

A novel method to model read counts in genomic data to reduce false positive identification of heterozygotes

Supplemental Material

Tables

Maximum likelihood, AIC and BIC values for different components in each model.

CEU 2013 Chromosome 21						
Model	TH lnL	PH lnL	TH AIC	PH AIC	TH BIC	PH BIC
Components 1	-680227.22	-1049127.29	1360460.44	2098260.57	1360485.35	2098286.28
Components 2	-679553.35	-1047190.51	1359120.71	2094395.02	1359178.84	2094455.01
Components 3	-679518.05	-1046976.22	1359058.10	2093974.43	1359149.44*	2094068.71
Components 4	-679503.99	-1046863.10	1359037.99*	2093756.19	1359162.55	2093884.75
Components 5	-679500.25	-1046801.13	1359038.49	2093640.26	1359196.27	2093803.09
Components 6	-679499.16	-1046759.39	1359044.32	2093564.77*	1359235.31	2093761.89*

CEU 2013 Chromosome 10						
Model	TH lnL	PH lnL	TH AIC	PH AIC	TH BIC	PH BIC
Components 1	-822125.53	-861877.92	1644257.06	1723761.83	1644282.55	1723787.47
Components 2	-821819.67	-861134.63	1643653.34	1722283.25	1643712.83*	1722343.07
Components 3	-821806.53	-861095.35	1643635.06*	1722212.71*	1643728.54	1722306.71*
Components 4	-821803.92	-861092.33	1643637.84	1722214.65	1643765.32	1722342.83
Components 5	-821802.52	-861088.23	1643643.03	1722214.47	1643804.51	1722376.83
Components 6	-821801.14	-861086.03	1643648.29	1722218.06	1643843.76	1722414.61

CEU 2012 Chromosome 21						
Model	TH lnL	PH lnL	TH AIC	PH AIC	TH BIC	PH BIC
Components 1	-1295587.45	-1567598.52	2591180.90	3135203.04	2591205.81	3135228.44
Components 2	-1294765.87	-1564084.48	2589545.74	3128182.96	2589603.87*	3128242.23
Components 3	-1294751.05	-1563981.27	2589524.11	3127984.54	2589615.44	3128077.69
Components 4	-1294738.61	-1563903.83	2589507.23*	3127837.65	2589631.78	3127964.67
Components 5	-1294735.56	-1563870.23	2589509.11	3127778.45	2589666.88	3127939.35*
Components 6	-1294732.85	-1563852.35	2589511.69	3127750.70*	2589702.67	3127945.47

CEU 2012 Chromosome 10						
Model	TH lnL	PH lnL	TH AIC	PH AIC	TH BIC	PH BIC
Components 1	-1576846.58	-1681522.38	3153699.16	3363050.76	3153724.69	3363076.53
Components 2	-1576531.60	-1679609.04	3153077.20	3359232.08	3153136.77*	3359292.21
Components 3	-1576517.22	-1679519.20	3153056.44*	3359060.39	3153150.04	3359154.88
Components 4	-1576513.59	-1679490.33	3153057.18	3359010.66	3153184.83	3359139.50*
Components 5	-1576510.84	-1679484.47	3153059.69	3359006.94	3153221.37	3359170.15
Components 6	-1576508.61	-1679473.47	3153063.22	3358992.95*	3153258.94	3359190.51

CEU 2011 Chromosome 21						
Model	TH lnL	PH lnL	TH AIC	PH AIC	TH BIC	PH BIC
Components 1	-1295073.11	-1564321.59	2590152.22	3128649.18	2590177.13	3128674.58
Components 2	-1294248.59	-1560880.98	2588511.18	3121775.95	2588569.31*	3121835.22
Components 3	-1294233.74	-1560781.60	2588489.49	3121585.20	2588580.83	3121678.34
Components 4	-1294220.12	-1560704.65	2588470.24*	3121439.29	2588594.79	3121566.29
Components 5	-1294216.29	-1560669.63	2588470.58	3121377.27	2588628.35	3121538.13*
Components 6	-1294214.05	-1560651.10	2588474.10	3121348.19*	2588665.08	3121542.93
CEU 2011 Chromosome 10						
Model	TH lnL	PH lnL	TH AIC	PH AIC	TH BIC	PH BIC
Components 1	-1576118.74	-1680591.96	3152243.47	3361189.92	3152269.00	3361215.69
Components 2	-1575808.42	-1678712.33	3151630.84	3357438.67	3151690.41*	3357498.80
Components 3	-1575793.38	-1678620.74	3151608.77*	3357263.48	3151702.38	3357357.97
Components 4	-1575789.85	-1678591.80	3151609.70	3357213.59	3151737.34	3357342.44*
Components 5	-1575786.15	-1678585.13	3151610.30	3357208.25	3151771.99	3357371.46
Components 6	-1575785.32	-1678576.67	3151616.63	3357199.34*	3151812.36	3357396.90
CEU 2010 Chromosome 21						
Model	TH lnL	PH lnL	TH AIC	PH AIC	TH BIC	PH BIC
Components 1	-609177.81	-741752.33	1218361.61	1483510.67	1218386.32	1483535.69
Components 2	-609069.60	-740874.49	1218153.20	1481762.98	1218210.86*	1481821.36
Components 3	-609057.91	-740685.21	1218137.82*	1481392.42	1218228.43	1481484.15
Components 4	-609057.53	-740660.48	1218145.05	1481350.95	1218268.61	1481476.04*
Components 5	-609057.09	-740641.97	1218152.19	1481321.95	1218308.69	1481480.39
Components 6	-609056.88	-740630.74	1218159.75	1481307.48*	1218349.21	1481499.28
CEU 2010 Chromosome 10						
Model	TH lnL	PH lnL	TH AIC	PH AIC	TH BIC	PH BIC
Components 1	-786319.70	-838669.52	1572645.39	1677345.03	1572670.77	1677370.56
Components 2	-786283.09	-838295.21	1572580.18	1676604.41	1572639.38*	1676663.98
Components 3	-786279.14	-838241.95	1572580.28	1676505.89	1572673.32	1676599.49*
Components 4	-786272.06	-838223.33	1572574.12*	1676476.66	1572700.98	1676604.30
Components 5	-786271.18	-838218.88	1572580.36	1676475.77*	1572741.05	1676637.44
Components 6	-786271.55	-838215.94	1572589.10	1676477.87	1572783.63	1676673.58
CHM1 Chromosome 21						
Model	FD lnL	RD lnL	FD AIC	RD AIC	FD AIC	RD BIC
Components 1	-8884.14	-7705.50	17774.29	15417.01	17799.96	15442.68
Components 2	-8111.63	-7680.10	16237.26	15374.20*	16297.18*	15434.12*
Components 3	-8101.03	-7678.67	16224.06	15379.34	16318.21	15473.49
Components 4	-8096.28	-7678.67	16222.57*	15387.34	16350.96	15515.73
Components 5	-8096.14	-7678.67	16230.28	15395.34	16392.91	15557.96
Components 6	-8096.45	-7678.67	16238.90	15403.34	16435.77	15600.20
CHM1 Chromosome 10						
Model	FD lnL	RD lnL	FD AIC	RD AIC	FD AIC	RD BIC
Components 1	-9741.81	-8820.24	19489.62	17646.48	19515.40	17672.26
Components 2	-8941.66	-8797.67	17897.32	17609.34*	17957.48*	17669.49*
Components 3	-8932.63	-8796.54	17887.27*	17615.07	17981.80	17709.60
Components 4	-8931.64	-8796.51	17893.28	17623.02	18022.18	17751.91
Components 5	-8931.58	-8796.51	17901.17	17631.02	18064.44	17794.29
Components 6	-8931.63	-8796.53	17909.26	17639.07	18106.91	17836.71

Parameter estimation for each model.

Parameter estimates CEU 2013 Chromosome 21									
Model	π_{ref}	π_{alt}	π_{err}	α_{ref}	α_{alt}	α_{err}	φ	p	ML-P
Multinomial	0.5	0.5	0.000741	NA	NA	NA	NA	NA	NA
Multinomial w/bias	0.503	0.496	0.000741	NA	NA	NA	NA	NA	NA
CEU13 M1 TH	0.504	0.496	0.000416	57.4	56.5	0.0474	0.0087	1	1
CEU13 M1 PH	0.528	0.471	0.00098	10.6	9.47	0.0197	0.0474	1	1
CEU13 M2 TH	0.504	0.496	0.000334	682	671	0.453	0.000738	0.96	0.815
	0.501	0.496	0.00269	4.68	4.63	0.0251	0.0968	0.0397	0.185
CEU13 M2 PH	0.499	0.5	0.000362	Inf	Inf	Inf	0	0.578	0.701
	0.561	0.437	0.00186	5.98	4.67	0.0199	0.0857	0.422	0.299
CEU13 M3 TH	0.504	0.496	0.000353	2.05e+03	2.02e+03	1.43	0.000246	0.939	0.783
	0.508	0.491	0.000526	6.86	6.64	0.00711	0.0689	0.0604	0.213
	0.239	0.483	0.278	3.41	6.88	3.97	0.0656	0.000587	0.00412
CEU13 M3 PH	0.505	0.495	0.000352	123	120	0.0854	0.0041	0.742	0.702
	0.493	0.503	0.00383	4.6	4.7	0.0358	0.0967	0.163	0.124
	0.747	0.252	0.000518	108	36.6	0.0751	0.00686	0.0948	0.174
CEU13 M4 TH	0.503	0.496	0.000352	383	377	0.267	0.00131	0.986	0.804
	0.725	0.275	1.88e-13	193	73.3	5.01e-11	0.00374	0.00889	0.118
	0.243	0.757	0.00067	67	209	0.185	0.00361	0.00474	0.0733
	0.254	0.488	0.257	3.39	6.52	3.43	0.0697	0.000683	0.00539
CEU13 M4 PH	0.504	0.496	0.000401	Inf	Inf	Inf	0	0.596	0.677
	0.524	0.474	0.00126	6.99	6.33	0.0167	0.0698	0.346	0.185
	0.774	0.225	0.000518	Inf	Inf	Inf	0	0.0551	0.127
	0.318	0.42	0.263	3.51	4.64	2.91	0.0829	0.0024	0.0106
CEU13 M5 TH	0.504	0.496	0.000346	387	381	0.265	0.0013	0.985	0.738
	0.741	0.259	7.19e-14	2.24e+03	783	2.17e-10	0.000331	0.00751	0.0976
	0.226	0.774	7.87e-14	137	467	4.75e-11	0.00165	0.00336	0.0114
	0.328	0.669	0.00311	Inf	Inf	Inf	0	0.00296	0.15
	0.254	0.488	0.258	3.4	6.54	3.45	0.0695	0.000682	0.00248
CEU13 M5 PH	0.499	0.501	0.00037	361	362	0.267	0.00138	0.726	0.519
	0.643	0.356	0.000753	74.4	41.2	0.0871	0.00857	0.13	0.225
	0.363	0.636	0.000941	9.23	16.2	0.0239	0.0378	0.0737	0.159
	0.781	0.218	0.00035	Inf	Inf	Inf	0	0.0649	0.0814
	0.416	0.41	0.174	3.51	3.46	1.46	0.106	0.00491	0.0161
CEU13 M6 TH	0.508	0.492	0.000325	813	788	0.52	0.000624	0.905	0.493
	0.453	0.546	0.000558	Inf	Inf	Inf	0	0.0807	0.305
	0.732	0.268	2.84e-13	342	125	1.32e-10	0.00214	0.00827	0.106
	0.222	0.778	8.79e-14	359	1.26e+03	1.42e-10	0.000617	0.00318	0.01
	0.316	0.68	0.00356	Inf	Inf	Inf	0	0.00194	0.0832
	0.258	0.489	0.253	3.38	6.39	3.31	0.0711	0.000701	0.00291
CEU13 M6 PH	0.501	0.499	0.000336	5.94e+03	5.91e+03	3.98	8.44e-05	0.709	0.46
	0.638	0.361	0.000751	74.6	42.2	0.0878	0.00848	0.138	0.224
	0.372	0.627	0.00066	169	286	0.3	0.00219	0.0681	0.194
	0.781	0.219	0.000349	Inf	Inf	Inf	0	0.0662	0.0825
	0.215	0.785	0.000288	97.9	357	0.131	0.00219	0.0129	0.0245
	0.419	0.421	0.16	3.49	3.5	1.33	0.107	0.00549	0.016

Parameter estimates CEU 2013 Chromosome 10									
Model	π_{ref}	π_{alt}	π_{err}	α_{ref}	α_{alt}	α_{err}	φ	p	ML-P
Multinomial	0.5	0.5	0.000449	NA	NA	NA	NA	NA	NA
Multinomial w/bias	0.502	0.497	0.000449	NA	NA	NA	NA	NA	NA
CEU13 M1 TH	0.502	0.497	0.000369	149	148	0.11	0.00335	1	1
CEU13 M1 PH	0.503	0.496	0.000447	73.3	72.3	0.0652	0.00682	1	1
CEU13 M2 TH	0.502	0.497	0.000336	1.17e+03	1.16e+03	0.786	0.000428	0.992	0.848
	0.504	0.49	0.00621	3.55	3.45	0.0438	0.124	0.00754	0.152
CEU13 M2 PH	0.503	0.497	0.000328	768	759	0.501	0.000655	0.976	0.845
	0.511	0.48	0.00914	3.89	3.65	0.0695	0.116	0.0239	0.155
CEU13 M3 TH	0.502	0.498	0.000343	4.87e+03	4.82e+03	3.32	0.000103	0.981	0.795
	0.513	0.487	0.000488	7.23	6.85	0.00687	0.0663	0.019	0.198
	0.301	0.427	0.272	3.19	4.53	2.88	0.0862	0.000283	0.00676
CEU13 M3 PH	0.502	0.497	0.000342	Inf	Inf	Inf	0	0.95	0.784
	0.523	0.476	0.00147	7.66	6.97	0.0215	0.0639	0.0492	0.205
	0.299	0.485	0.216	3.12	5.06	2.25	0.0875	0.00121	0.011
CEU13 M4 TH	0.502	0.498	0.000342	1.14e+03	1.13e+03	0.775	0.000441	0.994	0.774
	0.408	0.591	0.00119	5.39	7.81	0.0157	0.0703	0.00392	0.136
	0.748	0.252	1.35e-13	5.61e+07	1.89e+07	1.01e-05	1.33e-08	0.00208	0.0827
	0.308	0.427	0.265	3.2	4.43	2.76	0.0878	0.000294	0.00742
CEU13 M4 PH	0.502	0.497	0.000346	Inf	Inf	Inf	0	0.951	0.741
	0.529	0.47	0.000996	7.91	7.03	0.0149	0.0627	0.0464	0.132
	0.319	0.479	0.202	3.1	4.65	1.97	0.0933	0.00137	0.00997
	0.298	0.698	0.00406	Inf	Inf	Inf	0	0.00113	0.117
CEU13 M5 TH	0.502	0.498	0.000341	1.36e+03	1.35e+03	0.924	0.000369	0.994	0.749
	0.728	0.272	1.97e-13	1.35e+03	505	3.65e-10	0.000539	0.0028	0.102
	0.392	0.608	9.51e-12	4.24	6.57	1.03e-10	0.0847	0.00201	0.000689
	0.317	0.681	0.00164	Inf	Inf	Inf	0	0.00122	0.141
	0.319	0.433	0.247	3.22	4.37	2.49	0.0903	0.000325	0.00687
CEU13 M5 PH	0.501	0.498	0.000343	6.68e+03	6.63e+03	4.57	7.51e-05	0.963	0.669
	0.601	0.398	0.000833	16.6	11	0.0231	0.0349	0.0293	0.196
	0.3	0.698	0.00146	Inf	Inf	Inf	0	0.00428	0.119
	0.336	0.477	0.186	3.15	4.48	1.75	0.0964	0.00159	0.012
	0.357	0.643	1.21e-11	3.67	6.61	1.24e-10	0.0886	0.00147	0.00392
CEU13 M6 TH	0.502	0.498	0.000336	7.03e+03	6.97e+03	4.71	7.14e-05	0.99	0.66
	0.676	0.324	2.72e-13	55.9	26.8	2.25e-11	0.0119	0.00565	0.162
	0.333	0.666	0.000985	Inf	Inf	Inf	0	0.00271	0.162
	0.264	0.736	6.06e-13	5.36	14.9	1.23e-11	0.047	0.000669	0.00513
	0.296	0.422	0.283	3.26	4.65	3.12	0.0831	0.000277	0.000303
	0.491	0.471	0.0384	Inf	Inf	Inf	0	0.000235	0.0108
CEU13 M6 PH	0.502	0.498	0.000349	2.7e+04	2.68e+04	18.8	1.86e-05	0.96	0.655
	0.604	0.396	1.66e-10	18.7	12.3	5.14e-09	0.0313	0.0252	0.208
	0.47	0.53	3.59e-08	5.49	6.2	4.2e-07	0.0788	0.0105	0.00718
	0.301	0.697	0.0025	Inf	Inf	Inf	0	0.00262	0.119
	0.558	0.367	0.0749	11.3	7.43	1.52	0.0471	0.00113	0.0106
	0.254	0.517	0.228	3.4	6.92	3.05	0.0695	0.000998	0.00111

Parameter estimates CEU 2013 Chromosome 21									
Model	π_{ref}	π_{alt}	π_{err}	α_{ref}	α_{alt}	α_{err}	φ	p	ML-P
Multinomial	0.5	0.5	0.000741	NA	NA	NA	NA	NA	NA
Multinomial w/bias	0.503	0.496	0.000741	NA	NA	NA	NA	NA	NA
CEU13 M1 TH	0.504	0.496	0.000416	57.4	56.5	0.0474	0.0087	1	1
CEU13 M1 PH	0.528	0.471	0.00098	10.6	9.47	0.0197	0.0474	1	1
CEU13 M2 TH	0.504	0.496	0.000334	682	671	0.453	0.000738	0.96	0.815
	0.501	0.496	0.00269	4.68	4.63	0.0251	0.0968	0.0397	0.185
CEU13 M2 PH	0.499	0.5	0.000362	Inf	Inf	Inf	0	0.578	0.701
	0.561	0.437	0.00186	5.98	4.67	0.0199	0.0857	0.422	0.299
CEU13 M3 TH	0.504	0.496	0.000353	2.05e+03	2.02e+03	1.43	0.000246	0.939	0.783
	0.508	0.491	0.000526	6.86	6.64	0.00711	0.0689	0.0604	0.213
	0.239	0.483	0.278	3.41	6.88	3.97	0.0656	0.000587	0.00412
CEU13 M3 PH	0.505	0.495	0.000352	123	120	0.0854	0.0041	0.742	0.702
	0.493	0.503	0.00383	4.6	4.7	0.0358	0.0967	0.163	0.124
	0.747	0.252	0.000518	108	36.6	0.0751	0.00686	0.0948	0.174
CEU13 M4 TH	0.503	0.496	0.000352	383	377	0.267	0.00131	0.986	0.804
	0.725	0.275	1.88e-13	193	73.3	5.01e-11	0.00374	0.00889	0.118
	0.243	0.757	0.00067	67	209	0.185	0.00361	0.00474	0.0733
	0.254	0.488	0.257	3.39	6.52	3.43	0.0697	0.000683	0.00539
CEU13 M4 PH	0.504	0.496	0.000401	Inf	Inf	Inf	0	0.596	0.677
	0.524	0.474	0.00126	6.99	6.33	0.0167	0.0698	0.346	0.185
	0.774	0.225	0.000518	Inf	Inf	Inf	0	0.0551	0.127
	0.318	0.42	0.263	3.51	4.64	2.91	0.0829	0.0024	0.0106
CEU13 M5 TH	0.504	0.496	0.000346	387	381	0.265	0.0013	0.985	0.738
	0.741	0.259	7.19e-14	2.24e+03	783	2.17e-10	0.000331	0.00751	0.0976
	0.226	0.774	7.87e-14	137	467	4.75e-11	0.00165	0.00336	0.0114
	0.328	0.669	0.00311	Inf	Inf	Inf	0	0.00296	0.15
	0.254	0.488	0.258	3.4	6.54	3.45	0.0695	0.000682	0.00248
CEU13 M5 PH	0.499	0.501	0.00037	361	362	0.267	0.00138	0.726	0.519
	0.643	0.356	0.000753	74.4	41.2	0.0871	0.00857	0.13	0.225
	0.363	0.636	0.000941	9.23	16.2	0.0239	0.0378	0.0737	0.159
	0.781	0.218	0.00035	Inf	Inf	Inf	0	0.0649	0.0814
	0.416	0.41	0.174	3.51	3.46	1.46	0.106	0.00491	0.0161
CEU13 M6 TH	0.508	0.492	0.000325	813	788	0.52	0.000624	0.905	0.493
	0.453	0.546	0.000558	Inf	Inf	Inf	0	0.0807	0.305
	0.732	0.268	2.84e-13	342	125	1.32e-10	0.00214	0.00827	0.106
	0.222	0.778	8.79e-14	359	1.26e+03	1.42e-10	0.000617	0.00318	0.01
	0.316	0.68	0.00356	Inf	Inf	Inf	0	0.00194	0.0832
	0.258	0.489	0.253	3.38	6.39	3.31	0.0711	0.000701	0.00291
CEU13 M6 PH	0.501	0.499	0.000336	5.94e+03	5.91e+03	3.98	8.44e-05	0.709	0.46
	0.638	0.361	0.000751	74.6	42.2	0.0878	0.00848	0.138	0.224
	0.372	0.627	0.00066	169	286	0.3	0.00219	0.0681	0.194
	0.781	0.219	0.000349	Inf	Inf	Inf	0	0.0662	0.0825
	0.215	0.785	0.000288	97.9	357	0.131	0.00219	0.0129	0.0245
	0.419	0.421	0.16	3.49	3.5	1.33	0.107	0.00549	0.016

Parameter estimates CEU 2013 Chromosome 10									
Model	π_{ref}	π_{alt}	π_{err}	α_{ref}	α_{alt}	α_{err}	φ	p	ML-P
Multinomial	0.5	0.5	0.000449	NA	NA	NA	NA	NA	NA
Multinomial w/bias	0.502	0.497	0.000449	NA	NA	NA	NA	NA	NA
CEU13 M1 TH	0.502	0.497	0.000369	149	148	0.11	0.00335	1	1
CEU13 M1 PH	0.503	0.496	0.000447	73.3	72.3	0.0652	0.00682	1	1
CEU13 M2 TH	0.502	0.497	0.000336	1.17e+03	1.16e+03	0.786	0.000428	0.992	0.848
	0.504	0.49	0.00621	3.55	3.45	0.0438	0.124	0.00754	0.152
CEU13 M2 PH	0.503	0.497	0.000328	768	759	0.501	0.000655	0.976	0.845
	0.511	0.48	0.00914	3.89	3.65	0.0695	0.116	0.0239	0.155
CEU13 M3 TH	0.502	0.498	0.000343	4.87e+03	4.82e+03	3.32	0.000103	0.981	0.795
	0.513	0.487	0.000488	7.23	6.85	0.00687	0.0663	0.019	0.198
	0.301	0.427	0.272	3.19	4.53	2.88	0.0862	0.000283	0.00676
CEU13 M3 PH	0.502	0.497	0.000342	Inf	Inf	Inf	0	0.95	0.784
	0.523	0.476	0.00147	7.66	6.97	0.0215	0.0639	0.0492	0.205
	0.299	0.485	0.216	3.12	5.06	2.25	0.0875	0.00121	0.011
CEU13 M4 TH	0.502	0.498	0.000342	1.14e+03	1.13e+03	0.775	0.000441	0.994	0.774
	0.408	0.591	0.00119	5.39	7.81	0.0157	0.0703	0.00392	0.136
	0.748	0.252	1.35e-13	5.61e+07	1.89e+07	1.01e-05	1.33e-08	0.00208	0.0827
	0.308	0.427	0.265	3.2	4.43	2.76	0.0878	0.000294	0.00742
CEU13 M4 PH	0.502	0.497	0.000346	Inf	Inf	Inf	0	0.951	0.741
	0.529	0.47	0.000996	7.91	7.03	0.0149	0.0627	0.0464	0.132
	0.319	0.479	0.202	3.1	4.65	1.97	0.0933	0.00137	0.00997
	0.298	0.698	0.00406	Inf	Inf	Inf	0	0.00113	0.117
CEU13 M5 TH	0.502	0.498	0.000341	1.36e+03	1.35e+03	0.924	0.000369	0.994	0.749
	0.728	0.272	1.97e-13	1.35e+03	505	3.65e-10	0.000539	0.0028	0.102
	0.392	0.608	9.51e-12	4.24	6.57	1.03e-10	0.0847	0.00201	0.000689
	0.317	0.681	0.00164	Inf	Inf	Inf	0	0.00122	0.141
	0.319	0.433	0.247	3.22	4.37	2.49	0.0903	0.000325	0.00687
CEU13 M5 PH	0.501	0.498	0.000343	6.68e+03	6.63e+03	4.57	7.51e-05	0.963	0.669
	0.601	0.398	0.000833	16.6	11	0.0231	0.0349	0.0293	0.196
	0.3	0.698	0.00146	Inf	Inf	Inf	0	0.00428	0.119
	0.336	0.477	0.186	3.15	4.48	1.75	0.0964	0.00159	0.012
	0.357	0.643	1.21e-11	3.67	6.61	1.24e-10	0.0886	0.00147	0.00392
CEU13 M6 TH	0.502	0.498	0.000336	7.03e+03	6.97e+03	4.71	7.14e-05	0.99	0.66
	0.676	0.324	2.72e-13	55.9	26.8	2.25e-11	0.0119	0.00565	0.162
	0.333	0.666	0.000985	Inf	Inf	Inf	0	0.00271	0.162
	0.264	0.736	6.06e-13	5.36	14.9	1.23e-11	0.047	0.000669	0.00513
	0.296	0.422	0.283	3.26	4.65	3.12	0.0831	0.000277	0.000303
	0.491	0.471	0.0384	Inf	Inf	Inf	0	0.000235	0.0108
CEU13 M6 PH	0.502	0.498	0.000349	2.7e+04	2.68e+04	18.8	1.86e-05	0.96	0.655
	0.604	0.396	1.66e-10	18.7	12.3	5.14e-09	0.0313	0.0252	0.208
	0.47	0.53	3.59e-08	5.49	6.2	4.2e-07	0.0788	0.0105	0.00718
	0.301	0.697	0.0025	Inf	Inf	Inf	0	0.00262	0.119
	0.558	0.367	0.0749	11.3	7.43	1.52	0.0471	0.00113	0.0106
	0.254	0.517	0.228	3.4	6.92	3.05	0.0695	0.000998	0.00111

Parameter estimates CEU 2012 Chromosome 21									
Model	π_{ref}	π_{alt}	π_{err}	α_{ref}	α_{alt}	α_{err}	φ	p	ML-P
Multinomial	0.5	0.5	0.000431	NA	NA	NA	NA	NA	NA
Multinomial w/bias	0.51	0.49	0.000431	NA	NA	NA	NA	NA	NA
CEU12 M1 TH	0.51	0.489	0.000371	124	119	0.0906	0.00408	1	1
CEU12 M1 PH	0.523	0.477	0.000712	21.9	20	0.0298	0.0233	1	1
CEU12 M2 TH	0.509	0.491	0.000315	3.95e+03	3.81e+03	2.44	0.000129	0.961	0.84
	0.541	0.457	0.00204	6.46	5.45	0.0244	0.0773	0.039	0.16
CEU12 M2 PH	0.509	0.491	0.00032	Inf	Inf	Inf	0	0.772	0.77
	0.566	0.432	0.00232	6.67	5.09	0.0273	0.0782	0.228	0.23
CEU12 M3 TH	0.509	0.491	0.000322	4.14e+03	3.99e+03	2.62	0.000123	0.958	0.834
	0.544	0.455	0.00101	7.31	6.12	0.0135	0.0692	0.0417	0.163
	0.294	0.498	0.207	9.51	16.1	6.69	0.03	0.000392	0.00258
CEU12 M3 PH	0.509	0.491	0.000311	4.07e+03	3.93e+03	2.49	0.000125	0.831	0.758
	0.506	0.49	0.00394	4.9	4.74	0.0381	0.0936	0.0995	0.0874
	0.703	0.296	0.00103	45.6	19.2	0.0671	0.0152	0.0691	0.154
CEU12 M4 TH	0.508	0.491	0.000325	916	885	0.585	0.000555	0.983	0.854
	0.689	0.311	0.000515	38.3	17.3	0.0287	0.0177	0.0135	0.104
	0.257	0.743	2.62e-14	60.5	175	6.16e-12	0.00423	0.00261	0.0341
	0.349	0.498	0.153	6.53	9.32	2.87	0.0507	0.000667	0.00768
CEU12 M4 PH	0.509	0.491	0.000324	1.32e+05	1.28e+05	84.3	3.85e-06	0.826	0.725
	0.698	0.301	0.00123	37.3	16.1	0.0655	0.0184	0.0887	0.158
	0.463	0.535	0.0016	6.97	8.06	0.0241	0.0623	0.083	0.11
	0.409	0.363	0.228	3.88	3.44	2.16	0.0953	0.00222	0.00776
CEU12 M5 TH	0.506	0.493	0.000299	Inf	Inf	Inf	0	0.888	0.616
	0.535	0.465	0.000612	104	90.5	0.119	0.00511	0.1	0.278
	0.728	0.272	0.000184	88.5	33.1	0.0224	0.00815	0.00841	0.0464
	0.283	0.717	3.06e-13	21.7	55	2.34e-11	0.0129	0.00333	0.0543
	0.335	0.5	0.166	6.95	10.4	3.44	0.0459	0.000607	0.00553
CEU12 M5 PH	0.507	0.492	0.000313	Inf	Inf	Inf	0	0.83	0.65
	0.643	0.356	0.00117	40.3	22.3	0.0732	0.0157	0.0997	0.169
	0.381	0.618	0.00127	9.92	16.1	0.0332	0.037	0.0433	0.125
	0.778	0.221	0.000457	Inf	Inf	Inf	0	0.024	0.0458
	0.439	0.375	0.186	3.88	3.31	1.64	0.102	0.00302	0.0101
CEU12 M6 TH	0.506	0.493	0.0003	Inf	Inf	Inf	0	0.933	0.629
	0.575	0.425	0.00053	Inf	Inf	Inf	0	0.032	0.291
	0.537	0.462	0.00136	30.5	26.2	0.0772	0.0173	0.0259	0.0233
	0.749	0.251	6.36e-12	239	80.4	2.03e-09	0.00312	0.0062	0.0245
	0.254	0.746	1.61e-14	80.6	237	5.12e-12	0.00314	0.0025	0.0296
	0.324	0.501	0.176	7.4	11.5	4.02	0.0419	0.000553	0.00335
CEU12 M6 PH	0.507	0.493	0.00031	Inf	Inf	Inf	0	0.848	0.653
	0.644	0.355	0.00099	59.2	32.6	0.091	0.0108	0.0922	0.169
	0.776	0.223	0.00044	Inf	Inf	Inf	0	0.0278	0.0455
	0.348	0.651	0.000617	Inf	Inf	Inf	0	0.0223	0.105
	0.22	0.78	0.000124	289	1.02e+03	0.163	0.000761	0.00565	0.0101
	0.461	0.405	0.134	3.63	3.19	1.06	0.113	0.00447	0.0177

Parameter estimates CEU 2012 Chromosome 10									
Model	π_{ref}	π_{alt}	π_{err}	α_{ref}	α_{alt}	α_{err}	φ	p	ML-P
Multinomial	0.5	0.5	0.00038	NA	NA	NA	NA	NA	NA
Multinomial w/bias	0.509	0.491	0.00038	NA	NA	NA	NA	NA	NA
CEU12 M1 TH	0.509	0.491	0.000346	237	229	0.161	0.00214	1	1
CEU12 M1 PH	0.514	0.485	0.000481	63.9	60.3	0.0597	0.00799	1	1
CEU12 M2 TH	0.508	0.491	0.000319	919	888	0.576	0.000553	0.986	0.851
	0.54	0.457	0.00305	6.56	5.56	0.037	0.076	0.0138	0.149
CEU12 M2 PH	0.509	0.491	0.000306	2.52e+03	2.43e+03	1.51	0.000202	0.918	0.822
	0.572	0.425	0.00363	7.55	5.6	0.048	0.0704	0.0818	0.178
CEU12 M3 TH	0.508	0.492	0.00032	846	819	0.533	0.0006	0.991	0.821
	0.669	0.33	0.000653	88.3	43.6	0.0862	0.00752	0.00635	0.116
	0.445	0.534	0.0206	2.74	3.29	0.127	0.14	0.00216	0.0623
CEU12 M3 PH	0.508	0.492	0.000319	Inf	Inf	Inf	0	0.902	0.804
	0.573	0.426	0.00167	10.4	7.72	0.0302	0.0523	0.0966	0.188
	0.386	0.392	0.221	4.67	4.74	2.68	0.0764	0.00168	0.00712
CEU12 M4 TH	0.508	0.492	0.000321	891	863	0.564	0.000569	0.991	0.76
	0.666	0.333	0.000879	69.7	34.9	0.0921	0.00946	0.00701	0.12
	0.389	0.611	1.63e-11	5.77	9.05	2.42e-10	0.0632	0.0019	0.103
	0.396	0.473	0.131	2.81	3.35	0.933	0.123	0.000448	0.0162
CEU12 M4 PH	0.508	0.491	0.000329	609	588	0.395	0.000834	0.957	0.8
	0.686	0.313	0.00144	44.4	20.2	0.0934	0.0152	0.0371	0.13
	0.286	0.711	0.00207	17	42.3	0.123	0.0166	0.00317	0.0628
	0.424	0.388	0.188	5.25	4.8	2.32	0.0748	0.00232	0.00735
CEU12 M5 TH	0.509	0.491	0.000337	1.56e+03	1.51e+03	1.03	0.000326	0.94	0.607
	0.492	0.508	2.57e-12	68.1	70.2	3.55e-10	0.00718	0.0526	0.26
	0.668	0.331	0.000991	68.8	34.1	0.102	0.00961	0.00676	0.118
	0.183	0.812	0.00459	40.7	181	1.02	0.00447	0.000361	0.00679
	0.413	0.418	0.17	4.2	4.25	1.73	0.0894	0.000336	0.00832
CEU12 M5 PH	0.509	0.491	0.000333	541	521	0.354	0.00094	0.962	0.784
	0.707	0.293	0.000865	84.5	35	0.104	0.00829	0.0301	0.104
	0.342	0.656	0.00228	8.95	17.2	0.0598	0.0368	0.00493	0.0998
	0.391	0.391	0.218	5.31	5.32	2.97	0.0685	0.00183	0.00239
	0.636	0.31	0.0542	117	56.9	9.94	0.00543	0.00112	0.00937
CEU12 M6 TH	0.508	0.492	0.000322	951	921	0.604	0.000534	0.988	0.79
	0.489	0.511	1.14e-12	6.89	7.21	1.61e-11	0.0662	0.00581	0.0911
	0.671	0.328	0.00104	91.3	44.6	0.142	0.0073	0.00562	0.115
	0.378	0.339	0.284	9.27	8.32	6.96	0.0391	0.000127	0.000164
	0.58	0.321	0.0992	Inf	Inf	Inf	0	0.000127	0.00305
CEU12 M6 PH	0.147	0.765	0.0884	Inf	Inf	Inf	0	0.00011	0.000873
	0.508	0.492	0.000355	1.39e+03	1.35e+03	0.973	0.000365	0.89	0.708
	0.547	0.453	3.92e-12	29.6	24.5	2.12e-10	0.0182	0.088	0.195
	0.747	0.252	0.000749	Inf	Inf	Inf	0	0.0156	0.0462
	0.254	0.744	0.00273	25.6	75.1	0.276	0.0098	0.00215	0.0366
	0.399	0.392	0.209	5.32	5.21	2.78	0.0699	0.00197	0.00282
	0.643	0.32	0.0371	138	68.7	7.96	0.00464	0.00182	0.0112

Parameter estimates CEU 2011 Chromosome 21									
Model	π_{ref}	π_{alt}	π_{err}	α_{ref}	α_{alt}	α_{err}	φ	p	ML-P
Multinomial	0.5	0.5	0.000429	NA	NA	NA	NA	NA	NA
Multinomial w/bias	0.51	0.49	0.000429	NA	NA	NA	NA	NA	NA
CEU11 M1 TH	0.51	0.49	0.00037	124	119	0.0901	0.00409	1	1
CEU11 M1 PH	0.522	0.477	0.000703	22.3	20.3	0.03	0.0229	1	1
CEU11 M2 TH	0.509	0.491	0.000315	3.88e+03	3.74e+03	2.4	0.000131	0.961	0.842
	0.541	0.457	0.00198	6.37	5.39	0.0234	0.0782	0.0391	0.158
CEU11 M2 PH	0.509	0.491	0.000319	Inf	Inf	Inf	0	0.773	0.77
	0.564	0.433	0.00228	6.72	5.16	0.0271	0.0775	0.227	0.23
CEU11 M3 TH	0.509	0.491	0.000322	3.84e+03	3.7e+03	2.43	0.000133	0.958	0.833
	0.543	0.456	0.000915	7.18	6.03	0.0121	0.0703	0.0416	0.164
	0.3	0.497	0.203	9.02	15	6.12	0.0321	0.000408	0.00288
CEU11 M3 PH	0.509	0.491	0.000309	1.02e+04	9.83e+03	6.19	4.99e-05	0.83	0.758
	0.507	0.489	0.00381	5	4.82	0.0376	0.0921	0.102	0.0871
	0.7	0.298	0.00101	45.5	19.4	0.0659	0.0152	0.0682	0.155
CEU11 M4 TH	0.509	0.491	0.000325	815	787	0.522	0.000623	0.985	0.872
	0.702	0.298	0.00029	49.8	21.1	0.0206	0.0139	0.0119	0.0922
	0.245	0.755	1.37e-14	330	1.02e+03	1.85e-11	0.000742	0.00241	0.0265
	0.357	0.494	0.149	6.3	8.7	2.63	0.0537	0.000694	0.00901
CEU11 M4 PH	0.509	0.491	0.000322	9.83e+05	9.48e+05	623	5.18e-07	0.83	0.716
	0.694	0.305	0.0012	36.1	15.9	0.0623	0.0189	0.0928	0.16
	0.449	0.549	0.00154	7.37	9.02	0.0252	0.0574	0.0752	0.116
	0.416	0.364	0.22	3.94	3.44	2.08	0.0955	0.0023	0.008
CEU11 M5 TH	0.507	0.492	0.000305	2.1e+03	2.04e+03	1.26	0.000242	0.954	0.68
	0.559	0.44	0.00106	74.7	58.8	0.141	0.00743	0.0345	0.244
	0.727	0.273	4.37e-13	85.6	32.1	5.14e-11	0.00843	0.00818	0.0353
	0.259	0.741	3.19e-14	48.5	138	5.96e-12	0.00532	0.0028	0.0363
	0.332	0.501	0.167	7.09	10.7	3.56	0.0448	0.0006	0.00462
CEU11 M5 PH	0.507	0.492	0.000311	Inf	Inf	Inf	0	0.831	0.648
	0.641	0.358	0.00113	44.3	24.8	0.0779	0.0142	0.0979	0.17
	0.379	0.62	0.00125	10.3	16.8	0.0339	0.0356	0.0428	0.125
	0.776	0.223	0.000423	Inf	Inf	Inf	0	0.0251	0.0463
	0.446	0.375	0.179	3.92	3.29	1.57	0.102	0.0031	0.0109
CEU11 M6 TH	0.505	0.495	0.000297	Inf	Inf	Inf	0	0.915	0.589
	0.562	0.438	0.000417	Inf	Inf	Inf	0	0.068	0.318
	0.734	0.266	1.34e-12	124	44.9	2.26e-10	0.00589	0.00796	0.0325
	0.522	0.472	0.00583	28.3	25.5	0.316	0.0181	0.00559	0.0326
	0.25	0.75	1.99e-14	87.4	262	6.96e-12	0.00285	0.00256	0.0272
	0.321	0.498	0.181	7.58	11.8	4.29	0.0406	0.000529	0.00107
CEU11 M6 PH	0.507	0.493	0.000309	Inf	Inf	Inf	0	0.85	0.648
	0.643	0.356	0.000947	70.8	39.2	0.104	0.00901	0.0886	0.172
	0.774	0.226	0.000407	Inf	Inf	Inf	0	0.0288	0.046
	0.348	0.651	0.000612	Inf	Inf	Inf	0	0.0225	0.105
	0.22	0.78	0.000133	2.49e+03	8.81e+03	1.51	8.85e-05	0.00557	0.0101
	0.466	0.404	0.13	3.69	3.2	1.03	0.112	0.00458	0.0183

Parameter estimates CEU 2011 Chromosome 10

Model	π_{ref}	π_{alt}	π_{err}	α_{ref}	α_{alt}	α_{err}	φ	p	ML-P
Multinomial	0.5	0.5	0.000381	NA	NA	NA	NA	NA	NA
Multinomial w/bias	0.509	0.491	0.000381	NA	NA	NA	NA	NA	NA
CEU11 M1 TH	0.509	0.491	0.000347	237	229	0.162	0.00214	1	1
CEU11 M1 PH	0.514	0.485	0.000481	64.4	60.8	0.0603	0.00792	1	1
CEU11 M2 TH	0.508	0.491	0.000319	913	883	0.573	0.000556	0.986	0.848
	0.542	0.455	0.00301	6.81	5.72	0.0379	0.0737	0.0139	0.152
CEU11 M2 PH	0.509	0.491	0.000307	2.38e+03	2.29e+03	1.43	0.000214	0.918	0.821
	0.572	0.425	0.00362	7.64	5.67	0.0484	0.0696	0.0815	0.179
CEU11 M3 TH	0.508	0.492	0.00032	837	811	0.528	0.000607	0.992	0.824
	0.669	0.33	0.000652	95.3	46.9	0.0928	0.00698	0.00642	0.116
	0.446	0.531	0.0233	2.72	3.23	0.142	0.141	0.00194	0.0601
CEU11 M3 PH	0.508	0.492	0.00032	Inf	Inf	Inf	0	0.901	0.801
	0.572	0.426	0.00164	10.6	7.89	0.0305	0.0512	0.0971	0.191
	0.387	0.391	0.222	4.65	4.69	2.66	0.0769	0.00167	0.00722
CEU11 M4 TH	0.508	0.492	0.000322	890	862	0.564	0.00057	0.991	0.756
	0.666	0.333	0.000886	73.4	36.8	0.0977	0.00899	0.0071	0.121
	0.397	0.603	1.01e-11	6.08	9.23	1.55e-10	0.0613	0.00188	0.106
	0.396	0.472	0.132	2.82	3.35	0.938	0.123	0.000447	0.0161
CEU11 M4 PH	0.508	0.491	0.000331	595	575	0.388	0.000854	0.958	0.802
	0.687	0.312	0.00141	48	21.8	0.0988	0.0141	0.0363	0.127
	0.288	0.71	0.00207	17.2	42.5	0.124	0.0165	0.00309	0.063
	0.427	0.387	0.186	5.22	4.73	2.28	0.0756	0.00233	0.00755
CEU11 M5 TH	0.508	0.492	0.000322	882	854	0.559	0.000576	0.99	0.77
	0.667	0.332	0.000994	73.5	36.7	0.11	0.00898	0.00699	0.122
	0.414	0.586	2.73e-12	5.83	8.27	3.84e-11	0.0662	0.00218	0.105
	0.448	0.345	0.207	8.76	6.73	4.05	0.0487	0.000235	0.00232
	0.146	0.765	0.0893	Inf	Inf	Inf	0	0.000106	0.000436
CEU11 M5 PH	0.509	0.491	0.000336	479	462	0.317	0.00106	0.965	0.831
	0.71	0.289	0.000822	106	43.3	0.123	0.00665	0.0287	0.1
	0.279	0.718	0.00235	18.5	47.5	0.155	0.0149	0.00284	0.0563
	0.394	0.389	0.217	5.3	5.24	2.91	0.0692	0.00184	0.00254
	0.635	0.314	0.0516	97.9	48.3	7.96	0.00645	0.00117	0.0105
CEU11 M6 TH	0.508	0.492	0.000337	1.4e+03	1.35e+03	0.927	0.000363	0.944	0.691
	0.513	0.487	2.24e-06	56.7	53.7	0.000247	0.00898	0.0495	0.144
	0.684	0.315	0.00123	92.7	42.7	0.167	0.00732	0.00501	0.0863
	0.318	0.682	5.04e-12	6.4	13.7	1.02e-10	0.0473	0.00083	0.0763
	0.452	0.346	0.202	8.74	6.7	3.91	0.0491	0.000247	0.00251
	0.146	0.765	0.0892	Inf	Inf	Inf	0	0.000107	0.000327
CEU11 M6 PH	0.508	0.492	0.000347	891	862	0.609	0.00057	0.922	0.74
	0.567	0.433	2.62e-12	20.4	15.6	9.45e-11	0.027	0.0589	0.164
	0.746	0.253	0.000903	Inf	Inf	Inf	0	0.0134	0.0416
	0.257	0.74	0.00278	24	69.1	0.259	0.0106	0.00211	0.0402
	0.403	0.389	0.209	5.33	5.15	2.76	0.0702	0.00197	0.00289
	0.643	0.32	0.0368	153	75.9	8.74	0.00419	0.0017	0.0111

Parameter estimates CEU 2010 Chromosome 21									
Model	π_{ref}	π_{alt}	π_{err}	α_{ref}	α_{alt}	α_{err}	φ	p	ML-P
Multinomial	0.499	0.499	0.00228	NA	NA	NA	NA	NA	NA
Multinomial w/bias	0.543	0.455	0.00228	NA	NA	NA	NA	NA	NA
CEU10 M1 TH	0.543	0.454	0.00238	101	84.6	0.443	0.00535	1	1
CEU10 M1 PH	0.553	0.444	0.00322	23.5	18.9	0.137	0.023	1	1
CEU10 M2 TH	0.533	0.465	0.00225	350	306	1.48	0.00152	0.922	0.718
	0.67	0.327	0.0027	Inf	Inf	Inf	0	0.0783	0.282
CEU10 M2 PH	0.535	0.462	0.0024	Inf	Inf	Inf	0	0.663	0.714
	0.584	0.412	0.00415	10.8	7.59	0.0766	0.0514	0.337	0.286
CEU10 M3 TH	0.531	0.467	0.00216	1.1e+03	964	4.47	0.000484	0.892	0.561
	0.662	0.335	0.00268	Inf	Inf	Inf	0	0.0961	0.3
	0.517	0.476	0.0079	16.3	15	0.249	0.0308	0.012	0.139
CEU10 M3 PH	0.532	0.465	0.00218	884	772	3.61	0.000602	0.797	0.642
	0.695	0.302	0.00329	87.1	37.9	0.413	0.00791	0.132	0.263
	0.512	0.479	0.00831	5.77	5.4	0.0935	0.0816	0.0709	0.0955
CEU10 M4 TH	0.534	0.464	0.00212	Inf	Inf	Inf	0	0.754	0.398
	0.517	0.481	0.00259	122	114	0.615	0.0042	0.151	0.272
	0.664	0.334	0.00273	Inf	Inf	Inf	0	0.0939	0.268
	0.481	0.46	0.0583	16.7	16	2.02	0.028	0.000685	0.0624
CEU10 M4 PH	0.532	0.465	0.00221	392	343	1.63	0.00135	0.832	0.584
	0.696	0.301	0.00324	77.5	33.6	0.361	0.0089	0.145	0.247
	0.343	0.653	0.00423	13.4	25.5	0.165	0.0249	0.0193	0.122
	0.54	0.351	0.109	7.28	4.74	1.47	0.069	0.0038	0.0472
CEU10 M5 TH	0.534	0.464	0.002	3.52e+04	3.06e+04	132	1.52e-05	0.782	0.298
	0.5	0.497	0.00295	206	205	1.21	0.00242	0.106	0.332
	0.63	0.366	0.00426	Inf	Inf	Inf	0	0.0655	0.156
	0.682	0.317	0.0016	Inf	Inf	Inf	0	0.046	0.157
	0.491	0.459	0.0506	22.7	21.2	2.34	0.0212	0.00105	0.0569
CEU10 M5 PH	0.524	0.474	0.00209	5.93e+03	5.36e+03	23.6	8.84e-05	0.729	0.459
	0.618	0.379	0.00285	201	123	0.926	0.00306	0.176	0.248
	0.738	0.259	0.00256	311	109	1.08	0.00237	0.0688	0.124
	0.344	0.652	0.00428	13.3	25.1	0.165	0.0253	0.0194	0.115
	0.563	0.36	0.0772	7.73	4.94	1.06	0.0679	0.00639	0.0534
CEU10 M6 TH	0.531	0.467	0.00215	1.95e+03	1.72e+03	7.91	0.000272	0.882	0.378
	0.658	0.339	0.00268	Inf	Inf	Inf	0	0.0567	0.152
	0.663	0.334	0.00258	Inf	Inf	Inf	0	0.0446	0.133
	0.461	0.537	0.00272	90.8	106	0.536	0.00505	0.0143	0.271
	0.55	0.413	0.0369	244	183	16.4	0.00225	0.00175	0.0532
	0.393	0.538	0.0689	9.43	12.9	1.65	0.04	0.000243	0.0134
CEU10 M6 PH	0.527	0.471	0.00207	Inf	Inf	Inf	0	0.741	0.404
	0.624	0.373	0.00296	178	106	0.844	0.00349	0.159	0.24
	0.74	0.257	0.0025	353	123	1.19	0.00209	0.0652	0.118
	0.398	0.599	0.00284	89.4	135	0.637	0.00443	0.0226	0.171
	0.551	0.378	0.0703	6.89	4.73	0.879	0.0741	0.00754	0.0525
	0.242	0.756	0.00257	77.1	241	0.821	0.00312	0.00507	0.0146

Parameter estimates CEU 2010 Chromosome 10

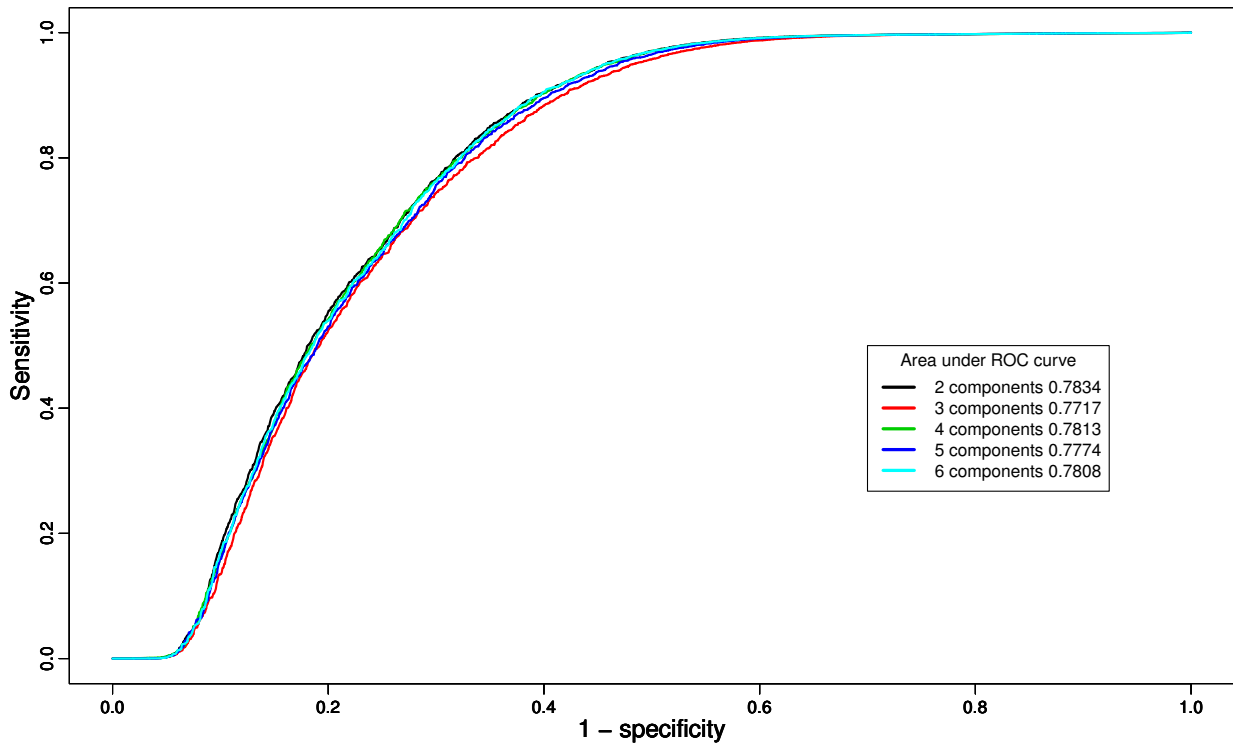
Model	π_{ref}	π_{alt}	π_{err}	α_{ref}	α_{alt}	α_{err}	φ	p	ML-P
Multinomial	0.499	0.499	0.00229	NA	NA	NA	NA	NA	NA
Multinomial w/bias	0.539	0.459	0.00229	NA	NA	NA	NA	NA	NA
CEU10 M1 TH	0.539	0.458	0.00234	154	131	0.667	0.00349	1	1
CEU10 M1 PH	0.543	0.455	0.00262	59.2	49.6	0.286	0.00908	1	1
CEU10 M2 TH	0.534	0.463	0.00305	Inf	Inf	Inf	0	0.684	0.606
	0.55	0.449	0.000645	42.2	34.4	0.0495	0.0129	0.316	0.394
CEU10 M2 PH	0.537	0.461	0.00245	Inf	Inf	Inf	0	0.787	0.721
	0.563	0.434	0.00271	15.4	11.9	0.0741	0.0353	0.213	0.279
CEU10 M3 TH	0.529	0.468	0.00237	459	407	2.05	0.00115	0.883	0.542
	0.618	0.381	0.00157	Inf	Inf	Inf	0	0.116	0.358
	0.495	0.491	0.0147	5.7	5.65	0.169	0.0799	0.0014	0.1
CEU10 M3 PH	0.532	0.466	0.00227	1.1e+03	964	4.69	0.000483	0.88	0.599
	0.66	0.338	0.00208	202	103	0.636	0.00326	0.0877	0.292
	0.508	0.482	0.00987	7.47	7.08	0.145	0.0637	0.032	0.109
CEU10 M4 TH	0.538	0.458	0.00315	5.76e+03	4.91e+03	33.7	9.34e-05	0.704	0.175
	0.498	0.502	0.000158	Inf	Inf	Inf	0	0.189	0.427
	0.621	0.379	0.000147	Inf	Inf	Inf	0	0.105	0.345
	0.506	0.476	0.0173	6.74	6.34	0.231	0.0699	0.00181	0.0541
CEU10 M4 PH	0.532	0.466	0.00228	1.31e+03	1.15e+03	5.62	0.000406	0.871	0.505
	0.647	0.35	0.00244	93.5	50.6	0.352	0.00687	0.112	0.29
	0.398	0.597	0.00454	19.6	29.5	0.224	0.0199	0.0158	0.173
	0.491	0.365	0.144	8.62	6.42	2.53	0.0538	0.00139	0.0316
CEU10 M5 TH	0.538	0.46	0.0027	932	797	4.68	0.000577	0.838	0.235
	0.481	0.519	9.65e-09	Inf	Inf	Inf	0	0.0888	0.377
	0.633	0.367	7.37e-06	Inf	Inf	Inf	0	0.0724	0.296
	0.441	0.531	0.0285	4.25	5.12	0.275	0.094	0.000568	0.0386
	0.713	0.267	0.02	Inf	Inf	Inf	0	0.000359	0.0536
CEU10 M5 PH	0.533	0.465	0.00229	962	840	4.13	0.000554	0.888	0.514
	0.658	0.339	0.00225	133	68.7	0.455	0.00492	0.0954	0.268
	0.389	0.606	0.00444	20.9	32.6	0.239	0.0183	0.0142	0.165
	0.529	0.374	0.0966	13	9.2	2.38	0.0391	0.00186	0.0523
	0.313	0.281	0.406	Inf	Inf	Inf	0	0.000123	0.000218
CEU10 M6 TH	0.537	0.461	0.00266	957	821	4.75	0.000561	0.845	0.241
	0.63	0.37	0.000182	Inf	Inf	Inf	0	0.0776	0.297
	0.476	0.524	2.1e-11	4.4e+18	4.84e+18	1.94e+08	1.08e-19	0.0645	0.154
	0.475	0.525	6.6e-11	4.46e+18	4.92e+18	6.19e+08	1.07e-19	0.0123	0.215
	0.441	0.529	0.03	4.22	5.07	0.287	0.0946	0.000547	0.0366
	0.712	0.268	0.0205	Inf	Inf	Inf	0	0.000361	0.0559
CEU10 M6 PH	0.539	0.459	0.00259	6.83e+03	5.81e+03	32.9	7.89e-05	0.769	0.27
	0.501	0.499	0.000612	289	288	0.353	0.00173	0.138	0.322
	0.667	0.331	0.00181	184	91.1	0.497	0.00362	0.0825	0.257
	0.35	0.644	0.0053	28	51.5	0.424	0.0123	0.00777	0.0896
	0.537	0.396	0.067	11.6	8.58	1.45	0.0441	0.00323	0.0613
	0.318	0.284	0.398	Inf	Inf	Inf	0	0.000136	0.000246

Parameter estimates CHM1 Chromosome 21							
Model	π_{ref}	π_{err}	α_{ref}	α_{err}	φ	p	ML-P
CHM1 Multinomial	1	0.000255	NA	NA	NA	NA	NA
CHM1 M1 FD	0.999	0.00129	5.18	0.00667	0.162	1	1
CHM1 M1 RD	1	0.000256	273	0.0697	0.00365	1	1
CHM1 M2 FD	1	0.000249	396	0.0987	0.00252	0.972	0.995
	0.982	0.0176	0.119	0.00214	0.892	0.0278	0.00485
CHM1 M2 RD	1	0.00022	Inf	Inf	0	0.751	0.808
	1	0.000361	64.5	0.0233	0.0153	0.249	0.192
CHM1 M3 FD	0.999	0.000615	0.1	6.16e-05	0.909	0.745	0.981
	0.999	0.000804	Inf	Inf	0	0.253	0
	0.981	0.0192	Inf	Inf	0	0.00224	0.0191
CHM1 M3 RD	1	0.000185	Inf	Inf	0	0.995	0.981
	0.986	0.0141	Inf	Inf	0	0.00446	0.0187
	0.926	0.0742	Inf	Inf	0	0.000101	0.000441
CHM1 M4 FD	1	0.000185	2.25e+04	4.16	4.44e-05	0.994	0.98
	0.987	0.013	512	6.77	0.00192	0.00497	0.0191
	0.00453	0.995	0.274	60.3	0.0162	0.000363	0.000363
	0.766	0.234	6.39	1.96	0.107	0.000234	0.000259
CHM1 M4 RD	1	0.000185	Inf	Inf	0	0.995	0.981
	0.986	0.0141	Inf	Inf	0	0.00446	0.0187
	0.926	0.0742	Inf	Inf	0	0.000101	0.000441
	1	0.000405	384	0.156	0.00259	1e-06	0
CHM1 M5 FD	1	0.000188	1.39e+04	2.62	7.17e-05	0.995	0.98
	0.985	0.0146	Inf	Inf	0	0.00401	0.0191
	0.984	0.0156	3.81	0.0604	0.205	0.000842	0
	0.00453	0.995	0.274	60.3	0.0162	0.000363	0.000363
	0.754	0.246	6.13	2	0.11	0.000181	0.000234
CHM1 M5 RD	1	0.000185	Inf	Inf	0	0.995	0.981
	0.986	0.0141	Inf	Inf	0	0.00446	0.0187
	1	0.000411	1.31e+03	0.54	0.000761	0.00013	0
	0.926	0.0742	Inf	Inf	0	0.000101	0.000441
	0.999	0.000912	447	0.408	0.00223	4.17e-09	0
CHM1 M6 FD	1	0.000188	1.3e+04	2.45	7.68e-05	0.995	0.98
	0.985	0.0146	Inf	Inf	0	0.0032	0.0161
	0.985	0.0148	Inf	Inf	0	0.0008	0.00285
	0.00453	0.995	0.274	60.3	0.0162	0.000363	0.000363
	0.832	0.168	3.91	0.791	0.176	0.000337	0.000389
	0.999	0.000754	172	0.13	0.00576	0.000117	0
CHM1 M6 RD	1	0.000185	Inf	Inf	0	0.995	0
	0.986	0.0141	Inf	Inf	0	0.00444	0.0163
	1	2.58e-05	Inf	Inf	0	0.000851	0.981
	0.926	0.0742	Inf	Inf	0	0.000101	0.000389
	0.985	0.0154	Inf	Inf	0	1.73e-05	0.00252
	1	0.000423	Inf	Inf	0	8.07e-06	0

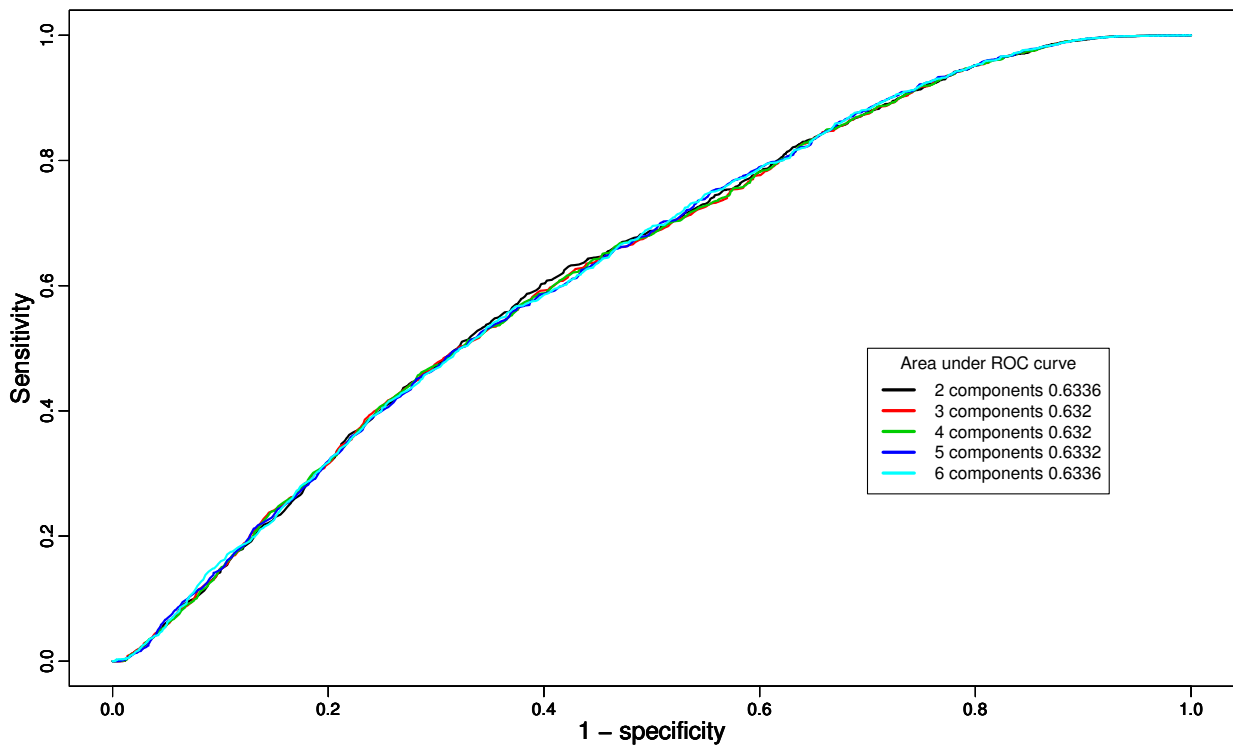
Parameter estimates CHM1 Chromosome 10							
Model	π_{ref}	π_{err}	α_{ref}	α_{err}	φ	p	ML-P
CHM1 Multinomial	1	0.000286	NA	NA	NA	NA	NA
CHM1 M1 FD	0.999	0.00122	6.23	0.00761	0.138	1	1
CHM1 M1 RD	1	0.000289	190	0.0551	0.00522	1	1
CHM1 M2 FD	1	0.000282	240	0.0676	0.00415	0.984	0.999
	0.975	0.0254	0.0534	0.00139	0.948	0.0164	0.000978
CHM1 M2 RD	1	0.00026	370	0.0961	0.00269	0.942	0.997
	0.999	0.000833	20	0.0167	0.0475	0.0585	0.00324
CHM1 M3 FD	1	0.000253	372	0.094	0.00268	0.964	0.979
	0.999	0.00134	21.3	0.0287	0.0447	0.0359	0.0205
	0.0836	0.916	0.0129	0.141	0.867	0.000379	0.000502
CHM1 M3 RD	1	0.000246	415	0.102	0.0024	0.998	0.979
	0.976	0.0244	395	9.87	0.00246	0.00147	0.0206
	0.859	0.141	Inf	Inf	0	9.34e-05	0.000201
CHM1 M4 FD	1	0.000464	0.0115	5.35e-06	0.989	0.745	0.979
	0.999	0.000964	656	0.633	0.00152	0.253	0
	0.974	0.0259	1.93e+03	51.4	0.000504	0.00139	0.0206
	0.862	0.138	Inf	Inf	0	9.5e-05	0.000201
CHM1 M4 RD	1	0.000228	465	0.106	0.00215	0.92	0.979
	0.999	0.000623	127	0.0794	0.00779	0.079	0
	0.968	0.0318	Inf	Inf	0	0.000684	0.0206
	0.859	0.141	Inf	Inf	0	9.35e-05	0.000176
CHM1 M5 FD	1	0.000265	382	0.101	0.00261	0.95	0.00364
	0.993	0.00714	0.0115	8.29e-05	0.989	0.0485	0.976
	0.97	0.0301	Inf	Inf	0	0.000943	0.0075
	0.86	0.14	Inf	Inf	0	9.01e-05	0.000176
	0.996	0.00395	569	2.26	0.00175	4.06e-07	0.0131
CHM1 M5 RD	1	0.000249	357	0.0889	0.00279	0.98	0.979
	1	0.000487	Inf	Inf	0	0.0187	0
	0.969	0.0306	Inf	Inf	0	0.000904	0.00316
	0.86	0.14	Inf	Inf	0	9.42e-05	0.000176
	0.987	0.0129	205	2.69	0.00478	4.12e-06	0.0174
CHM1 M6 FD	1	0.000194	74.2	0.0144	0.0133	0.502	0.979
	1	0.000368	713	0.263	0.0014	0.498	0
	0.113	0.887	0.0122	0.0955	0.903	0.000389	0.000351
	0.995	0.00506	778	3.96	0.00128	0.000159	0.0203
	0.86	0.14	Inf	Inf	0	8.85e-05	0.000426
	0.53	0.47	0.0149	0.0132	0.973	2.64e-06	0
CHM1 M6 RD	1	0.00025	389	0.0972	0.00256	0.998	0.979
	0.996	0.00379	94.1	0.358	0.0105	0.000895	0.00113
	0.969	0.0307	2.57e+04	814	3.77e-05	0.000729	0.000953
	0.972	0.0276	2.17e+03	61.4	0.000449	0.000204	0.0185
	0.855	0.145	Inf	Inf	0	9.05e-05	0.000176
	1	0.000316	2.05e+03	0.646	0.000489	4.29e-05	0

Figures

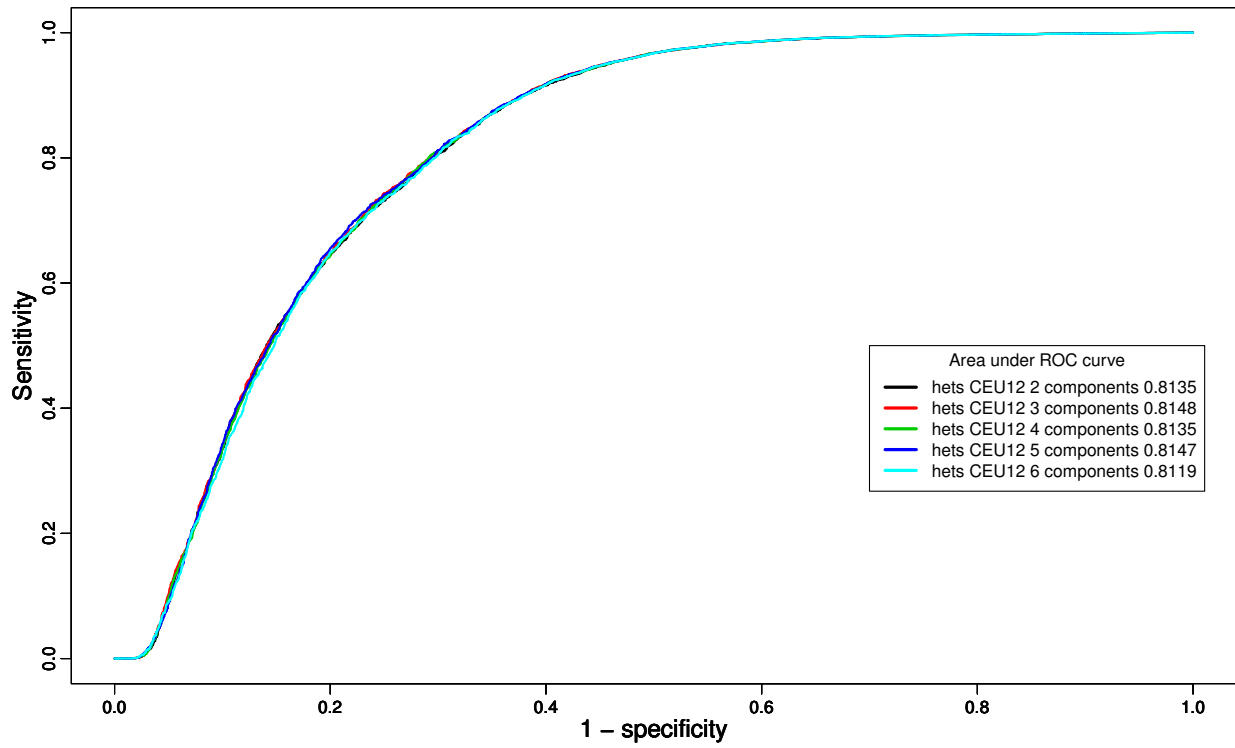
CEU 2013 Chromosome 21



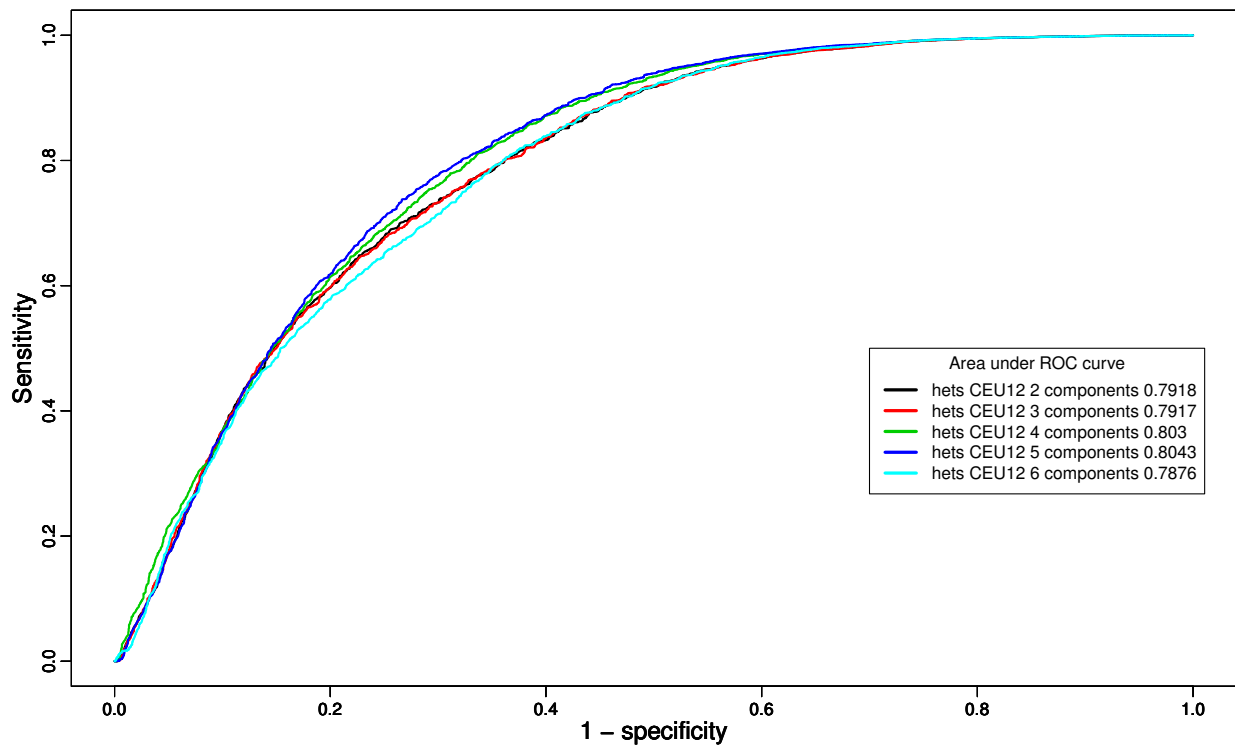
CEU 2013 Chromosome 10



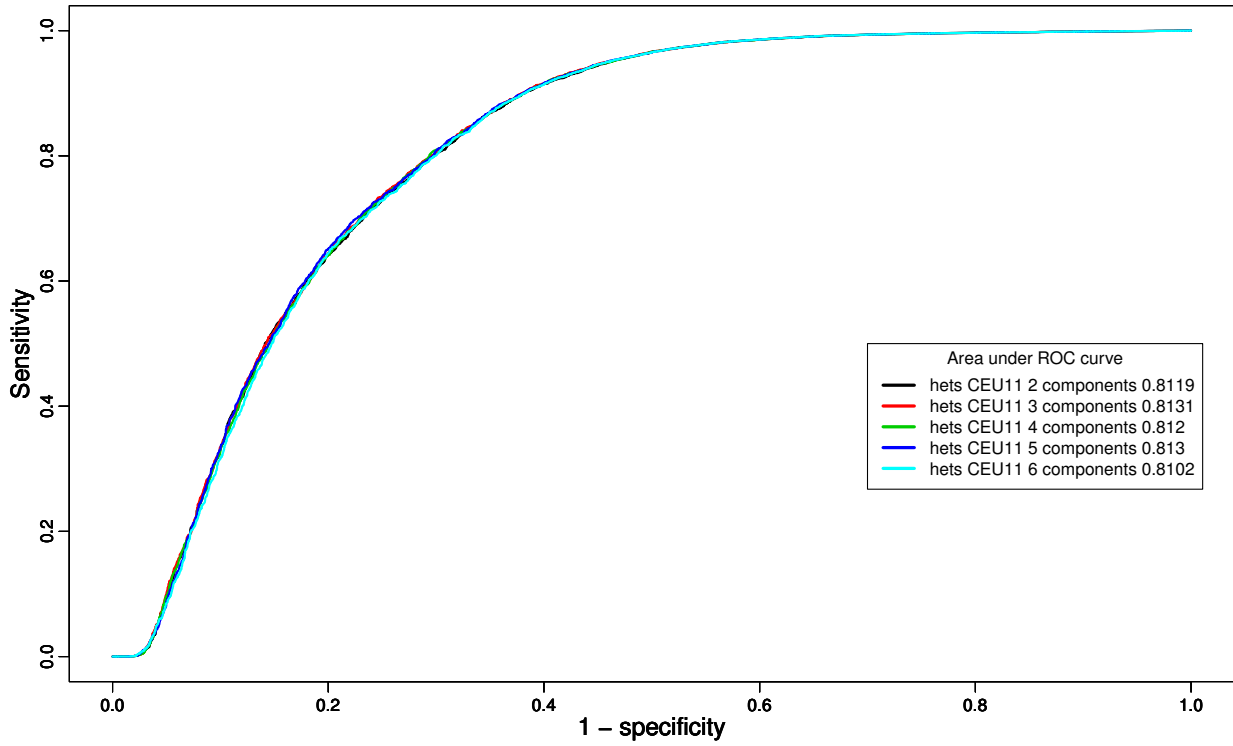
CEU 2012 Chromosome 21



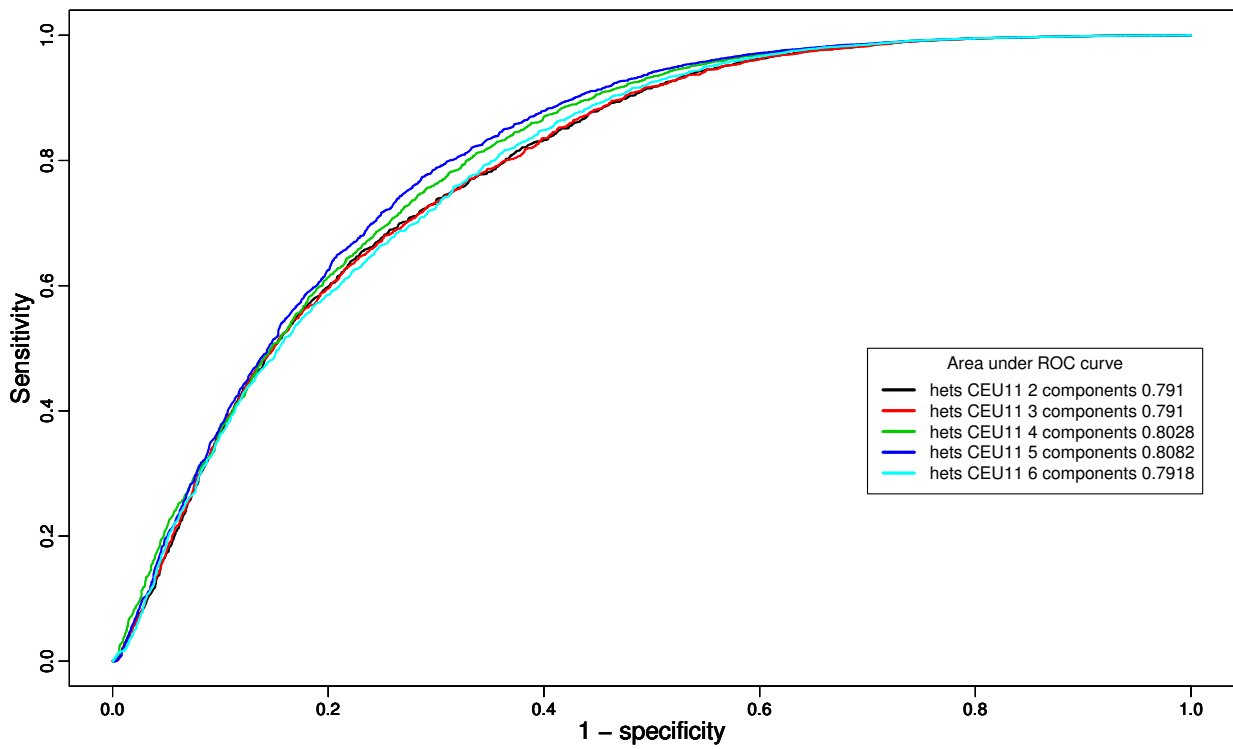
CEU 2012 Chromosome 10



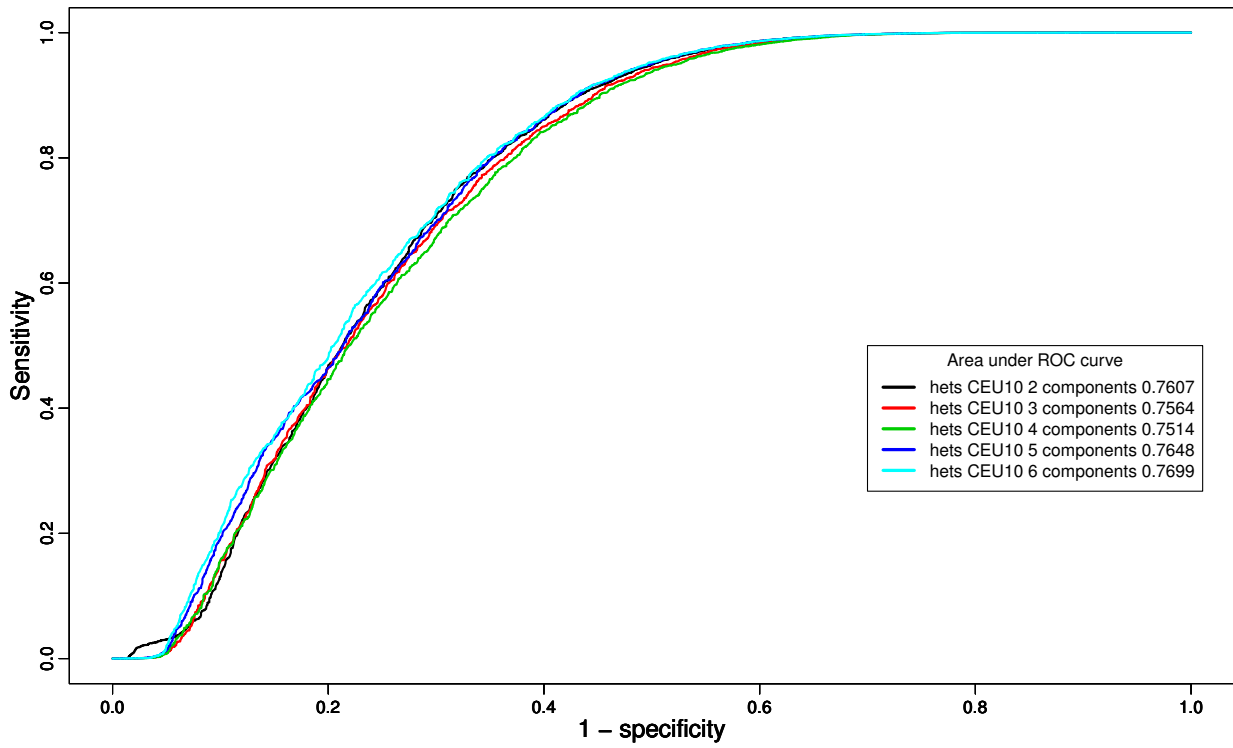
CEU 2011 Chromosome 21



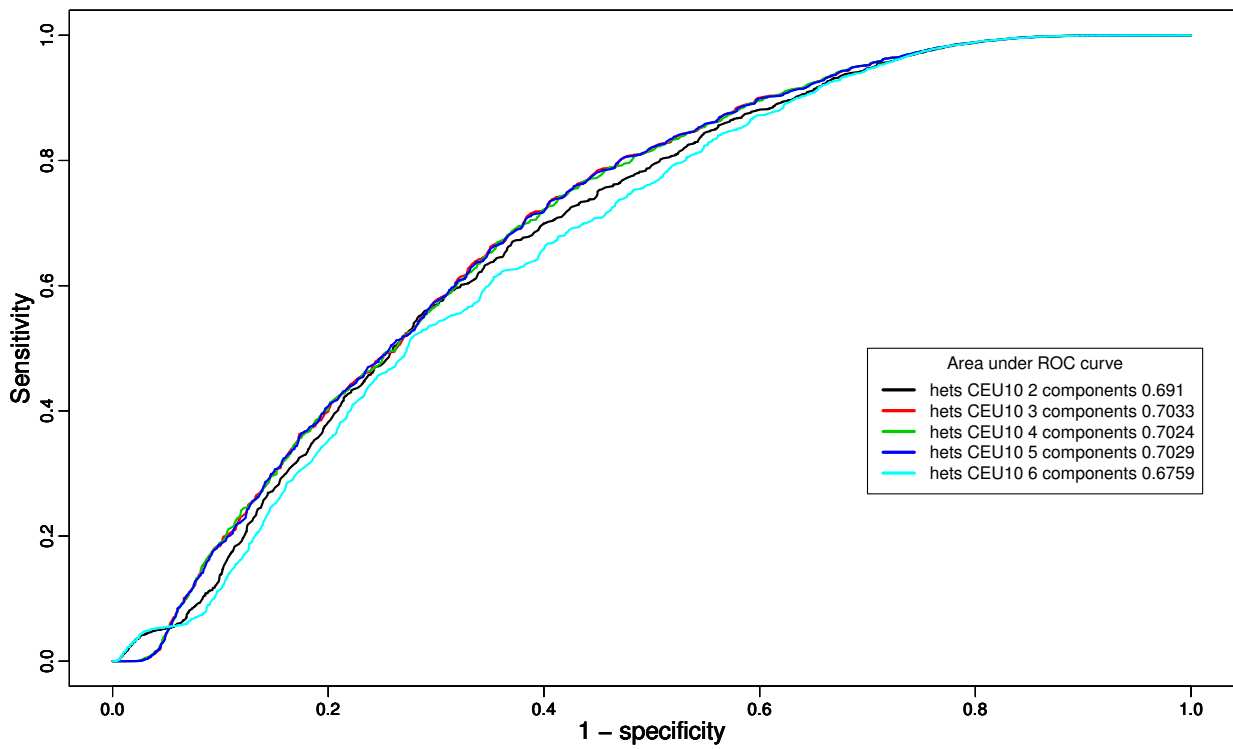
CEU 2011 Chromosome 10



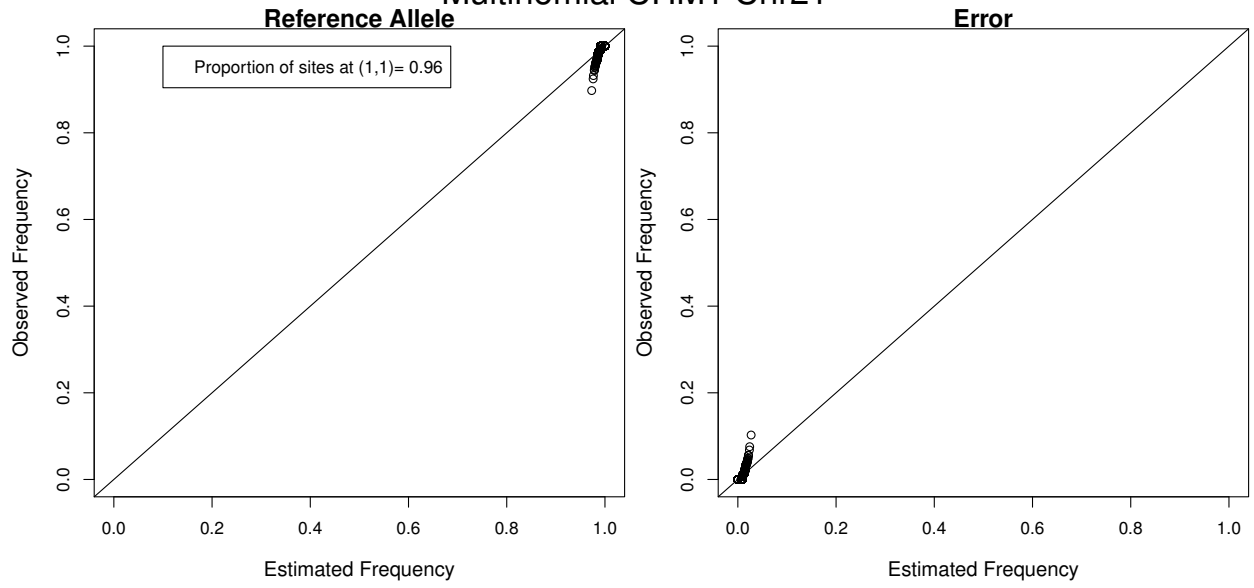
CEU 2010 Chromosome 21



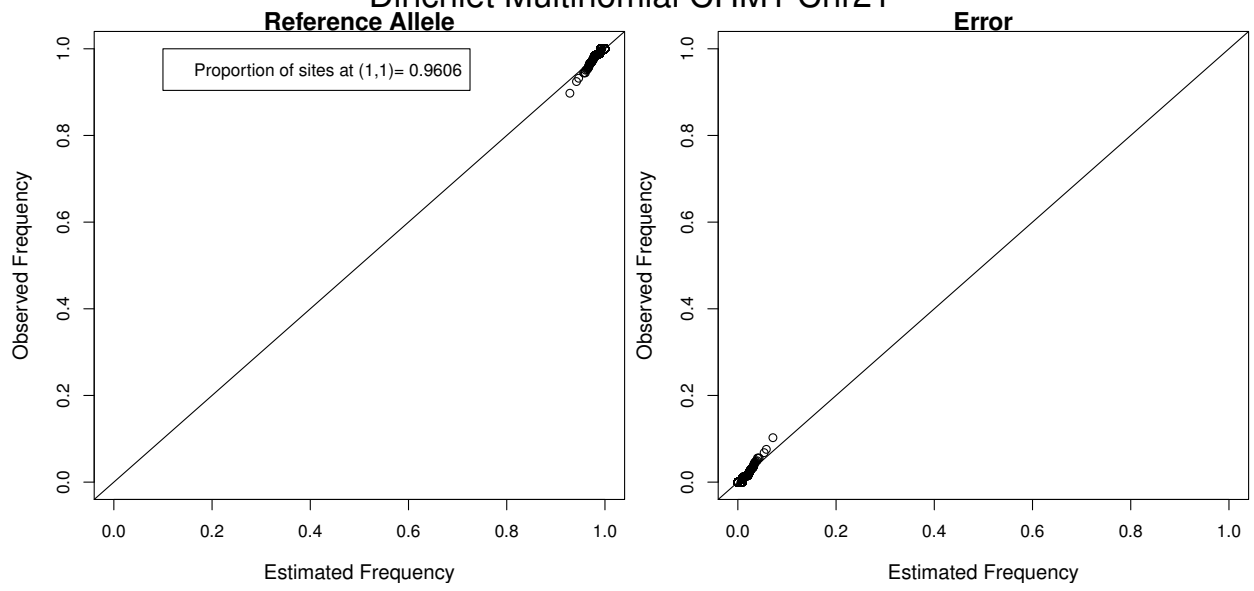
CEU 2010 Chromosome 10



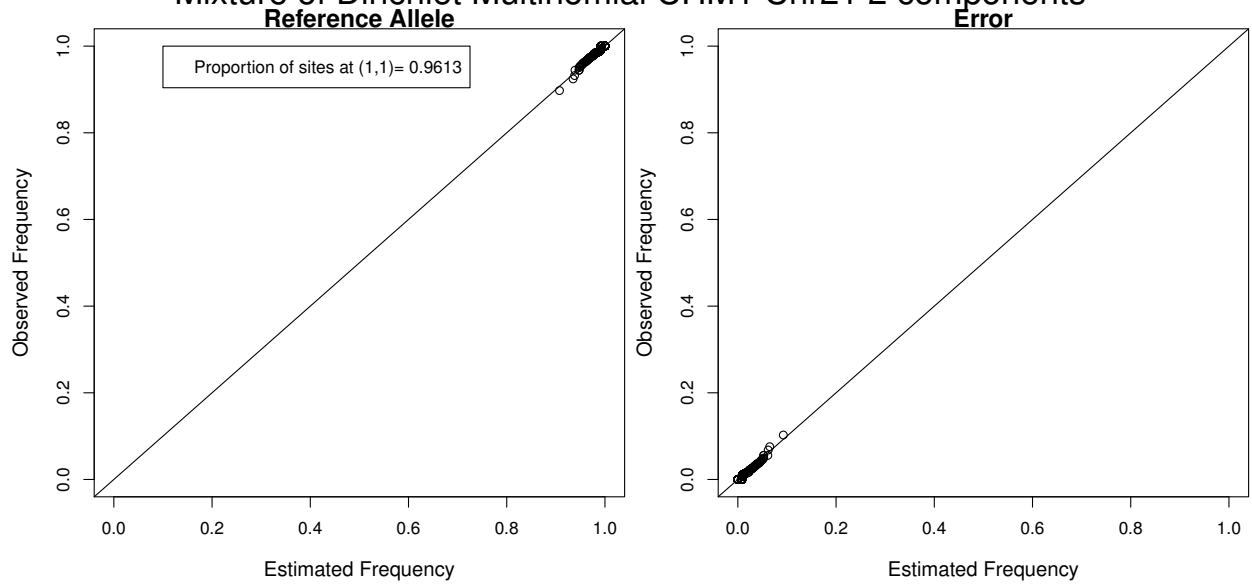
Multinomial CHM1 Chr21



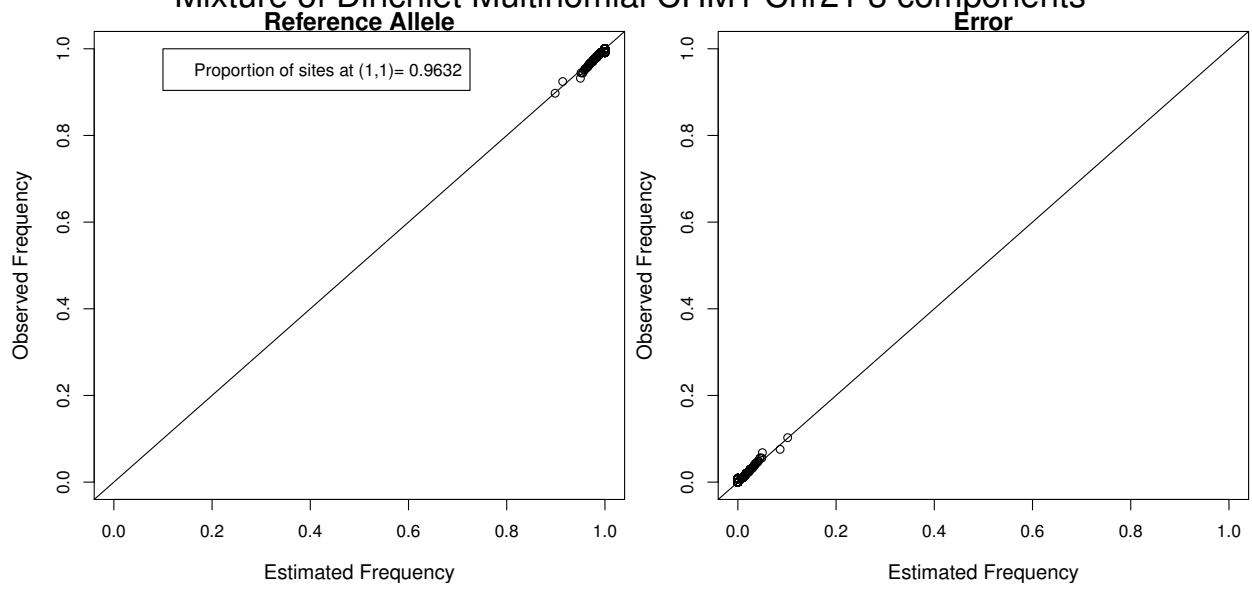
Dirichlet Multinomial CHM1 Chr21



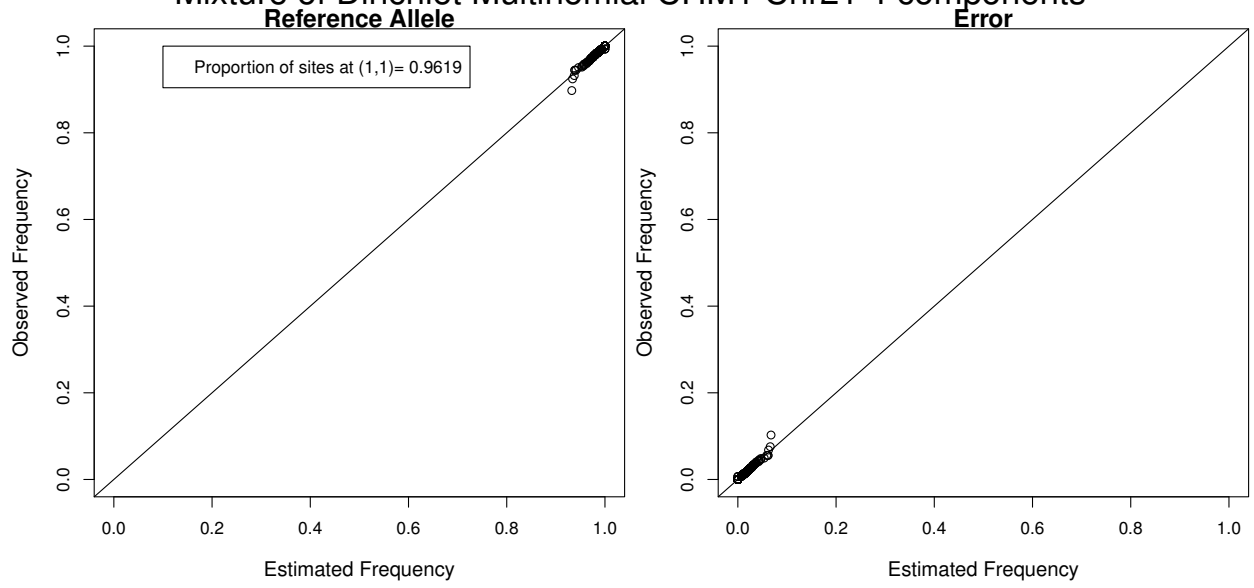
Mixture of Dirichlet Multinomial CHM1 Chr21 2 components



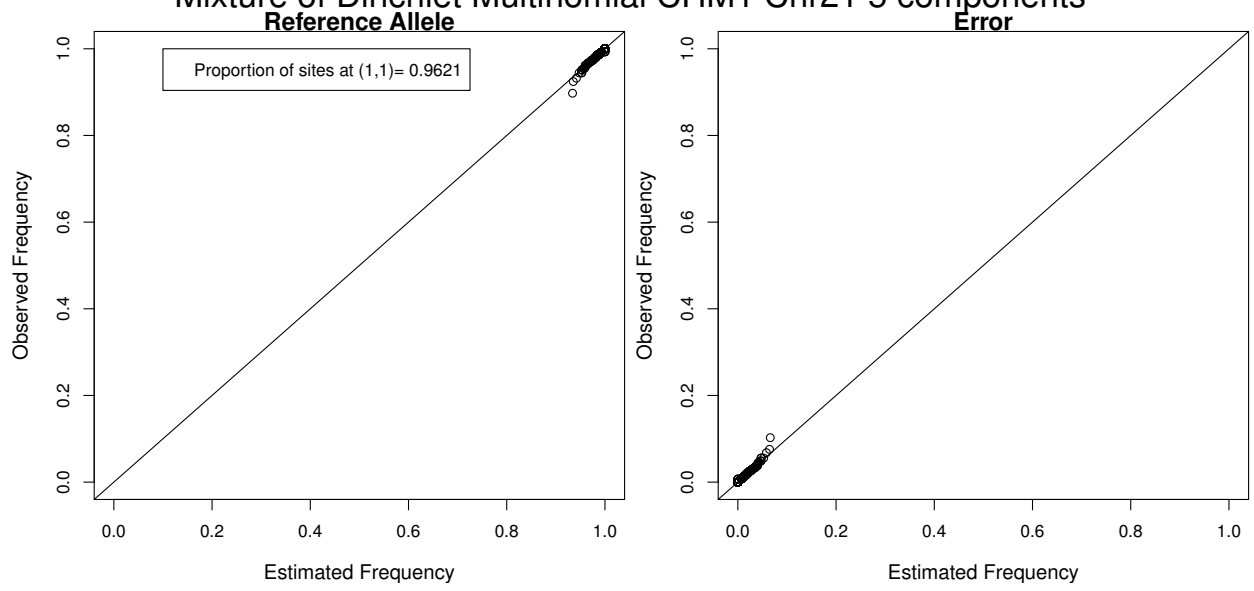
Mixture of Dirichlet Multinomial CHM1 Chr21 3 components



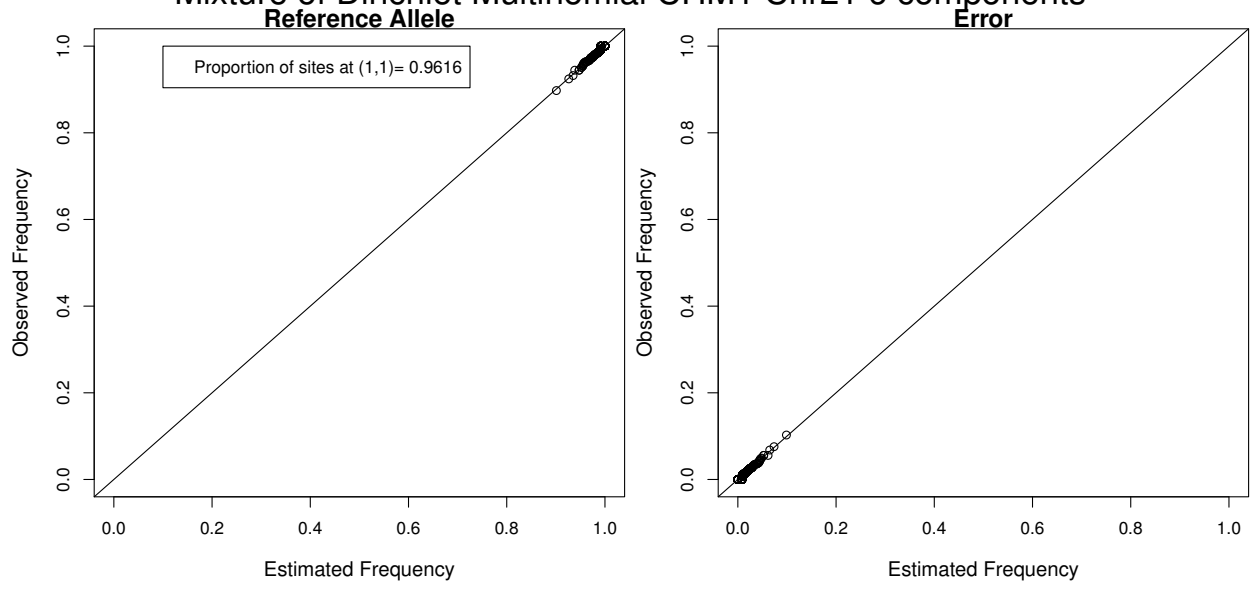
Mixture of Dirichlet Multinomial CHM1 Chr21 4 components



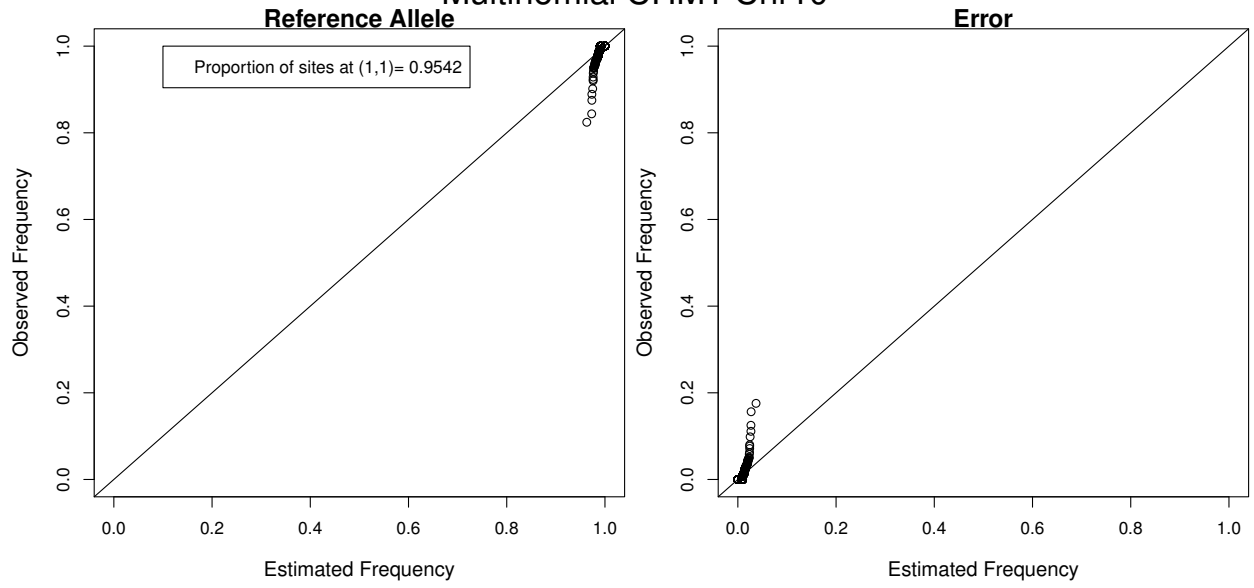
Mixture of Dirichlet Multinomial CHM1 Chr21 5 components



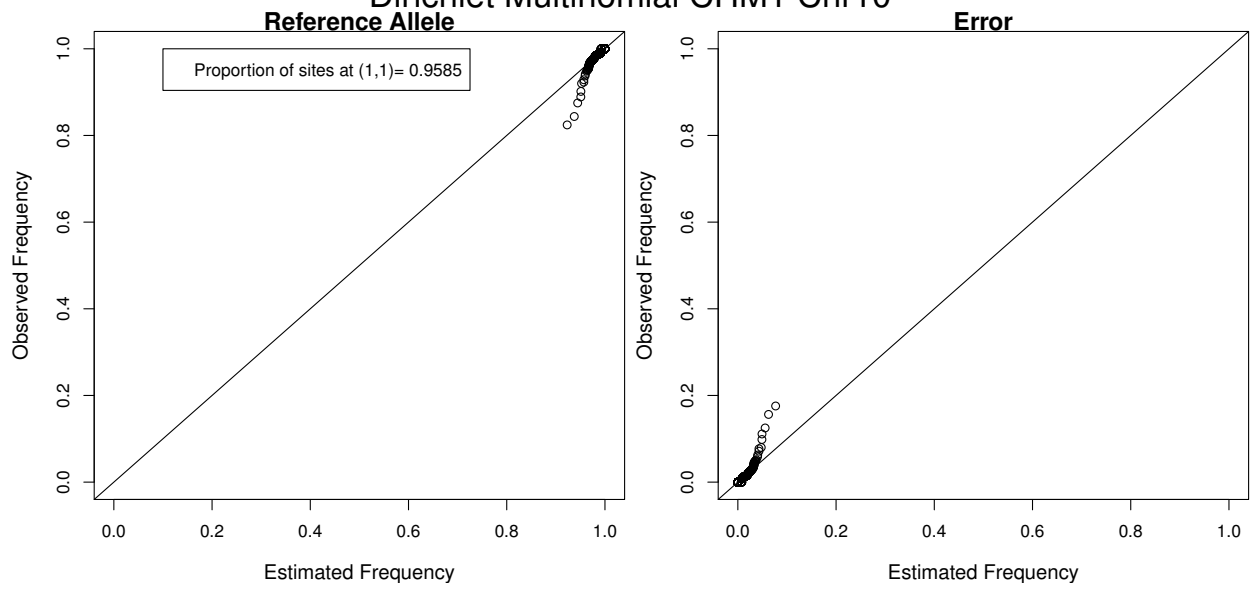
Mixture of Dirichlet Multinomial CHM1 Chr21 6 components



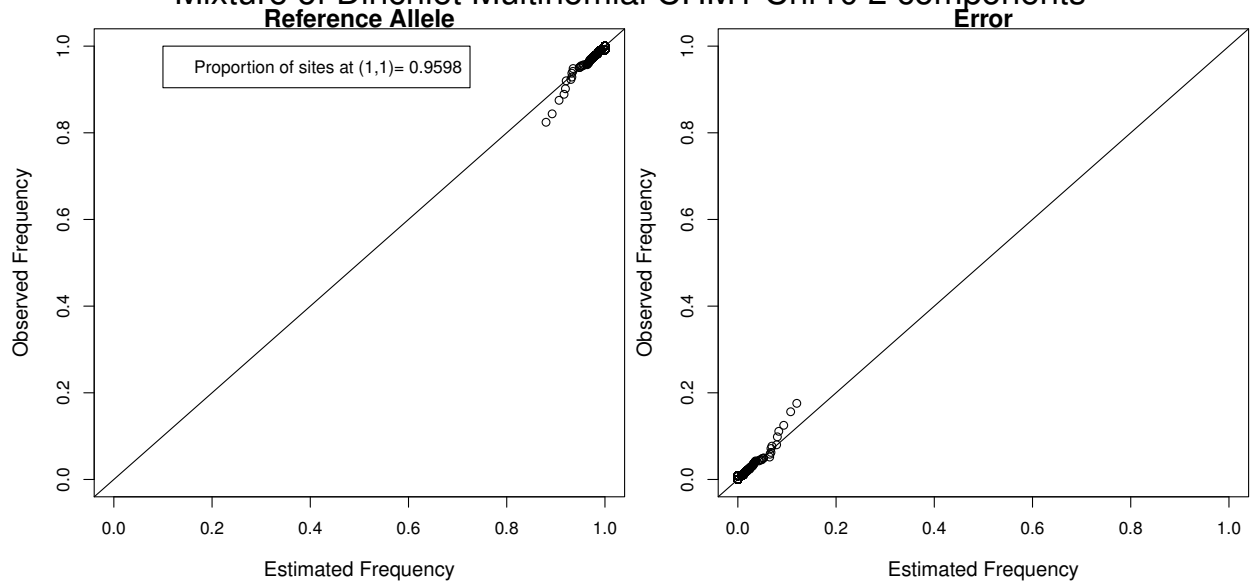
Multinomial CHM1 Chr10



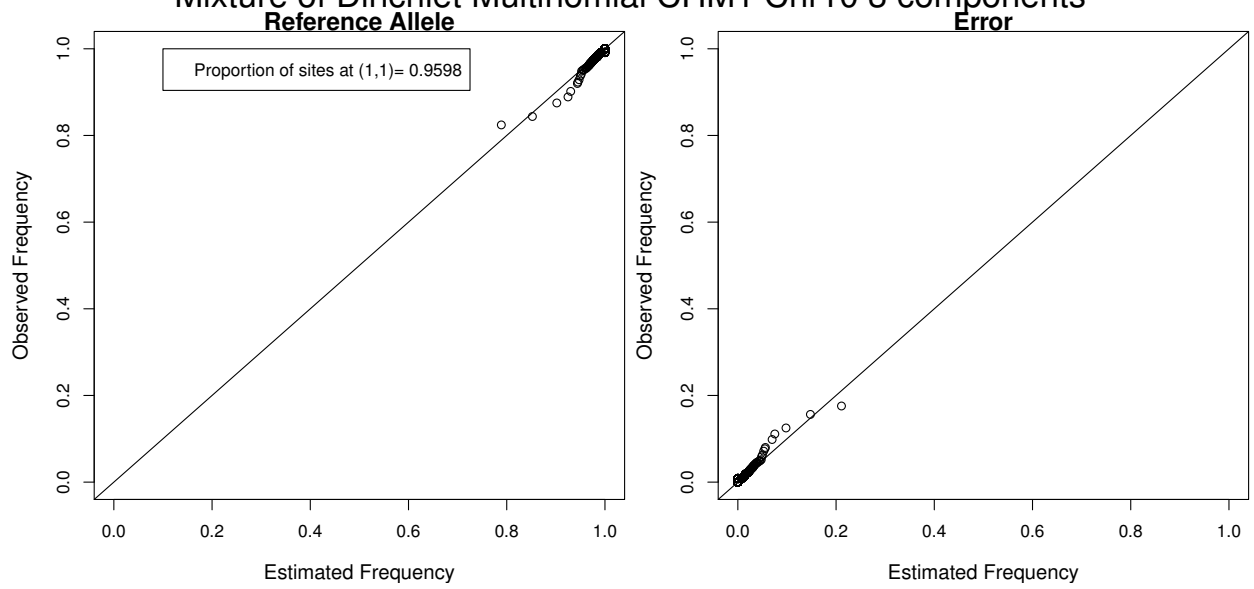
Dirichlet Multinomial CHM1 Chr10



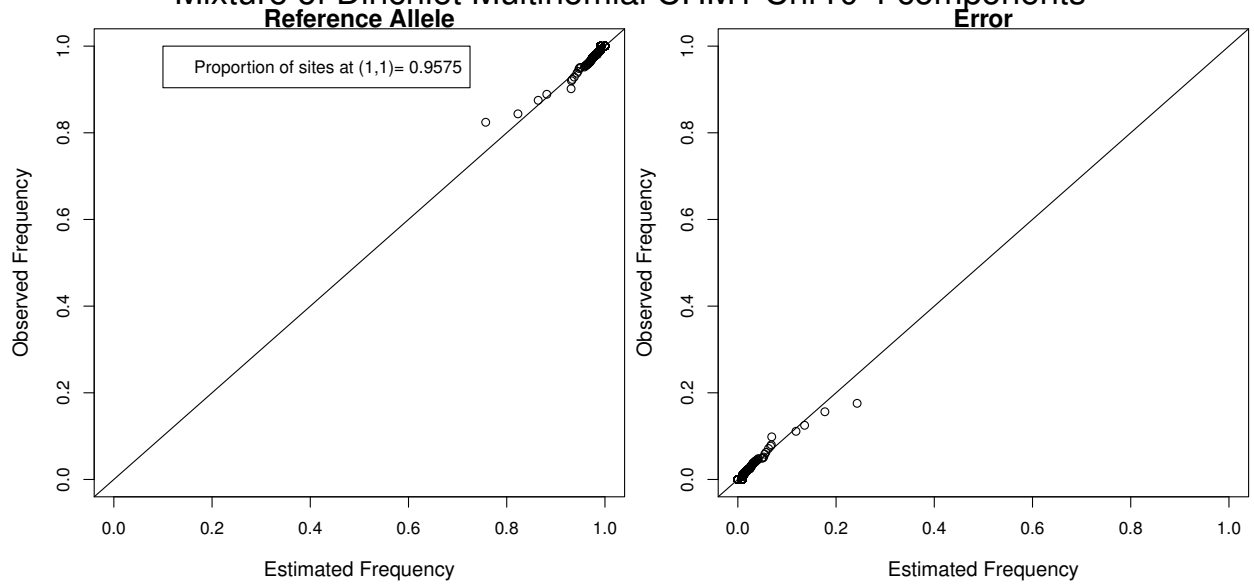
Mixture of Dirichlet Multinomial CHM1 Chr10 2 components



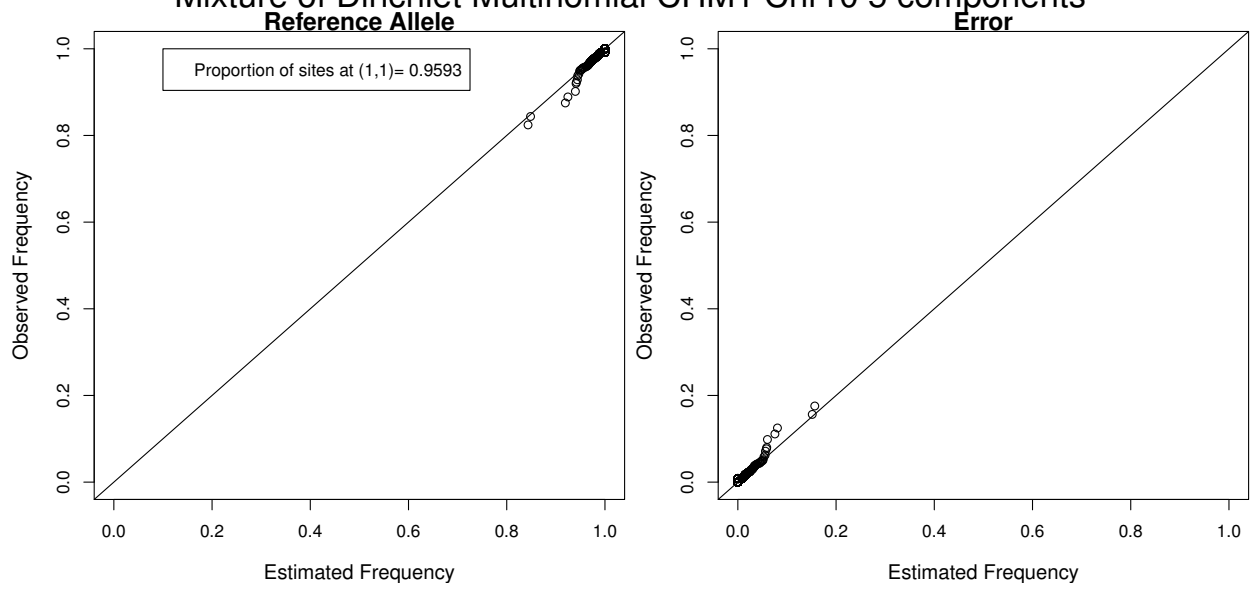
Mixture of Dirichlet Multinomial CHM1 Chr10 3 components



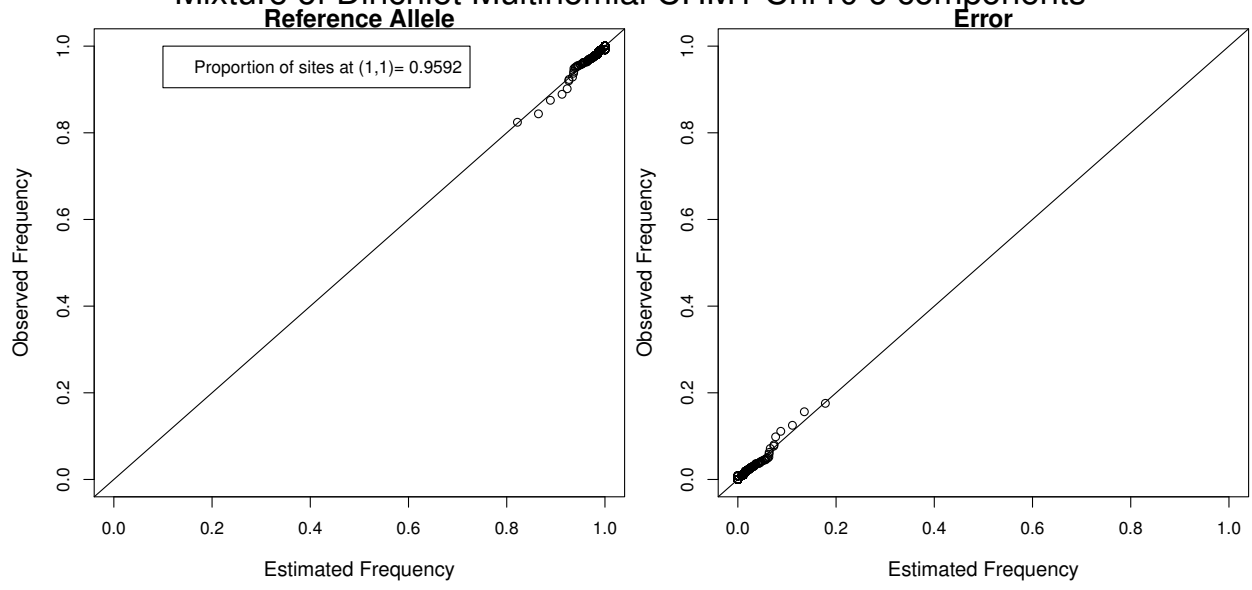
Mixture of Dirichlet Multinomial CHM1 Chr10 4 components



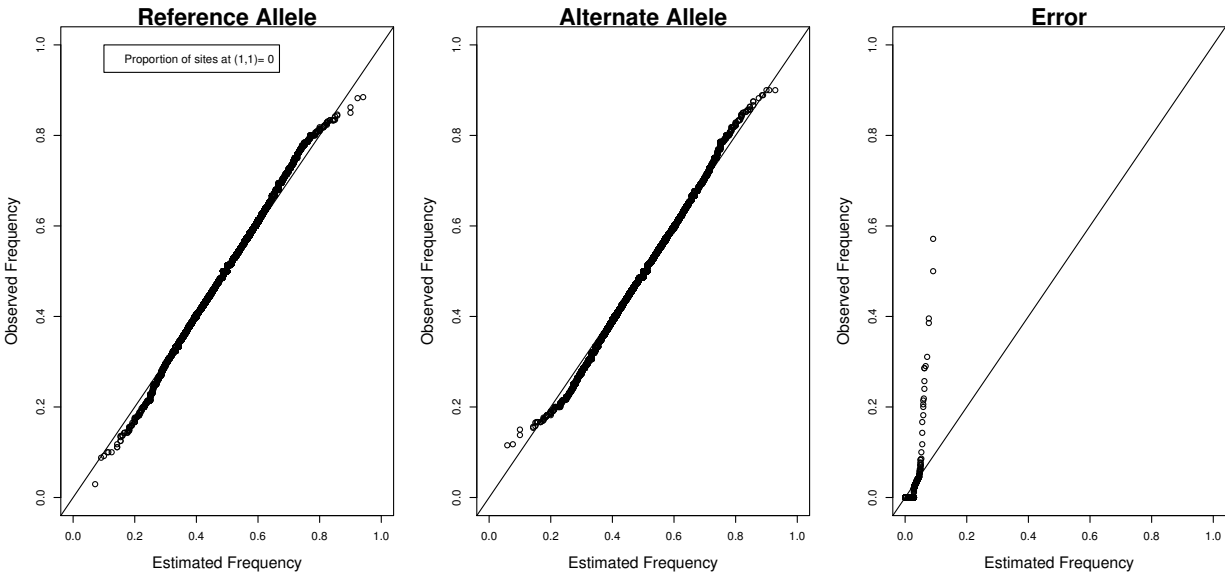
Mixture of Dirichlet Multinomial CHM1 Chr10 5 components



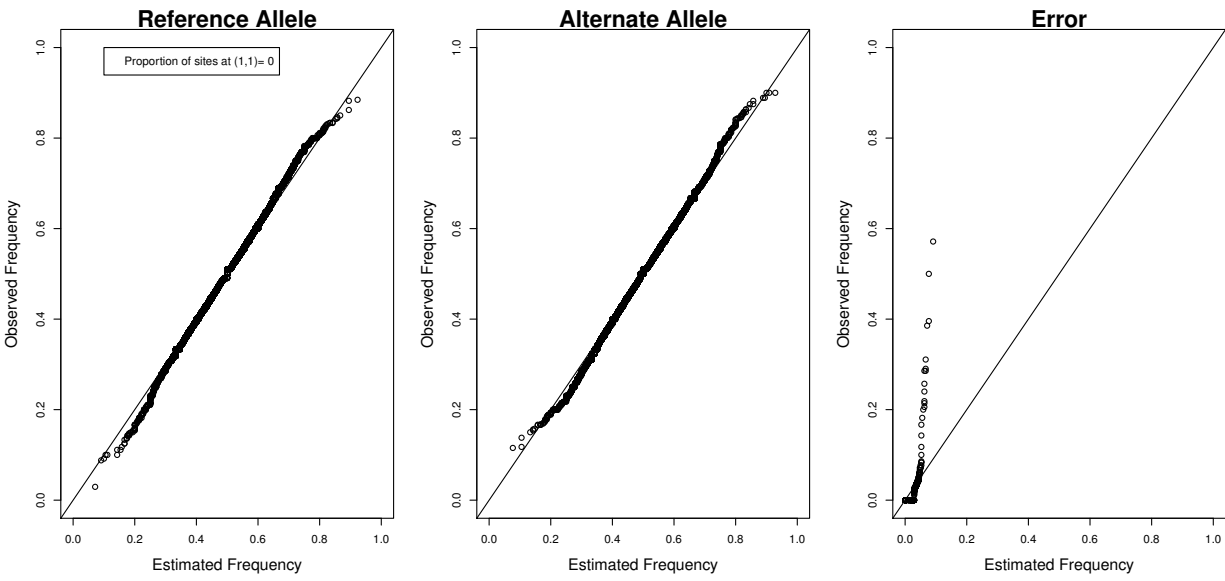
Mixture of Dirichlet Multinomial CHM1 Chr10 6 components



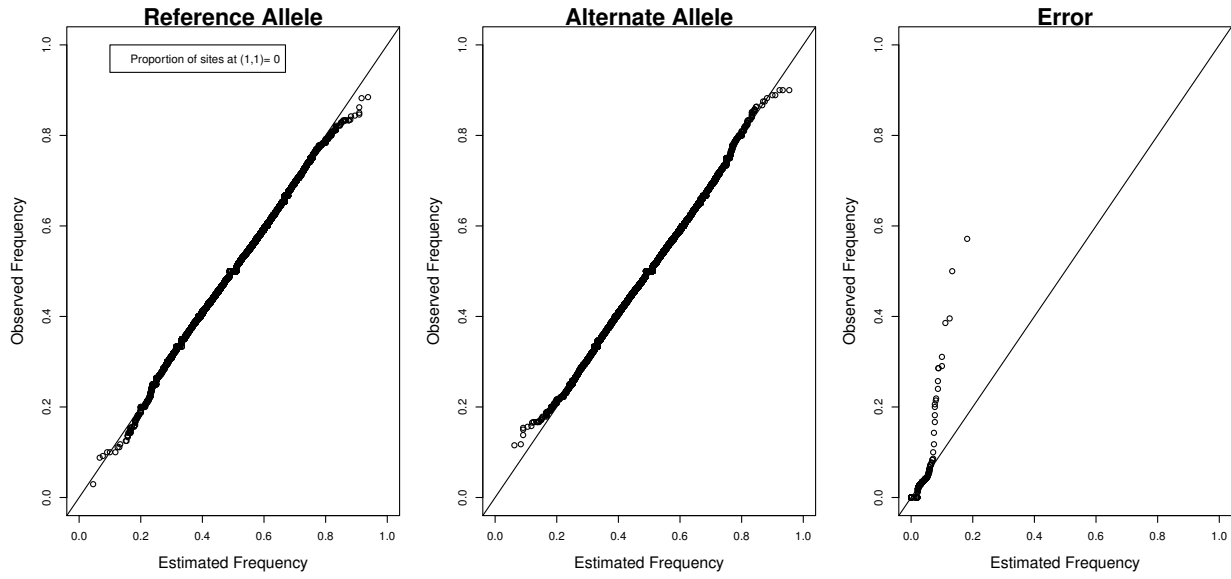
Multinomial CEU13 Chr21



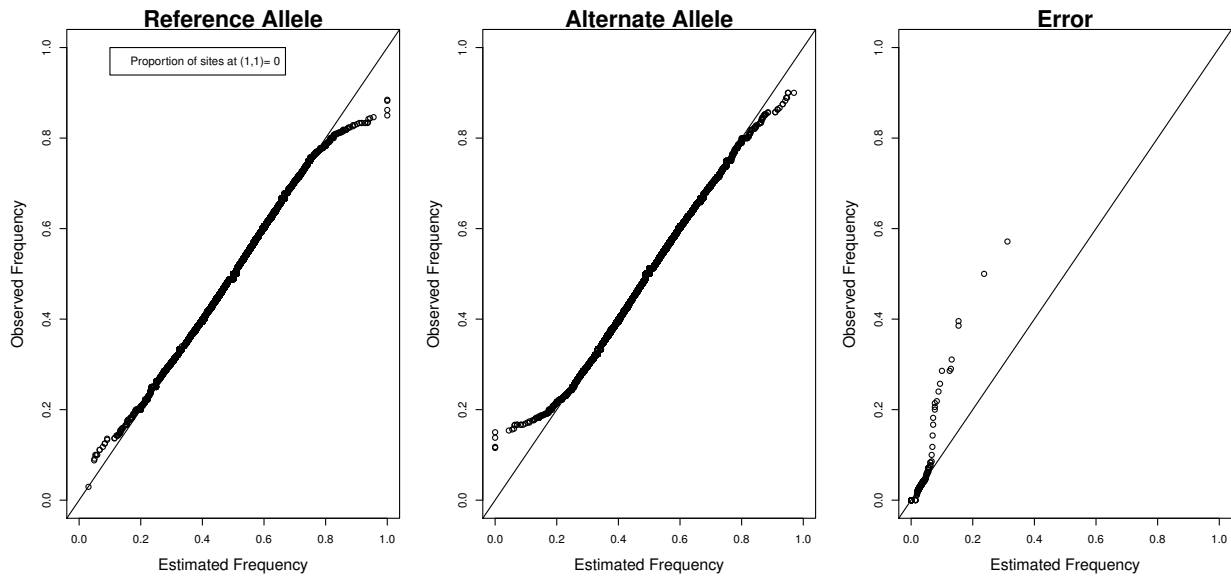
Biased Multinomial CEU13 Chr21



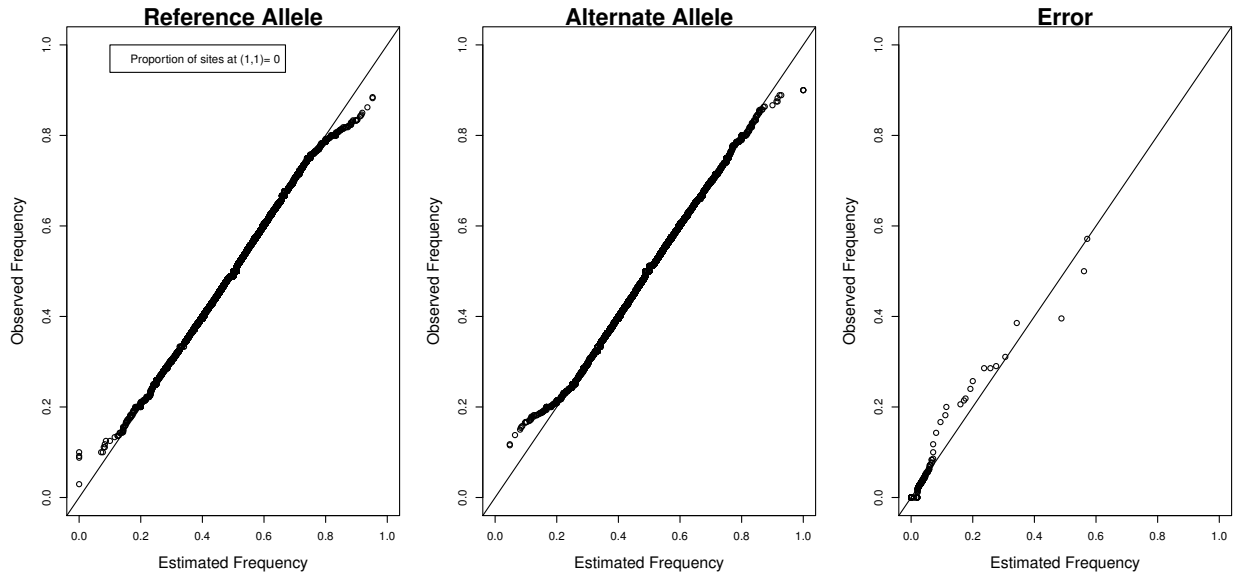
Dirichlet Multinomial CEU13 Chr21



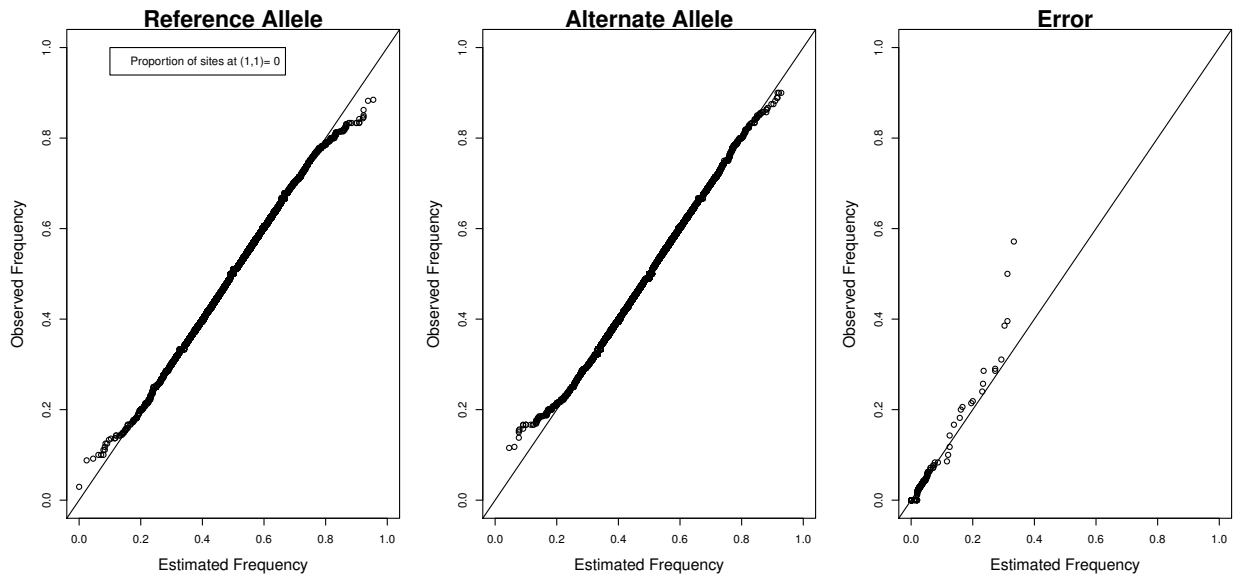
Mixture of Dirichlet Multinomial CEU13 Chr21 2 components



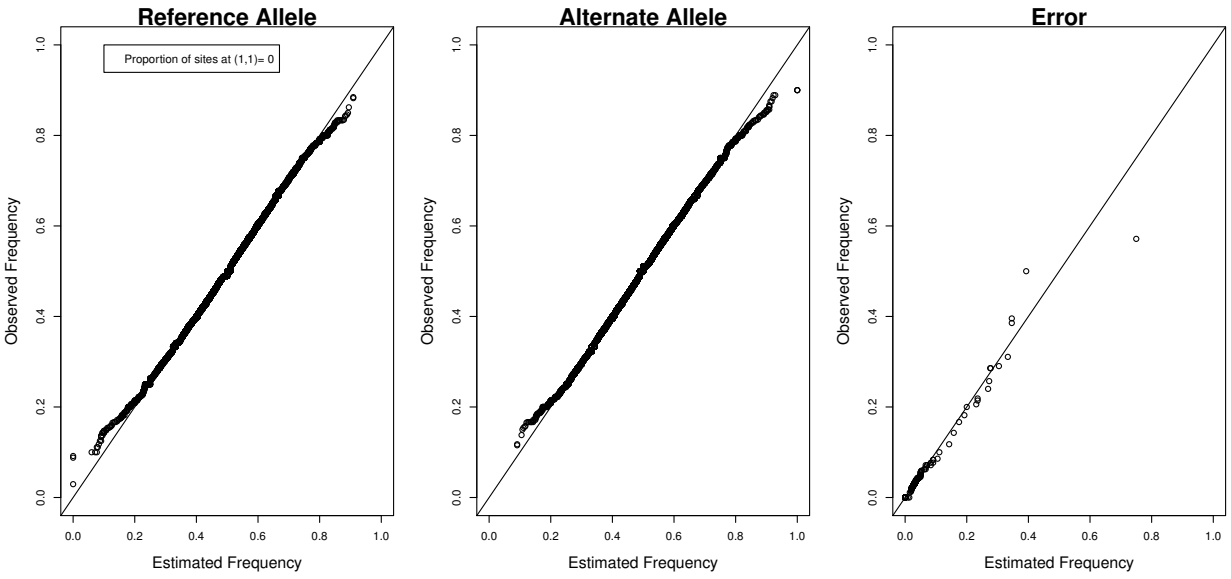
Mixture of Dirichlet Multinomial CEU13 Chr21 3 components



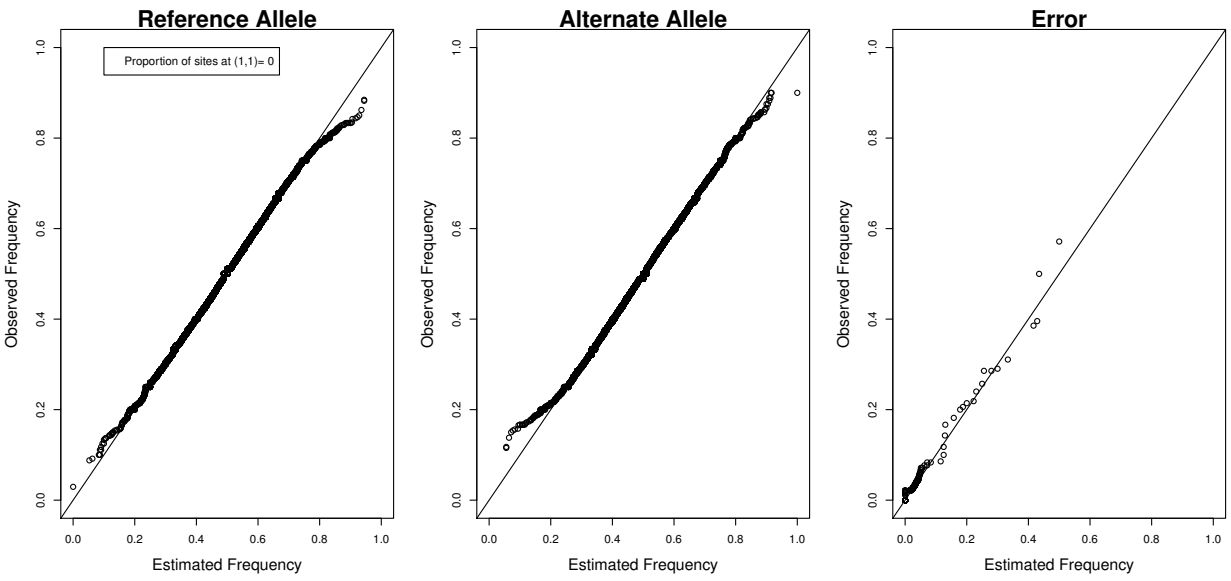
Mixture of Dirichlet Multinomial CEU13 Chr21 4 components



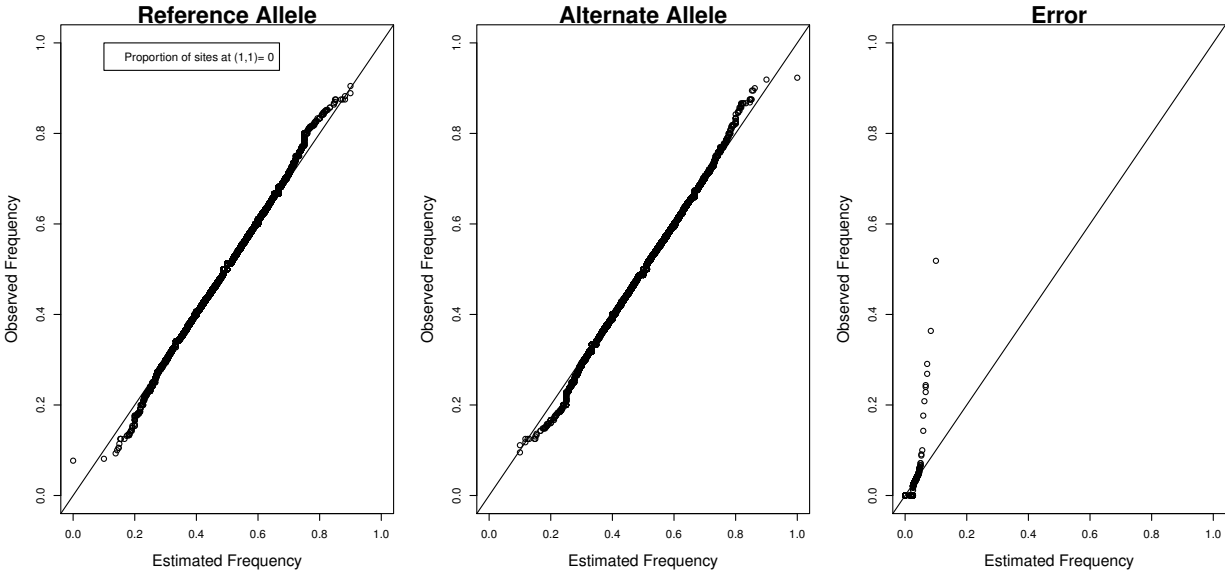
Mixture of Dirichlet Multinomial CEU13 Chr21 5 components



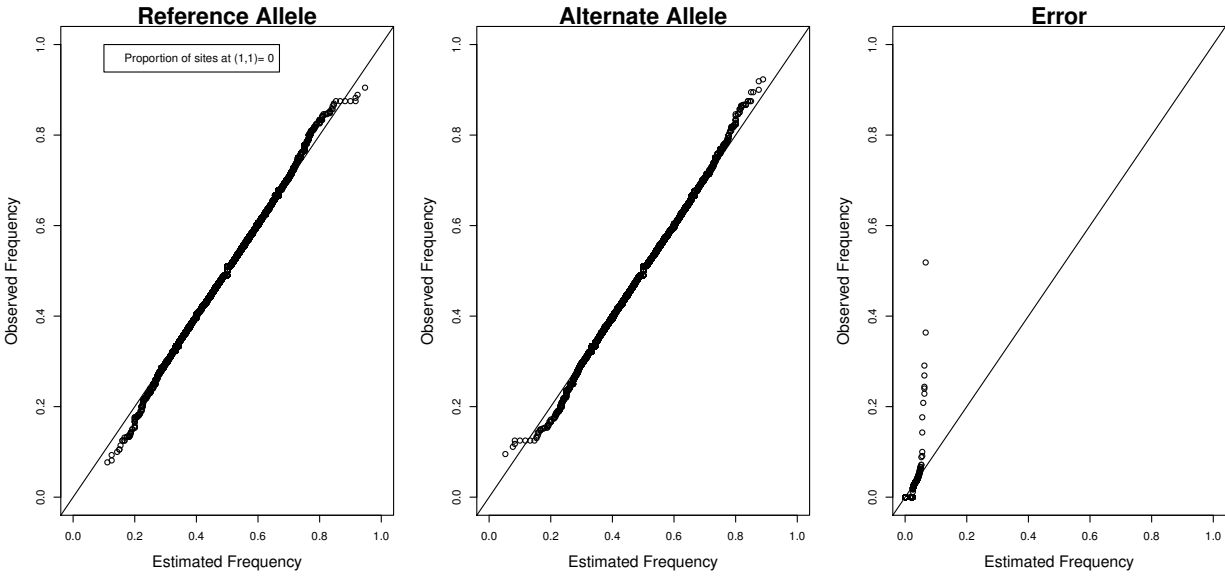
Mixture of Dirichlet Multinomial CEU13 Chr21 6 components



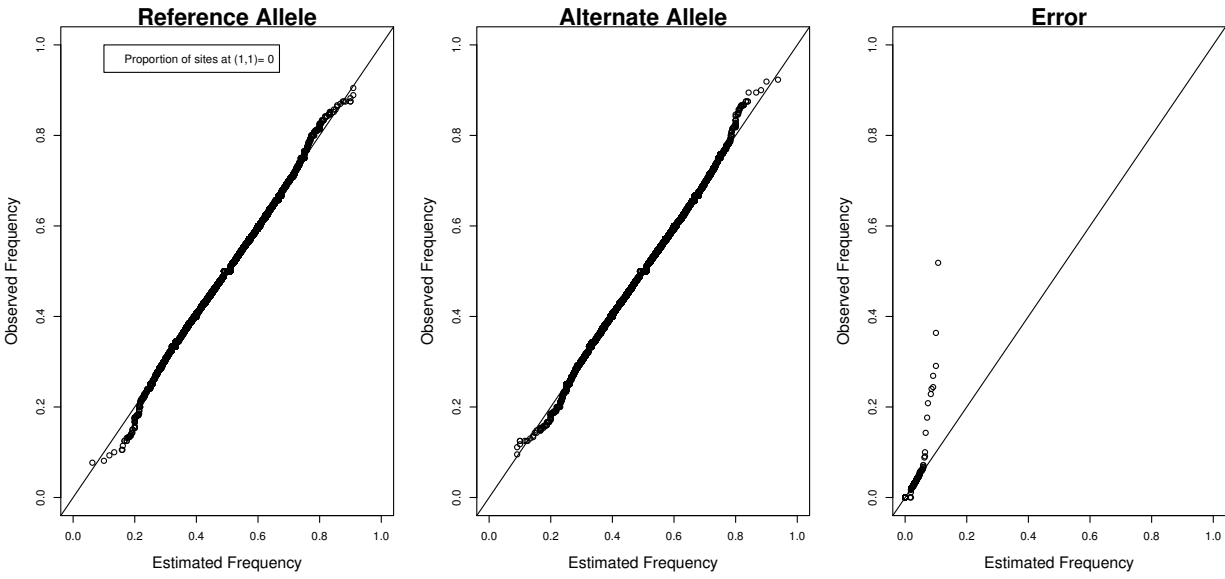
Multinomial CEU13 Chr10



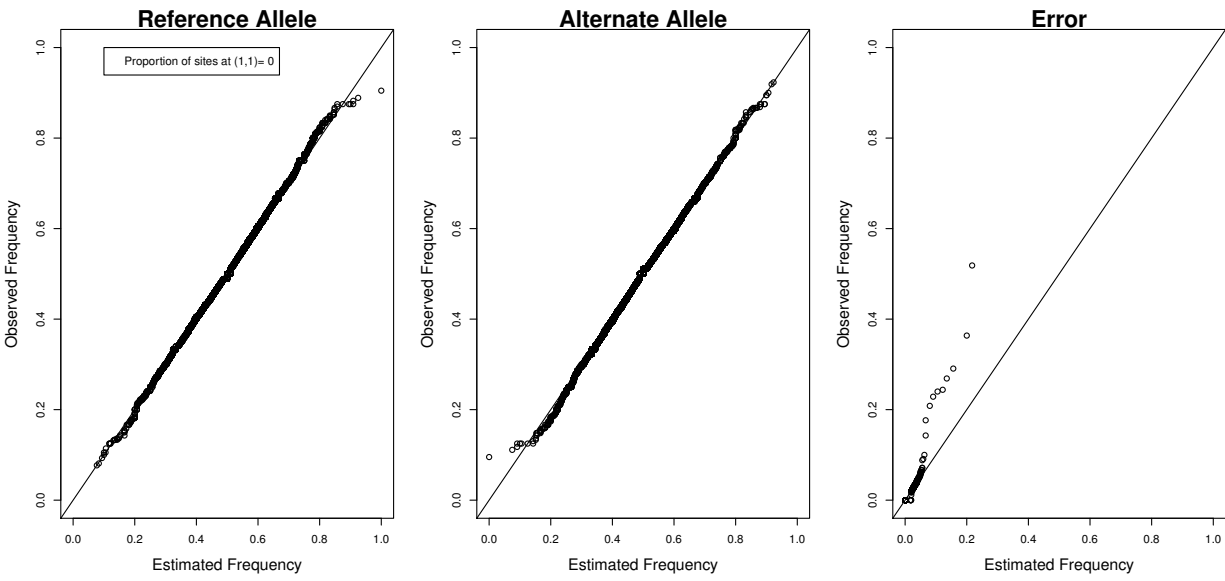
Biased Multinomial CEU13 Chr10



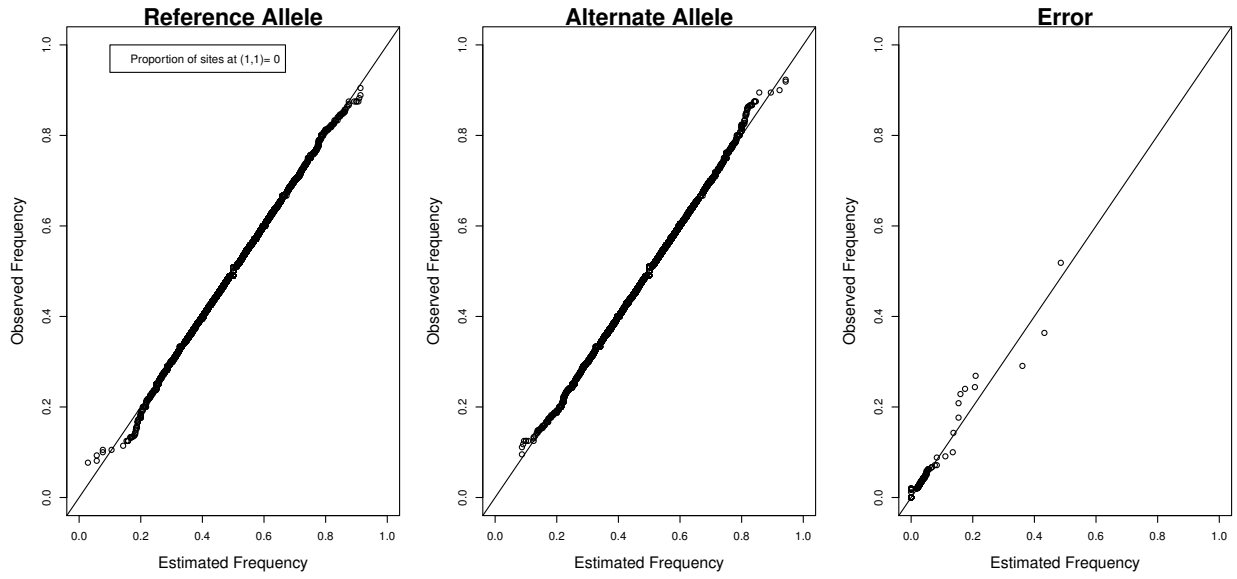
Dirichlet Multinomial CEU13 Chr10



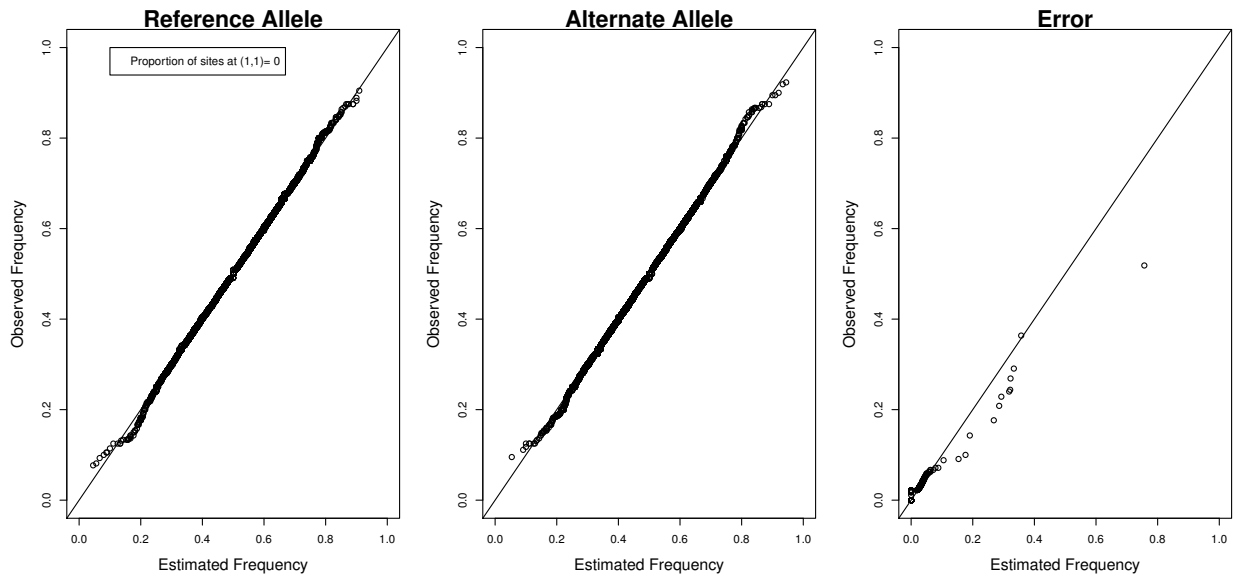
Mixture of Dirichlet Multinomial CEU13 Chr10 2 components



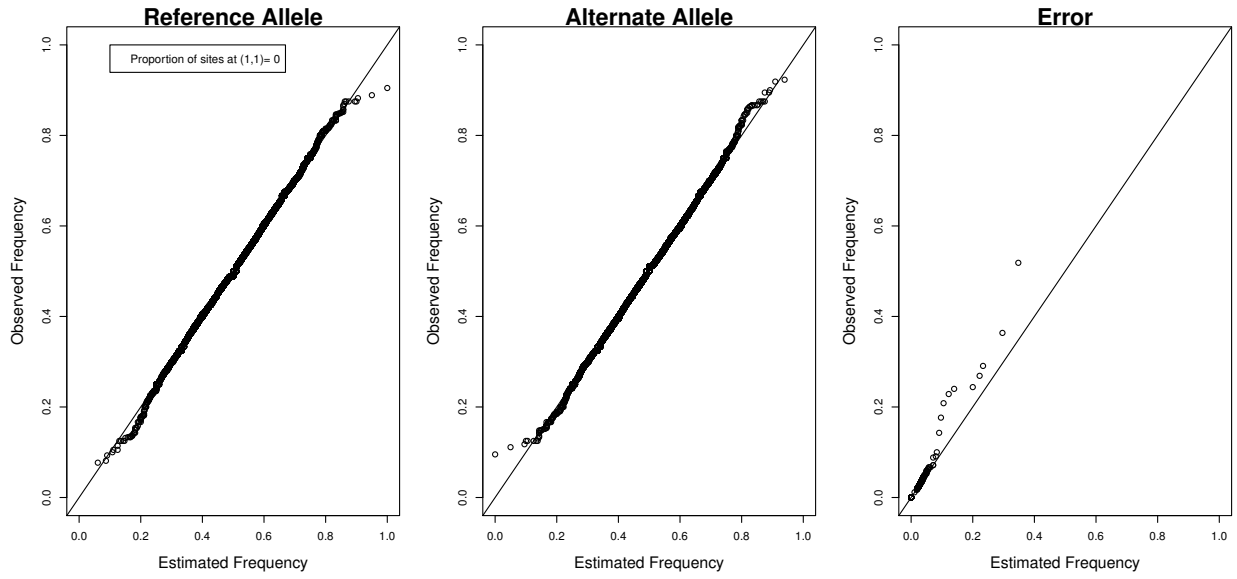
Mixture of Dirichlet Multinomial CEU13 Chr10 3 components



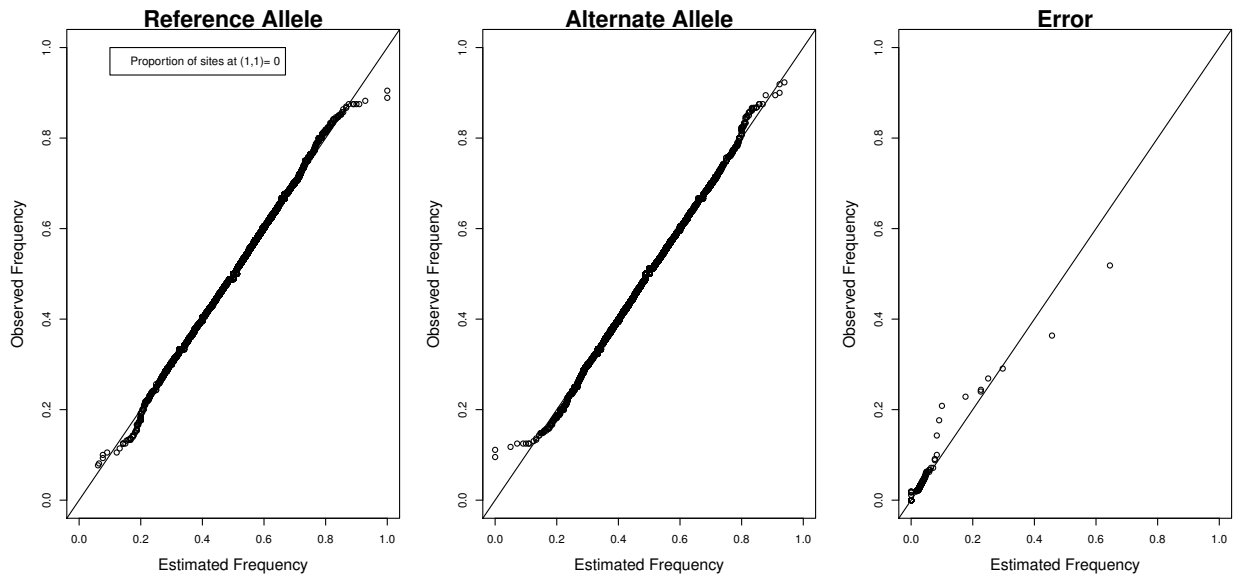
Mixture of Dirichlet Multinomial CEU13 Chr10 4 components



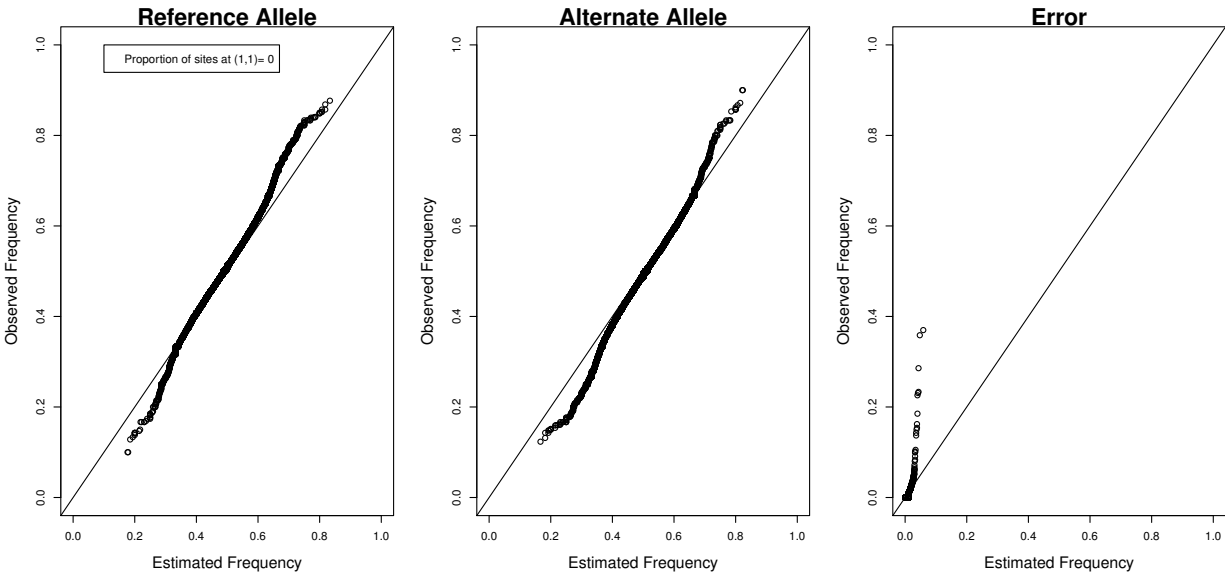
Mixture of Dirichlet Multinomial CEU13 Chr10 5 components



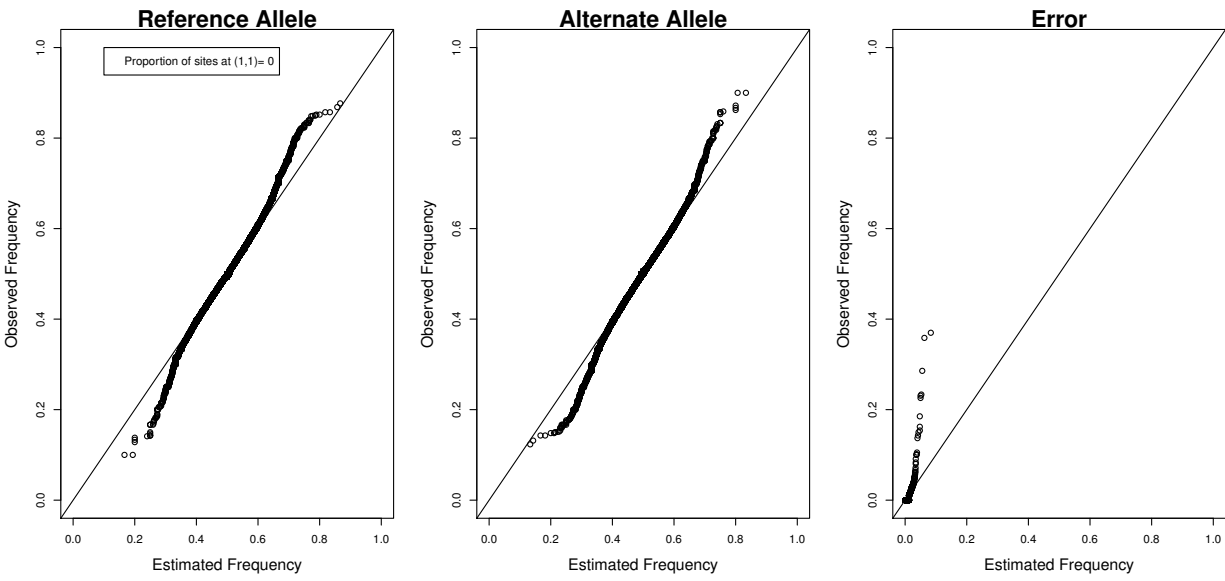
Mixture of Dirichlet Multinomial CEU13 Chr10 6 components



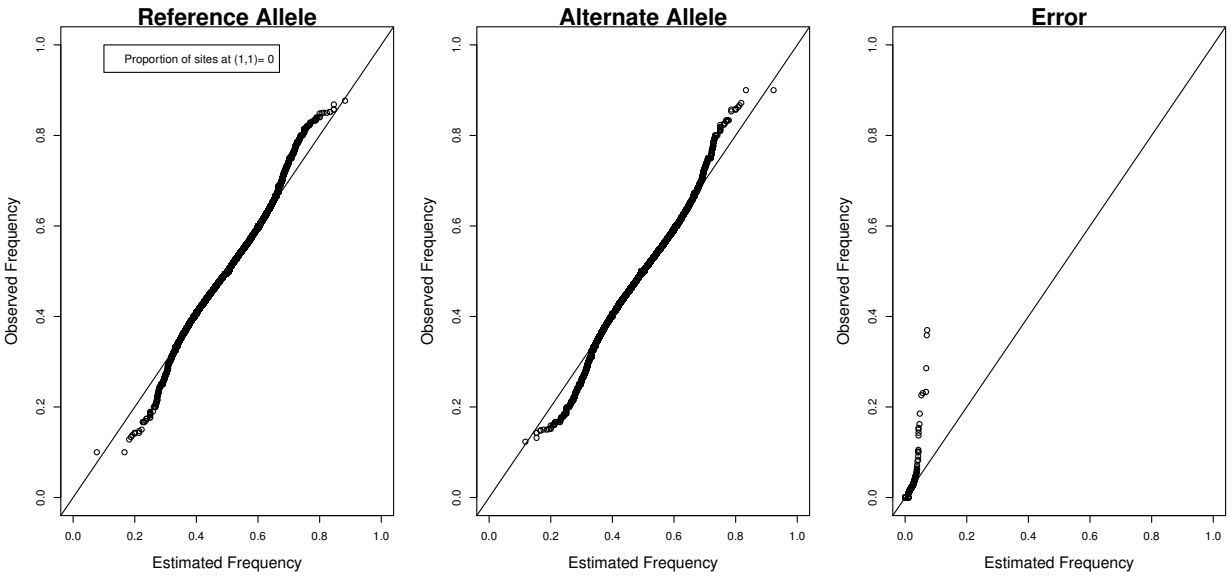
Multinomial CEU12 Chr21



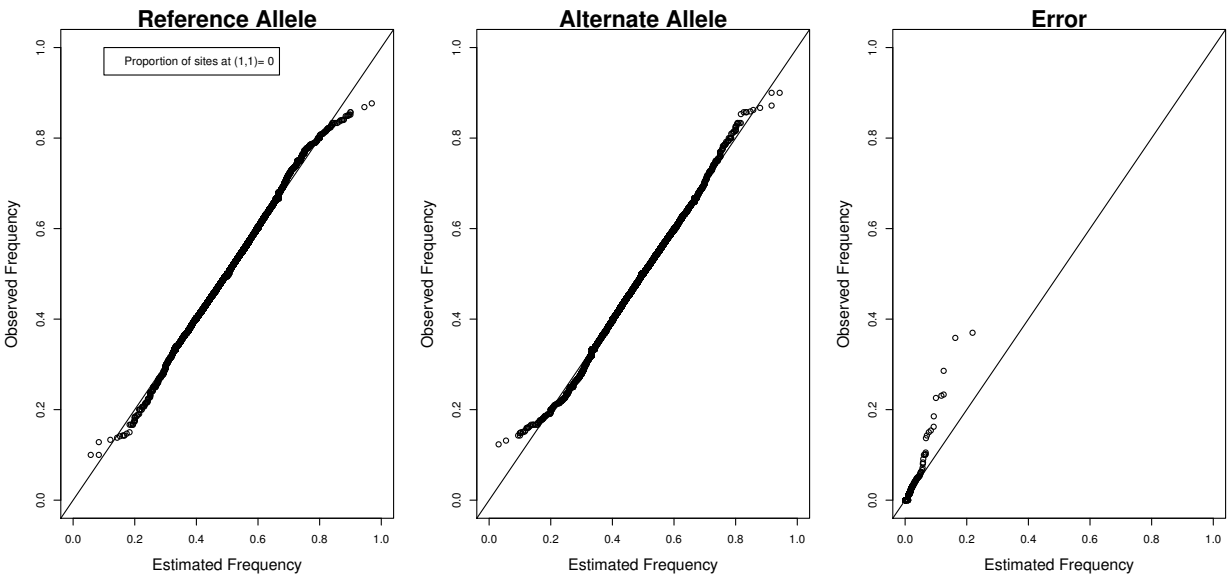
Biased Multinomial CEU12 Chr21



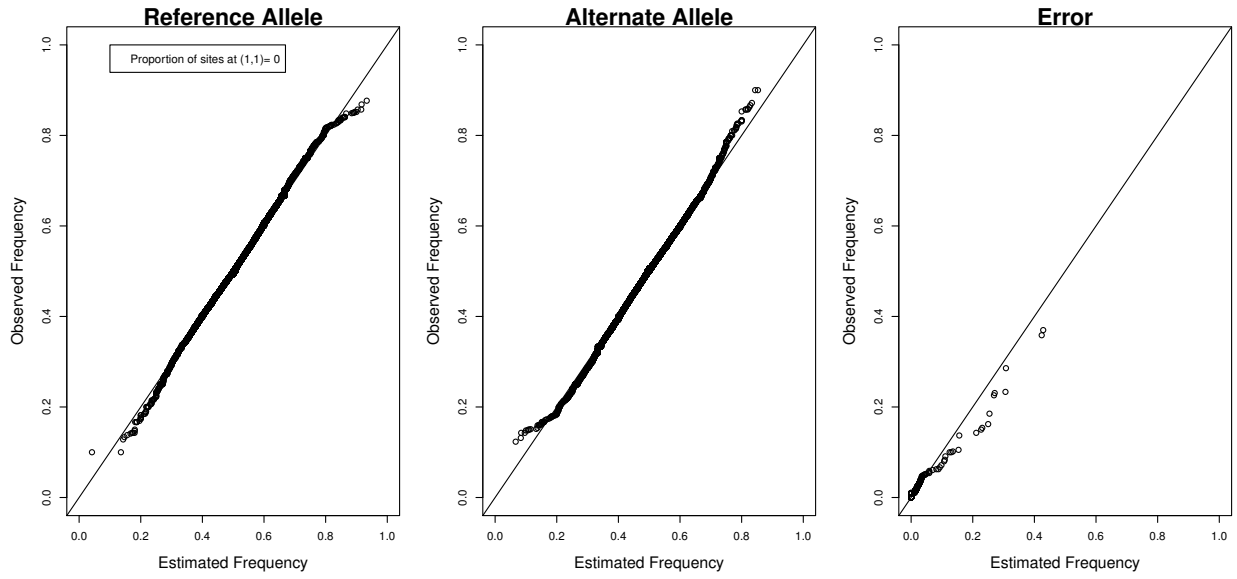
Dirichlet Multinomial CEU12 Chr21



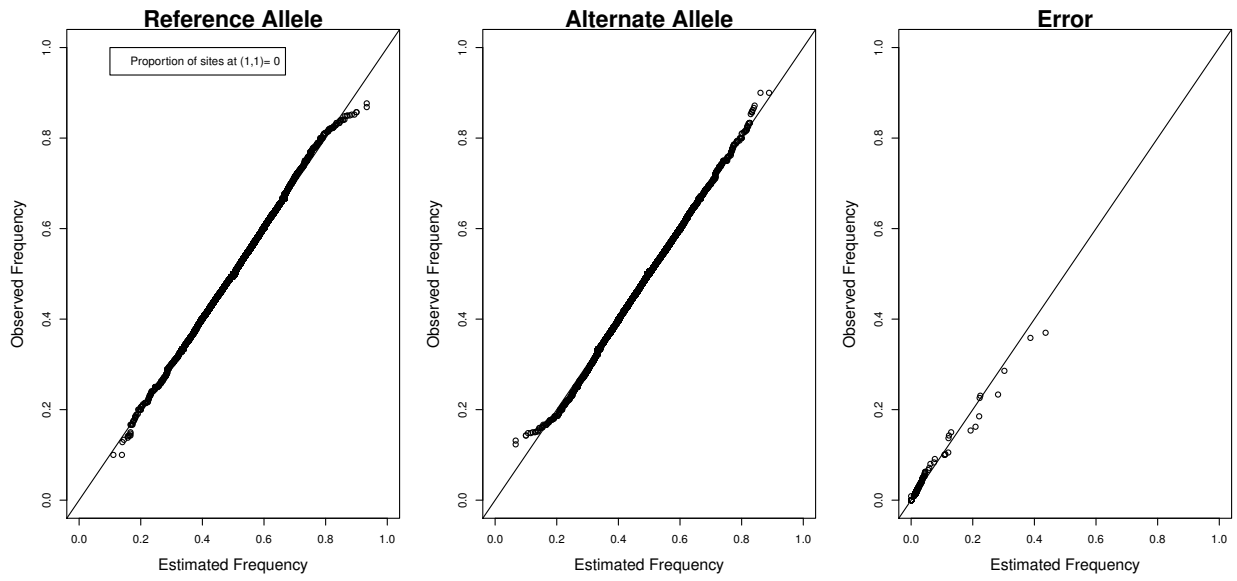
Mixture of Dirichlet Multinomial CEU12 Chr21 2 components



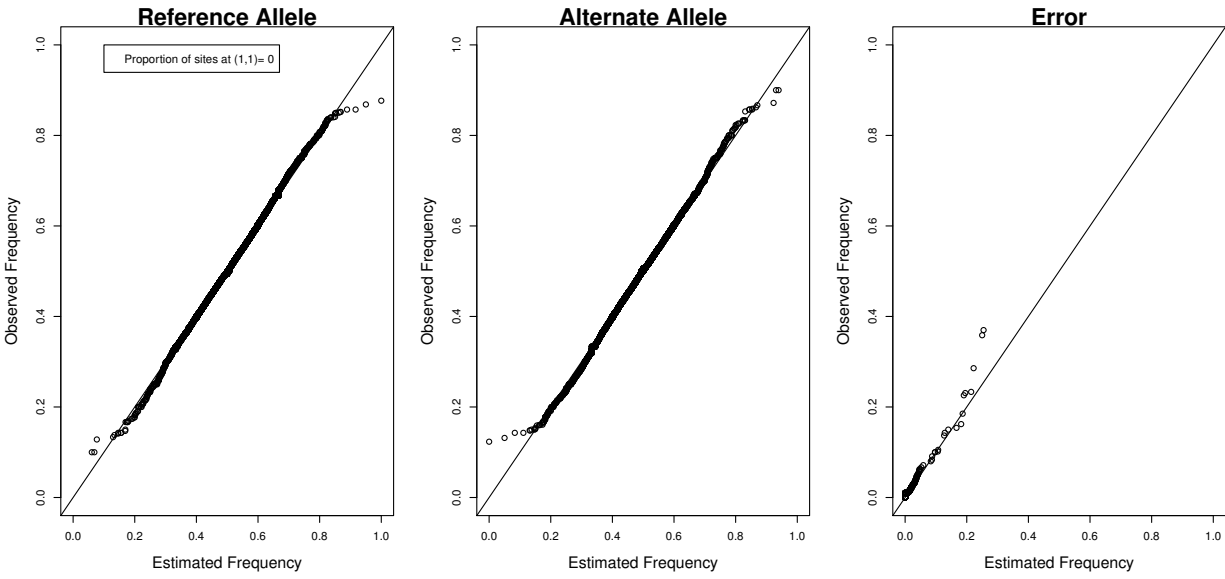
Mixture of Dirichlet Multinomial CEU12 Chr21 3 components



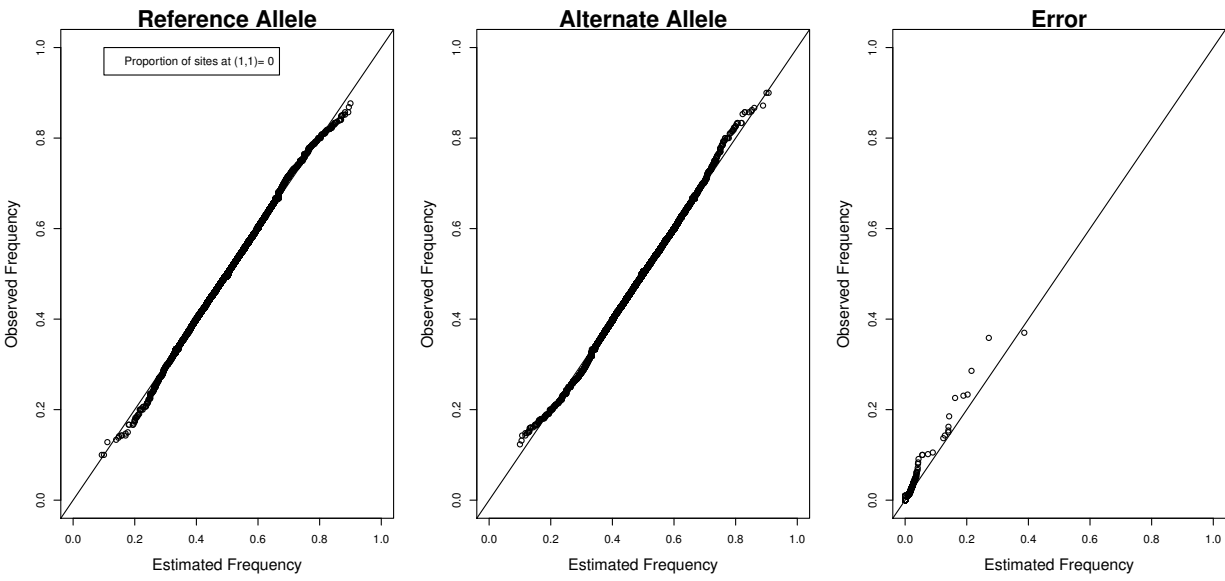
Mixture of Dirichlet Multinomial CEU12 Chr21 4 components



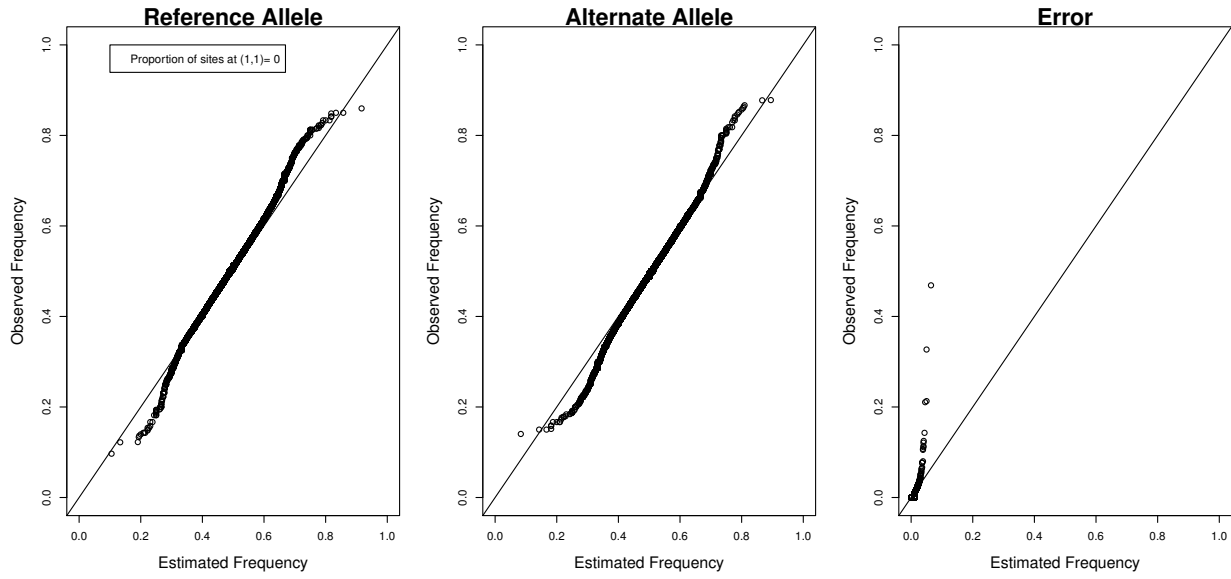
Mixture of Dirichlet Multinomial CEU12 Chr21 5 components



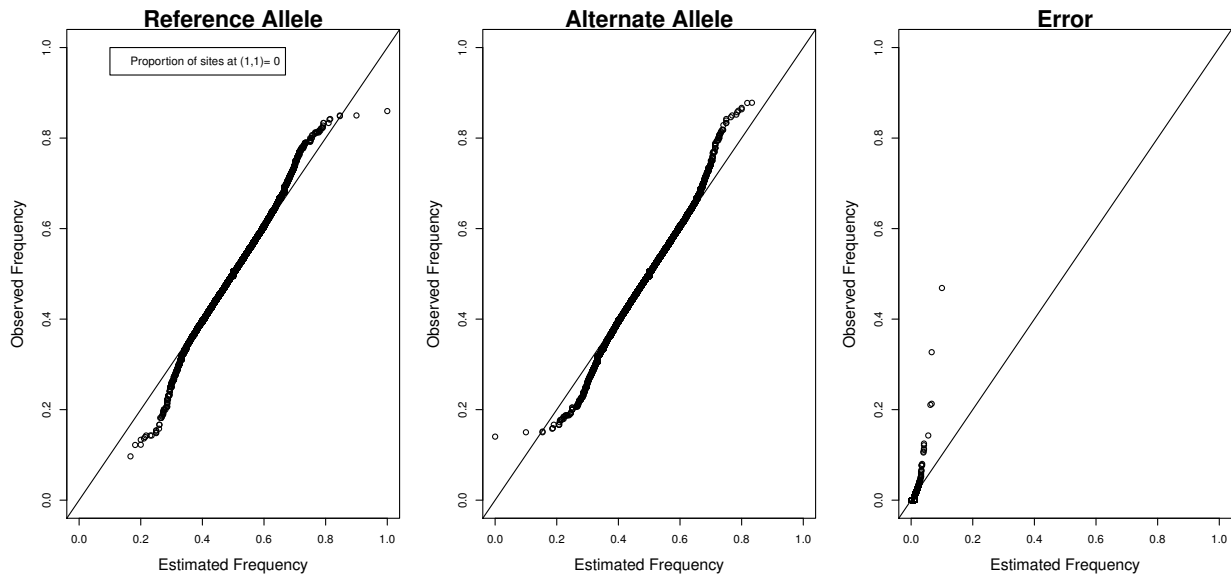
Mixture of Dirichlet Multinomial CEU12 Chr21 6 components



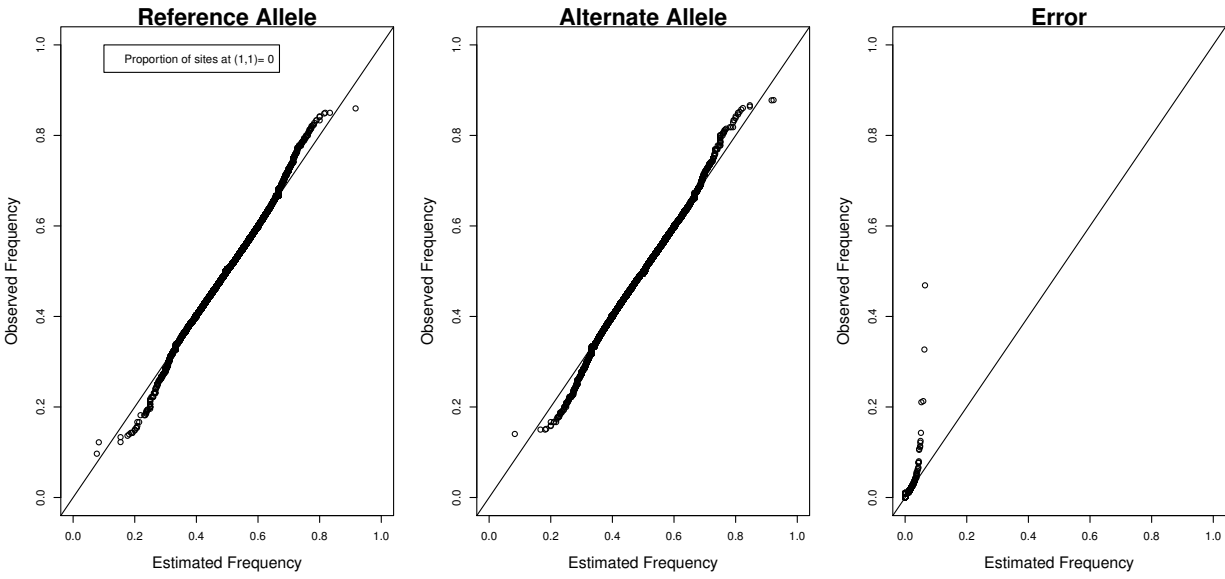
Multinomial CEU12 Chr10



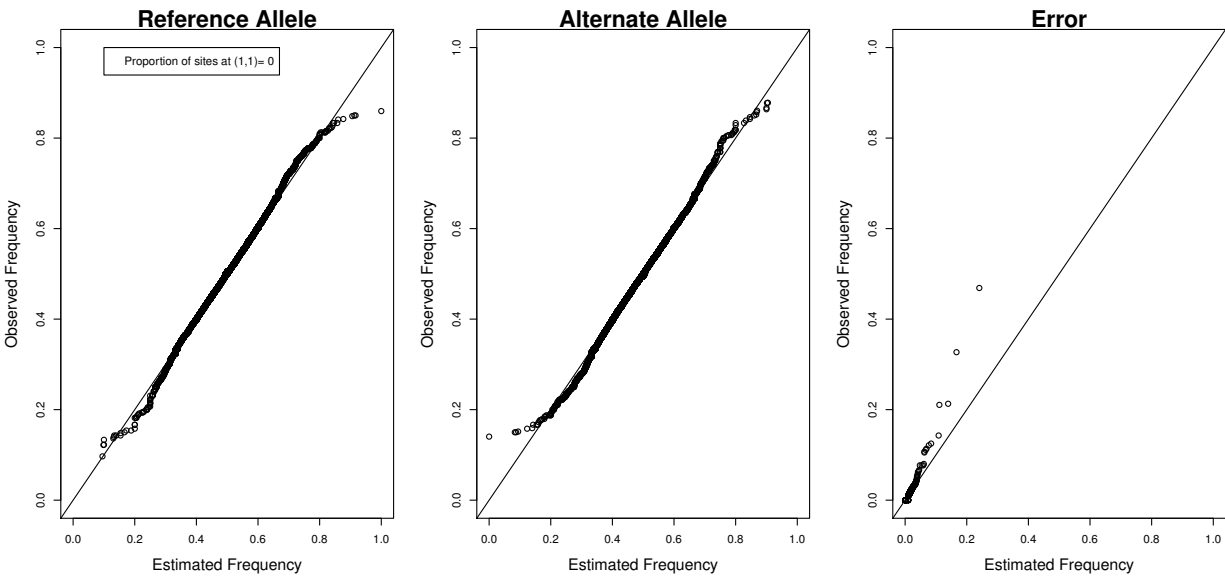
Biased Multinomial CEU12 Chr10



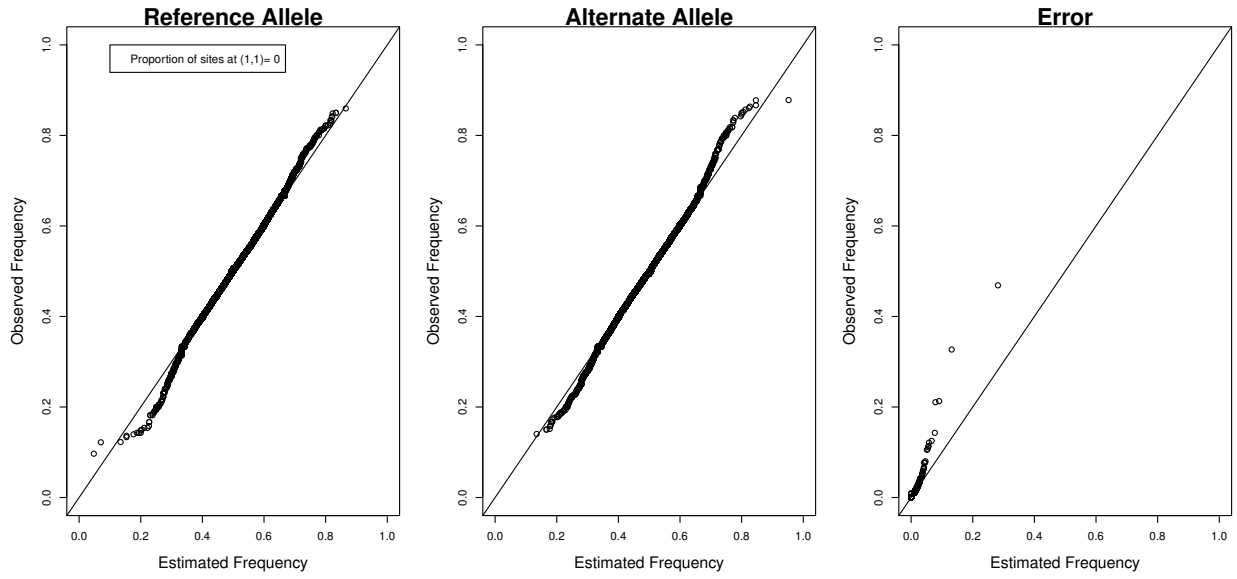
Dirichlet Multinomial CEU12 Chr10



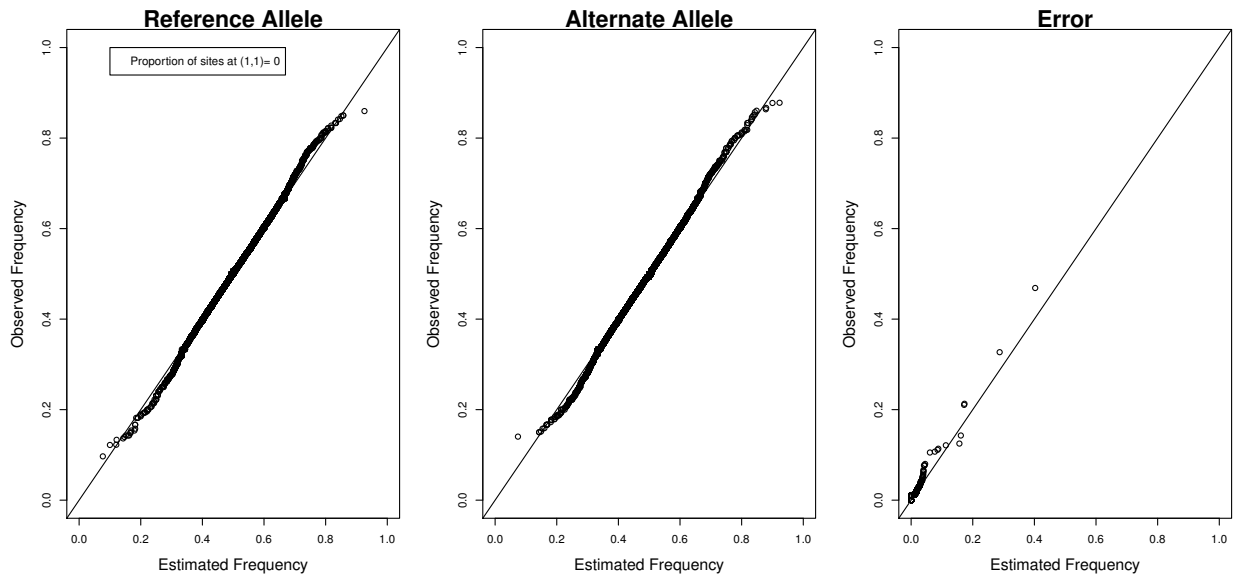
Mixture of Dirichlet Multinomial CEU12 Chr10 2 components



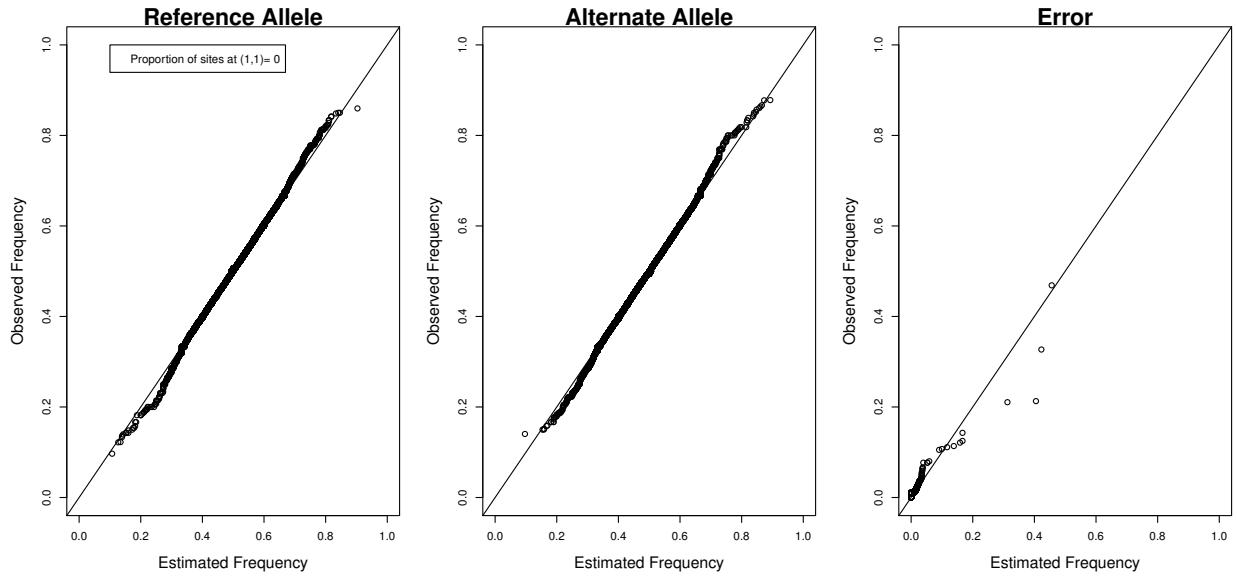
Mixture of Dirichlet Multinomial CEU12 Chr10 3 components



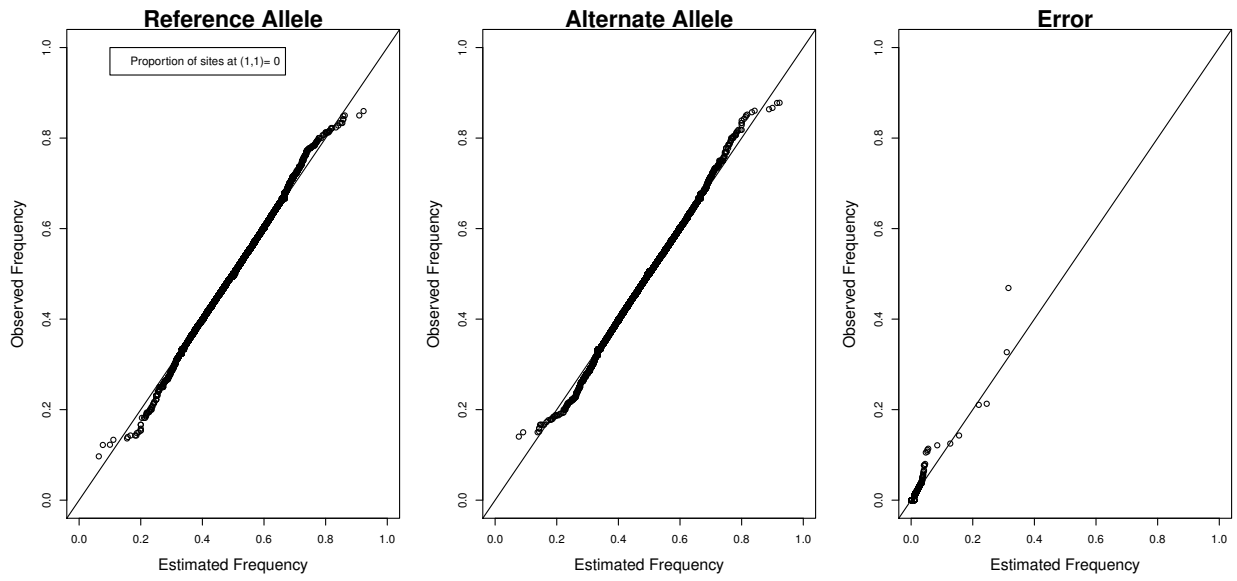
Mixture of Dirichlet Multinomial CEU12 Chr10 4 components



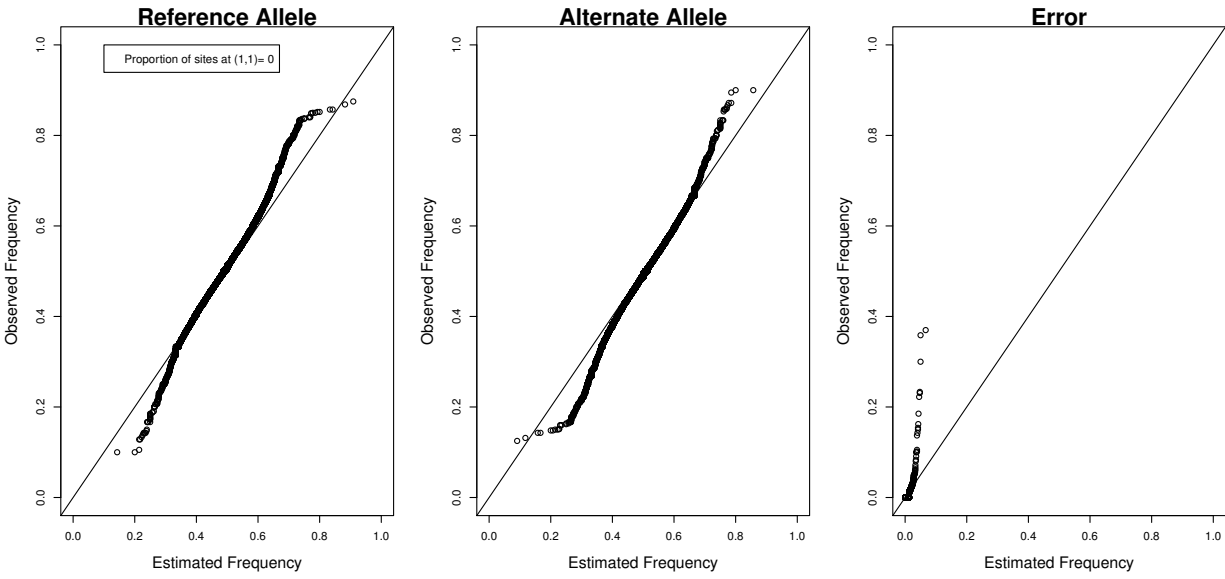
Mixture of Dirichlet Multinomial CEU12 Chr10 5 components



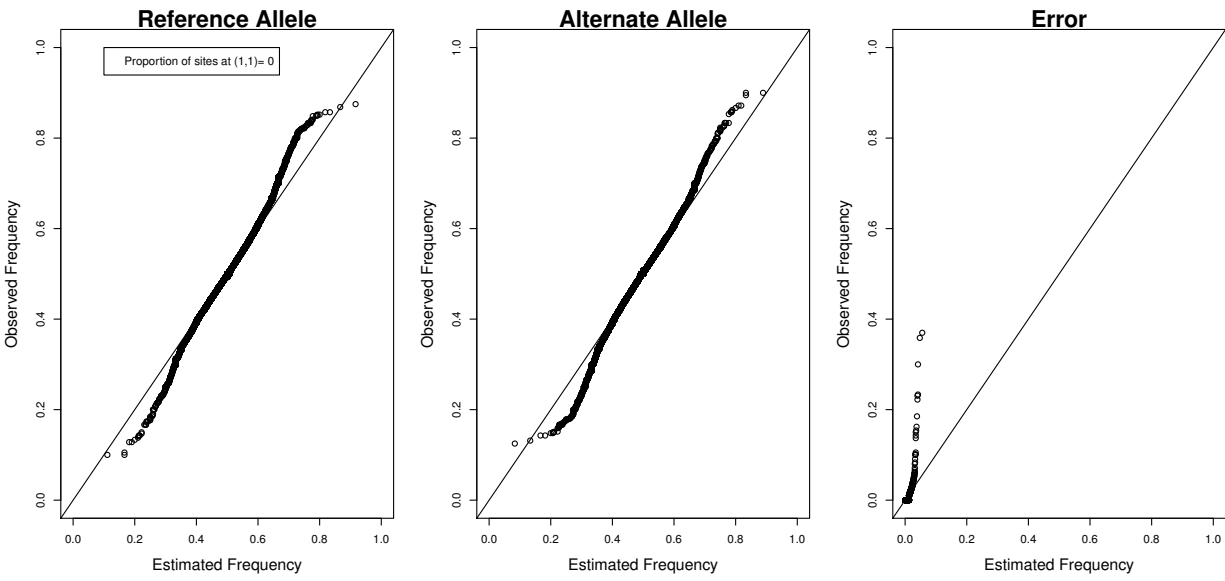
Mixture of Dirichlet Multinomial CEU12 Chr10 6 components



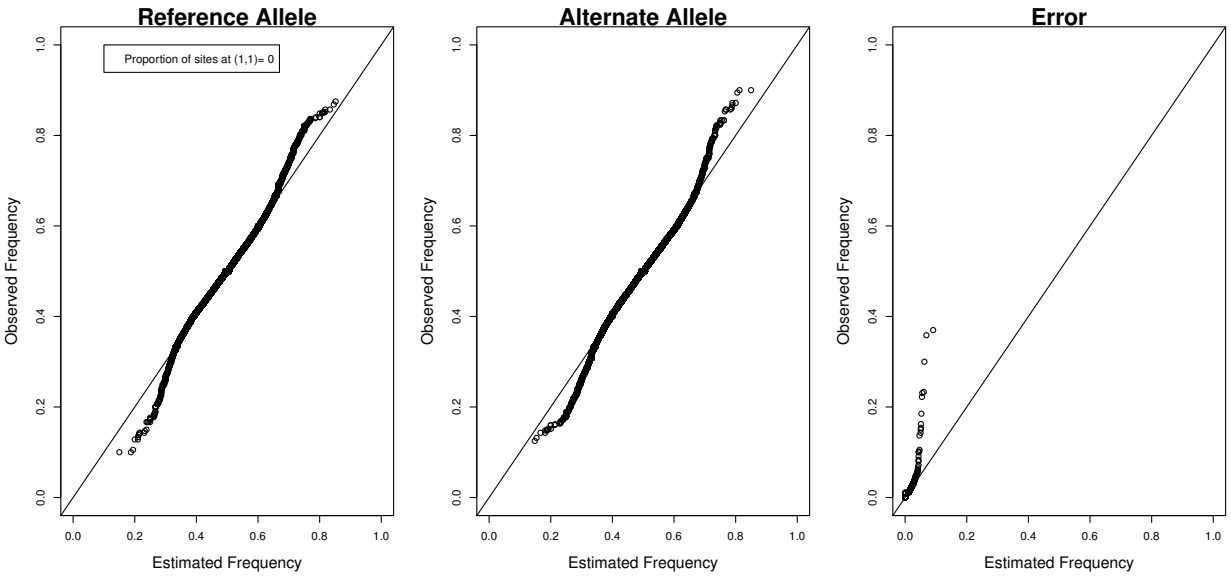
Multinomial CEU11 Chr21



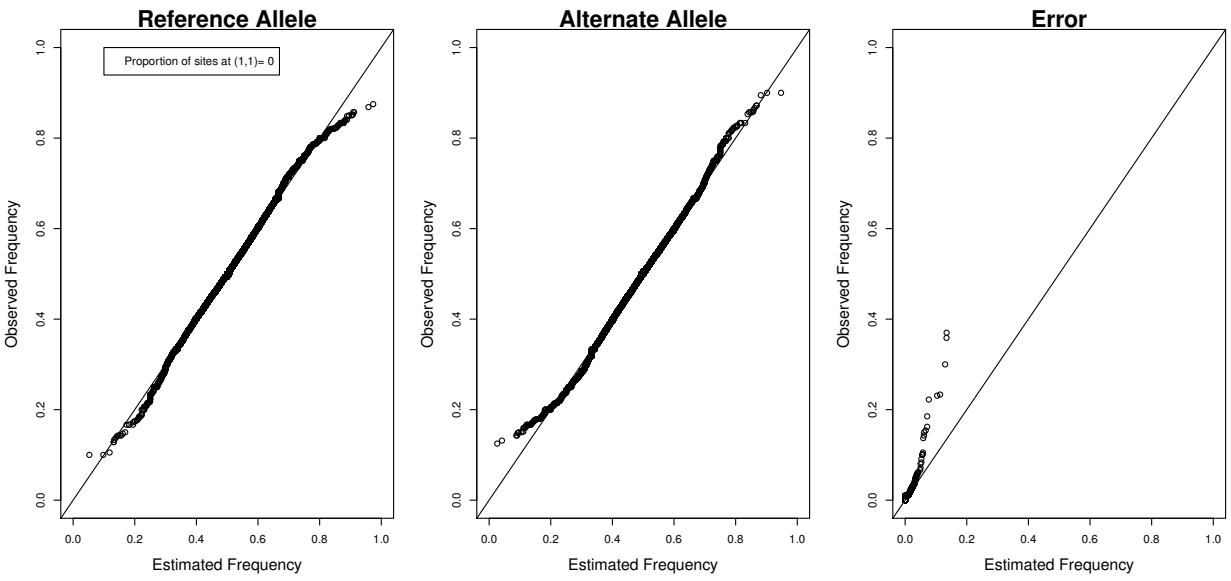
Biased Multinomial CEU11 Chr21



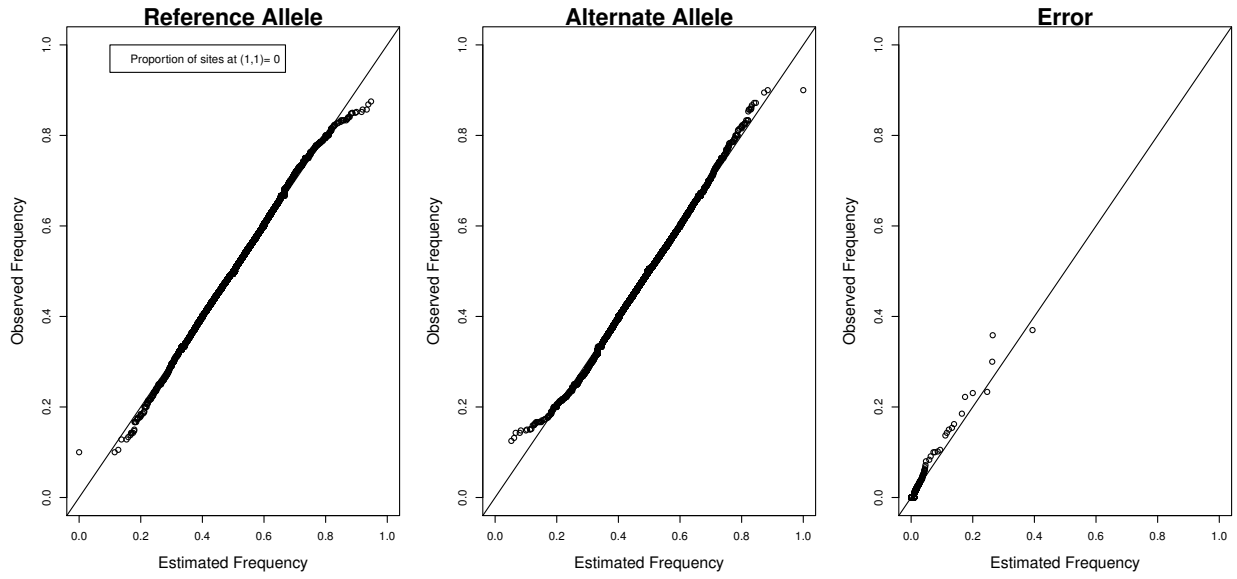
Dirichlet Multinomial CEU11 Chr21



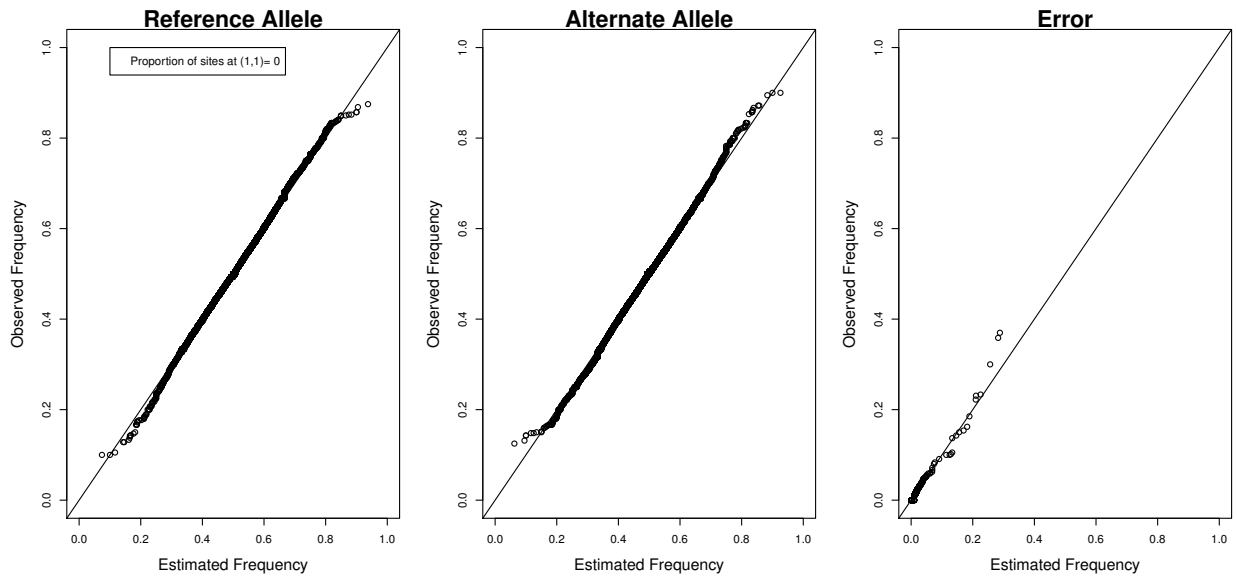
Mixture of Dirichlet Multinomial CEU11 Chr21 2 components



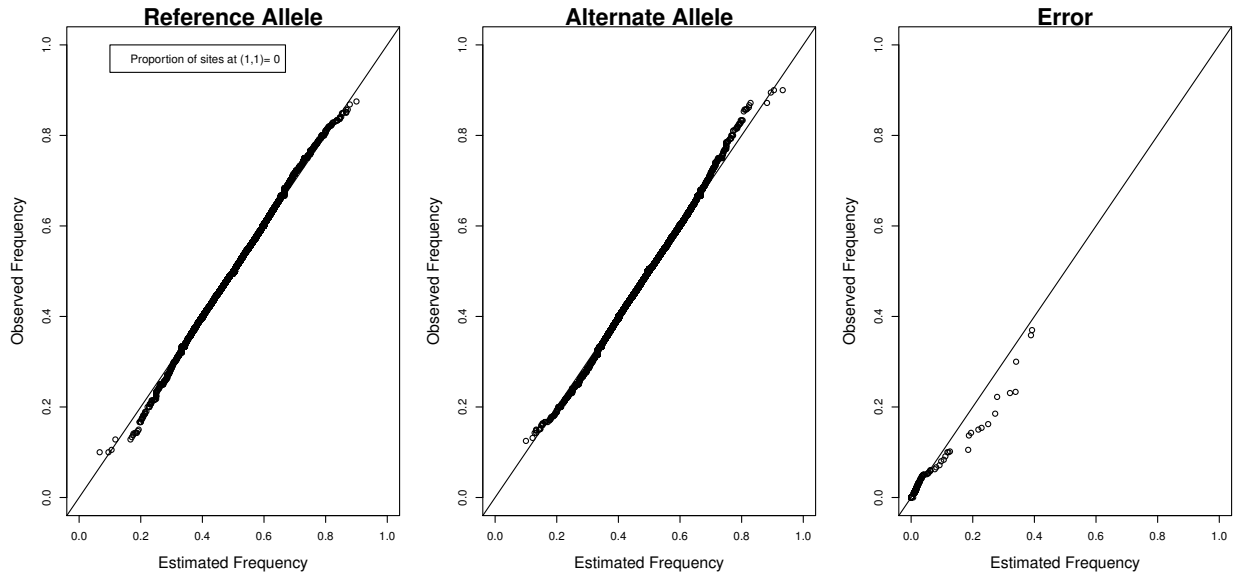
Mixture of Dirichlet Multinomial CEU11 Chr21 3 components



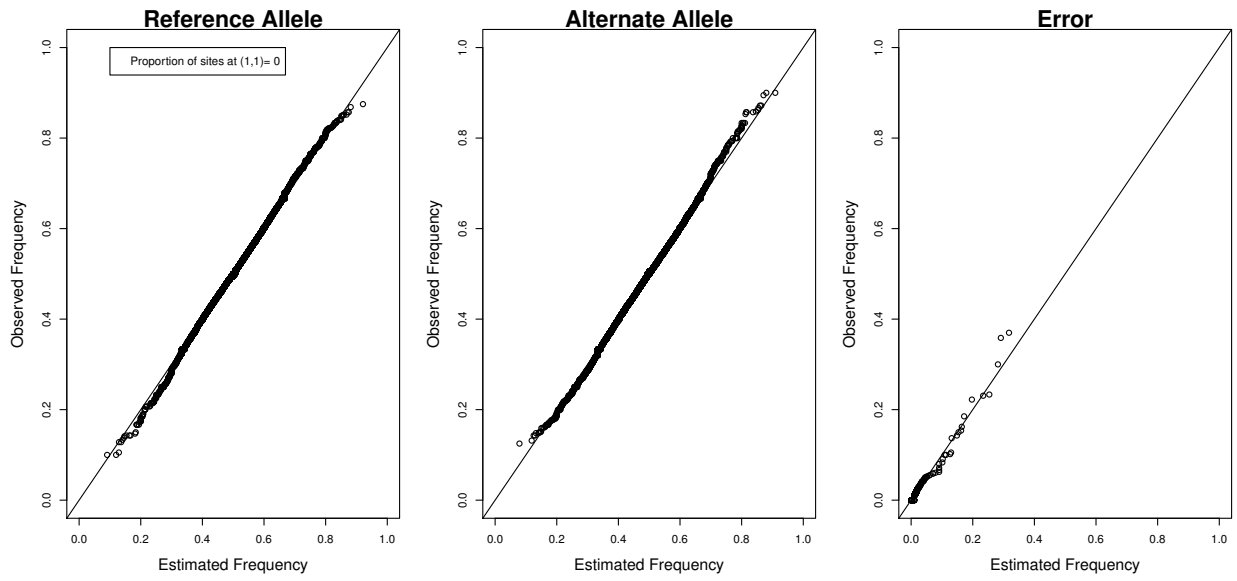
Mixture of Dirichlet Multinomial CEU11 Chr21 4 components



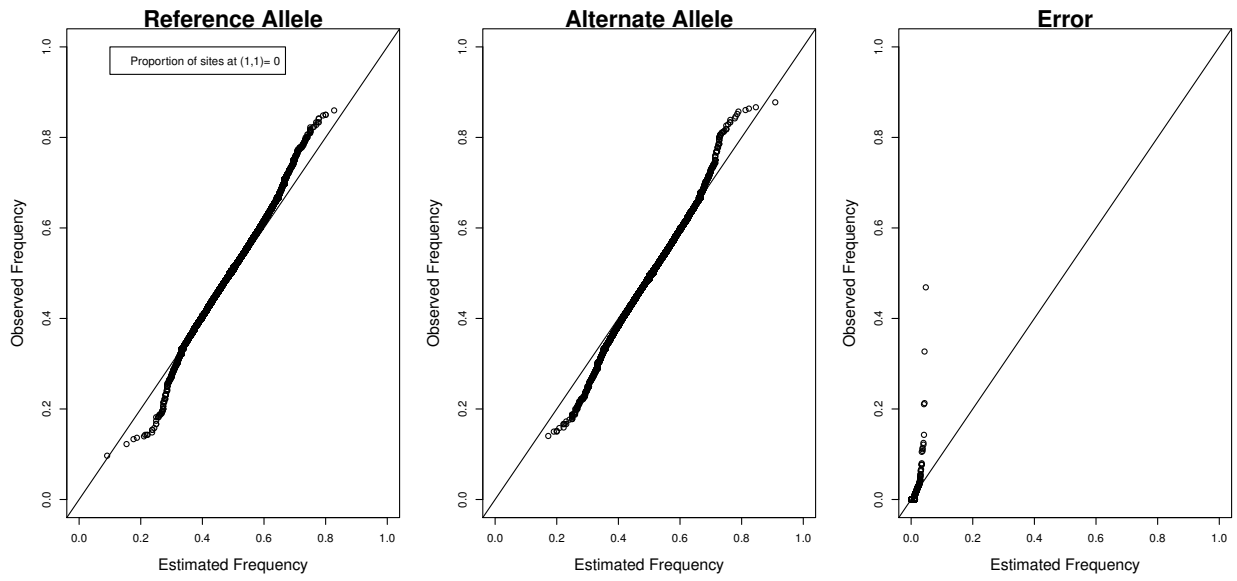
Mixture of Dirichlet Multinomial CEU11 Chr21 5 components



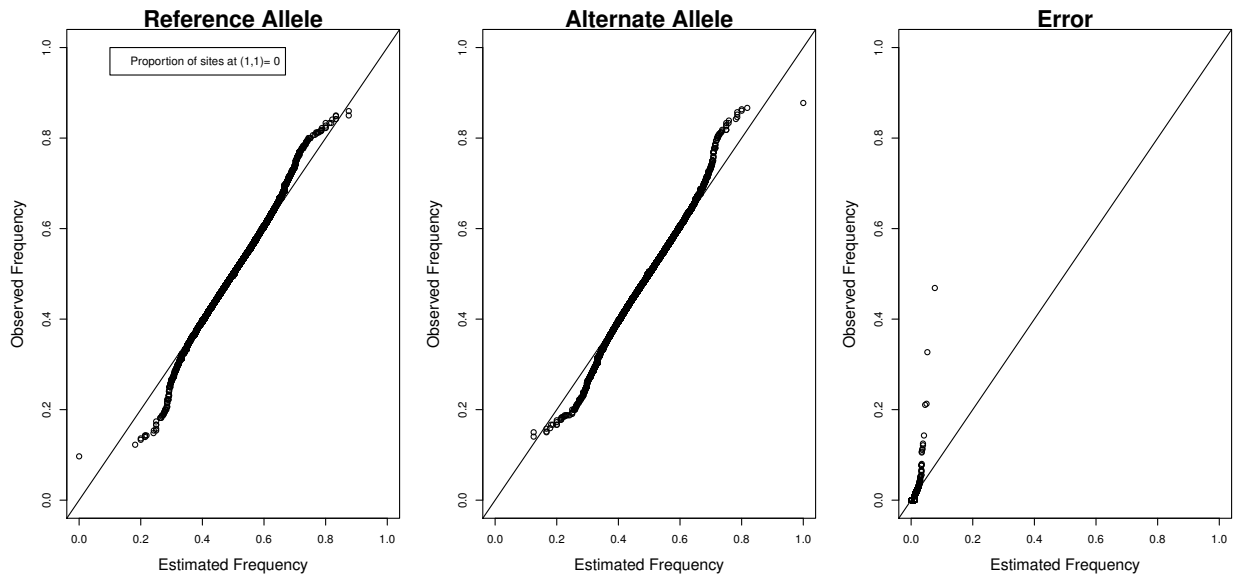
Mixture of Dirichlet Multinomial CEU11 Chr21 6 components



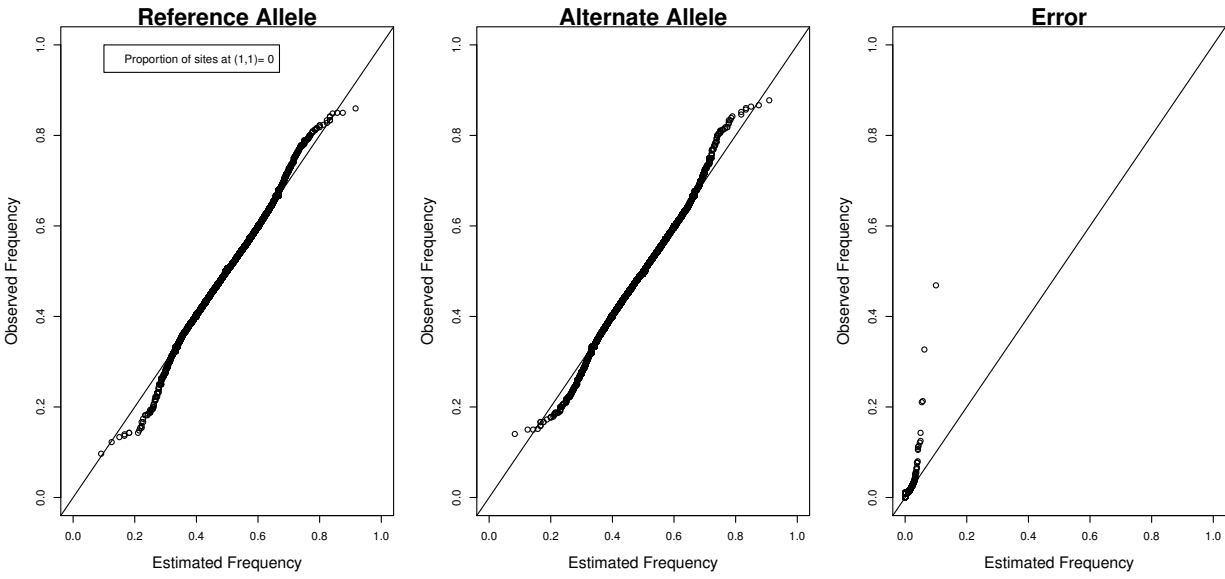
Multinomial CEU11 Chr10



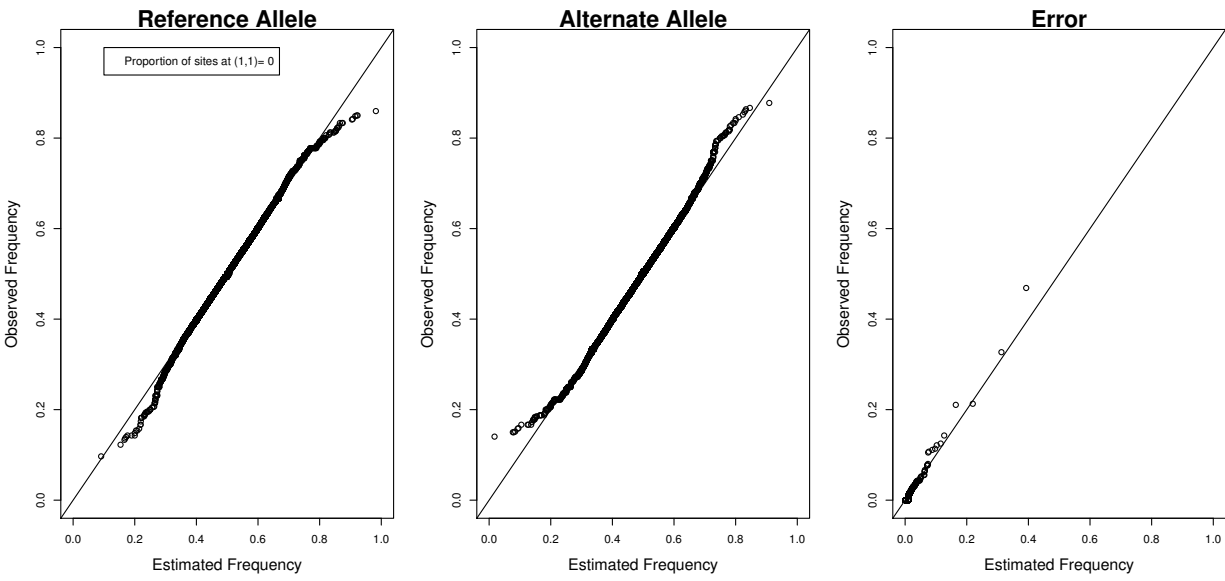
Biased Multinomial CEU11 Chr10



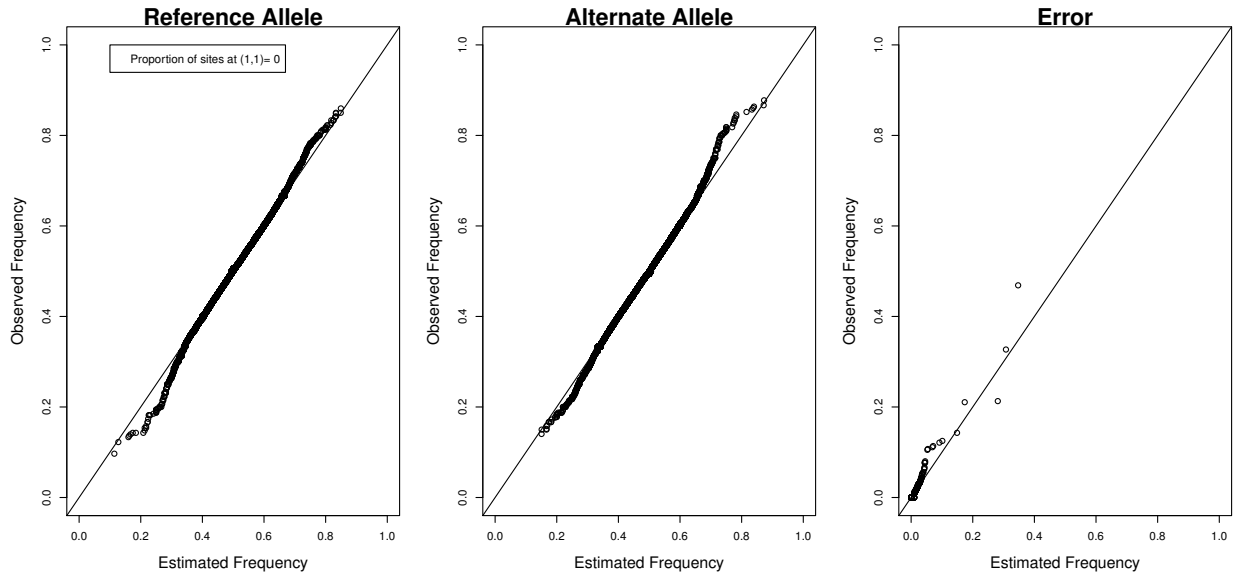
Dirichlet Multinomial CEU11 Chr10



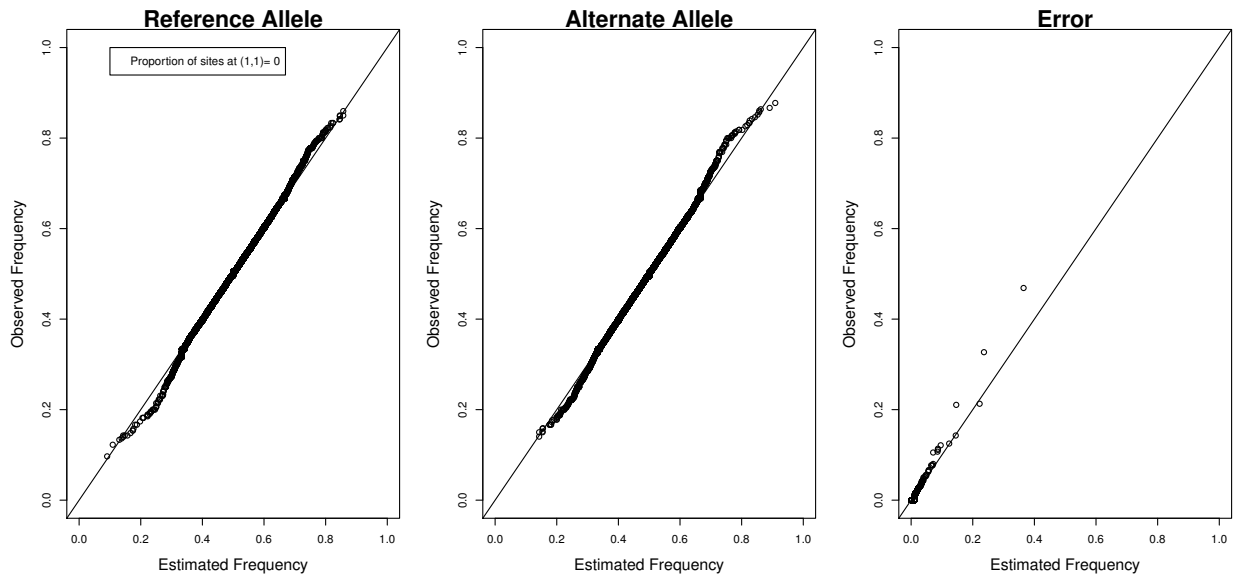
Mixture of Dirichlet Multinomial CEU11 Chr10 2 components



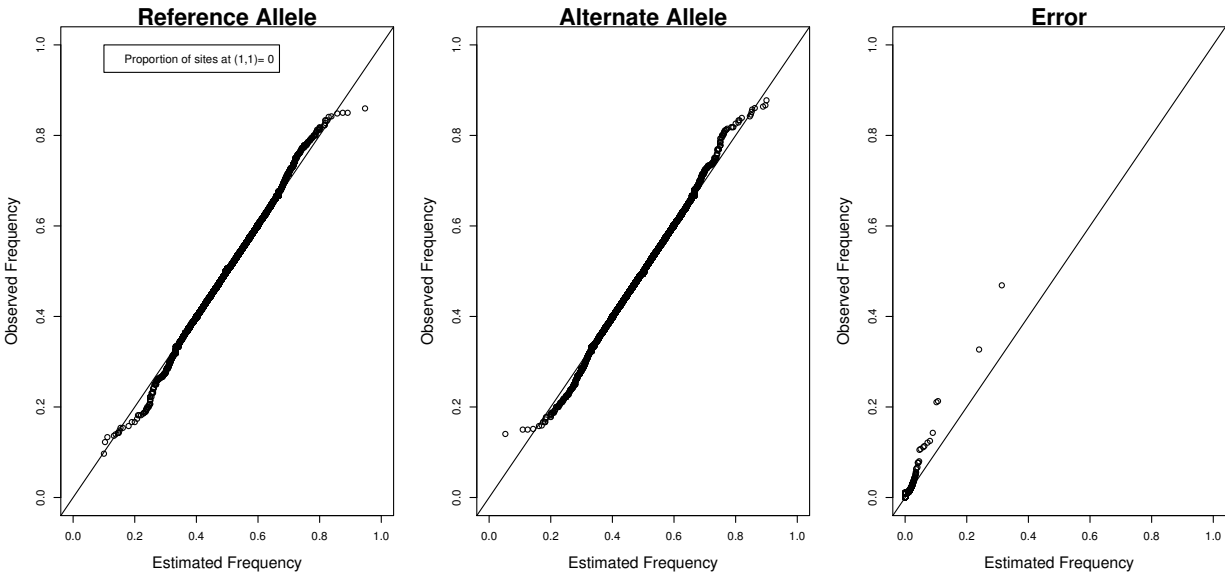
Mixture of Dirichlet Multinomial CEU11 Chr10 3 components



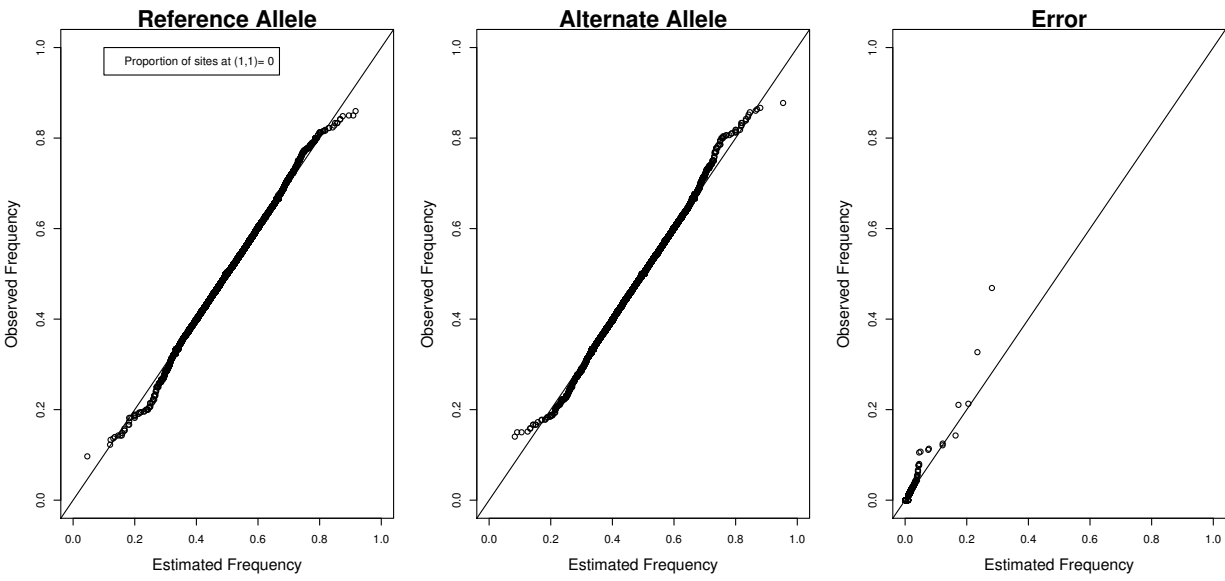
Mixture of Dirichlet Multinomial CEU11 Chr10 4 components



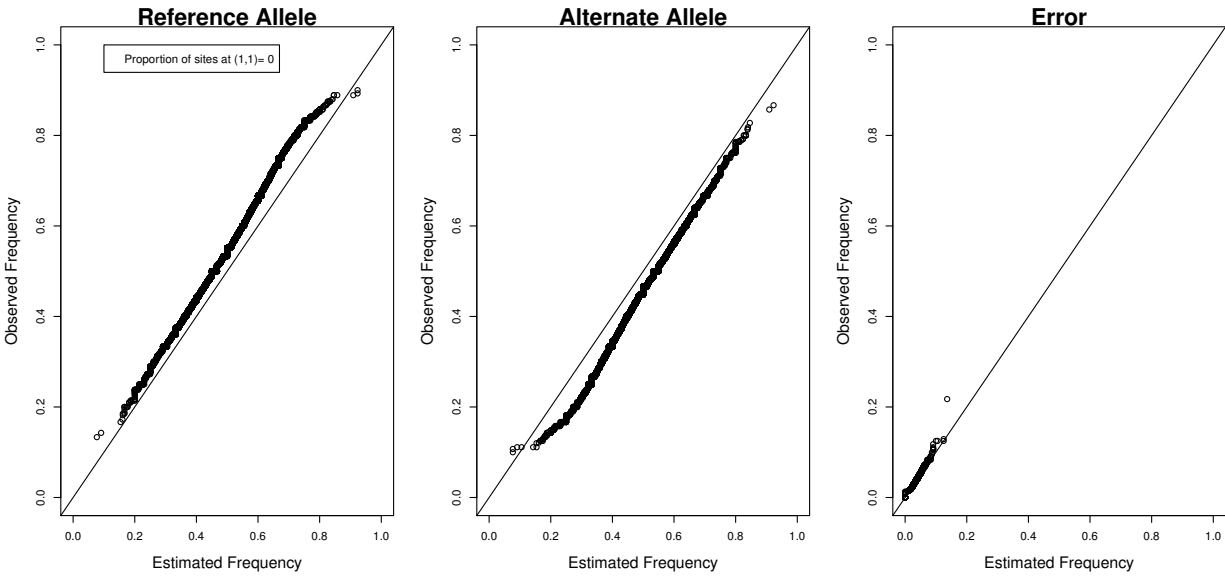
Mixture of Dirichlet Multinomial CEU11 Chr10 5 components



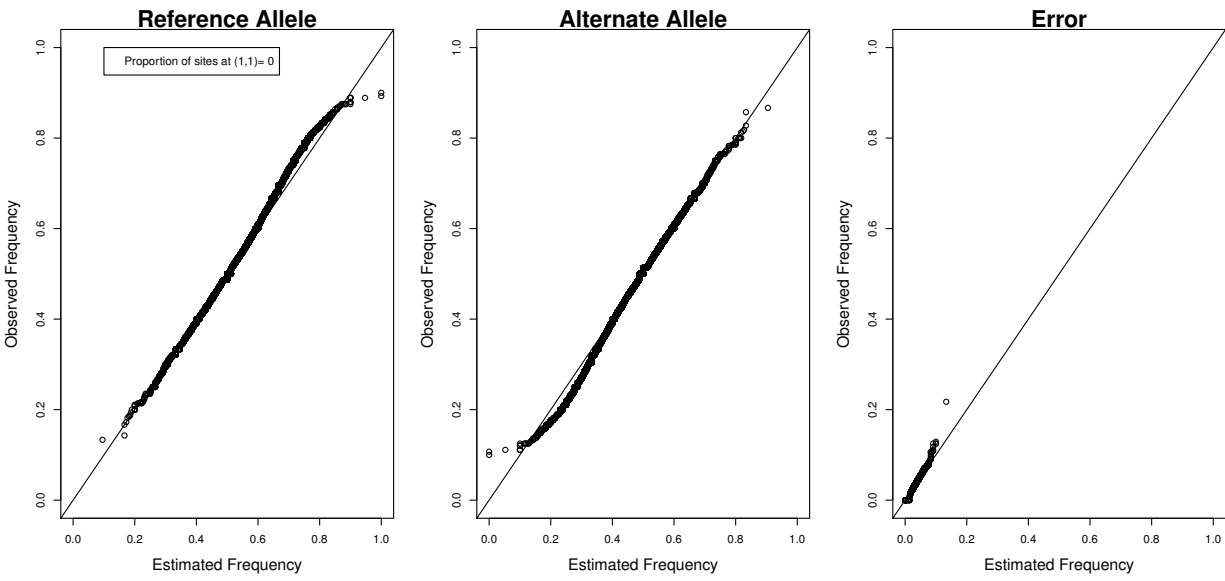
Mixture of Dirichlet Multinomial CEU11 Chr10 6 components



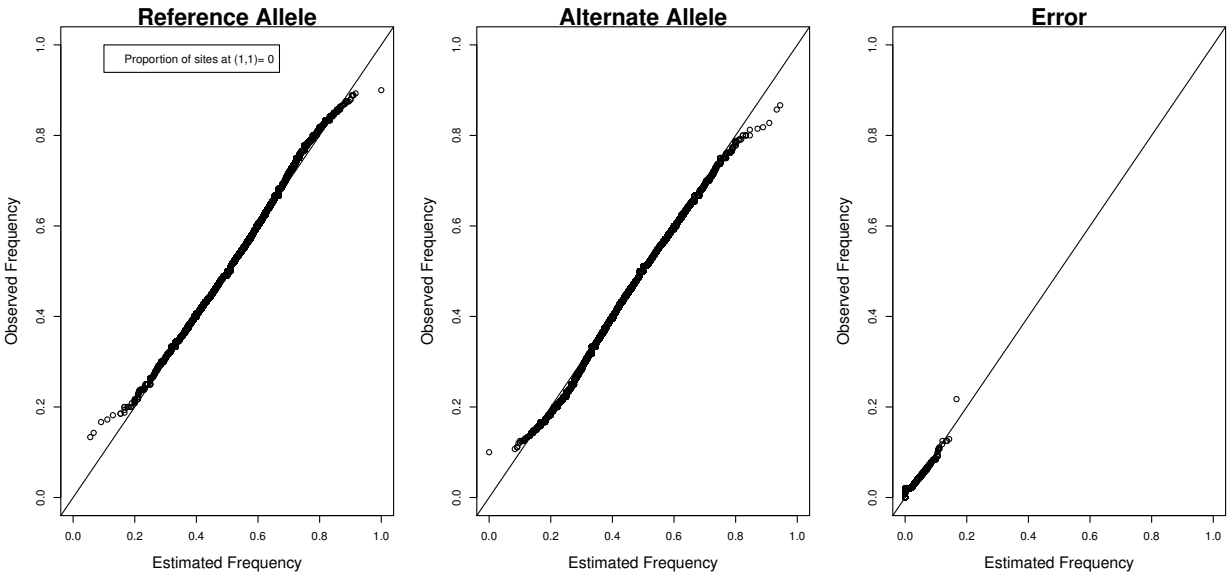
Multinomial CEU10 Chr21



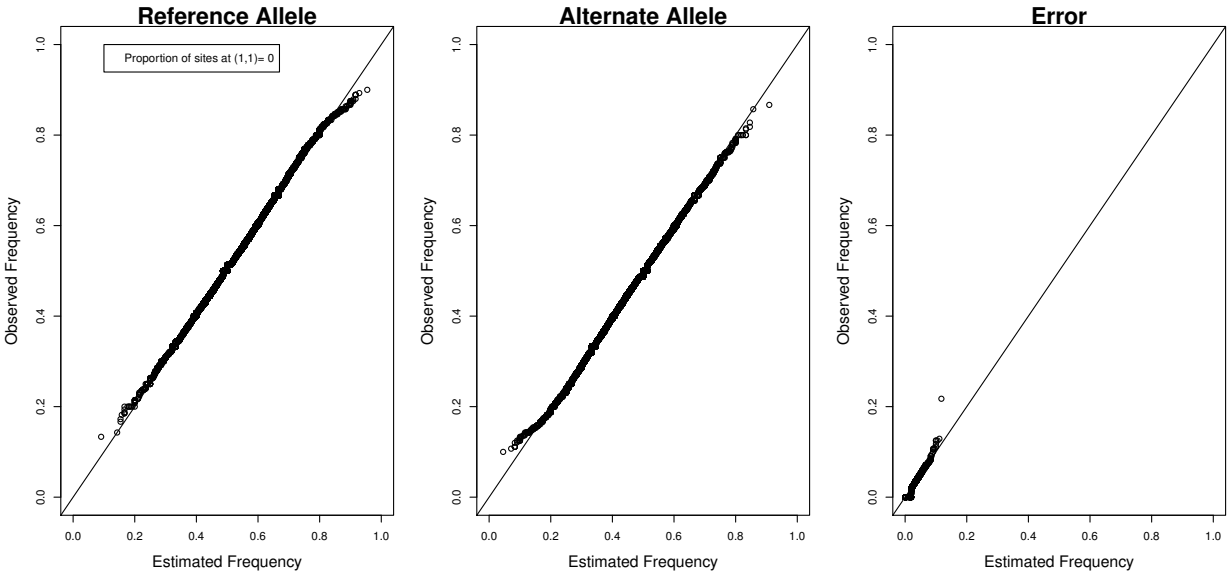
Biased Multinomial CEU10 Chr21



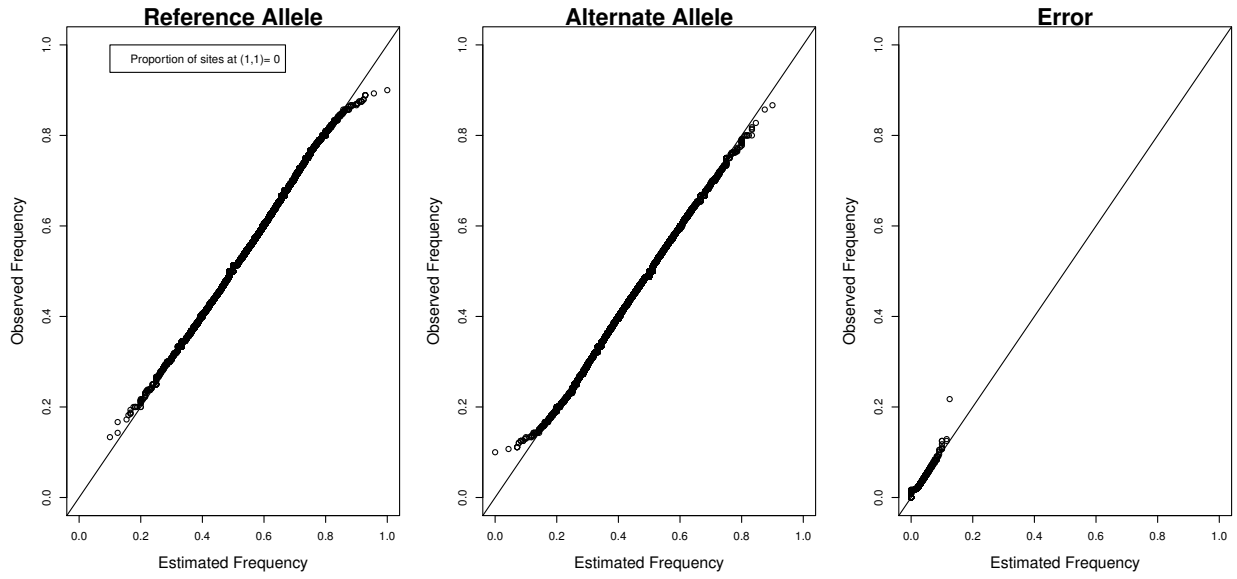
Dirichlet Multinomial CEU10 Chr21



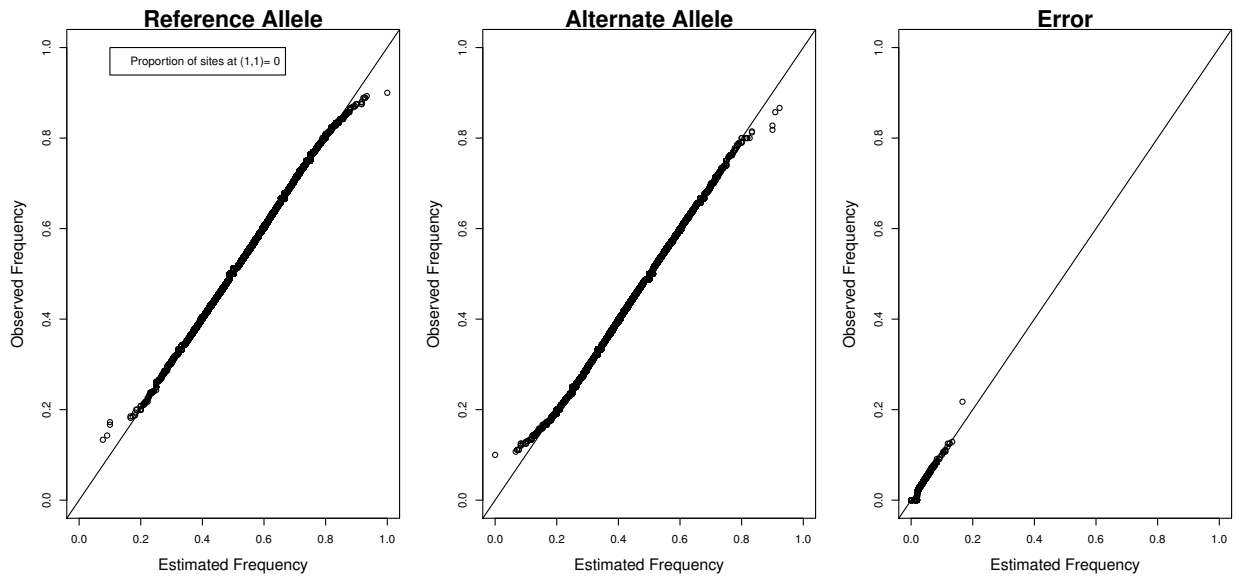
Mixture of Dirichlet Multinomial CEU10 Chr21 2 components



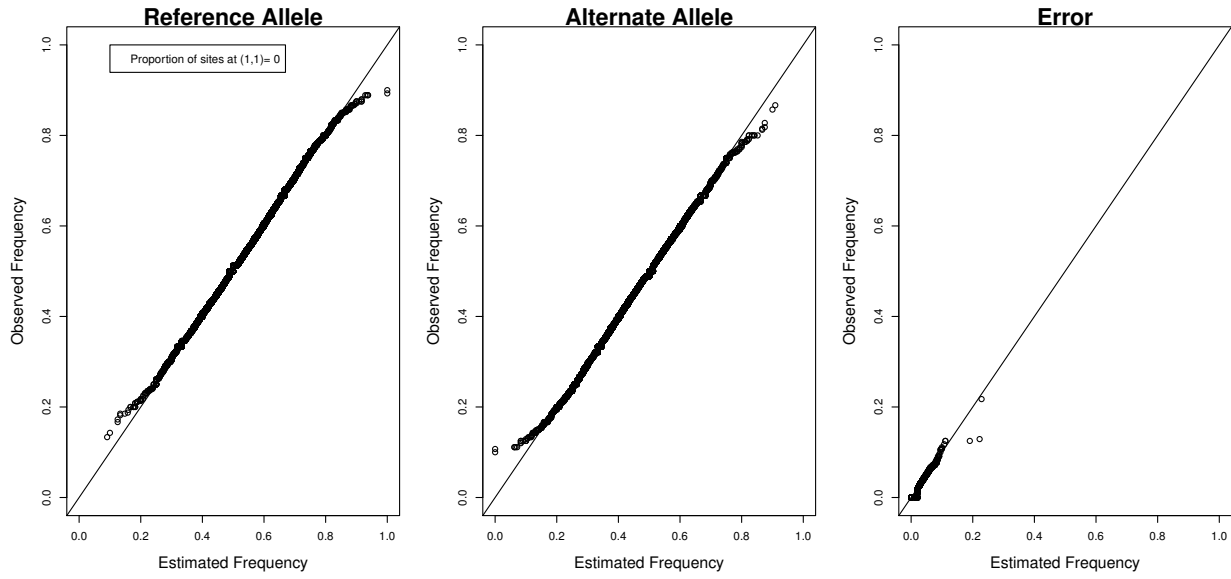
Mixture of Dirichlet Multinomial CEU10 Chr21 3 components



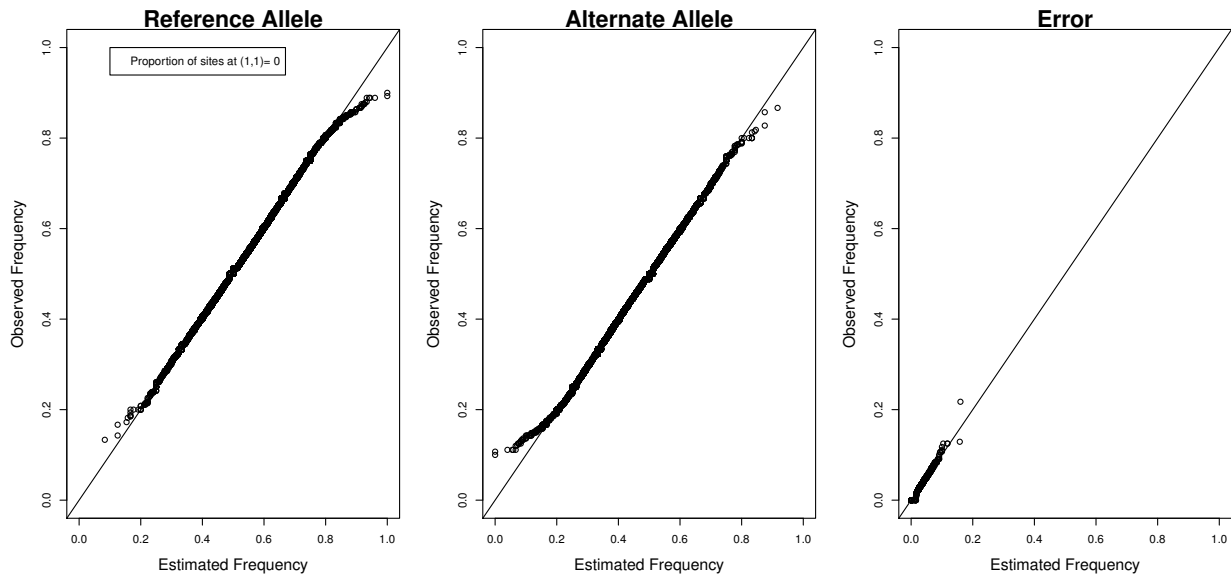
Mixture of Dirichlet Multinomial CEU10 Chr21 4 components



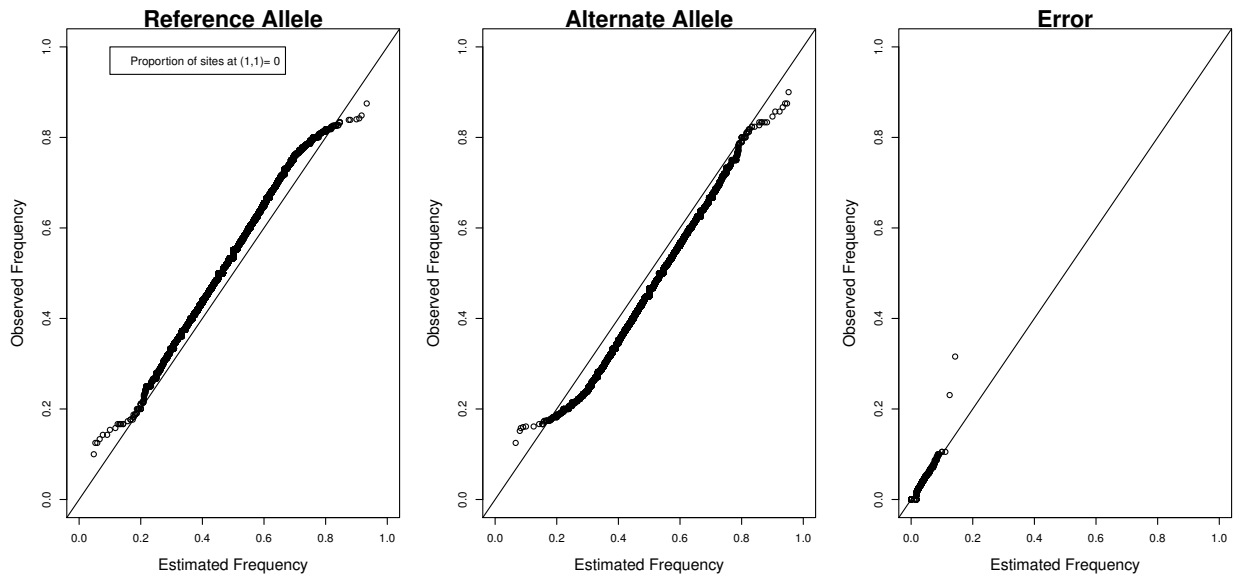
Mixture of Dirichlet Multinomial CEU10 Chr21 5 components



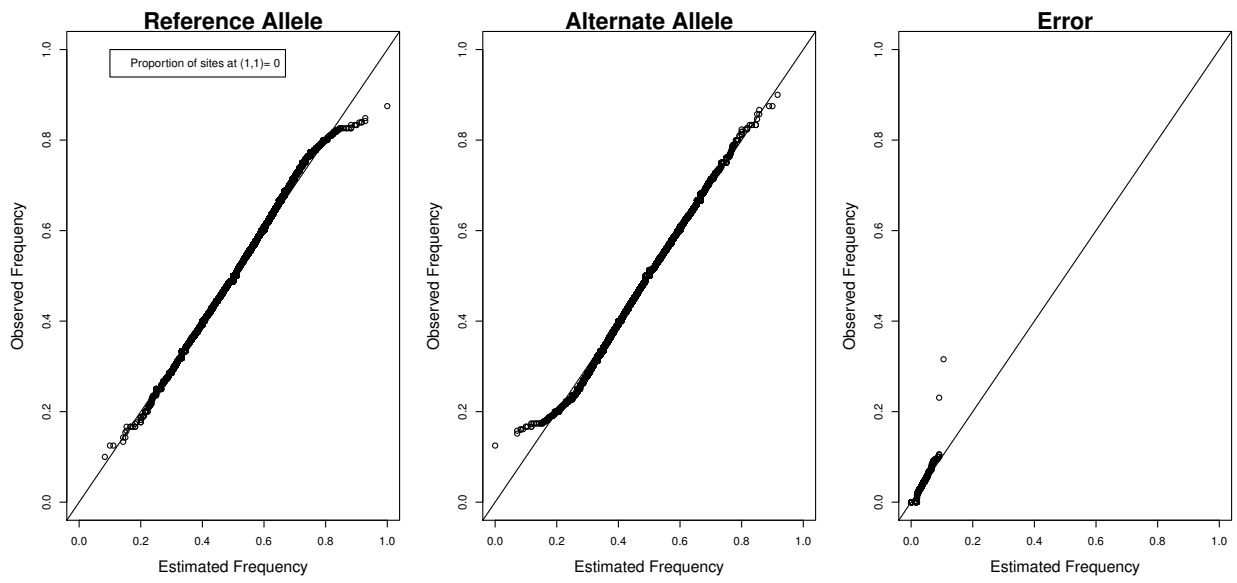
Mixture of Dirichlet Multinomial CEU10 Chr21 6 components



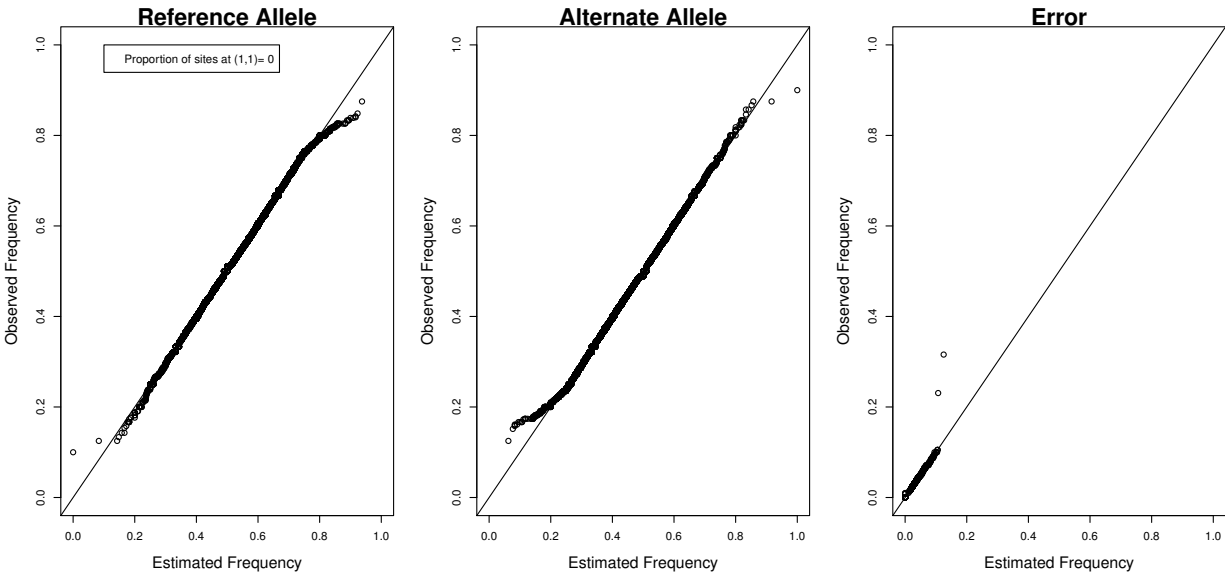
Multinomial CEU10 Chr10



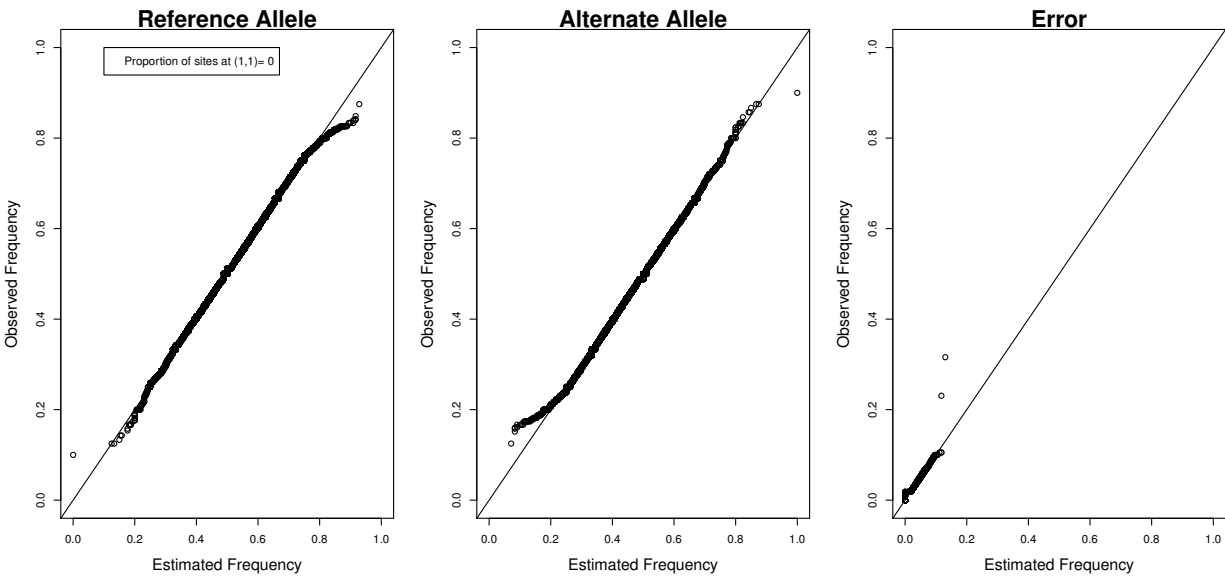
Biased Multinomial CEU10 Chr10



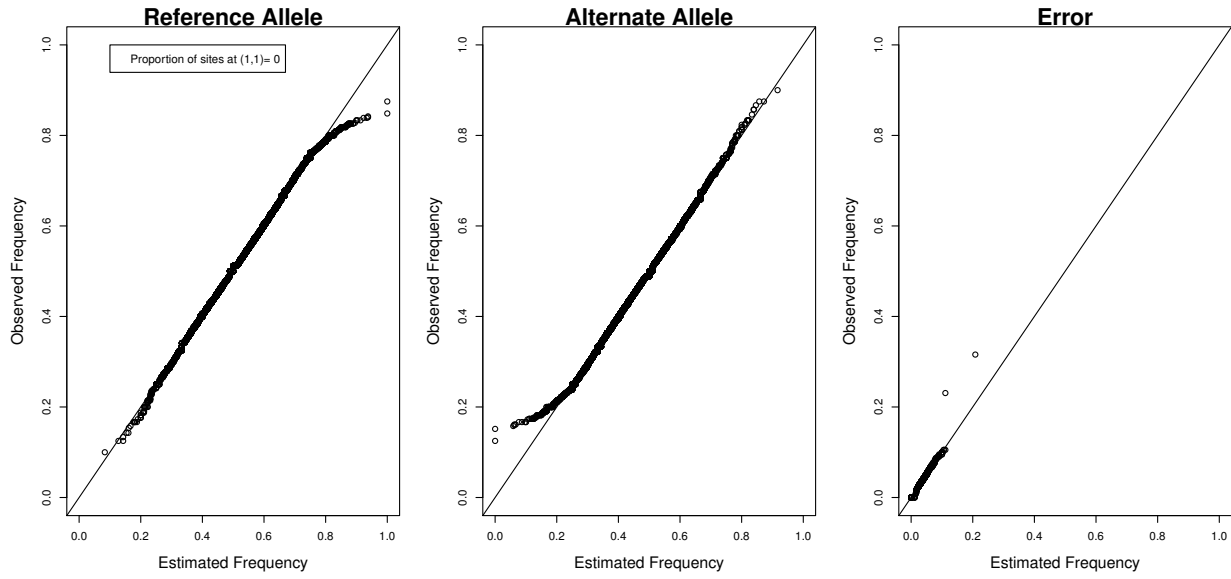
Dirichlet Multinomial CEU10 Chr10



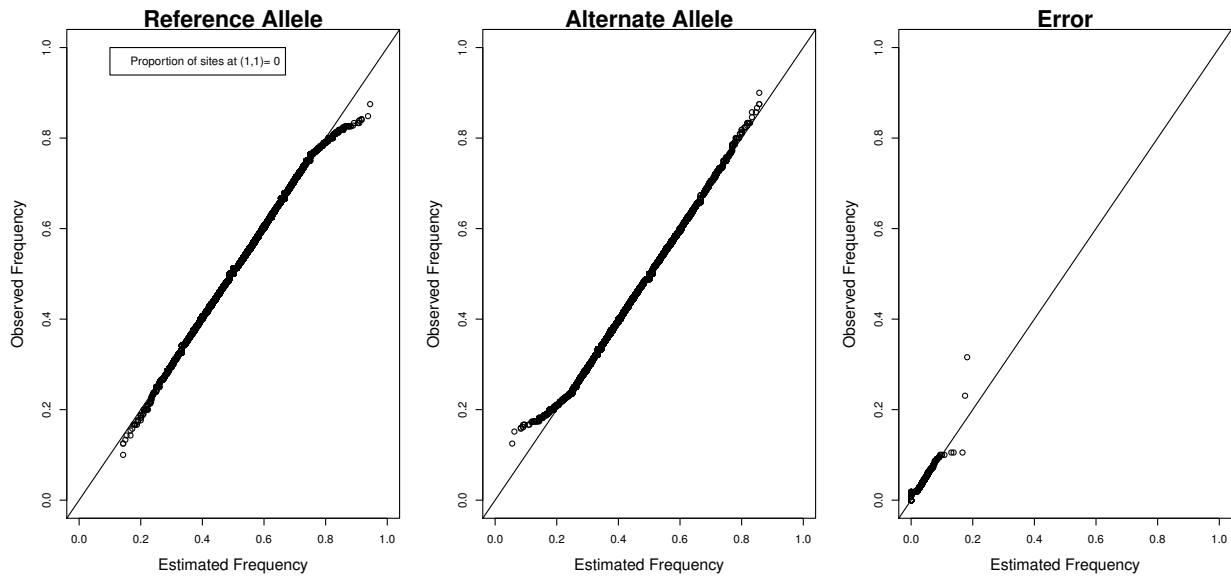
Mixture of Dirichlet Multinomial CEU10 Chr10 2 components



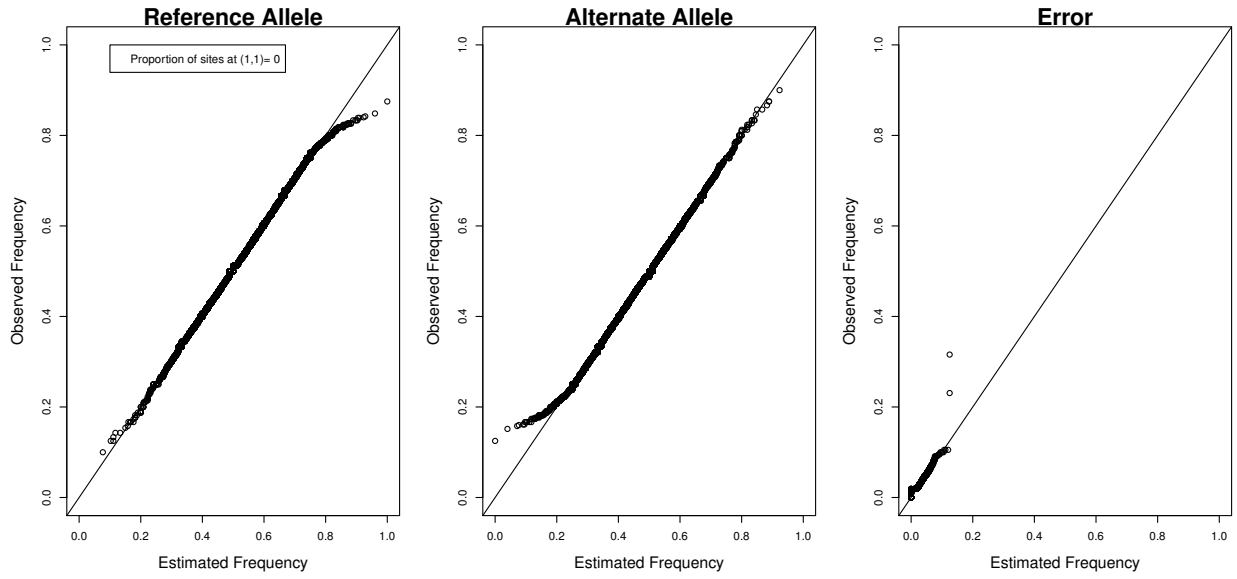
Mixture of Dirichlet Multinomial CEU10 Chr10 3 components



Mixture of Dirichlet Multinomial CEU10 Chr10 4 components



Mixture of Dirichlet Multinomial CEU10 Chr10 5 components



Mixture of Dirichlet Multinomial CEU10 Chr10 6 components

