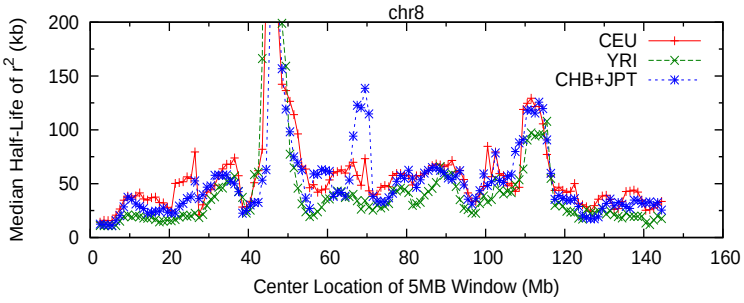
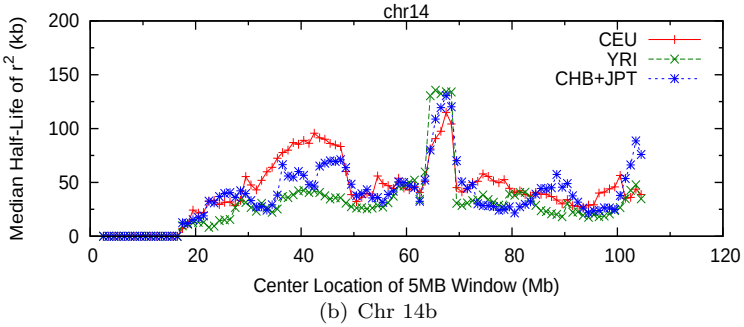
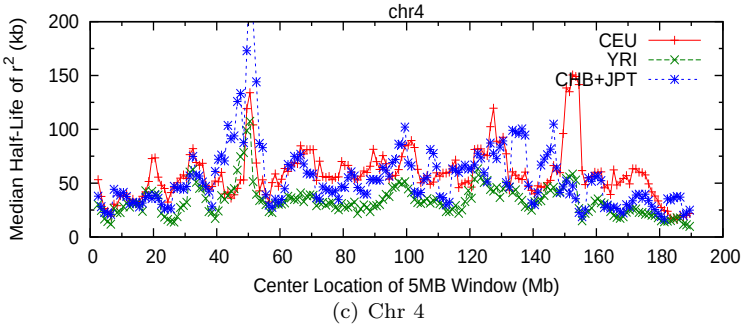
Supplementary Tables and Figures



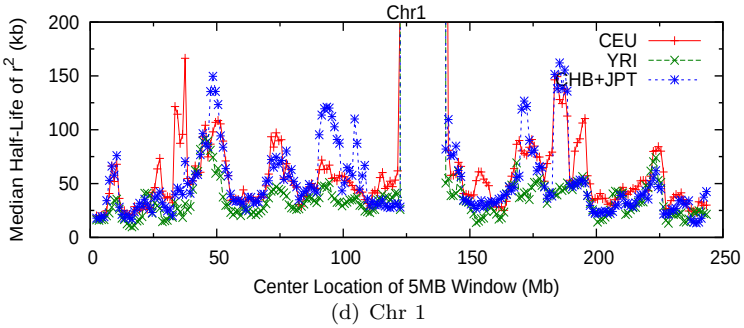
(a) Chr 8



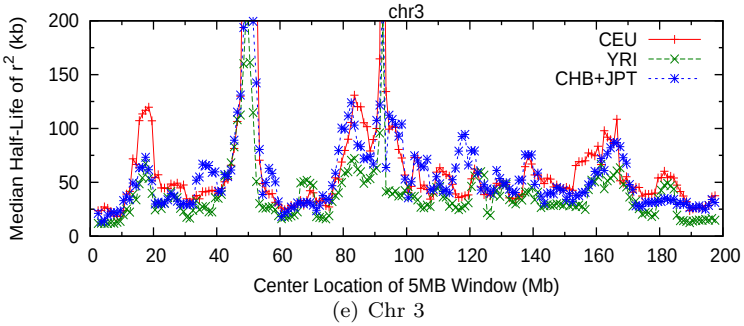
(b) Chr 14b



(c) Chr 4



(d) Chr 1



(e) Chr 3

Fig. S1. Median r^2 half-life value of 5Mb windows on 5 chromosomes

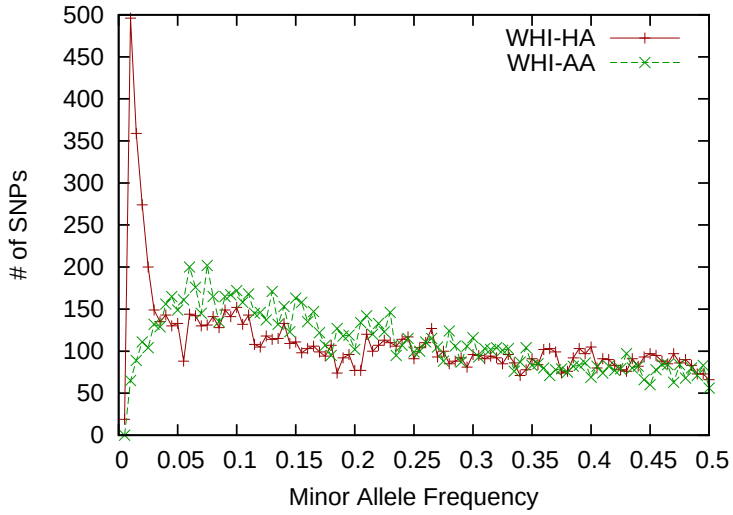
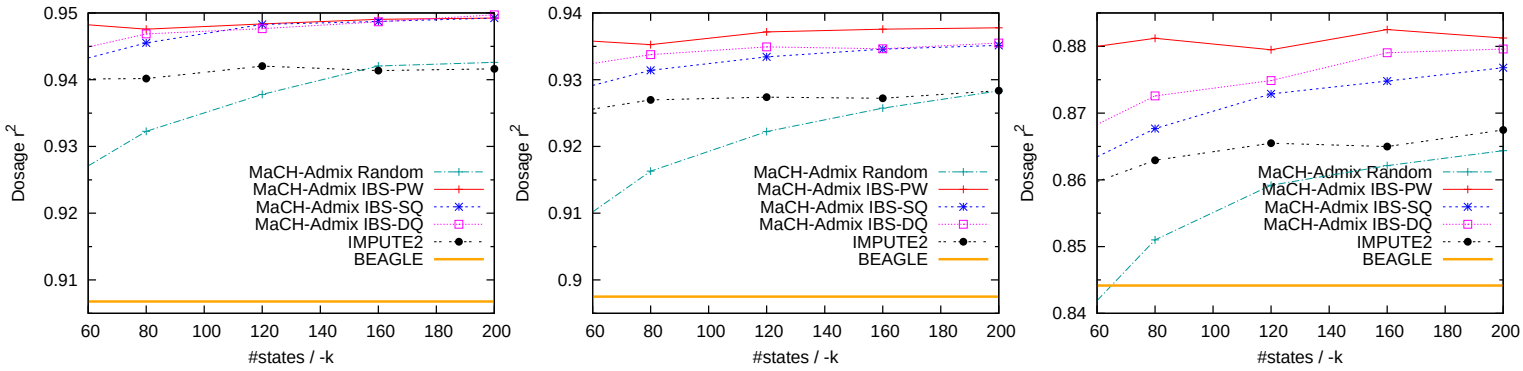
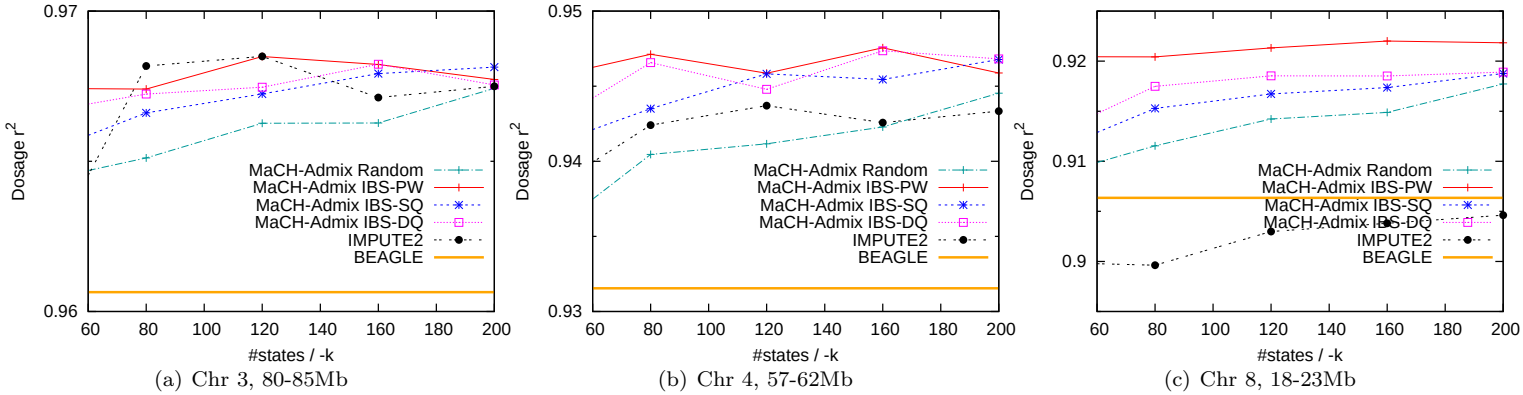


Fig. S2. Minor Allele Frequency (MAF) distribution of SNPs in WHI-AA and WHI-HA.



(a) Chr 3, 80-85Mb (b) Chr 4, 57-62Mb (c) Chr 8, 18-23Mb

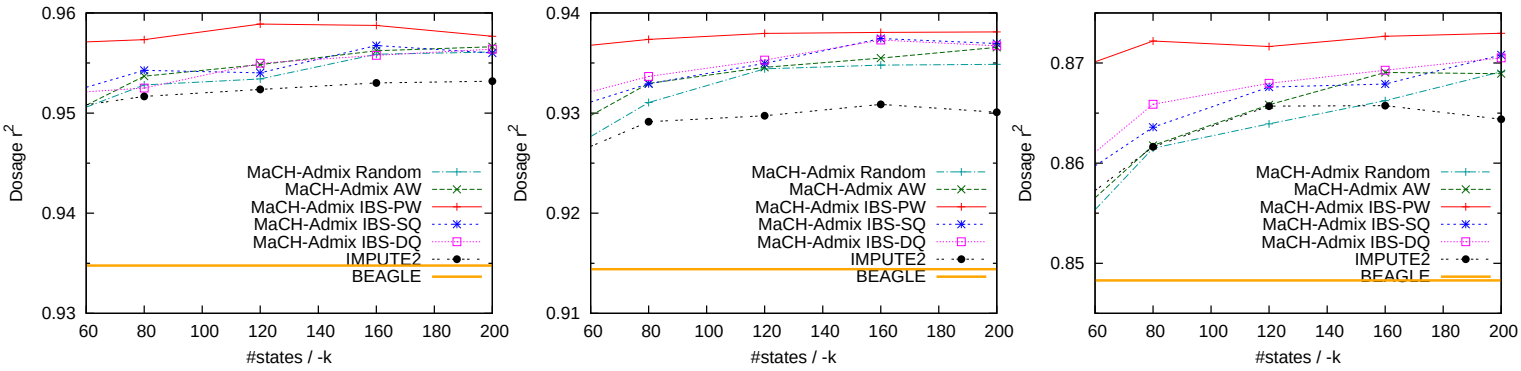
S3A: Overall imputation quality of HapMap ASW with the 1000G reference panel



(a) Chr 3, 80-85Mb (b) Chr 4, 57-62Mb (c) Chr 8, 18-23Mb

S3B: Overall imputation quality of HapMap MEX with the 1000G reference panel

Fig. S3. Imputation of 49 HapMap ASW and 50 HapMap MEX individuals with the 1000G reference panel. Imputation quality (measured by dosage r^2) is plotted as a function of the effective reference panel size (i.e., #states), for WHI-AA individuals in three selected 5Mb regions (ordered by LD from high to low).



(a) Chr 3, 80-85Mb (b) Chr 4, 57-62Mb (c) Chr 8, 18-23Mb

Fig. S4. Imputation quality of ASW with HapMapII CEU+YRI+LWK+MKK reference panel. Imputation quality (measured by dosage r^2) is plotted as a function of the effective reference panel size (i.e., #states), for ASW individuals in three selected 5Mb regions (ordered by LD from high to low).

Table S1. Median Half Life of r^2 (in Kb)

	CEU	YRI	JPT+CHB
10th Percentile	26	16	22
30th Percentile	38	24	32
50th Percentile	48	30	41
70th Percentile	60	39	55
90th Percentile	92	57	83
chromosome3:80-85Mb	106	70	124
chromosome1:75-80Mb	69	38	80
chromosome4:57-62Mb	47	31	32
chromosome14:50-55Mb	40	25	43
chromosome8:18-23Mb	25	16	23

Percentiles are calculated within each population using all 5Mb windows across the genome.

Table S2. Imputation Results of HapMap ASW & MEX Individuals over Five 5Mb Regions with the 1000G reference ($H = 2188$)

	49 ASW Individuals			50 MEX Individuals		
	overall dosage r^2 (std dev)	uncommon SNPs dosage r^2(std dev)	running time	overall dosage r^2 (std dev)	uncommon SNPs dosage r^2(std dev)	running time
chromosome3:80-85Mb						
MaCH-Admix Random	0.937(0.104)	0.854(0.210)	189	0.966(0.080)	0.960(0.149)	173
MaCH-Admix IBS-PW	**0.948(0.095)**	0.888(0.192)	252	**0.968(0.077)**	**0.968(0.148)**	212
MaCH-Admix IBS-SQ	**0.948(0.091)**	**0.898(0.176)**	220	0.967(0.079)	0.961(0.148)	203
MaCH-Admix IBS-DQ	0.947(0.095)	0.889(0.190)	220	0.967(0.079)	0.963(0.149)	221
IMPUTE2	0.942(0.106)	0.877(0.201)	457	**0.968(0.086)**	0.953(0.187)	477
BEAGLE	0.906(0.137)	0.774(0.267)	2388	0.960(0.096)	0.938(0.196)	2760
chromosome1:75-80Mb						
MaCH-Admix Random	0.915(0.135)	0.828(0.233)	273	0.937(0.132)	0.854(0.238)	257
MaCH-Admix IBS-PW	**0.930(0.123)**	**0.859(0.216)**	329	**0.940(0.134)**	0.867(0.250)	302
MaCH-Admix IBS-SQ	0.926(0.128)	0.849(0.222)	331	0.938(0.130)	**0.870(0.235)**	293
MaCH-Admix IBS-DQ	0.928(0.127)	0.852(0.227)	330	0.938(0.132)	0.866(0.243)	299
IMPUTE2	0.915(0.140)	0.842(0.229)	609	0.933(0.140)	0.847(0.270)	549
BEAGLE	0.900(0.148)	0.817(0.245)	3195	0.931(0.144)	0.839(0.264)	3779
chromosome4:57-62Mb						
MaCH-Admix Random	0.922(0.116)	0.801(0.230)	283	0.941(0.127)	0.873(0.228)	244
MaCH-Admix IBS-PW	**0.937(0.107)**	**0.852(0.220)**	325	**0.945(0.118)**	**0.896(0.203)**	298
MaCH-Admix IBS-SQ	0.933(0.110)	0.837(0.224)	322	**0.945(0.116)**	0.894(0.200)	286
MaCH-Admix IBS-DQ	0.934(0.107)	0.845(0.215)	325	0.944(0.119)	0.883(0.210)	290
IMPUTE2	0.927(0.116)	0.819(0.238)	743	0.943(0.120)	0.889(0.207)	785
BEAGLE	0.897(0.144)	0.755(0.284)	4364	0.931(0.143)	0.839(0.263)	5677
chromosome14:50-55Mb						
MaCH-Admix Random	0.899(0.144)	0.739(0.280)	392	0.947(0.119)	0.891(0.218)	366
MaCH-Admix IBS-PW	**0.914(0.134)**	0.769(0.273)	438	**0.951(0.118)**	**0.900(0.218)**	420
MaCH-Admix IBS-SQ	0.909(0.138)	0.765(0.282)	419	0.948(0.120)	0.896(0.223)	420
MaCH-Admix IBS-DQ	0.909(0.135)	0.763(0.264)	438	0.947(0.122)	0.889(0.231)	429
IMPUTE2	0.901(0.145)	**0.770(0.281)**	636	0.940(0.126)	0.874(0.234)	562
BEAGLE	0.879(0.167)	0.677(0.325)	4868	0.939(0.128)	0.872(0.232)	4643
chromosome8:18-23Mb						
MaCH-Admix Random	0.859(0.172)	0.755(0.283)	420	0.914(0.145)	0.892(0.200)	404
MaCH-Admix IBS-PW	**0.879(0.162)**	**0.792(0.280)**	523	**0.921(0.140)**	**0.908(0.186)**	487
MaCH-Admix IBS-SQ	0.872(0.164)	0.775(0.282)	537	0.916(0.145)	0.898(0.197)	485
MaCH-Admix IBS-DQ	0.874(0.166)	0.774(0.293)	526	0.918(0.143)	0.901(0.196)	495
IMPUTE2	0.865(0.173)	0.767(0.298)	818	0.902(0.164)	0.864(0.247)	854
BEAGLE	0.844(0.181)	0.760(0.285)	6295	0.906(0.156)	0.875(0.233)	6509

All results were generated using the following parameter values: MaCH-Admix: *--rounds* 30, *--states* 120, *--imputeStates* 500; IMPUTE2: *-iter* 30, *-k* 120, *-k_hap* 500; BEAGLE: *niterations*=10 *nsamples*=4. Running time is measured in seconds. Best performance in each comparison is highlighted by bold font.

Table S3. Imputation Results of WHI-HA Individuals over Five 5Mb Regions with the HapMapII reference ($H = 420$)

	All 3587 individuals			Random 200 Subset		
	overall dosage r^2 (std dev)	uncommon SNPs dosage r^2(std dev)	running time	overall dosage r^2 (std dev)	uncommon SNPs dosage r^2(std dev)	running time
chromosome3:80-85Mb						
MaCH-Admix Random	0.897(0.157)	0.864(0.091)	9907	0.885(0.150)	0.807(0.101)	234
MaCH-Admix IBS-PW	**0.905(0.150)**	0.918(0.021)	10373	**0.888(0.150)**	0.831(0.081)	248
MaCH-Admix IBS-SQ	0.904(0.150)	0.913(0.033)	11303	0.887(0.150)	0.838(0.088)	246
MaCH-Admix IBS-DQ	0.904(0.150)	0.911(0.036)	10434	**0.888(0.147)**	**0.845(0.082)**	247
IMPUTE2	0.904(0.148)	**0.924(0.011)**	8874	0.887(0.144)	0.843(0.044)	403
BEAGLE	0.892(0.159)	0.902(0.062)	11877	0.873(0.164)	0.831(0.106)	232
chromosome1:75-80Mb						
MaCH-Admix Random	0.855(0.184)	0.752(0.222)	14227	0.857(0.185)	0.723(0.253)	350
MaCH-Admix IBS-PW	**0.863(0.176)**	0.762(0.201)	13328	0.859(0.183)	0.721(0.236)	367
MaCH-Admix IBS-SQ	0.860(0.179)	0.748(0.204)	15146	**0.860(0.181)**	0.715(0.234)	363
MaCH-Admix IBS-DQ	0.861(0.178)	0.750(0.204)	15878	0.858(0.183)	0.712(0.237)	377
IMPUTE2	0.842(0.188)	0.740(0.248)	11782	0.840(0.194)	0.701(0.282)	556
BEAGLE	0.851(0.186)	**0.792(0.230)**	15446	0.849(0.191)	**0.795(0.250)**	296
chromosome4:57-62Mb						
MaCH-Admix Random	0.852(0.169)	0.742(0.237)	14728	0.863(0.165)	0.775(0.210)	343
MaCH-Admix IBS-PW	**0.862(0.162)**	**0.764(0.217)**	17051	**0.869(0.162)**	**0.787(0.201)**	360
MaCH-Admix IBS-SQ	0.860(0.161)	0.756(0.223)	16123	0.868(0.162)	0.779(0.211)	362
MaCH-Admix IBS-DQ	0.860(0.161)	0.757(0.224)	15364	0.867(0.164)	0.786(0.205)	363
IMPUTE2	0.844(0.176)	0.717(0.231)	12369	0.847(0.180)	0.732(0.221)	541
BEAGLE	0.850(0.168)	0.740(0.234)	17503	0.851(0.174)	0.734(0.263)	348
chromosome14:50-55Mb						
MaCH-Admix Random	0.845(0.190)	0.669(0.285)	19813	0.850(0.191)	0.677(0.290)	428
MaCH-Admix IBS-PW	0.854(0.184)	**0.689(0.274)**	19214	0.854(0.186)	**0.690(0.273)**	448
MaCH-Admix IBS-SQ	0.852(0.184)	0.682(0.283)	18357	0.854(0.186)	0.678(0.289)	450
MaCH-Admix IBS-DQ	0.852(0.184)	0.686(0.278)	19201	**0.855(0.186)**	0.689(0.277)	453
IMPUTE2	**0.856(0.183)**	0.681(0.272)	14430	**0.855(0.187)**	0.686(0.286)	660
BEAGLE	0.846(0.186)	0.666(0.279)	17102	0.845(0.191)	0.641(0.327)	356
chromosome8:18-23Mb						
MaCH-Admix Random	0.826(0.216)	0.760(0.246)	22069	0.830(0.216)	0.754(0.244)	524
MaCH-Admix IBS-PW	0.838(0.211)	**0.775(0.240)**	21194	**0.838(0.213)**	**0.763(0.238)**	551
MaCH-Admix IBS-SQ	0.832(0.213)	0.765(0.241)	22098	0.833(0.213)	0.758(0.242)	551
MaCH-Admix IBS-DQ	0.833(0.213)	0.768(0.241)	22360	0.833(0.216)	0.750(0.243)	553
IMPUTE2	**0.839(0.207)**	0.772(0.236)	17910	0.835(0.214)	0.744(0.253)	875
BEAGLE	0.826(0.211)	0.742(0.245)	27236	0.822(0.215)	0.732(0.258)	543

All results were generated using the following parameter values: MaCH-Admix: *--rounds* 30, *--states* 120, *--imputeStates* 500; IMPUTE2: *-iter* 30, *-k* 120, *-k_hap* 500; BEAGLE: *niterations*=10 *nsamples*=4. Running time is measured in seconds. Best performance in each comparison is highlighted by bold font.

Table S4. Imputation Results of WHI-AA Individuals over Five 5Mb Regions with the HapMapII reference ($H = 240$)

	All 8421 Individuals			Random 200 Subset		
	overall dosage r^2 (std dev)	uncommon SNPs dosage r^2(std dev)	running time	overall dosage r^2 (std dev)	uncommon SNPs dosage r^2(std dev)	running time
chromosome3:80-85Mb						
MaCH-Admix Random	0.877(0.140)	**0.684(0.271)**	56434	0.875(0.149)	0.636(0.354)	259
MaCH-Admix IBS-PW	0.884(0.136)	0.683(0.294)	52858	0.877(0.149)	0.641(0.369)	275
MaCH-Admix IBS-SQ	0.883(0.137)	0.678(0.294)	61142	0.877(0.148)	**0.645(0.356)**	264
MaCH-Admix IBS-DQ	0.883(0.137)	0.677(0.297)	56255	0.876(0.150)	0.627(0.349)	265
IMPUTE2	**0.885(0.135)**	0.668(0.290)	25283	**0.879(0.148)**	0.613(0.371)	388
BEAGLE	0.842(0.164)	0.575(0.259)	116113	0.841(0.173)	0.558(0.368)	234
chromosome1:75-80Mb						
MaCH-Admix Random	0.822(0.166)	0.746(0.146)	66325	0.811(0.174)	0.746(0.176)	394
MaCH-Admix IBS-PW	0.830(0.160)	0.759(0.143)	73130	**0.815(0.172)**	**0.757(0.194)**	407
MaCH-Admix IBS-SQ	0.830(0.160)	0.762(0.143)	75065	0.814(0.174)	0.746(0.200)	403
MaCH-Admix IBS-DQ	**0.831(0.160)**	**0.764(0.144)**	77968	**0.815(0.173)**	0.751(0.198)	402
IMPUTE2	0.812(0.167)	0.736(0.137)	35170	0.794(0.181)	0.712(0.167)	556
BEAGLE	0.798(0.185)	0.685(0.167)	142769	0.776(0.200)	0.656(0.222)	291
chromosome4:57-62Mb						
MaCH-Admix Random	0.832(0.150)	0.664(0.152)	77490	0.831(0.154)	0.679(0.177)	368
MaCH-Admix IBS-PW	0.841(0.144)	0.686(0.149)	74439	0.835(0.152)	0.693(0.177)	378
MaCH-Admix IBS-SQ	**0.842(0.143)**	0.689(0.143)	74604	**0.836(0.150)**	**0.704(0.169)**	400
MaCH-Admix IBS-DQ	**0.842(0.143)**	**0.691(0.142)**	76374	0.835(0.152)	0.693(0.159)	384
IMPUTE2	0.826(0.153)	0.654(0.160)	34875	0.816(0.162)	0.666(0.177)	513
BEAGLE	0.798(0.183)	0.552(0.271)	145240	0.788(0.199)	0.464(0.261)	298
chromosome14:50-55Mb						
MaCH-Admix Random	0.770(0.195)	0.628(0.288)	82618	0.780(0.199)	0.671(0.278)	427
MaCH-Admix IBS-PW	0.781(0.188)	0.645(0.279)	77589	0.784(0.195)	0.681(0.268)	442
MaCH-Admix IBS-SQ	0.780(0.187)	0.647(0.280)	82175	0.786(0.196)	0.679(0.262)	436
MaCH-Admix IBS-DQ	0.780(0.188)	0.644(0.283)	90951	0.787(0.194)	0.678(0.265)	450
IMPUTE2	**0.791(0.180)**	**0.667(0.270)**	39702	**0.789(0.194)**	**0.689(0.265)**	597
BEAGLE	0.742(0.210)	0.553(0.308)	124661	0.739(0.221)	0.579(0.315)	336
chromosome8:18-23Mb						
MaCH-Admix Random	0.754(0.222)	0.619(0.241)	99090	0.758(0.216)	0.649(0.233)	570
MaCH-Admix IBS-PW	0.764(0.217)	0.641(0.240)	104999	0.764(0.214)	0.665(0.230)	584
MaCH-Admix IBS-SQ	0.768(0.214)	0.654(0.235)	95685	0.765(0.213)	**0.677(0.232)**	593
MaCH-Admix IBS-DQ	0.768(0.213)	0.655(0.236)	104526	0.765(0.213)	0.672(0.236)	590
IMPUTE2	**0.779(0.203)**	**0.659(0.232)**	53975	**0.769(0.209)**	0.675(0.225)	869
BEAGLE	0.717(0.232)	0.535(0.243)	162132	0.709(0.237)	0.543(0.269)	452

All results were generated using the following parameter values: MaCH-Admix: --*rounds* 30, --*states* 120, --*imputeStates* 500; IMPUTE2: -*iter* 30, -*k* 120, -*k_hap* 500; BEAGLE: *niterations*=10 *nsamples*=4. Running time is measured in seconds. Best performance in each comparison is highlighted by bold font.

Table S5A. Imputation Results of 49 ASW Individuals Over All Five Short Regions

	HapMapII CEU+YRI reference			HapMapIII CEU+YRI reference		
	overall dosage r^2 (std dev)	uncommon SNPs dosage r^2(std dev)	running time	overall dosage r^2 (std dev)	uncommon SNPs dosage r^2(std dev)	running time
chromosome3:80-85Mb						
MaCH-Admix Random	0.937(0.106)	0.721(0.230)	168	0.942(0.121)	0.833(0.275)	138
MaCH-Admix AW	0.938(0.102)	0.766(0.191)	126	0.944(0.120)	0.837(0.275)	147
MaCH-Admix IBS-PW	**0.940(0.099)**	0.787(0.190)	125	**0.946(0.111)**	**0.860(0.249)**	158
MaCH-Admix IBS-SQ	0.939(0.100)	0.759(0.184)	128	0.943(0.121)	0.836(0.281)	158
MaCH-Admix IBS-DQ	0.937(0.106)	0.739(0.209)	132	**0.946(0.112)**	0.857(0.249)	149
IMPUTE2	0.939(0.099)	**0.803(0.155)**	288	0.942(0.119)	0.850(0.264)	316
BEAGLE	0.906(0.140)	0.702(0.276)	177	0.921(0.141)	0.796(0.296)	131
chromosome1:75-80Mb						
MaCH-Admix Random	**0.916(0.123)**	**0.862(0.201)**	197	0.921(0.135)	0.810(0.237)	250
MaCH-Admix AW	0.915(0.124)	0.853(0.209)	194	0.922(0.134)	0.812(0.236)	280
MaCH-Admix IBS-PW	0.915(0.123)	0.857(0.202)	199	**0.925(0.132)**	**0.826(0.234)**	258
MaCH-Admix IBS-SQ	0.914(0.125)	0.853(0.207)	209	0.923(0.132)	0.819(0.230)	243
MaCH-Admix IBS-DQ	0.914(0.125)	0.858(0.211)	206	0.923(0.135)	0.815(0.240)	246
IMPUTE2	0.914(0.131)	0.839(0.228)	441	0.919(0.140)	0.810(0.253)	442
BEAGLE	0.893(0.150)	0.824(0.245)	178	0.898(0.166)	0.777(0.285)	199
chromosome4:57-62Mb						
MaCH-Admix Random	0.898(0.138)	0.808(0.230)	188	0.920(0.125)	0.840(0.239)	226
MaCH-Admix AW	0.898(0.138)	0.814(0.231)	187	**0.922(0.123)**	**0.850(0.239)**	210
MaCH-Admix IBS-PW	**0.900(0.136)**	**0.821(0.231)**	203	**0.922(0.127)**	0.847(0.249)	234
MaCH-Admix IBS-SQ	0.899(0.141)	0.811(0.238)	192	0.920(0.127)	0.841(0.243)	230
MaCH-Admix IBS-DQ	0.899(0.140)	0.814(0.232)	317	0.921(0.127)	0.845(0.247)	228
IMPUTE2	0.897(0.140)	0.813(0.233)	415	0.920(0.128)	0.837(0.245)	452
BEAGLE	0.868(0.166)	0.775(0.252)	182	0.900(0.146)	0.803(0.280)	170
chromosome14:50-55Mb						
MaCH-Admix Random	0.869(0.180)	0.744(0.298)	227	0.876(0.179)	0.757(0.306)	504
MaCH-Admix AW	0.871(0.176)	**0.765(0.279)**	232	0.880(0.177)	0.766(0.304)	282
MaCH-Admix IBS-PW	**0.873(0.177)**	0.762(0.293)	249	**0.881(0.178)**	**0.769(0.304)**	296
MaCH-Admix IBS-SQ	**0.873(0.176)**	0.761(0.289)	240	0.879(0.178)	0.765(0.302)	311
MaCH-Admix IBS-DQ	**0.873(0.176)**	0.757(0.293)	249	0.878(0.180)	0.757(0.312)	310
IMPUTE2	0.870(0.180)	0.756(0.289)	497	0.879(0.180)	0.766(0.301)	523
BEAGLE	0.841(0.199)	0.688(0.332)	189	0.849(0.201)	0.694(0.340)	214
chromosome8:18-23Mb						
MaCH-Admix Random	0.861(0.170)	0.813(0.247)	329	0.849(0.189)	0.766(0.285)	392
MaCH-Admix AW	**0.863(0.171)**	**0.824(0.249)**	332	0.850(0.188)	0.765(0.288)	423
MaCH-Admix IBS-PW	0.862(0.170)	**0.824(0.247)**	332	**0.853(0.189)**	0.761(0.296)	423
MaCH-Admix IBS-SQ	0.861(0.172)	0.819(0.246)	373	0.849(0.191)	**0.778(0.290)**	508
MaCH-Admix IBS-DQ	0.862(0.171)	0.821(0.239)	344	0.849(0.190)	0.776(0.289)	418
IMPUTE2	0.860(0.175)	0.793(0.263)	658	**0.853(0.194)**	0.767(0.299)	767
BEAGLE	0.820(0.200)	0.728(0.303)	241	0.825(0.206)	0.732(0.309)	269

All results were generated using the following parameter values: MaCH-Admix: *--rounds* 30, *--states* 120; IMPUTE2: *-iter* 30, *-k* 120, *-k_hap* 500; BEAGLE: *niterations*=10 *nsamples*=4. Best performance in each comparison is highlighted by bold font.

Table S5B. Imputation Results of 49 ASW Individuals Over All Five Short Regions

	HapMapIII CEU+YRI+LWK+MKK reference overall dosage r^2 (std dev)	uncommon SNPs dosage r^2(std dev)	running time
chromosome3:80-85Mb			
MaCH-Admix Random	0.953(0.101)	0.868(0.232)	162
MaCH-Admix AW	0.954(0.097)	0.881(0.222)	159
MaCH-Admix IBS-PW	**0.958(0.091)**	**0.898(0.208)**	167
MaCH-Admix IBS-SQ	0.954(0.100)	0.871(0.233)	179
MaCH-Admix IBS-DQ	0.954(0.100)	0.876(0.233)	173
IMPUTE2	0.952(0.100)	0.877(0.225)	291
BEAGLE	0.934(0.124)	0.811(0.271)	334
chromosome1:75-80Mb			
MaCH-Admix Random	0.932(0.122)	0.837(0.222)	236
MaCH-Admix AW	0.935(0.119)	0.847(0.217)	238
MaCH-Admix IBS-PW	**0.939(0.117)**	**0.858(0.222)**	283
MaCH-Admix IBS-SQ	0.935(0.124)	0.841(0.235)	270
MaCH-Admix IBS-DQ	0.935(0.120)	0.850(0.226)	272
IMPUTE2	0.932(0.124)	0.846(0.225)	553
BEAGLE	0.918(0.144)	0.819(0.259)	491
chromosome4:57-62Mb			
MaCH-Admix Random	0.934(0.107)	0.885(0.200)	232
MaCH-Admix AW	0.934(0.110)	0.884(0.208)	251
MaCH-Admix IBS-PW	**0.937(0.106)**	**0.892(0.200)**	253
MaCH-Admix IBS-SQ	0.934(0.110)	0.879(0.211)	247
MaCH-Admix IBS-DQ	0.935(0.109)	0.878(0.210)	267
IMPUTE2	0.929(0.120)	0.861(0.237)	426
BEAGLE	0.914(0.132)	0.833(0.256)	469
chromosome14:50-55Mb			
MaCH-Admix Random	0.883(0.170)	0.756(0.301)	318
MaCH-Admix AW	0.886(0.168)	0.772(0.295)	309
MaCH-Admix IBS-PW	0.891(0.167)	0.778(0.304)	352
MaCH-Admix IBS-SQ	0.889(0.166)	0.783(0.295)	320
MaCH-Admix IBS-DQ	0.890(0.166)	**0.786(0.294)**	335
IMPUTE2	**0.893(0.168)**	0.785(0.303)	642
BEAGLE	0.873(0.181)	0.757(0.305)	514
chromosome8:18-23Mb			
MaCH-Admix Random	0.863(0.178)	0.781(0.274)	431
MaCH-Admix AW	0.865(0.180)	0.788(0.285)	417
MaCH-Admix IBS-PW	**0.871(0.177)**	0.790(0.286)	452
MaCH-Admix IBS-SQ	0.867(0.180)	**0.800(0.281)**	479
MaCH-Admix IBS-DQ	0.867(0.178)	0.785(0.281)	462
IMPUTE2	0.865(0.186)	**0.800(0.286)**	923
BEAGLE	0.848(0.190)	0.768(0.292)	718

All results were generated using the following parameter values: MaCH-Admix: *--rounds* 30, *--states* 120; IMPUTE2: *-iter* 30, *-k* 120, *-k_hap* 500; BEAGLE: *niterations*=10 *nsamples*=4. Best performance in each comparison is highlighted by bold font.

Table S5C. Imputation Results of 50 MEX Individuals Over All Five Short Regions

	HapMapII CEU+YRI+JPT+CHB reference			HapMapIII CEU+YRI+JPT+CHB reference		
	overall dosage r^2 (std dev)	uncommon SNPs dosage r^2(std dev)	running time	overall dosage r^2 (std dev)	uncommon SNPs dosage r^2(std dev)	running time
chromosome3:80-85Mb						
MaCH-Admix Random	**0.965(0.083)**	0.988(0.040)	114	0.956(0.112)	0.893(0.227)	143
MaCH-Admix AW	**0.965(0.080)**	0.985(0.054)	120	**0.957(0.109)**	0.898(0.216)	144
MaCH-Admix IBS-PW	0.964(0.082)	0.989(0.037)	125	**0.957(0.110)**	**0.899(0.222)**	184
MaCH-Admix IBS-SQ	0.964(0.081)	0.987(0.046)	124	**0.957(0.110)**	0.897(0.221)	164
MaCH-Admix IBS-DQ	0.963(0.083)	0.989(0.042)	122	0.956(0.112)	0.896(0.223)	167
IMPUTE2	0.961(0.089)	0.986(0.036)	298	**0.957(0.119)**	0.898(0.237)	311
BEAGLE	0.959(0.093)	**0.995(0.012)**	225	0.947(0.130)	0.854(0.245)	232
chromosome1:75-80Mb						
MaCH-Admix Random	0.927(0.136)	0.832(0.244)	192	0.923(0.165)	0.818(0.296)	255
MaCH-Admix AW	0.929(0.134)	0.827(0.240)	186	0.924(0.168)	0.814(0.306)	248
MaCH-Admix IBS-PW	**0.930(0.134)**	**0.838(0.245)**	209	**0.926(0.169)**	0.819(0.312)	272
MaCH-Admix IBS-SQ	0.926(0.136)	**0.838(0.221)**	203	0.921(0.171)	**0.829(0.308)**	251
MaCH-Admix IBS-DQ	0.926(0.139)	0.832(0.230)	220	0.922(0.170)	0.822(0.309)	262
IMPUTE2	0.927(0.141)	0.820(0.250)	471	0.923(0.177)	0.801(0.317)	476
BEAGLE	0.915(0.146)	0.806(0.245)	239	0.908(0.191)	0.775(0.338)	299
chromosome4:57-62Mb						
MaCH-Admix Random	0.928(0.147)	0.806(0.296)	183	**0.928(0.160)**	0.840(0.286)	219
MaCH-Admix AW	**0.929(0.146)**	0.806(0.286)	189	0.927(0.162)	0.838(0.289)	214
MaCH-Admix IBS-PW	0.928(0.149)	0.802(0.304)	200	0.927(0.161)	0.844(0.287)	238
MaCH-Admix IBS-SQ	0.928(0.148)	**0.812(0.286)**	286	0.926(0.163)	**0.851(0.288)**	235
MaCH-Admix IBS-DQ	0.927(0.149)	0.809(0.292)	193	**0.928(0.161)**	0.839(0.291)	238
IMPUTE2	0.925(0.156)	0.806(0.300)	435	0.925(0.169)	0.832(0.298)	501
BEAGLE	0.920(0.160)	0.793(0.305)	230	0.919(0.172)	0.824(0.304)	320
chromosome14:50-55Mb						
MaCH-Admix Random	**0.922(0.158)**	0.895(0.167)	249	0.916(0.183)	0.823(0.290)	347
MaCH-Admix AW	0.921(0.161)	0.902(0.168)	273	0.915(0.183)	0.816(0.292)	286
MaCH-Admix IBS-PW	**0.922(0.163)**	0.900(0.171)	252	**0.918(0.182)**	0.827(0.293)	335
MaCH-Admix IBS-SQ	0.921(0.161)	**0.903(0.168)**	273	0.915(0.183)	0.828(0.286)	316
MaCH-Admix IBS-DQ	0.920(0.161)	0.898(0.166)	263	0.917(0.181)	**0.840(0.287)**	315
IMPUTE2	**0.922(0.165)**	0.901(0.169)	541	0.916(0.182)	0.827(0.290)	598
BEAGLE	0.911(0.170)	0.891(0.172)	276	0.908(0.190)	0.813(0.299)	319
chromosome8:18-23Mb						
MaCH-Admix Random	0.900(0.162)	0.852(0.233)	316	0.886(0.191)	0.824(0.284)	402
MaCH-Admix AW	0.901(0.160)	0.858(0.224)	336	0.885(0.196)	0.815(0.294)	401
MaCH-Admix IBS-PW	**0.903(0.159)**	0.867(0.218)	327	**0.888(0.197)**	**0.826(0.298)**	513
MaCH-Admix IBS-SQ	0.900(0.163)	0.863(0.223)	356	0.882(0.198)	0.817(0.298)	465
MaCH-Admix IBS-DQ	0.900(0.161)	0.864(0.212)	329	0.883(0.199)	0.813(0.301)	459
IMPUTE2	0.898(0.164)	**0.871(0.199)**	716	0.879(0.205)	0.811(0.302)	806
BEAGLE	0.889(0.169)	0.859(0.225)	340	0.870(0.211)	0.788(0.320)	434

All results were generated using the following parameter values: MaCH-Admix: *--rounds* 30, *--states* 120; IMPUTE2: *-iter* 30, *-k* 120, *-k_hap* 500; BEAGLE: *niterations*=10 *nsamples*=4. Best performance in each comparison is highlighted by bold font.