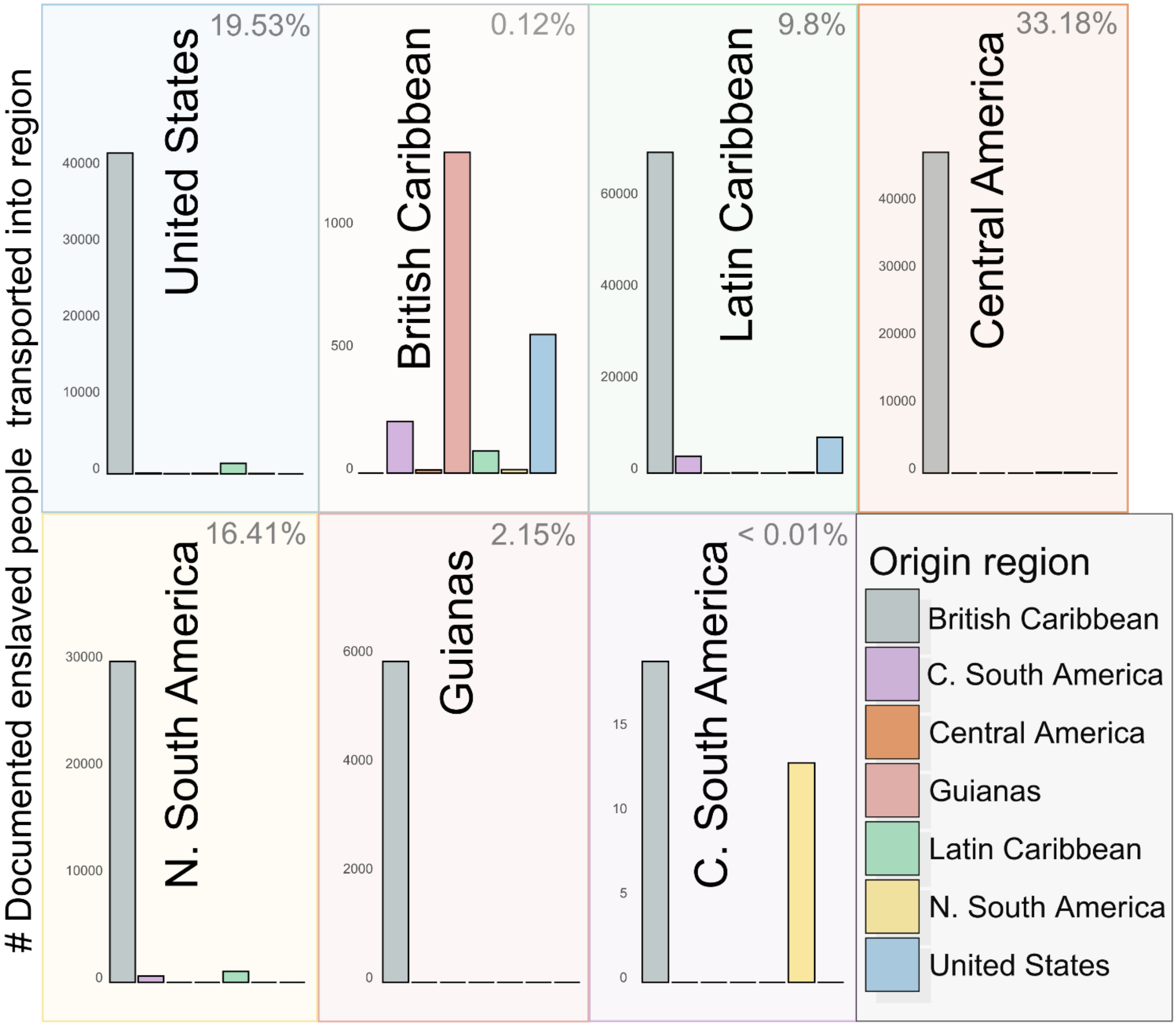

Figure S13. Intra-American slave trade counts. Number of enslaved people that disembarked in each region of the Americas from another embarkation location in the Americas. Percentages at the top of each cell represent the total number of documented enslaved people that are represented by the intra-American slave trade. Note that the Y-axis scale differs by American region.

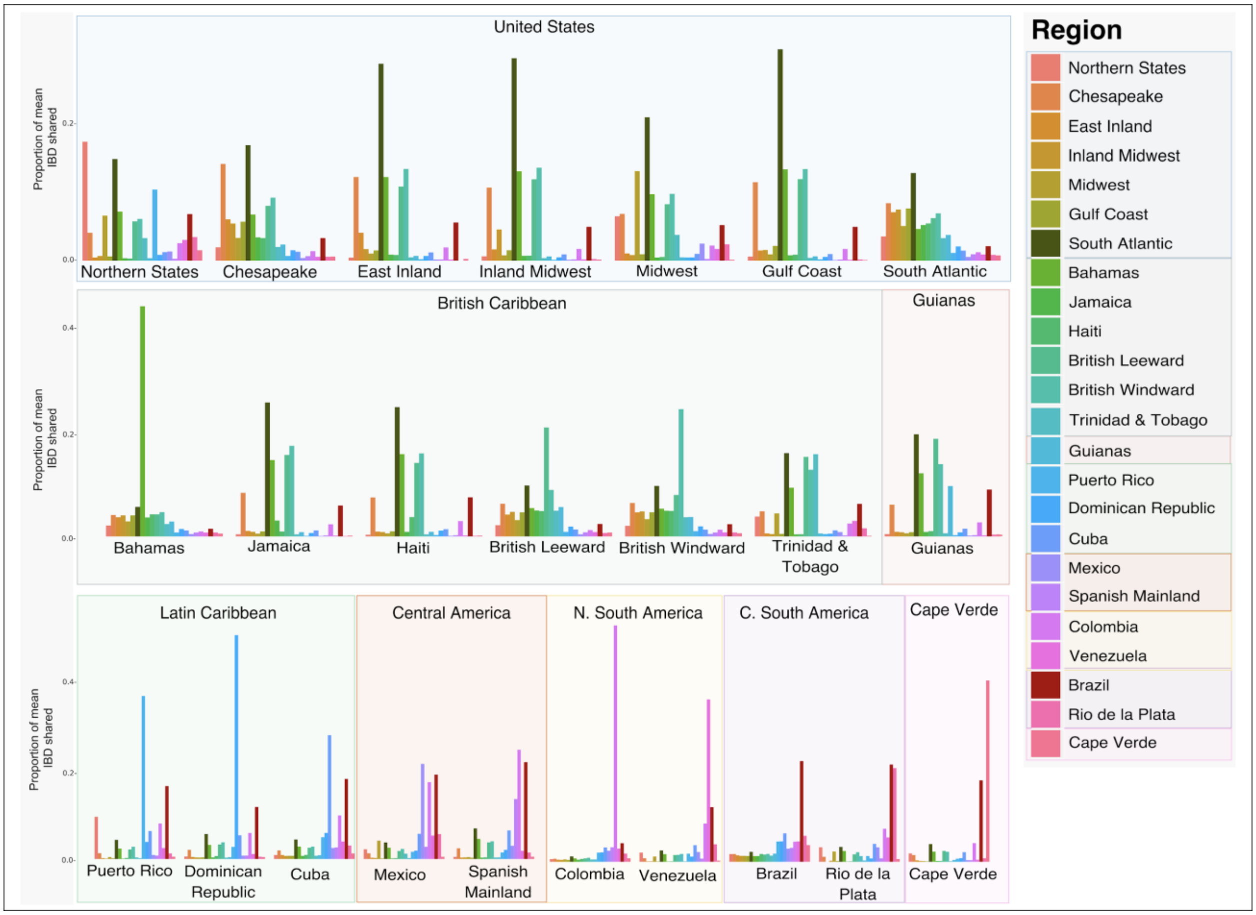

Figure S14. Proportion of mean IBD sharing ($_{ms}$IBD) within regions of America and Cape Verde.

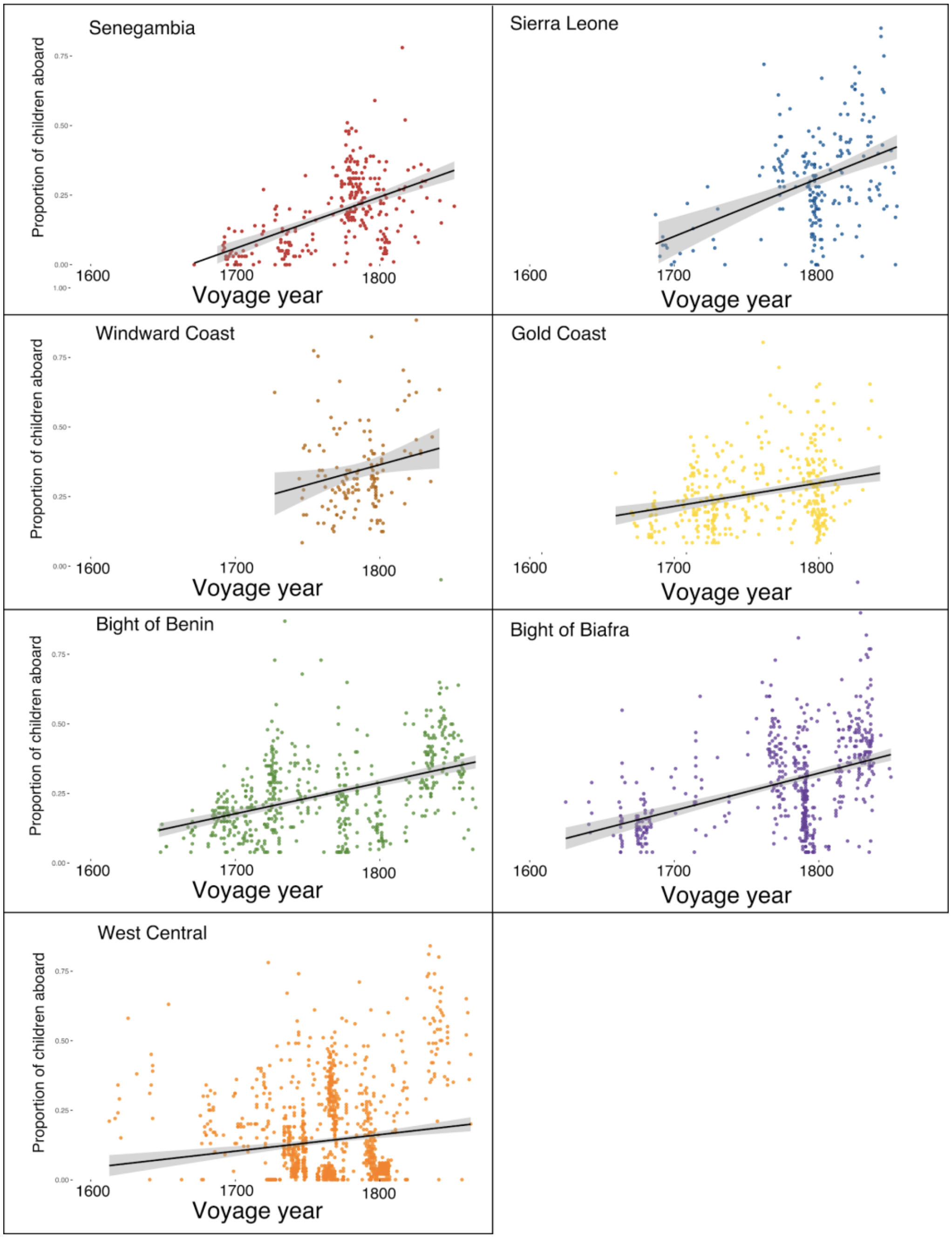

Figure S15. Proportion of children deported from each Africa region over time according to historical records.

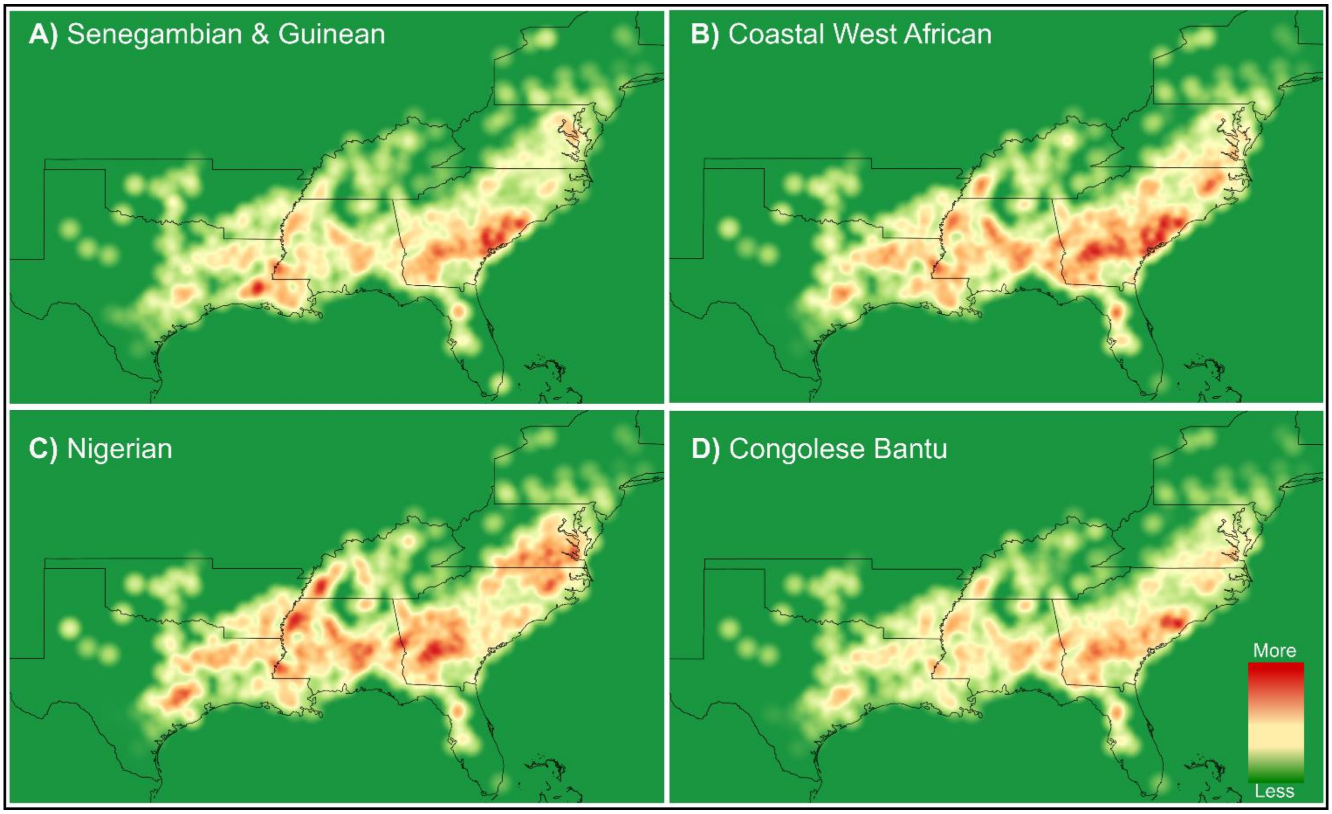

Figure S16. Kernel density heat map of proportion of African Ancestry Composition using participant provided grandparent coordinates in the eastern United States. The four Atlantic African ancestry categories include: (A) Senegambian & Guinean, (B) Coastal West African, (C) Nigerian, and (D) Congolese Bantu.

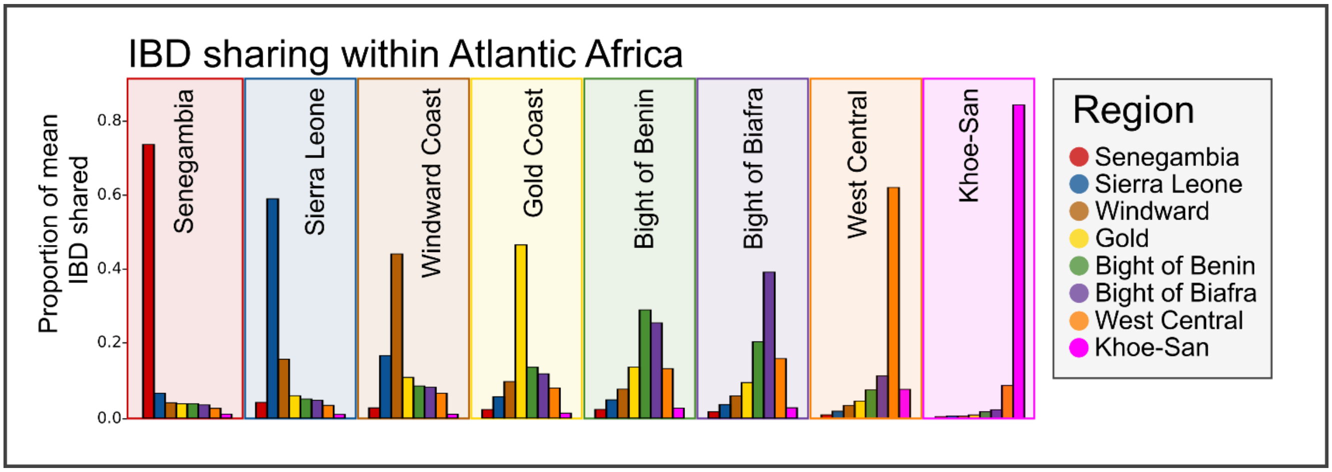

Figure S17. Proportion of mean IBD sharing ($_{ms}$IBD) within Atlantic Africa regions.

Historical Region	**Adm. borders**	**N**	**Represented Ethnicities**
Senegambia	GM, SN	154	Mandenka
Sierra Leone	GN, SL	167	Limba, Mende, Temne, Loko
Windward Coast	CI	56	Grebo, Kpelle, Mano
Gold Coast	GH	156	Ashanti, Ewe, Fante
Bight of Benin	NG*, TG	246	Yoruba
Bight of Biafra	NG*, CM	282	Bakossi, Bamileke, Basaa, Esan, Igbo
West Central Africa	AO, CD	856	Bakongo, Bindi, Chokwe, Dekese, Kete, Kongo, Kuba, Lele, Luba, Luluwa, Luntu, Mbala, Mbundu, Mongo, Ngombe, Sala, Songe, Tetela
Southern Africa (Khoe-San)	-	48	Sandawe, Hadza

Table S1. African regions represented in this study and the number of unrelated individuals (≥ 95% African ancestry) and major African ethnicities that were indicated by at least 5 individuals from those regions. Nigeria is split into western and eastern portions along the Niger river with the eastern half historically tied to ports in the Bight of Biafra, and the western half historically tied to ports in the Bight of Benin. The Khoe-San from southern Africa were included as a control group that were minimally directly impacted by the transatlantic slave trade. Each 23andMe research participant indicated four grandparents born within the same administrative border, whereas each individual from a public dataset or African collection indicated ancestral roots within an administrative border.

Broad Region	Historical Source Region	Adm. borders	N
United States	Gulf Coast	AL, FL, MS *	1,411
	South Atlantic	GA, NC, SC *	1,235
	East Inland	KY, TN *	340
	Chesapeake	DE, MD, VA, WV *	653
	Northern States	CT, MA, NJ, NY, RI, PA *	166
	Midwest	LA, TX *	1,745
	Inland Midwest	AR, OK *	235
British & French Caribbean	British Leeward Islands and French Caribbean	AG, DM, GP, KN, MQ, MS, VG	163
	British Windward Islands	BB, GD, LC, VC	293
	Trinidad and Tobago	TT	282
	Haiti	HT	596
	Bahamas	BS	65
	Jamaica and the Caymans	JM, KY	1,526
Guianas	Guianas	GF, GY, SR	267
Latin Caribbean	Dominican Republic	DO	2,307
	Cuba	CU	840
	Puerto Rico	PR	6,127
Central America and Mexico	Mexico	MX	3,270
	Spanish Caribbean Mainland	BZ, CR, GT, HN, NI, PA, SV	2,766
North South America	Colombia	CO	1,029
	Venezuela	VE	495
Central South America	Brazil	BR	1,461
	Rio De La Plata	AR, UY	29
Cape Verde	Cape Verde *	CV	121

Table S2. Regions represented in the Americas and the number of unrelated individuals ($\leq$ 500 cM shared; $\geq$ 5% African ancestry) within those regions. All individuals representing the Americas are 23andMe research participants that indicated they have all four grandparents born within the same administrative border. Due to more granular georeferencing, the United States is split by state borders, whereas the rest of the Americas are split by country border. *Cape Verde is not a country within the Americas but rather an Atlantic African archipelago that was colonized by the Portuguese in the 15th century and primarily contained enslaved people from Senegambia.

Historical Source Region	**Administrative border(s)**	**N**
Kingdom of Portugal	PT	3,190
Spanish Empire	ES	1,917
Kingdom of France	FR	1,159
Prussia and Belgium	DE, BE	1,901
Kingdom of Great Britain	GB	5,253
Kingdom of Ireland	IE, North Ireland*	1,894
Dutch Republic	NL	1,939
Kingdom of Denmark	DK, SE, NO	3,689

Table S3. Regions represented in Europe based on historical affiliations during the transatlantic slave trade and the number of unrelated individuals ($\geq$ 95% European ancestry) within those regions. All individuals representing Europe are 23andMe research participants that indicated they have all grandparents born within the same administrative border. * Northern Ireland was combined with the rest of the Ireland to match recent historical borders.

Table S4. Mean identity by descent sharing ($_{ms}$IBD) pairwise comparisons. Comparisons (A) within Atlantic Africa, (B) within the Americas, (C) within Europe, and (D) between Atlantic African and the Americas. $_{ms}$IBD is the total amount of IBD (cM) shared between individuals in two regions, divided by the total possible number of pairwise comparisons.

Broad Region	**Region**	${}_{mc}\mathrm{IBD}_{Africa}$	**STDEV**
United States	Northern States	3.79	2.44
United States	Chesapeake	5.62	2.03
United States	East Inland	5.74	1.85
United States	Inland Midwest	6.23	1.28
United States	Midwest	5.38	2.10
United States	Gulf Coast	6.16	1.46
United States	South Atlantic	5.06	2.73
British Caribbean	Bahamas	3.60	3.33
British Caribbean	Jamaica and the Caymans	5.93	1.45
British Caribbean	Haiti	6.16	1.06
British Caribbean	British Leeward Islands and French Caribbean	6.08	1.71
British Caribbean	British Windward Islands	5.47	2.24
Latin Caribbean	Trinidad and Tobago	5.13	2.07
Guianas	Guianas	5.22	2.20
Latin Caribbean	Puerto Rico	2.86	1.98
Latin Caribbean	Dominican Republic	4.40	1.95
Latin Caribbean	Cuba	2.91	2.03
Central America	Mexico	1.79	1.48
Central America	Spanish Caribbean Mainland	2.48	1.78
N. South America	Colombia	2.52	1.89
N. South America	Venezuela	2.43	1.62
C. South America	Brazil	2.85	1.81
C. South America	Rio De La Plata	1.59	1.13
Cape Verde	Cape Verde	2.84	2.45

Table S5. Mean number of African regions an individual from the Americas shares a ≥5 cM IBD with. Means are calculated only in individuals that share a ≥5 cM IBD segment with (${}_{mc}$IBD) at least one of the seven primary slave trading regions.

Broad Region	**Region**	$_{mc}IBD_{Europe}$	**STDEV**
United States	Northern States	5.54	2.32
United States	Chesapeake	4.13	2.15
United States	East Inland	4.42	2.08
United States	Inland Midwest	3.82	1.69
United States	Midwest	4.32	2.16
United States	Gulf Coast	3.64	1.85
United States	South Atlantic	2.95	2.34
British Caribbean	Bahamas	1.97	2.33
British Caribbean	Jamaica and the Caymans	3.57	2.15
British Caribbean	Haiti	2.46	2.14
British Caribbean	British Leeward Islands and French Caribbean	2.64	1.90
British Caribbean	British Windward Islands	2.80	2.09
Latin Caribbean	Trinidad and Tobago	3.71	2.04
Guianas	Guianas	3.46	2.23
Latin Caribbean	Puerto Rico	5.07	2.43
Latin Caribbean	Dominican Republic	4.86	2.02
Latin Caribbean	Cuba	5.45	1.90
Central America	Mexico	4.87	1.61
Central America	Spanish Caribbean Mainland	4.79	1.67
N. South America	Colombia	4.69	2.01
N. South America	Venezuela	5.63	1.78
C. South America	Brazil	5.55	1.80
C. South America	Rio De La Plata	5.86	1.31
Cape Verde	Cape Verde	3.13	2.66

Table S6. Mean number of European regions an individual from the Americas shares a $\geq$5 cM IBD segment with ($_{mc}$IBD) out of the eight European regions involved in the slave trade. Means are calculated only in individuals that share a $\geq$5 cM IBD segment with ($_{mc}$IBD) at least one of the European regions.

Table S7. **Mean Ancestry Composition for the research cohort.** (A) African leaf populations (out of 4) that individuals are assigned ($\geq$ 0.5%); this includes the median number, mean, and proportion of individuals that are assigned 1-4 of the African populations. (B) Mean Ancestry Composition for populations of interest. Populations are organized into continental (broad) and population (granular) estimates for ancestries of interest. (C) Standard deviations for mean estimates in (B).

Table S8. Y and mitochondrial haplogroup assignment. Research participants were subset into Males to compare the origin continent of their Y and mitochondrial haplogroups. (A) Proportion of male participants representing regions in the Americas with the Y and mitochondrial haplogroup assignment above. (B) The mean continental Ancestry Composition of individuals with the combination of Y and mitochondrial haplogroups above.

Table S9. Genetic sex-bias estimates for generations 1-15, infinite. Estimates represent all (A) regions of the Americas and (B) broad regions of the Americas using ancestry inference on the X chromosome vs. the autosomes. Estimates were withheld when either autosomal or X ancestry estimates are below 5% on average. *sf* is the estimated contribution of females to the gene pool, *sm* is the estimated contribution of males, *ga* is the mean ancestry estimate for autosomes, and g*x* is the estimated mean ancestry estimate for the X chromosome (either African, Native American, or European).

Table S10. Mean ancestry estimates for (A) autosomal chromosomes vs. (B) X chromosome in research-participants representing the Americas. *pf* refers to the proportion of females and *pm* refers to the proportion of males representing each region. * Ancestry categories within Atlantic Africa.

Supplemental References

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