Table S1: Posterior estimates of demographic parameters for 51 populations

Geographic Region	ID	Population	No. of Males	TMRCA (KYA)			Expansion time (KYA)			N posterior			Population growth rate (%)		
				OMR	EMR	rEMR	OMR	EMR	rEMR	OMR	EMR	rEMR	OMR	EMR	rEMR
Sub-Saharan Africa (77 males)	1	Bantu (South Africa)	8	13.7 [9.7-19.9]	40.1 [28.2-59.2]	52.2 [35.8-79.1]	10.1 [2.8-26.4]	19.0 [6.4-50.1]	21.7 [6.4-64.8]	276 [102-764]	841 [311-2369]	1156 [426-3129]	0.41 [0.06-1.25]	0.31 [0.06-1.08]	0.26 [0.04-1.08]
	2	Bantu (Kenya)	10	15.9 [11.0-23.7]	47.7 [32.6-71.9]	63.0 [42.3-96.5]	9.0 [1.9-27.1]	21.2 [3.6-62.1]	25.1 [3.7-77.3]	268 [109-633]	899 [347-2218]	1144 [445-2833]	0.29 [0.04-0.95]	0.17 [0.02-0.67]	0.14 [0.02-0.63]
	3	Mandenka	14	9.6 [7.0-13.4]	26.9 [19.6-37.9]	32.5 [23.2-46.4]	7.4 [2.9-18.6]	14.4 [7.0-32.3]	16.3 [7.8-38.1]	198 [72-530]	553 [212-1497]	655 [244-1779]	0.61 [0.11-1.62]	0.44 [0.12-1.05]	0.39 [0.10-0.97]
	4	Yoruba	10	4.3 [3.1-6.2]	13.9 [10.0-20.0]	16.7 [11.8-24.5]	4.9 [1.8-14.9]	10.1 [5.4-18.7]	11.7 [6.4-21.1]	139 [49-374]	283 [105-842]	328 [122-993]	0.67 [0.08-2.00]	0.76 [0.22-1.76]	0.74 [0.22-1.70]
	5	Biaka Pygmies	20	14.9 [11.2-20.4]	45.1 [33.2-62.8]	58.5 [42.4-83.0]	10.3 [1.0-31.1]	21.6 [1.1-86.6]	25.3 [1.2-107.7]	299 [142-550]	1146 [525-2145]	1428 [639-2660]	0.14 [0.02-0.59]	0.06 [0.01-0.53]	0.05 [0.01-0.52]
	6	Mbuti Pygmies	11	12.3 [9.1-17.1]	37.1 [27.6-51.5]	48.8 [35.8-68.3]	10.8 [1.7-30.3]	27.0 [2.6-73.0]	33.6 [2.6-94.8]	297 [122-681]	999 [381-2380]	1298 [502-3020]	0.22 [0.03-0.73]	0.11 [0.02-0.48]	0.08 [0.01-0.47]
	7	San	4	26.6 [19.3-37.4]	78.6 [57.2-109.8]	117.4 [83.0-168.1]	22.6 [10.0-41.9]	61.4 [32.0-93.9]	81.2 [40.2-129.6]	528 [176-1981]	1471 [515-5381]	2073 [741-6918]	0.56 [0.10-1.56]	0.48 [0.11-1.48]	0.45 [0.09-1.43]
Middle East/ North Africa (68 males)	8	Mozabite	20	12.1 [8.6-17.6]	34.4 [24.3-49.6]	42.5 [29.6-62.7]	5.1 [0.7-18.6]	7.2 [1.3-40.6]	7.4 [1.3-46.7]	175 [89-328]	594 [290-1134]	710 [353-1330]	0.24 [0.03-0.96]	0.20 [0.02-1.12]	0.19 [0.02-1.11]
	9	Bedouin	24	12.3 [8.8-17.8]	39.0 [27.8-56.4]	47.6 [33.6-70.5]	10.0 [1.5-27.7]	28.4 [1.8-77.8]	33.2 [1.8-90.8]	261 [111-510]	986 [398-2038]	1147 [471-2416]	0.20 [0.03-0.61]	0.08 [0.01-0.42]	0.07 [0.01-0.42]
	10	Druze	11	9.9 [7.2-13.9]	30.9 [22.5-43.3]	38.9 [27.9-55.4]	8.5 [1.3-24.0]	22.1 [2.2-61.5]	26.0 [2.1-76.4]	226 [96-509]	785 [315-1850]	979 [397-2323]	0.24 [0.03-0.79]	0.11 [0.02-0.49]	0.09 [0.01-0.48]
	11	Palestinian	13	6.8 [4.7-9.9]	21.9 [15.2-31.9]	27.2 [18.5-40.3]	2.9 [0.4-11.4]	4.8 [0.7-28.6]	5.0 [0.7-33.4]	90 [48-180]	342 [177-688]	409 [210-827]	0.23 [0.03-0.92]	0.17 [0.02-0.96]	0.16 [0.02-0.96]
Europe (84 males)	12	Orcadian	7	9.3 [6.6-13.3]	28.5 [20.5-40.6]	38.2 [26.8-55.7]	7.6 [1.6-22.5]	17.9 [3.5-46.9]	22.1 [3.9-60.4]	208 [80-563]	664 [244-1901]	880 [321-2512]	0.35 [0.05-1.14]	0.23 [0.03-0.84]	0.19 [0.03-0.80]
	13	Adygei	6	9.9 [7.0-14.1]	29.6 [21.1-42.3]	38.1 [26.6-55.9]	8.4 [2.2-24.0]	16.7 [5.4-43.6]	19.4 [6.3-52.1]	229 [84-674]	669 [243-2060]	854 [305-2646]	0.42 [0.06-1.32]	0.34 [0.06-1.18]	0.33 [0.05-1.19]
	14	Russian	16	12.2 [9.3-16.4]	36.1 [27.1-49.2]	42.8 [31.7-59.4]	10.6 [4.3-23.4]	28.2 [8.8-53.2]	32.7 [8.4-63.3]	262 [97-703]	766 [288-2295]	945 [353-2918]	0.48 [0.10-1.08]	0.21 [0.06-0.53]	0.17 [0.05-0.52]
	15	Basque	16	9.6 [6.7-13.8]	28.7 [20.2-41.6]	36.3 [25.4-53.1]	6.0 [1.4-18.4]	7.0 [3.3-27.3]	7.5 [3.6-30.3]	193 [79-419]	589 [255-1320]	717 [320-1577]	0.42 [0.06-1.47]	0.64 [0.09-1.79]	0.65 [0.09-1.75]
	16	French	10	8.5 [8.5-11.5]	27.6 [20.4-38.0]	36.7 [26.6-51.2]	8.5 [2.4-22.5]	21.4 [4.5-47.9]	26.4 [5.0-61.2]	221 [83-578]	751 [263-2132]	1005 [343-2736]	0.43 [0.06-1.16]	0.23 [0.05-1.02]	0.20 [0.04-1.06]
	17	North Italian	7	10.5 [7.5-15.1]	30.4 [21.8-43.1]	38.7 [27.1-56.3]	8.9 [2.4-24.4]	17.5 [5.5-44.1]	19.0 [6.1-53.5]	245 [89-711]	713 [252-2073]	905 [322-2658]	0.42 [0.06-1.26]	0.33 [0.06-1.29]	0.31 [0.05-1.30]
	18	Sardinian	16	11.8 [8.8-16.5]	35.1 [25.6-49.2]	43.6 [31.2-62.4]	10.2 [2.5-26.2]	24.1 [5.2-57.9]	27.5 [5.4-70.0]	274 [103-649]	866 [316-2179]	1108 [397-2673]	0.33 [0.05-0.94]	0.17 [0.03-0.65]	0.14 [0.03-0.62]
	19	Tuscan	6	10.4 [7.7-14.4]	32.6 [24.0-45.4]	42.0 [30.3-59.9]	10.4 [4.5-24.7]	27.1 [12.8-45.2]	34.5 [15.6-57.1]	259 [87-830]	666 [236-2265]	831 [298-2818]	0.61 [0.09-1.58]	0.41 [0.11-1.03]	0.34 [0.10-0.90]
Central/ South Asia (170 males)	20	Balochi	23	10.5 [8.2-14.0]	31.1 [23.6-42.0]	40.2 [29.9-55.0]	9.9 [5.0-19.2]	26.6 [12.1-46.0]	33.6 [13.6-58.3]	216 [82-593]	652 [256-1878]	857 [332-2622]	0.59 [0.16-1.15]	0.23 [0.09-0.45]	0.18 [0.07-0.37]
	21	Brahui	24	11.3 [8.6-15.6]	32.9 [24.8-44.9]	40.8 [30.4-56.7]	11.7 [6.1-26.9]	32.5 [18.6-63.6]	39.6 [22.1-76.8]	288 [110-741]	845 [336-2304]	1037 [406-2725]	0.41 [0.08-0.87]	0.15 [0.04-0.30]	0.13 [0.04-0.25]
	22	Makrani	20	14.0 [10.6-19.3]	36.3 [26.8-51.3]	45.8 [33.2-65.6]	11.3 [5.6-20.5]	25.3 [10.3-43.8]	30.9 [12.0-55.3]	247 [98-692]	705 [266-2043]	903 [338-2550]	0.62 [0.21-1.23]	0.29 [0.12-0.69]	0.23 [0.10-0.62]
	23	Sindhi	19	10.8 [8.3-14.2]	29.2 [22.3-38.9]	35.9 [27.1-48.5]	9.9 [4.5-18.8]	22.9 [6.8-40.6]	25.4 [7.1-48.5]	236 [89-659]	733 [249-2269]	1013 [337-2893]	0.64 [0.18-1.31]	0.30 [0.11-1.12]	0.26 [0.09-1.17]
	24	Pathan	19	11.6 [9.0-15.5]	33.3 [25.1-44.9]	40.0 [29.7-54.8]	10.9 [5.1-24.2]	28.4 [13.5-52.7]	34.2 [16.3-62.9]	271 [103-723]	742 [288-2158]	863 [335-2512]	0.47 [0.10-1.01]	0.20 [0.06-0.40]	0.17 [0.05-0.34]
	25	Burusho	19	11.1 [8.6-14.6]	34.1 [26.2-45.7]	42.0 [31.5-57.0]	11.9 [5.0-29.4]	33.9 [14.8-68.0]	41.9 [17.2-86.0]	307 [115-782]	915 [346-2566]	1138 [449-3108]	0.36 [0.06-0.83]	0.14 [0.04-0.30]	0.11 [0.03-0.24]

Central/ South Asia	26	Hazara	20	9.2 [6.9-12.5]	27.9 [20.8-38.4]	35.9 [26.4-50.3]	8.0 [0.8-23.0]	21.7 [0.9-65.3]	26.4 [0.9-82.8]	208 [101-385]	780 [347-1484]	1000 [449-1917]	0.16 [0.02-0.57]	0.06 [0.01-0.45]	0.05 [0.01-0.47]
	27	Uygur	8	11.6 [8.6-16.3]	33.6 [24.7-47.2]	40.6 [29.2-58.2]	10.1 [4.8-21.5]	24.9 [12.4-42.1]	29.2 [13.8-50.7]	238 [86-737]	665 [238-2133]	796 [287-2624]	0.69 [0.13-1.62]	0.40 [0.13-1.04]	0.36 [0.11-1.00]
	28	Kalash	18	9.6 [7.2-13.2]	29.6 [22.1-40.9]	38.8 [28.2-54.5]	9.0 [1.0-25.9]	24.3 [1.2-72.4]	30.2 [1.2-90.7]	237 [110-448]	871 [368-1735]	1124 [479-2227]	0.16 [0.02-0.58]	0.07 [0.01-0.42]	0.05 [0.01-0.44]
East Asia (155 males)	29	Oroqen	5	13.2 [8.8-20.4]	37.9 [26.2-56.9]	47.0 [31.7-72.8]	9.2 [2.0-28.0]	19.7 [4.7-53.1]	22.7 [5.3-63.7]	263 [98-840]	789 [288-2549]	985 [349-3042]	0.36 [0.05-1.21]	0.28 [0.04-1.02]	0.26 [0.04-0.98]
	30	Naxi	7	8.2 [5.8-11.5]	26.0 [18.6-36.7]	33.2 [23.5-47.6]	7.7 [1.3-23.1]	19.6 [2.4-52.9]	24.0 [2.5-66.1]	208 [84-551]	690 [261-1878]	880 [328-2422]	0.30 [0.04-0.97]	0.17 [0.02-0.67]	0.14 [0.02-0.67]
	31	Dai	6	11.5 [8.2-16.6]	33.6 [24.0-48.2]	42.3 [29.6-62.0]	9.5 [2.4-26.4]	20.8 [5.8-49.7]	24.2 [6.1-59.6]	257 [94-772]	756 [266-2386]	971 [333-2918]	0.40 [0.05-1.23]	0.30 [0.05-1.05]	0.26 [0.05-1.02]
	32	Miaozu	7	8.0 [5.4-12.0]	26.7 [18.2-40.0]	34.5 [23.0-53.3]	5.9 [1.1-18.3]	13.8 [2.2-42.5]	16.1 [2.4-51.7]	159 [65-412]	542 [215-1471]	692 [272-1892]	0.33 [0.04-1.10]	0.21 [0.03-0.77]	0.18 [0.03-0.72]
	33	Daur	6	13.0 [9.2-18.9]	37.9 [27.0-54.4]	46.9 [33.0-68.5]	9.7 [3.0-26.8]	22.3 [7.8-48.8]	27.3 [9.0-58.7]	267 [96-828]	739 [267-2389]	912 [324-2926]	0.45 [0.06-1.36]	0.33 [0.06-0.92]	0.28 [0.05-0.85]
	34	She	7	5.9 [4.1-8.7]	20.1 [14.2-29.3]	24.6 [16.8-37.0]	5.5 [1.0-17.0]	14.4 [2.3-39.9]	17.0 [2.5-46.8]	141 [59-371]	491 [187-1336]	589 [224-1621]	0.33 [0.04-1.10]	0.20 [0.03-0.69]	0.18 [0.03-0.64]
	35	Han	23	11.2 [8.5-15.3]	31.0 [23.2-43.1]	36.4 [26.8-51.0]	8.9 [5.6-13.5]	21.6 [12.5-33.4]	24.7 [13.4-39.2]	172 [66-465]	556 [214-1563]	659 [244-1902]	1.14 [0.58-1.94]	0.47 [0.25-0.90]	0.41 [0.22-0.84]
	36	Hezhen	5	11.5 [8.2-16.5]	35.4 [25.6-50.0]	44.8 [31.8-64.9]	9.9 [4.1-25.1]	24.0 [13.1-41.6]	29.5 [16.3-49.4]	263 [87-927]	662 [239-2303]	805 [292-2697]	0.61 [0.08-1.74]	0.57 [0.13-1.57]	0.55 [0.13-1.51]
	37	Lahu	7	9.9 [6.6-15.3]	31.3 [21.1-47.4]	36.7 [24.2-56.8]	4.2 [0.6-15.8]	8.4 [1.1-38.3]	9.3 [1.2-43.9]	124 [57-319]	455 [202-1167]	535 [236-1382]	0.27 [0.04-0.99]	0.18 [0.02-0.88]	0.17 [0.02-0.86]
	38	Mongolia	7	12.8 [9.5-17.5]	38.0 [28.5-52.1]	46.9 [34.1-65.7]	11.5 [4.8-25.6]	29.8 [11.6-53.1]	36.4 [13.3-64.7]	282 [99-913]	845 [303-2784]	1011 [351-3320]	0.56 [0.09-1.40]	0.31 [0.08-0.87]	0.27 [0.07-0.81]
	39	Tu	7	8.9 [6.4-12.6]	27.6 [19.8-39.4]	35.7 [25.3-51.8]	8.3 [1.8-23.4]	19.8 [3.6-51.9]	24.1 [4.0-63.2]	218 [84-588]	702 [255-2003]	892 [327-2569]	0.34 [0.05-1.07]	0.20 [0.03-0.75]	0.17 [0.03-0.69]
	40	Yizu	9	11.8 [8.6-16.8]	36.1 [26.0-51.3]	45.4 [32.3-65.9]	9.2 [2.9-23.6]	17.0 [6.1-45.1]	18.9 [6.6-54.2]	247 [92-685]	809 [302-2201]	1035 [368-2769]	0.46 [0.07-1.32]	0.35 [0.07-1.34]	0.32 [0.06-1.34]
	41	Tujia	9	10.3 [7.5-14.7]	30.4 [22.0-43.0]	36.1 [25.8-52.2]	8.4 [3.9-19.4]	19.3 [10.5-35.3]	22.3 [12.1-41.2]	212 [75-628]	559 [214-1657]	683 [259-2003]	0.70 [0.12-1.75]	0.47 [0.14-1.10]	0.42 [0.12-1.01]
	42	Xibe	8	14.3 [10.7-19.7]	43.1 [31.9-59.6]	52.3 [38.2-73.8]	11.7 [6.1-23.2]	30.2 [16.5-49.4]	36.9 [19.1-60.8]	274 [98-895]	746 [288-2370]	922 [340-3021]	0.69 [0.15-1.58]	0.39 [0.13-1.01]	0.33 [0.11-0.87]
	43	Cambodian	6	11.0 [7.8-15.8]	32.0 [22.9-45.3]	42.9 [30.1-62.6]	9.6 [2.4-26.8]	20.7 [5.2-50.1]	25.0 [6.0-64.4]	261 [96-768]	772 [276-2295]	1029 [362-3148]	0.40 [0.05-1.22]	0.28 [0.05-1.04]	0.24 [0.04-1.03]
	44	Japanese	18	12.2 [9.2-16.5]	35.9 [26.9-49.3]	43.4 [31.9-60.5]	9.0 [4.4-17.9]	19.8 [9.9-38.1]	24.0 [11.2-46.9]	211 [78-602]	692 [262-1840]	822 [314-2233]	0.72 [0.19-1.53]	0.36 [0.13-0.82]	0.30 [0.11-0.73]
	45	Yakut	18	9.7 [6.5-14.9]	29.8 [20.1-44.3]	36.4 [24.1-56.0]	1.7 [0.2-7.2]	3.4 [0.5-16.5]	3.7 [0.5-19.4]	59 [33-109]	218 [119-409]	259 [141-487]	0.26 [0.03-1.02]	0.20 [0.02-0.91]	0.19 [0.02-0.92]
Oceania (16 males)	46	Melanesian	4	8.2 [5.3-13.0]	24.0 [15.7-37.4]	29.5 [18.8-46.8]	5.4 [0.8-20.8]	9.5 [2.0-38.7]	10.3 [2.3-42.7]	151 [55-575]	447 [164-1609]	527 [192-1848]	0.32 [0.04-1.17]	0.30 [0.03-1.23]	0.30 [0.04-1.24]
	47	Papuan	12	15.2 [10.8-21.7]	38.5 [27.7-54.9]	46.6 [33.1-67.6]	9.8 [3.2-25.3]	17.6 [7.4-46.7]	20.0 [8.6-54.1]	283 [106-716]	810 [306-2046]	947 [362-2385]	0.43 [0.07-1.25]	0.30 [0.06-0.92]	0.27 [0.06-0.83]
America (20 males)	48	Karitiana	4	3.3 [2.0-5.6]	10.8 [6.6-17.9]	13.2 [7.8-22.2]	2.2 [0.3-10.2]	4.7 [0.6-21.8]	5.4 [0.7-24.5]	53 [18-228]	178 [62-677]	210 [73-794]	0.32 [0.04-1.12]	0.25 [0.03-0.97]	0.23 [0.03-0.93]
	49	Surui	4	4.2 [2.6-6.9]	15.6 [9.5-25.8]	18.4 [11.0-31.1]	2.5 [0.3-11.6]	5.8 [0.7-27.3]	6.3 [0.7-30.8]	63 [21-250]	237 [83-894]	275 [95-1017]	0.31 [0.04-1.10]	0.22 [0.03-0.87]	0.21 [0.03-0.87]
	50	Colombian &Maya	4	4.2 [2.8-6.4]	13.6 [9.3-20.2]	17.2 [11.6-25.9]	5.6 [1.3-20.6]	12.4 [5.0-27.4]	15.0 [6.6-29.9]	161 [56-608]	363 [121-1408]	423 [140-1608]	0.43 [0.05-1.51]	0.60 [0.09-1.67]	0.61 [0.10-1.65]
	51	Pima	8	10.2 [6.8-15.5]	28.5 [19.4-42.9]	34.9 [23.1-53.7]	6.0 [1.1-19.0]	12.8 [2.2-40.1]	14.2 [2.3-45.5]	169 [73-416]	514 [208-1334]	613 [247-1586]	0.31 [0.04-1.07]	0.22 {0.03-0.78}	0.20 [0.03-0.74]

Table S2: Summary of mutations reported in the literature for 54 simple and 11 complex Y-STRs used to generate the observed mutation rates

Simple Y-STRs				Simple Y-STRs				Simple Y-STRs			
Locus	No. of mutations	No. of meioses	BATWING muprior	Locus	No. of mutations	No. of meioses	BATWING muprior	Locus	No. of mutations	No. of meioses	BATWING muprior
DYS472	0	403	gamma (1, 404)	DYS495	0	403	gamma (1, 404)	DYS540	0	403	gamma (1, 404)
DYS476	0	403	gamma (1, 404)	DYS497	1	403	gamma (1, 404)	DYS549	1	555	gamma (1, 556)
DYS480	0	403	gamma (1, 404)	DYS505	0	403	gamma (1, 404)	DYS554	1	403	gamma (1, 404)
DYS481	3	403	gamma (3, 404)	DYS508	2	403	gamma (2, 404)	DYS556	0	403	gamma (1, 404)
DYS485	1	403	gamma (1, 404)	DYS511	1	403	gamma (1, 404)	DYS565	2	403	gamma (2, 404)
DYS487	1	403	gamma (1, 404)	DYS522	0	555	gamma (1, 556)	DYS567	0	403	gamma (1, 404)
DYS488	0	403	gamma (1, 404)	DYS525	0	403	gamma (1, 404)	DYS568	0	403	gamma (1, 404)
DYS490	0	403	gamma (1, 404)	DYS530	0	403	gamma (1, 404)	DYS569	0	403	gamma (1, 404)
DYS491	0	403	gamma (1, 404)	DYS531	0	483	gamma (1, 484)	DYS570	7	555	gamma (7, 556)
DYS492	0	403	gamma (1, 404)	DYS533	2	555	gamma (2, 556)	DYS572	1	403	gamma (1, 404)
DYS494	0	403	gamma (1, 404)	DYS537	0	403	gamma (1, 404)	DYS573	2	403	gamma (2, 404)
Simple Y-STRs				Simple Y-STRs				Complex Y-STRs			
Locus	No. of mutations	No. of meioses	BATWING muprior	Locus	No. of mutations	No. of meioses	BATWING muprior	Locus	No. of mutations	No. of meioses	BATWING muprior
DYS575	1	403	gamma (1, 404)	DYS636	1	403	gamma (1, 404)	DYS391	25	9279	gamma (25, 9280)
DYS576	9	555	gamma (9, 556)	DYS638	1	403	gamma (1, 404)	DYS437	6	4381	gamma (6, 4382)
DYS578	0	403	gamma (1, 404)	DYS640	2	403	gamma (2, 404)	GATA_H4	11	2083	gamma (11, 2084)
DYS579	0	403	gamma (1, 404)	DYS641	0	403	gamma (1, 404)	DYS389CD	28	7842	gamma (28, 7843)
DYS580	0	403	gamma (1, 404)	DYS643	0	555	gamma (1, 556)	DYS389AB	20	7864	gamma (20, 7865)
DYS583	0	403	gamma (1, 404)	DYS393	6	7835	gamma (6, 7835)	DYS19	23	9840	gamma (23, 9841)
DYS589	0	403	gamma (1, 404)	DYS438	2	4565	gamma (2, 4566)	DYS448	1	1213	gamma (1, 1214)
DYS590	0	403	gamma (1, 404)	DYS456	8	1243	gamma (8, 1244)	DYS390	22	9340	gamma (22, 9341)
DYS594	0	403	gamma (1, 404)	DYS458	13	1243	gamma (13, 1244)	DYS635	12	1920	gamma (12, 1921)
DYS617	0	403	gamma (1, 404)	DYS388	1	2394	gamma (1, 2395)	DYS439	28	4542	gamma (28, 4543)
DYS618	0	403	gamma (1, 404)					DYS392	5	9264	gamma (5, 9265)

Table S3:
Subsets of 11 simple or complex Y-STRs with similar average repeat number variance

Simple STRs Subset 1	DYS456	DYS618	DYS568	DYS531	DYS565	DYS393	DYS438	DYS508	DYS505	DYS576	DYS570	Average Variance
Variance	1.14	0.59	0.97	0.96	0.26	0.92	0.50	0.97	0.76	2.17	2.37	1.06
Simple STRs Subset 2	DYS540	DYS554	DYS533	DYS487	DYS456	DYS485	DYS495	DYS481	DYS576	DYS505	DYS575	
Variance	0.38	0.30	0.64	0.72	1.14	1.36	1.25	2.48	2.17	0.76	0.29	1.04
Complex STRs	DYS391	DYS437	GATA_H4	DYS389CD	DYS389AB	DYS19	DYS448	DYS390	DYS635	DYS439	DYS392	
Variance	0.39	0.30	0.66	0.70	1.08	1.41	1.17	2.69	2.14	0.72	0.24	1.05

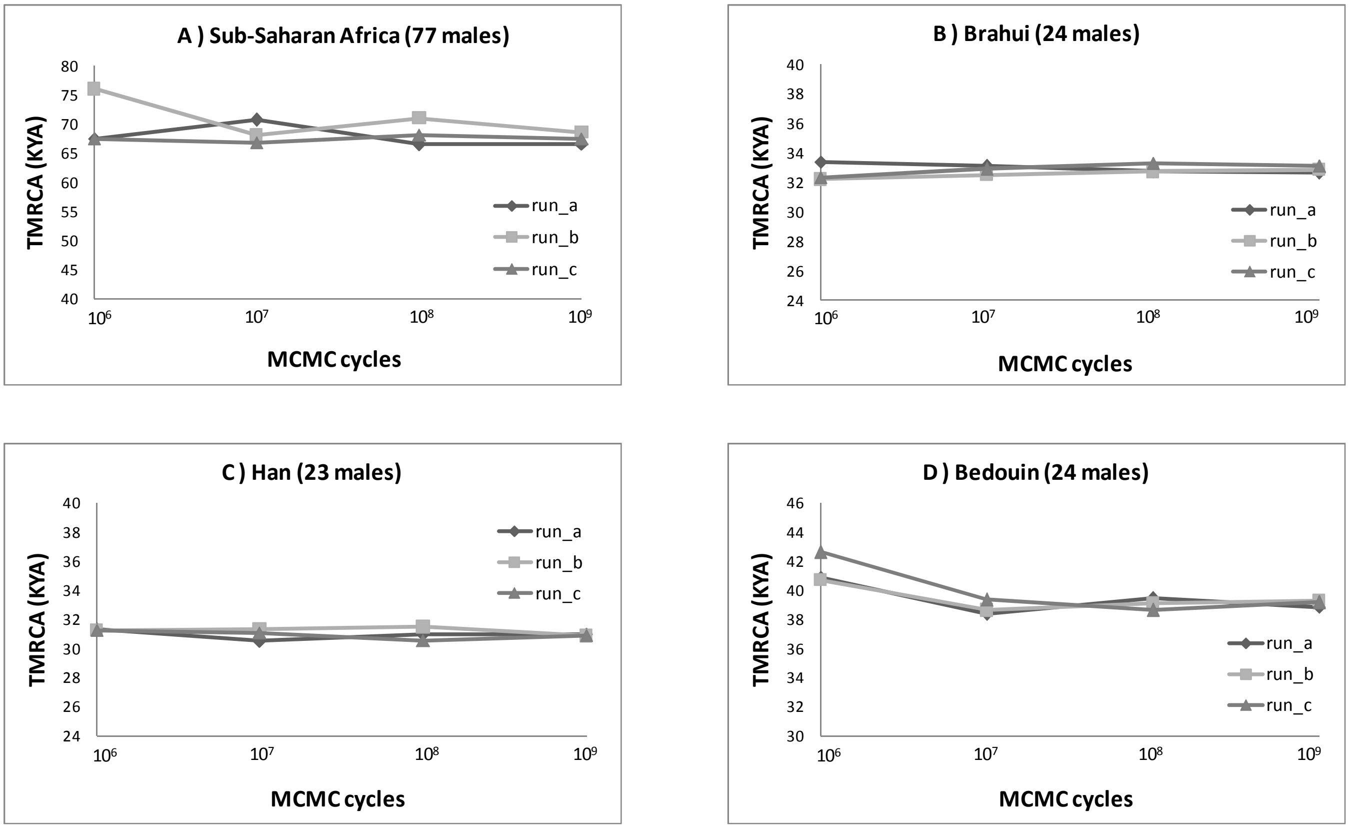


Figure S1: Program convergence confirmation. For each population, we ran the program three times for four different numbers of MCMC cycles, 1 million, 10 million, 100 million and 1000 million. A total of 10^4 samples of the program's output were taken after discarding the first 3×10^3 samples as "burn-in", and convergence was confirmed by examining the median estimates of longer runs and finding the same posterior: all runs have converged by 10^7 cycles.

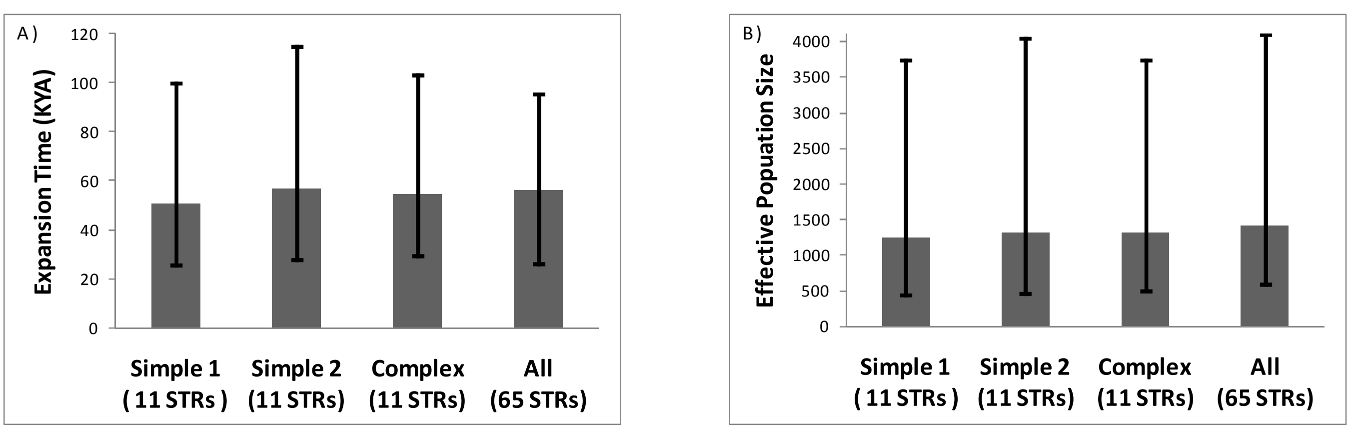


Figure S2: Effect of Y-STR properties and number on demographic inferences. The posterior estimates for expansion time and Ne are similar using different sets of 11 or 65 YSTRs in 77 sub-Saharan African males, and the 95% CIs are also similar for (A) Expansion time and (B) effective population size.

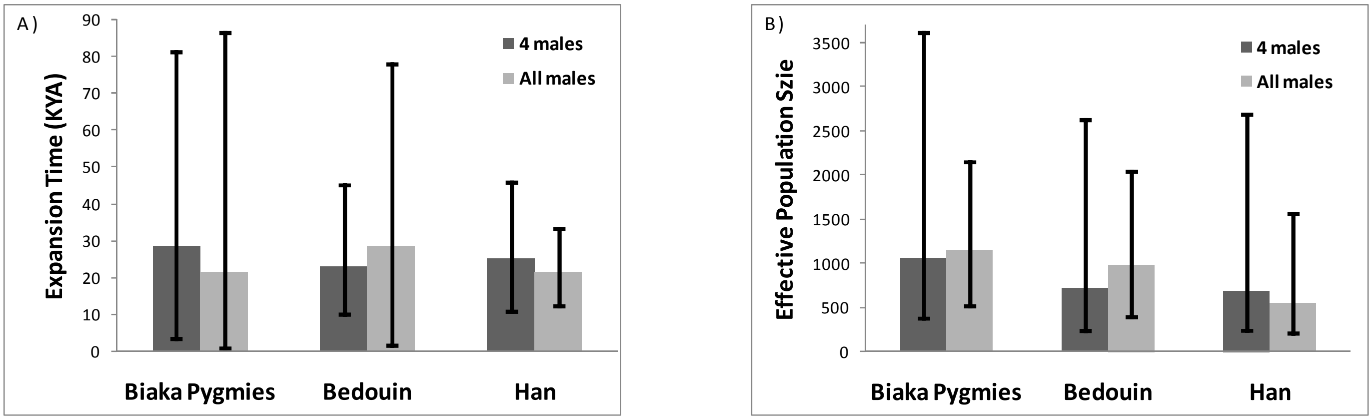


Figure S3: The effect of sample size on demographic inferences. Small sample sizes (4 males) gave similar median posterior estimates to larger sample size (20, 23 and 24 males). Larger sample sizes led to narrower 95% CIs for Ne but not for expansion time.

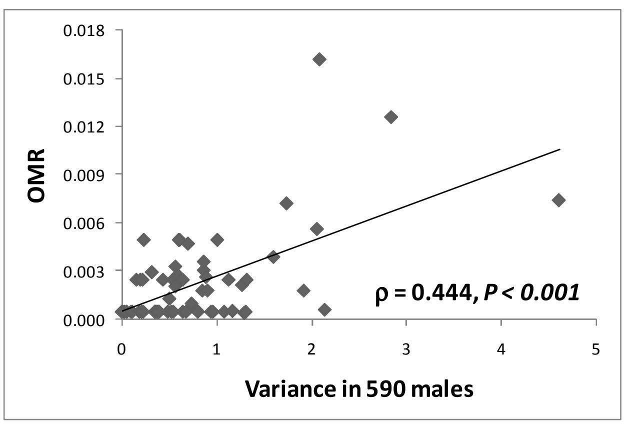
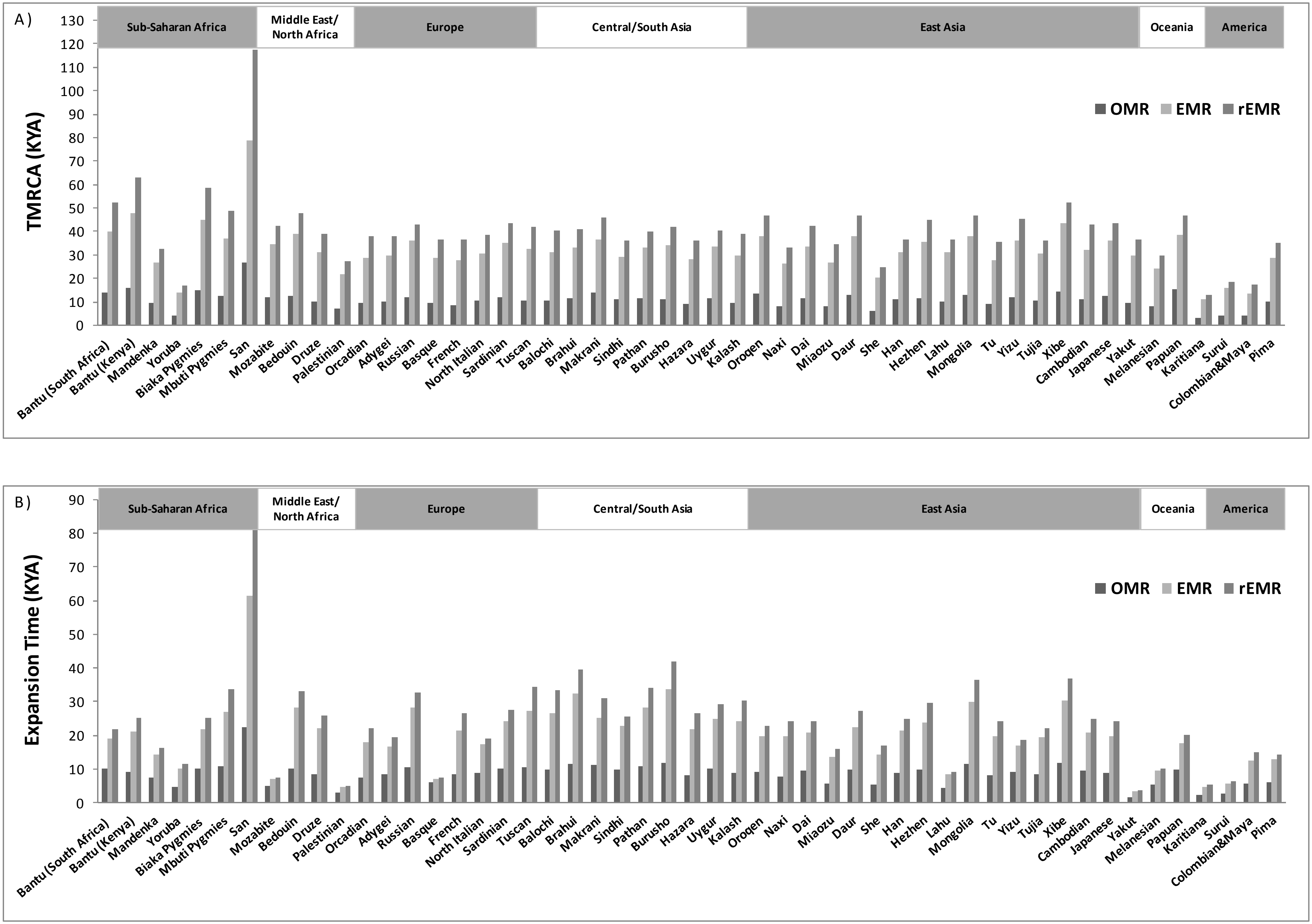


Figure S4: Correlation between observed mutation rate of each marker and its variance in the 590 individuals.


A)
TMRCA (KYA)
Sub-Saharan Africa
Middle East/ North Africa
Europe
Central/South Asia
East Asia
Oceania
America
OMR
EMR
rEMR
Bantu (South Africa)
Bantu (Kenya)
Mandenka
Yoruba
Biaka Pygmies
Mbuti Pygmies
San
Mozabite
Bedouin
Druze
Palestinian
Orcadian
Adygei
Russian
Basque
French
North Italian
Sardinian
Tuscan
Balochi
Brahui
Makrani
Sindhi
Pathan
Burusho
Hazara
Uygur
Kalash
Oroqen
Naxi
Dai
Miaozu
Daur
She
Han
Hezhen
Lahu
Mongolia
Tu
Yizu
Tujia
Xibe
Cambodian
Japanese
Yakut
Melanesian
Papuan
Karitiana
Surui
Colombian&Maya
Pima
B)
Expansion Time (KYA)

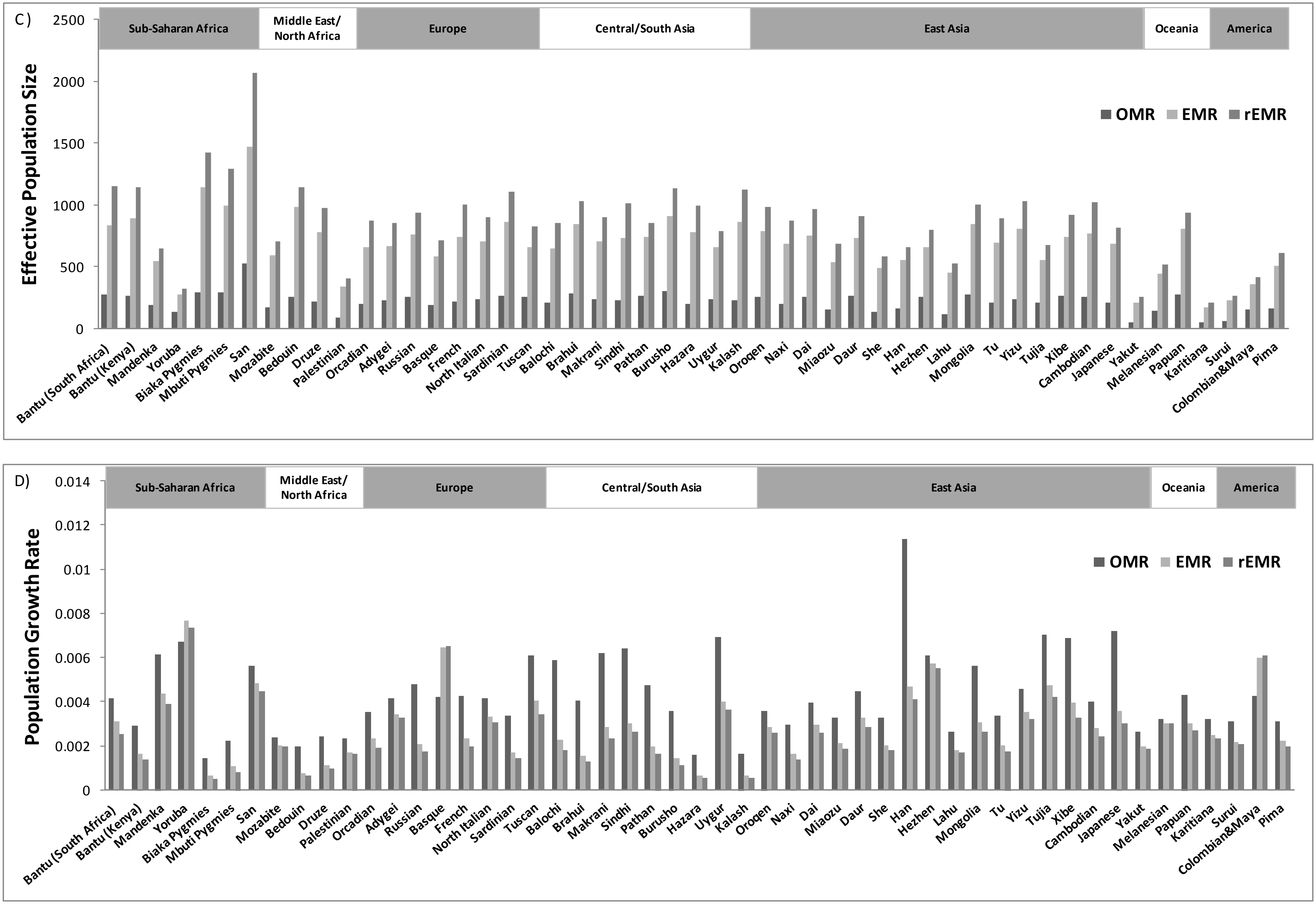


Figure S5: Median posterior estimates using three mutation rates. Bigger median values of (A) TMRCA , (B) Expansion time and (C) Ne were obtained when smaller mutation rates were applied, but the median values of (D) growth rate tended to become smaller when lower mutation rates were used.

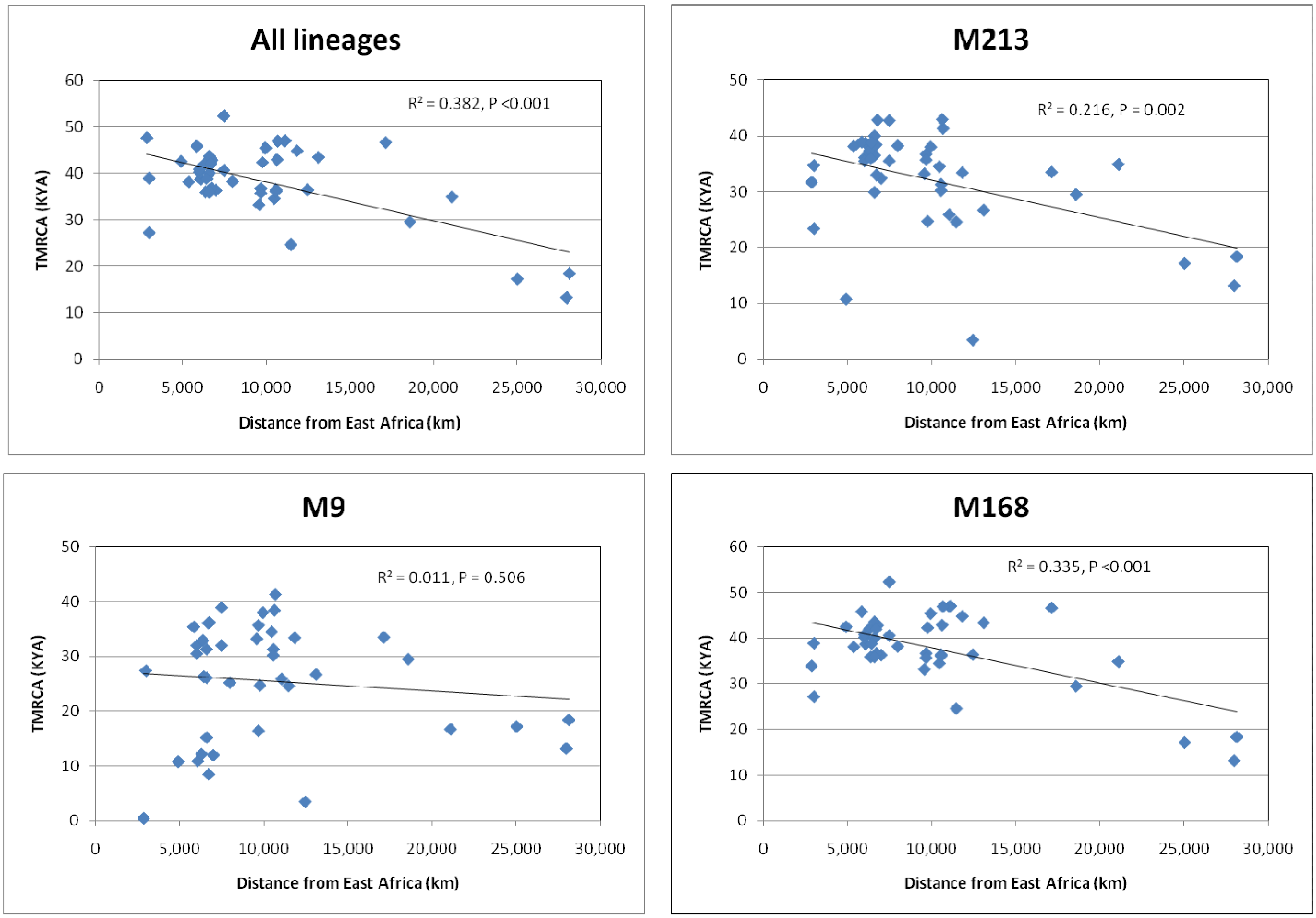


Figure S6. Correlation of TMRCA for specific lineages with walking distance from East Africa. Each point represents a population sample, and the lineage is shown at the top of the figure.

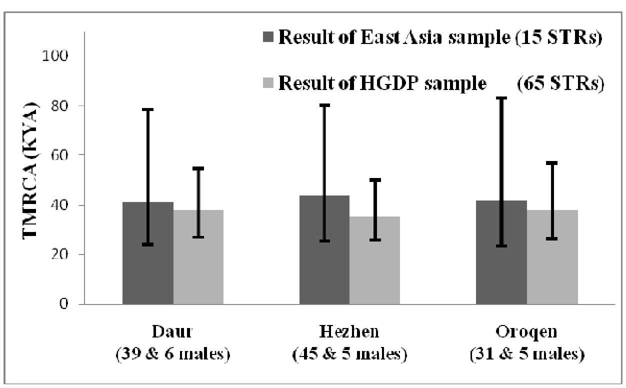


Figure S7: Comparison the TMRCA of three East Asian populations with TMRCA from the same populations reported by Xue et al (2006). Median estimates are similar, although 95% CIs are narrower when larger numbers of Y-STRs and smaller numbers of individuals are used.