

Supplementary table 11: Associations of mutational signatures and burdens with TM

Signature	Feature	(Univariate)	(Univariate)	Model
SBS1	TMAP	-2.54e-01	3.40e-02	Quasipoisson
SBS2	TMAP	-5.47e-01	5.89e-01	Logistic
SBS4	TMAP	1.49e-01	2.56e-01	Logistic
SBS5	TMAP	-2.87e-01	2.58e-01	Logistic
SBS12	TMAP	2.25e-01	5.85e-01	Logistic
SBS13	TMAP	-2.15e-01	2.37e-01	Logistic
SBS18	TMAP	-2.82e-01	2.85e-01	Logistic
SBS21	TMAP	9.46e-02	9.12e-01	Logistic
SBS22a	TMAP	5.74e-01	1.83e-01	Logistic - Romania & Serbia only
SBS22b	TMAP	9.53e-01	5.15e-02	Logistic - Romania & Serbia only
SBS40a	TMAP	2.74e-03	9.35e-01	Quasipoisson
SBS40b	TMAP	1.47e-01	1.20e-05	Quasipoisson
SBS40c	TMAP	-3.24e-01	1.27e-01	Logistic
SBS44	TMAP	-3.96e-02	9.62e-01	Logistic
SBS burden	TMAP	1.35e-01	5.64e-05	Quasipoisson
DBS2	TMAP	-2.32e-02	8.61e-01	Logistic
DBS4	TMAP	-9.76e-02	6.49e-01	Logistic
DBS9	TMAP	-4.18e-01	2.48e-01	Logistic
DBS20	TMAP	9.07e-01	5.10e-02	Logistic - Romania & Serbia only
DBS_C	TMAP	-5.02e-01	3.72e-02	Logistic
DBS burden	TMAP	1.05e-01	1.95e-04	Quasipoisson
ID1	TMAP	2.33e-02	8.81e-01	Quasipoisson
ID2	TMAP	-3.63e-01	5.41e-01	Logistic
ID3	TMAP	-5.14e-02	8.76e-01	Logistic
ID5	TMAP	1.37e-01	4.15e-06	Quasipoisson
ID8	TMAP	1.46e-01	2.64e-04	Quasipoisson
ID9	TMAP	-2.82e-01	7.85e-01	Logistic
ID11	TMAP	1.02e-01	8.74e-01	Logistic
ID12	TMAP	7.00e-01	3.00e-01	Logistic
ID23	TMAP	1.63e+00	7.56e-03	Logistic
ID burden	TMAP	1.30e-01	2.32e-02	Quasipoisson

As described in methods, the TMAP values used for regression against mutational signatures and I p-values are shown for TMAP metabolomic feature in logistic or quasipoisson models. Raw values Results passing multiple comparisons are highlighted in bold.

AP.

burdens are the result of a manual inspection and correction of the integration of the three features s
are shown, i.e. without adjustment for multiple comparisons. More information in Methods.

trongly correlating with the feature 240.1468@0.8929933.

Supplementary Table 1: Mutational burden in RCC

Sample	Country	SBS	DBS ID	
PD50153a	Brazil	5776	42	650
PD50140a	Brazil	5093	60	779
PD50143a	Brazil	1218	2	176
PD50146a	Brazil	4310	49	522
PD50147a	Brazil	11527	58	499
PD50148a	Brazil	4561	31	436
PD50151a	Brazil	5100	48	695
PD50154a	Brazil	2422	20	277
PD50157a	Brazil	3353	64	437
PD50160a	Brazil	2896	25	386
PD50161a	Brazil	4731	31	430
PD50162a	Brazil	6714	41	507
PD50163a	Brazil	6920	47	755
PD50164a	Brazil	4782	59	909
PD50165a	Brazil	5404	47	631
PD50166a	Brazil	4378	54	648
PD50167a	Brazil	6972	67	988
PD50168a	Brazil	8125	56	849
PD51393a	Brazil	1878	15	259
PD50170a	Brazil	4380	38	612
PD50171a	Brazil	4380	56	788
PD50172a	Brazil	2434	36	337
PD50139a	Brazil	5357	86	944
PD50173a	Brazil	7015	87	1315
PD50138a	Brazil	5793	49	748
PD51274a	Brazil	3240	33	471
PD51390a	Brazil	6413	71	1208
PD51389a	Brazil	8937	140	1429
PD51724a	Brazil	2333	20	254
PD51720a	Brazil	2554	27	401
PD51719a	Brazil	2162	21	278
PD51718a	Brazil	6081	80	1180
PD51387a	Brazil	2742	11	333
PD51715a	Brazil	5211	51	29
PD50428a	Brazil	3226	42	374
PD51385a	Brazil	9358	65	709
PD51293a	Brazil	2868	24	280
PD51290a	Brazil	2213	25	366
PD51289a	Brazil	5193	56	745
PD51286a	Brazil	6349	118	1211
PD51285a	Brazil	4676	56	650
PD51282a	Brazil	5926	49	772
PD51281a	Brazil	2052	35	332
PD51280a	Brazil	3985	61	671
PD51277a	Brazil	4032	38	459

PD51276a	Brazil	1666	9	224
PD51714a	Brazil	6780	135	1231
PD50137a	Brazil	1817	22	319
PD50175a	Brazil	6174	65	1368
PD50169a	Brazil	3417	30	552
PD50181a	Brazil	6132	81	724
PD51659a	Brazil	5320	61	819
PD51658a	Brazil	1553	25	311
PD50177a	Brazil	2883	23	490
PD51656a	Brazil	6677	71	1294
PD51652a	Brazil	3950	35	282
PD51651a	Brazil	4118	46	576
PD50618a	Brazil	4283	39	383
PD50616a	Brazil	4654	36	549
PD50614a	Brazil	2918	26	225
PD50613a	Brazil	3676	30	425
PD51660a	Brazil	4144	83	567
PD50612a	Brazil	7145	82	1046
PD51650a	Brazil	4540	63	632
PD51649a	Brazil	6874	74	909
PD51648a	Brazil	3335	19	287
PD51646a	Brazil	3466	31	433
PD51645a	Brazil	4319	37	426
PD51644a	Brazil	5578	87	857
PD51643a	Brazil	5339	90	853
PD51642a	Brazil	4479	37	590
PD51640a	Brazil	6549	87	1375
PD51639a	Brazil	3292	28	494
PD50610a	Brazil	2759	15	194
PD51661a	Brazil	3319	26	407
PD51657a	Brazil	3576	30	556
PD51264a	Brazil	4899	45	675
PD50183a	Brazil	5728	77	1346
PD50184a	Brazil	3384	36	546
PD50187a	Brazil	4564	48	585
PD50188a	Brazil	6469	96	1117
PD51273a	Brazil	6312	59	920
PD51270a	Brazil	7320	102	1290
PD51268a	Brazil	4064	39	520
PD51267a	Brazil	6582	92	1127
PD51266a	Brazil	3041	16	329
PD51265a	Brazil	6090	62	1062
PD51263a	Brazil	1860	21	205
PD51391a	Brazil	5222	51	774
PD51258a	Brazil	2892	30	530
PD51261a	Brazil	3719	59	770
PD51254a	Brazil	5149	64	788
PD51255a	Brazil	7448	64	865

PD51259a	Brazil	3093	39	462
PD51256a	Brazil	4198	22	390
PD51262a	Brazil	4273	55	772
PD51701a	Canada	7042	84	1361
PD51688a	Canada	5186	56	830
PD51689a	Canada	4330	50	795
PD51698a	Canada	4085	42	461
PD51695a	Canada	6080	46	642
PD51699a	Canada	3628	52	632
PD51700a	Canada	4994	75	873
PD51696a	Canada	4516	70	888
PD51691a	Canada	7060	80	972
PD51693a	Canada	6063	71	903
PD51703a	Canada	2915	22	555
PD51694a	Canada	4989	46	586
PD51697a	Canada	5504	48	926
PD51702a	Canada	6776	65	1258
PD51676a	Canada	6145	70	875
PD51685a	Canada	4365	46	700
PD51662a	Canada	4651	33	532
PD51663a	Canada	5052	56	846
PD51664a	Canada	3535	32	404
PD51665a	Canada	2360	33	326
PD51704a	Canada	5054	49	726
PD51666a	Canada	3997	39	603
PD51667a	Canada	3595	41	467
PD51668a	Canada	7919	103	762
PD51669a	Canada	2371	32	341
PD51670a	Canada	3112	26	385
PD51687a	Canada	5533	36	394
PD51671a	Canada	4082	57	727
PD51673a	Canada	3762	57	343
PD51675a	Canada	3738	40	674
PD51677a	Canada	5233	48	602
PD51678a	Canada	3134	30	466
PD51679a	Canada	4838	44	536
PD51680a	Canada	3764	48	529
PD51681a	Canada	3120	22	390
PD51682a	Canada	8038	117	1381
PD51683a	Canada	5312	73	884
PD51684a	Canada	4590	54	496
PD51672a	Canada	3559	36	633
PD51705a	Canada	5776	82	690
PD51706a	Canada	2847	20	455
PD51707a	Canada	3626	26	428
PD51733a	Canada	4542	16	383
PD51734a	Canada	5830	80	792
PD51735a	Canada	3122	42	454

PD51736a	Canada	5772	44	609
PD51725a	Canada	4151	36	451
PD51737a	Canada	8420	105	1215
PD51295a	Canada	10111	149	1459
PD51297a	Canada	6021	47	775
PD51732a	Canada	7955	80	963
PD51296a	Canada	3586	29	562
PD51294a	Canada	3352	28	416
PD51292a	Canada	5835	77	817
PD51291a	Canada	4124	39	638
PD51288a	Canada	5067	47	674
PD51287a	Canada	7276	71	1098
PD51284a	Canada	4603	67	630
PD51279a	Canada	4797	48	682
PD51814a	Canada	6177	50	697
PD51726a	Canada	3952	22	363
PD51275a	Canada	8865	92	1191
PD51727a	Canada	3922	28	589
PD51729a	Canada	14333	110	968
PD51708a	Canada	2755	27	307
PD51709a	Canada	3824	30	559
PD51710a	Canada	6045	82	881
PD51711a	Canada	5278	41	715
PD51712a	Canada	3841	38	410
PD51713a	Canada	4813	69	574
PD51728a	Canada	4366	68	691
PD51278a	Canada	4277	39	639
PD51730a	Canada	4562	41	620
PD48850a	Czech Republic	6705	67	1165
PD51517a	Czech Republic	4934	-	712
PD48852a	Czech Republic	6859	69	744
PD48855a	Czech Republic	12833	47	618
PD51518a	Czech Republic	5670	-	1182
PD51519a	Czech Republic	6114	-	1232
PD51521a	Czech Republic	4415	-	453
PD51522a	Czech Republic	6705	-	736
PD51523a	Czech Republic	3185	-	607
PD51516a	Czech Republic	4801	-	633
PD48851a	Czech Republic	7433	88	846
PD51215a	Czech Republic	7306	85	1408
PD51218a	Czech Republic	3813	36	675
PD51531a	Czech Republic	4986	-	871
PD51530a	Czech Republic	2983	-	573
PD51529a	Czech Republic	7797	-	1517
PD51528a	Czech Republic	6146	-	817
PD50429a	Czech Republic	6310	51	846
PD50430a	Czech Republic	4134	43	682
PD50431a	Czech Republic	4283	38	626

PD50351a	Czech Republic	5495	53	428
PD50350a	Czech Republic	4515	36	446
PD51527a	Czech Republic	6404	-	1266
PD51526a	Czech Republic	3377	-	375
PD51525a	Czech Republic	8814	-	1274
PD51524a	Czech Republic	5554	-	924
PD50432a	Czech Republic	2542	20	279
PD50449a	Czech Republic	4694	59	685
PD50345a	Czech Republic	5185	35	445
PD50344a	Czech Republic	6845	93	904
PD50450a	Czech Republic	3129	21	348
PD51205a	Czech Republic	4380	49	703
PD51206a	Czech Republic	5009	46	922
PD51207a	Czech Republic	7484	73	1202
PD51210a	Czech Republic	6811	62	1101
PD51211a	Czech Republic	5913	58	974
PD51213a	Czech Republic	9008	125	1310
PD51214a	Czech Republic	5191	39	610
PD48858a	Czech Republic	6430	72	1069
PD51217a	Czech Republic	6380	104	1361
PD51219a	Czech Republic	8801	147	1175
PD48859a	Czech Republic	5031	70	843
PD48869a	Czech Republic	10099	103	1457
PD48864a	Czech Republic	3811	33	577
PD51401a	Czech Republic	9566	91	1123
PD51400a	Czech Republic	4316	40	673
PD51399a	Czech Republic	5604	42	619
PD51398a	Czech Republic	7008	80	831
PD51396a	Czech Republic	6322	86	1271
PD51298a	Czech Republic	7076	103	1237
PD51300a	Czech Republic	3994	46	546
PD51301a	Czech Republic	4851	41	534
PD51302a	Czech Republic	4263	44	538
PD51303a	Czech Republic	5264	42	709
PD51304a	Czech Republic	5885	67	989
PD51305a	Czech Republic	5802	59	929
PD51307a	Czech Republic	5970	65	656
PD50085a	Czech Republic	5317	64	937
PD50084a	Czech Republic	3538	26	366
PD51324a	Czech Republic	6563	97	63
PD51323a	Czech Republic	6299	87	946
PD51322a	Czech Republic	7088	69	982
PD51321a	Czech Republic	6916	74	1413
PD51320a	Czech Republic	7263	118	1308
PD51319a	Czech Republic	1898	19	195
PD51318a	Czech Republic	5182	63	1005
PD51316a	Czech Republic	8926	120	1228
PD51314a	Czech Republic	6814	67	772

PD51312a	Czech Republic	4458	45	622
PD51309a	Czech Republic	9089	100	1184
PD50083a	Czech Republic	6086	61	804
PD51402a	Czech Republic	3823	43	324
PD48861a	Czech Republic	8159	114	1183
PD51406a	Czech Republic	5017	33	456
PD51409a	Czech Republic	6832	73	1002
PD48865a	Czech Republic	3434	25	405
PD48866a	Czech Republic	7116	68	757
PD48867a	Czech Republic	3891	49	743
PD48868a	Czech Republic	3296	24	310
PD51532a	Czech Republic	8965	-	1810
PD48871a	Czech Republic	3154	30	602
PD48872a	Czech Republic	3579	25	349
PD48873a	Czech Republic	3135	23	308
PD48875a	Czech Republic	9691	121	1827
PD48877a	Czech Republic	6244	67	1137
PD51515a	Czech Republic	3200	-	359
PD51514a	Czech Republic	5714	-	1064
PD51513a	Czech Republic	5281	-	954
PD51512a	Czech Republic	4638	-	385
PD51511a	Czech Republic	5625	-	683
PD51510a	Czech Republic	5646	-	1094
PD51509a	Czech Republic	5180	-	905
PD51508a	Czech Republic	8822	-	1090
PD51424a	Czech Republic	5262	62	1062
PD51422a	Czech Republic	6191	45	517
PD51418a	Czech Republic	6883	93	1845
PD51417a	Czech Republic	4199	42	448
PD51416a	Czech Republic	6206	49	1053
PD51413a	Czech Republic	5670	60	304
PD51412a	Czech Republic	4222	44	413
PD51411a	Czech Republic	1702	15	147
PD51410a	Czech Republic	3794	51	562
PD51407a	Czech Republic	5558	39	698
PD51533a	Czech Republic	3943	-	519
PD37458a	Czech Republic	6577	81	1192
PD46963a	Czech Republic	9981	166	1891
PD51773a	Czech Republic	5104	52	651
PD51774a	Czech Republic	3135	32	507
PD51775a	Czech Republic	6518	74	1345
PD51777a	Czech Republic	5550	57	701
PD46716a	Czech Republic	6996	124	1596
PD46714a	Czech Republic	6857	112	1342
PD46713a	Czech Republic	8391	108	1472
PD46712a	Czech Republic	4861	81	1008
PD46711a	Czech Republic	4767	74	928
PD46710a	Czech Republic	5796	74	1067

PD46709a	Czech Republic	6580	38	520
PD46708a	Czech Republic	8261	106	1390
PD46707a	Czech Republic	4740	74	923
PD46706a	Czech Republic	7475	112	1208
PD46705a	Czech Republic	13124	104	1095
PD51772a	Czech Republic	7147	84	1071
PD51771a	Czech Republic	9298	98	1373
PD51770a	Czech Republic	6774	48	597
PD51769a	Czech Republic	2718	37	460
PD46770a	Czech Republic	5002	57	811
PD46769a	Czech Republic	4187	44	643
PD46768a	Czech Republic	3398	42	407
PD46767a	Czech Republic	3327	31	441
PD46766a	Czech Republic	3037	24	392
PD46764a	Czech Republic	5640	53	565
PD46763a	Czech Republic	9103	152	1949
PD46704a	Czech Republic	4363	53	640
PD51717a	Czech Republic	4378	39	655
PD46745a	Czech Republic	5319	54	870
PD46744a	Czech Republic	4453	42	744
PD46743a	Czech Republic	8257	112	2604
PD51754a	Czech Republic	4932	53	477
PD51766a	Czech Republic	7383	90	1435
PD51767a	Czech Republic	6280	76	1042
PD46964a	Czech Republic	4977	52	664
PD46748a	Czech Republic	7537	75	1413
PD46771a	Czech Republic	7985	95	1184
PD46703a	Czech Republic	8171	101	1482
PD46701a	Czech Republic	5559	62	1055
PD37481a	Czech Republic	9183	113	1226
PD37480a	Czech Republic	5695	70	874
PD37479a	Czech Republic	7936	88	1037
PD37478a	Czech Republic	4237	36	344
PD37476a	Czech Republic	3392	32	269
PD37475a	Czech Republic	5892	68	1198
PD37474a	Czech Republic	3985	40	613
PD37473a	Czech Republic	4916	47	566
PD37472a	Czech Republic	7573	94	1154
PD37470a	Czech Republic	9839	124	1832
PD37468a	Czech Republic	12865	174	2098
PD37467a	Czech Republic	5301	48	822
PD37462a	Czech Republic	4500	61	470
PD37461a	Czech Republic	4282	35	437
PD37459a	Czech Republic	4473	47	666
PD37482a	Czech Republic	4345	32	483
PD37483a	Czech Republic	6236	55	775
PD37485a	Czech Republic	3764	36	209
PD37486a	Czech Republic	3946	33	424

PD46700a	Czech Republic	3383	22	479
PD46699a	Czech Republic	8008	102	1404
PD51778a	Czech Republic	3692	42	525
PD51788a	Czech Republic	4570	36	725
PD51791a	Czech Republic	4988	48	905
PD51793a	Czech Republic	7094	80	1204
PD51794a	Czech Republic	4910	64	764
PD46702a	Czech Republic	4885	60	877
PD51801a	Czech Republic	4841	53	873
PD51805a	Czech Republic	3167	18	314
PD51812a	Czech Republic	9490	138	1591
PD51815a	Czech Republic	5524	84	965
PD51816a	Czech Republic	6185	82	1390
PD51817a	Czech Republic	7211	104	824
PD51818a	Czech Republic	4688	70	912
PD51823a	Czech Republic	6319	48	855
PD51803a	Czech Republic	8570	74	1174
PD46798a	Czech Republic	5661	63	1211
PD51768a	Czech Republic	3613	24	310
PD46800a	Czech Republic	2779	30	376
PD46882a	Czech Republic	3793	36	437
PD46879a	Czech Republic	5618	48	839
PD46878a	Czech Republic	3761	38	571
PD46877a	Czech Republic	2105	24	312
PD46876a	Czech Republic	2991	40	545
PD46875a	Czech Republic	5021	49	670
PD46874a	Czech Republic	8201	112	1579
PD46873a	Czech Republic	803	8	92
PD46872a	Czech Republic	6340	56	917
PD46871a	Czech Republic	5315	58	921
PD46870a	Czech Republic	3796	46	575
PD46869a	Czech Republic	6710	43	847
PD46868a	Czech Republic	6784	101	1061
PD46866a	Czech Republic	6710	80	817
PD46865a	Czech Republic	7803	90	1218
PD46799a	Czech Republic	1995	20	410
PD46885a	Czech Republic	7903	85	1300
PD46886a	Czech Republic	4840	62	976
PD46887a	Czech Republic	7609	120	1264
PD46962a	Czech Republic	6650	94	1312
PD46961a	Czech Republic	4762	53	574
PD46960a	Czech Republic	7569	118	1243
PD51534a	Czech Republic	4552	-	647
PD51535a	Czech Republic	1706	-	261
PD46951a	Czech Republic	4872	57	937
PD46950a	Czech Republic	10958	173	2005
PD46864a	Czech Republic	6176	52	710
PD46949a	Czech Republic	7503	58	1046

PD46903a	Czech Republic	6599	69	803
PD46902a	Czech Republic	4411	49	706
PD46901a	Czech Republic	5418	73	1020
PD46892a	Czech Republic	7189	91	1515
PD46891a	Czech Republic	4575	40	751
PD46889a	Czech Republic	5717	33	750
PD46888a	Czech Republic	3331	42	499
PD46948a	Czech Republic	4753	43	640
PD46860a	Czech Republic	3939	36	340
PD46884a	Czech Republic	5608	42	686
PD46858a	Czech Republic	3119	28	472
PD46839a	Czech Republic	1583	24	251
PD46838a	Czech Republic	3101	33	388
PD46809a	Czech Republic	3188	33	422
PD46810a	Czech Republic	1777	12	286
PD46836a	Czech Republic	4464	62	504
PD46811a	Czech Republic	7108	79	726
PD46812a	Czech Republic	6714	108	1473
PD46815a	Czech Republic	5224	63	872
PD46826a	Czech Republic	4722	67	636
PD46827a	Czech Republic	6687	86	1047
PD46828a	Czech Republic	4917	70	715
PD46831a	Czech Republic	8576	108	1474
PD46832a	Czech Republic	8318	107	1681
PD46833a	Czech Republic	3136	36	551
PD46859a	Czech Republic	4814	54	839
PD46807a	Czech Republic	1924	23	262
PD46834a	Czech Republic	4743	55	631
PD46806a	Czech Republic	9498	145	1900
PD46841a	Czech Republic	8406	115	1287
PD46857a	Czech Republic	4414	56	440
PD46856a	Czech Republic	4469	52	617
PD46855a	Czech Republic	7102	100	1230
PD46854a	Czech Republic	7586	68	997
PD46853a	Czech Republic	4195	44	529
PD46852a	Czech Republic	5436	71	1192
PD46851a	Czech Republic	4300	66	608
PD46801a	Czech Republic	6940	87	791
PD46850a	Czech Republic	3457	28	615
PD46848a	Czech Republic	6316	51	882
PD46847a	Czech Republic	8335	120	1171
PD46846a	Czech Republic	6603	42	983
PD46845a	Czech Republic	8040	119	1463
PD46844a	Czech Republic	4829	42	736
PD46842a	Czech Republic	7340	120	1547
PD46849a	Czech Republic	5803	71	1106
PD46835a	Czech Republic	3603	40	571
PD55535a	Japan	4570	33	594

PD55538a	Japan	5195	75	630
PD55537a	Japan	5725	58	744
PD55534a	Japan	5389	28	619
PD55539a	Japan	7826	86	855
PD55536a	Japan	6215	79	689
PD55533a	Japan	6898	67	860
PD55524a	Japan	1888	19	189
PD55531a	Japan	5465	41	493
PD55504a	Japan	5061	18	518
PD55505a	Japan	5962	41	614
PD55506a	Japan	2472	19	228
PD55507a	Japan	4857	37	493
PD55508a	Japan	3379	41	410
PD55509a	Japan	4024	35	547
PD55510a	Japan	5017	43	588
PD55511a	Japan	6966	61	860
PD55512a	Japan	3650	34	432
PD55513a	Japan	4084	21	504
PD55514a	Japan	12872	83	1019
PD55532a	Japan	7725	72	1020
PD55515a	Japan	4608	23	366
PD55517a	Japan	6233	50	596
PD55519a	Japan	1481	13	163
PD55520a	Japan	4642	55	617
PD55521a	Japan	6318	54	561
PD55523a	Japan	6534	49	864
PD55525a	Japan	2160	16	207
PD55526a	Japan	4596	23	460
PD55527a	Japan	5204	33	427
PD55528a	Japan	3201	28	376
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PD55516a	Japan	8275	71	510
PD55540a	Japan	6600	37	575
PD55541a	Japan	5249	53	525
PD50621a	Lithuania	7371	87	805
PD50619a	Lithuania	4736	59	593
PD50620a	Lithuania	6545	90	1007
PD51742a	Lithuania	5866	70	981
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PD50625a	Lithuania	4862	59	809
PD51386a	Lithuania	4718	36	656
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PD51654a	Lithuania	6224	68	55
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PD51716a	Lithuania	4264	37	531

PD50634a	Lithuania	3500	34	401
PD50637a	Lithuania	5570	66	797
PD50632a	Lithuania	5341	48	529
PD50342a	Poland	3344	41	552
PD50334a	Poland	5906	98	647
PD50343a	Poland	4627	60	657
PD50329a	Poland	2025	24	145
PD50327a	Poland	7340	84	1100
PD50341a	Poland	3649	53	396
PD50337a	Poland	2735	25	144
PD50340a	Poland	4737	46	497
PD50339a	Poland	5108	67	834
PD50335a	Poland	6554	41	785
PD51405a	Poland	2217	20	188
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PD42906a	Romania	8539	80	785
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PD46774a	Romania	14253	94	1093
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PD46776a	Romania	8564	66	891
PD42905a	Romania	20142	146	985
PD51786a	Romania	8163	97	1128
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PD46957a	Romania	15564	78	923
PD46956a	Romania	19342	108	1535
PD51785a	Romania	5018	34	682
PD46954a	Romania	5347	25	205
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PD51216a	Romania	3313	40	422
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PD51779a	Romania	4356	46	569
PD42904a	Romania	5300	71	645
PD42903a	Romania	7285	70	869

PD42902a	Romania	3837	44	701
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PD46904a	Romania	3908	31	448
PD37484a	Romania	14840	95	615
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PD46959a	Romania	6361	49	988
PD46958a	Romania	11525	56	526
PD51536a	Romania	13345	-	1021
PD51537a	Romania	31812	-	1184
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PD51539a	Romania	10522	-	882
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PD51544a	Romania	16754	-	749
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PD46734a	Russia	7162	99	1030
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PD48915a	Russia	5515	39	476
PD46729a	Russia	5229	47	696
PD51740a	Russia	4968	45	791
PD50389a	Russia	7346	86	868
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PD51748a	Russia	7560	78	1023
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PD48914a	Russia	4716	54	816
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PD46730a	Russia	2149	7	358
PD48943a	Russia	6277	51	825
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PD46912a	Russia	2506	23	440
PD46920a	Russia	2440	15	356
PD46923a	Russia	5246	53	904
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PD46926a	Russia	4644	39	482
PD46928a	Russia	7181	109	1459
PD46929a	Russia	4028	40	483
PD46922a	Russia	5377	60	868
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PD46907a	Russia	2361	22	352
PD46786a	Russia	5575	55	409
PD46787a	Russia	5429	57	518
PD46789a	Russia	6888	93	1440

PD46790a	Russia	5505	38	529
PD46791a	Russia	6316	77	888
PD46783a	Russia	6492	31	764
PD46817a	Russia	4364	48	660
PD46819a	Russia	3520	52	558
PD46820a	Russia	1849	11	169
PD46821a	Russia	2373	12	248
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PD46824a	Russia	5577	55	945
PD46829a	Russia	5598	71	1030
PD46830a	Russia	5117	49	789
PD46781a	Russia	2418	25	260
PD46930a	Russia	8408	60	1124
PD46757a	Russia	4367	49	658
PD46931a	Russia	3379	29	490
PD46934a	Russia	5609	92	902
PD51594a	Russia	3884	-	10
PD51593a	Russia	7233	-	869
PD51591a	Russia	3018	-	313
PD51590a	Russia	2960	-	389
PD51589a	Russia	7427	-	1218
PD51588a	Russia	3772	-	612
PD51595a	Russia	7213	-	1060
PD51587a	Russia	4373	-	477
PD51585a	Russia	1731	-	80
PD51584a	Russia	2673	-	372
PD51583a	Russia	3586	-	536
PD51582a	Russia	4355	-	721
PD51581a	Russia	4318	-	668
PD51580a	Russia	6327	-	1230
PD51586a	Russia	1601	-	206
PD51596a	Russia	5275	-	791
PD51597a	Russia	5153	-	670
PD51598a	Russia	3893	-	565
PD46935a	Russia	4579	32	425
PD46936a	Russia	5061	66	901
PD46937a	Russia	1970	32	387
PD51655a	Russia	3924	35	610
PD46938a	Russia	5179	61	836
PD46939a	Russia	3765	25	421
PD46940a	Russia	5175	74	857
PD46941a	Russia	4464	63	695
PD46942a	Russia	4524	31	546
PD46943a	Russia	7998	88	1216
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PD48916a	Russia	4285	24	621
PD51601a	Russia	2336	-	396
PD51600a	Russia	2818	-	304

PD51599a	Russia	6111	-	721
PD46933a	Russia	3061	30	437
PD48919a	Russia	2204	19	342
PD46784a	Russia	2298	23	309
PD48922a	Russia	5214	71	970
PD51231a	Russia	7799	88	866
PD51232a	Russia	3348	26	220
PD51233a	Russia	5910	74	958
PD51234a	Russia	6925	104	1376
PD51235a	Russia	6159	75	993
PD51236a	Russia	2918	38	497
PD51237a	Russia	4567	41	754
PD51238a	Russia	5265	52	716
PD51239a	Russia	5054	39	662
PD51240a	Russia	4672	51	507
PD51241a	Russia	3184	44	605
PD51242a	Russia	6957	87	1007
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PD51244a	Russia	4255	54	734
PD51245a	Russia	2360	21	278
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PD51247a	Russia	5557	86	1293
PD50200a	Russia	6303	56	760
PD50201a	Russia	2935	13	517
PD50202a	Russia	1733	21	269
PD50203a	Russia	2598	29	478
PD50207a	Russia	4603	39	734
PD50209a	Russia	2420	29	301
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PD50213a	Russia	5085	62	996
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PD51250a	Russia	5072	42	934
PD48920a	Russia	7144	79	1105
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PD50459a	Russia	6379	83	882
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PD50456a	Russia	3443	22	329
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PD50453a	Russia	7203	115	986

PD50434a	Russia	2949	37	357
PD50433a	Russia	2221	20	194
PD50347a	Russia	5536	64	1008
PD50360a	Russia	5435	39	435
PD50387a	Russia	6552	79	301
PD50388a	Russia	3530	41	450
PD50346a	Russia	3988	35	438
PD50199a	Russia	3115	27	463
PD50461a	Russia	2648	23	365
PD51209a	Russia	9526	89	1439
PD51225a	Russia	6379	82	1066
PD51224a	Russia	3821	25	401
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PD51222a	Russia	3539	20	367
PD51221a	Russia	5832	60	677
PD51220a	Russia	4170	40	551
PD51821a	Russia	6675	70	783
PD50214a	Russia	3423	33	585
PD50216a	Russia	3091	47	636
PD50217a	Russia	6780	64	749
PD50219a	Russia	4553	55	700
PD50221a	Russia	1672	19	237
PD50325a	Russia	6291	62	706
PD50326a	Russia	1771	21	126
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PD50197a	Russia	2701	20	210
PD51248a	Russia	3791	25	509
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PD48948a	Russia	6231	58	774
PD48946a	Russia	3257	33	486
PD48945a	Russia	4754	41	585
PD48944a	Russia	2927	32	459
PD50196a	Russia	4642	45	749
PD48942a	Russia	12853	96	1392
PD48940a	Russia	4876	48	789
PD48939a	Russia	5519	59	857
PD48937a	Russia	4197	40	668
PD48936a	Russia	4355	62	685
PD48935a	Russia	4555	46	682
PD48934a	Russia	4009	41	478
PD48933a	Russia	6738	24	2489
PD48932a	Russia	6282	77	898
PD48931a	Russia	7494	93	1253
PD48929a	Russia	4839	55	795
PD48924a	Russia	3237	38	479
PD48949a	Russia	5371	40	651
PD48950a	Russia	5539	57	777
PD46785a	Russia	4548	51	802

PD46717a	Russia	7657	73	1548
PD46722a	Russia	4458	56	598
PD46721a	Russia	4618	33	491
PD46720a	Russia	7724	83	954
PD50191a	Russia	3917	38	581
PD50190a	Russia	9155	96	1724
PD46719a	Russia	3827	40	629
PD46718a	Russia	2647	33	371
PD42595a	Serbia	5282	59	680
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PD42672a	Serbia	5110	58	871
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PD51381a	Serbia	6701	85	896
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PD48899a	Serbia	3795	18	317
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PD50357a	Serbia	5619	68	661
PD42572a	Serbia	14130	116	1111
PD42573a	Serbia	4863	35	491
PD42574a	Serbia	6542	76	838
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PD42578a	Serbia	6221	62	988
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PD42586a	Serbia	3019	41	392
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PD46861a	Serbia	3353	26	266
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PD46863a	Serbia	5957	70	712
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PD47593a	Serbia	8367	66	753
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PD50135a	Thailand	5031	32	738
PD51653a	Thailand	4444	39	687
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PD50393a	United Kingdom	6344	93	964
PD46905a	United Kingdom	7974	66	943
PD51178a	United Kingdom	8883	129	1446
PD51179a	United Kingdom	4568	52	799
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PD51191a	United Kingdom	5613	56	731
PD51192a	United Kingdom	5936	67	754
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PD50442a	United Kingdom	6907	72	1203
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PD50462a	United Kingdom	6853	79	1162
PD50607a	United Kingdom	3841	41	521
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PD51557a	United Kingdom	4331	-	592
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PD46793a	United Kingdom	5508	53	966
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PD50115a	United Kingdom	6531	54	1008
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PD48909a	United Kingdom	4252	29	496
PD48907a	United Kingdom	3981	43	648
PD48906a	United Kingdom	5323	57	667
PD48904a	United Kingdom	2465	46	288
PD51425a	United Kingdom	5087	52	701
PD51426a	United Kingdom	4490	44	486
PD51427a	United Kingdom	4313	32	425
PD47606a	United Kingdom	6554	91	820
PD47605a	United Kingdom	4781	48	845
PD47601a	United Kingdom	3586	32	470
PD47600a	United Kingdom	5707	62	1165
PD47599a	United Kingdom	5122	56	710

PD47598a	United Kingdom	6230	64	913
PD51550a	United Kingdom	2890	-	499
PD51551a	United Kingdom	7806	-	1144
PD51553a	United Kingdom	3304	-	562
PD50421a	United Kingdom	6351	106	1248

Mutation Type	SBS_A	SBS_B	SBS_C	SBS_D	SBS_E	SBS_F
AA[C>A]AA	0.00142574	0.00678852	0.00780612	0.00092706	0.00664662	0.00052604
AA[C>A]AC	0.00119109	0.00263624	0.00383921	0.00032725	0.00108558	0.00035093
AA[C>A]AG	0.00093132	0.00257963	0.00403103	0.00042023	0.00096592	0.00053452
AA[C>A]AT	0.00118934	0.00230468	0.00461669	0.00044161	0.00137574	0.00000655
AA[C>A]CA	0.00013507	0.00261858	0.00327642	0.00049352	0.00121543	0.00053260
AA[C>A]CC	0.00041160	0.00130676	0.00147551	0.00018395	0.00047025	0.00128675
AA[C>A]CG	0.00002932	0.00007511	0.00032021	0.00002342	0.00015172	0.00016737
AA[C>A]CT	0.00010006	0.00222810	0.00193210	0.00032615	0.00187103	0.00050080
AA[C>A]GA	0.00011233	0.00047098	0.00040649	0.00006329	0.00038871	0.00006435
AA[C>A]GC	0.00011035	0.00018960	0.00031402	0.00001539	0.00015052	0.00007045
AA[C>A]GG	0.00010526	0.00021358	0.00046591	0.00004585	0.00018418	0.00008887
AA[C>A]GT	0.00002239	0.00025873	0.00060995	0.00005837	0.00038452	0.00021273
AA[C>A]TA	0.00005793	0.00144331	0.00226138	0.00031733	0.00092476	0.00064949
AA[C>A]TC	0.00047167	0.00115229	0.00120826	0.00023530	0.00066531	0.00049702
AA[C>A]TG	0.00074449	0.00190467	0.00217356	0.00031499	0.00073729	0.00075043
AA[C>A]TT	0.00003962	0.00190591	0.00205959	0.00013273	0.00202106	0.00025498
AA[C>G]AA	0.00091982	0.00086523	0.00220597	0.00021210	0.00131811	0.00124151
AA[C>G]AC	0.00024192	0.00024098	0.00072605	0.00012887	0.00041613	0.00020983
AA[C>G]AG	0.00074526	0.00167838	0.00197733	0.00032027	0.00333936	0.00175379
AA[C>G]AT	0.00034297	0.00017495	0.00125940	0.00007167	0.00060804	0.00005004
AA[C>G]CA	0.00167303	0.00100263	0.00181160	0.00020531	0.00072348	0.00029792
AA[C>G]CC	0.00098113	0.00059527	0.00070298	0.00002261	0.00039203	0.00051398
AA[C>G]CG	0.00009994	0.00005622	0.00007850	0.00001989	0.00002204	0.00011634
AA[C>G]CT	0.00110985	0.00065090	0.00089965	0.00007711	0.00075507	0.00025031
AA[C>G]GA	0.00020600	0.00016195	0.00031072	0.00005286	0.00007111	0.00030909
AA[C>G]GC	0.00006864	0.00016192	0.00019814	0.00001524	0.00019394	0.00019464
AA[C>G]GG	0.00010334	0.00002141	0.00010207	0.00003033	0.00008352	0.00012694
AA[C>G]GT	0.00017799	0.00017276	0.00022973	0.00003583	0.00025517	0.00012741
AA[C>G]TA	0.00165872	0.00072133	0.00137197	0.00007684	0.00154270	0.00058762
AA[C>G]TC	0.00177073	0.00050045	0.00087111	0.00003620	0.00067898	0.00057799
AA[C>G]TG	0.00167429	0.00054525	0.00085318	0.00008586	0.00142158	0.00055169
AA[C>G]TT	0.00226584	0.00072315	0.00067868	0.00009363	0.00119216	0.00052965
AA[C>T]AA	0.00101948	0.00286192	0.00198428	0.00011483	0.00240383	0.00255628
AA[C>T]AC	0.00100867	0.00145006	0.00074263	0.00010096	0.00101626	0.00107525
AA[C>T]AG	0.00099545	0.00177732	0.00107401	0.00005397	0.00092183	0.00176153
AA[C>T]AT	0.00203713	0.00374638	0.00194907	0.00016710	0.00432933	0.00220922
AA[C>T]CA	0.00016549	0.00145806	0.00083802	0.00007829	0.00112892	0.00237047
AA[C>T]CC	0.00033937	0.00185527	0.00068217	0.00010339	0.00121457	0.00174362
AA[C>T]CG	0.00007434	0.00016304	0.00005728	0.00000446	0.00010270	0.00014537
AA[C>T]CT	0.00036624	0.00220164	0.00080895	0.00005176	0.00190458	0.00121432
AA[C>T]GA	0.00044403	0.00141486	0.00037352	0.00011551	0.00164421	0.00024019
AA[C>T]GC	0.00036600	0.00044487	0.00024289	0.00013751	0.00102117	0.00006727
AA[C>T]GG	0.00032361	0.00083168	0.00059009	0.00001075	0.00110325	0.00028908
AA[C>T]GT	0.00045173	0.00091742	0.00062725	0.00008719	0.00133746	0.00036710
AA[C>T]TA	0.00094367	0.00158043	0.00087072	0.00011869	0.00123050	0.00113441
AA[C>T]TC	0.00071272	0.00105942	0.00058969	0.00008427	0.00076574	0.00119768
AA[C>T]TG	0.00059963	0.00144253	0.00109614	0.00016030	0.00123589	0.00198893
AA[C>T]TT	0.00045115	0.00172485	0.00050746	0.00009098	0.00193331	0.00166915
AA[T>A]AA	0.00139742	0.00226958	0.00100594	0.00254338	0.00120913	0.00196721

AA[T>A]AC	0.00126709	0.00061261	0.00060012	0.00178939	0.00011505	0.00095970
AA[T>A]AG	0.00096937	0.00020400	0.00064726	0.00199567	0.00035472	0.00167016
AA[T>A]AT	0.00096468	0.00134662	0.00072590	0.00515498	0.00062609	0.00099608
AA[T>A]CA	0.00089694	0.00078319	0.00038717	0.00042056	0.00040802	0.00027506
AA[T>A]CC	0.00080174	0.00044542	0.00021535	0.00011104	0.00025525	0.00040791
AA[T>A]CG	0.00016051	0.00003072	0.00000792	0.00002921	0.00001693	0.00008486
AA[T>A]CT	0.00074467	0.00069233	0.00029009	0.00038627	0.00038978	0.00049820
AA[T>A]GA	0.00100817	0.00120498	0.00081243	0.00203273	0.00072869	0.00175708
AA[T>A]GC	0.00087373	0.00041118	0.00052340	0.00126637	0.00037306	0.00113637
AA[T>A]GG	0.00113392	0.00067330	0.00017064	0.00232197	0.00073021	0.00067799
AA[T>A]GT	0.00088168	0.00073562	0.00099701	0.00432709	0.00100496	0.00126448
AA[T>A]TA	0.00125061	0.00095472	0.00057340	0.00057302	0.00006108	0.00130035
AA[T>A]TC	0.00094760	0.00031565	0.00043339	0.00025996	0.00009278	0.00207707
AA[T>A]TG	0.00118049	0.00070064	0.00032049	0.00062997	0.00009195	0.00149678
AA[T>A]TT	0.00069017	0.00125095	0.00007261	0.00049628	0.00030776	0.00942179
AA[T>C]AA	0.00155449	0.00156043	0.00098837	0.00062323	0.00268984	0.00276508
AA[T>C]AC	0.00118238	0.00129247	0.00032797	0.00072980	0.00131178	0.00213814
AA[T>C]AG	0.00129660	0.00185990	0.00067056	0.00157345	0.00368652	0.00262373
AA[T>C]AT	0.00153738	0.00138699	0.00081806	0.00313276	0.00235896	0.00218330
AA[T>C]CA	0.00016224	0.00044104	0.00008944	0.00001539	0.00035555	0.00127606
AA[T>C]CC	0.00031505	0.00016992	0.00029024	0.00001707	0.00023702	0.00106481
AA[T>C]CG	0.00007414	0.00002327	0.00000986	0.00000001	0.00004136	0.00007397
AA[T>C]CT	0.00025665	0.00034543	0.00007629	0.00009469	0.00066769	0.00141102
AA[T>C]GA	0.00102772	0.00067524	0.00119497	0.00025815	0.00155728	0.00332573
AA[T>C]GC	0.00065405	0.00027570	0.00060939	0.00039248	0.00125307	0.00196680
AA[T>C]GG	0.00136040	0.00063041	0.00110089	0.00042810	0.00264009	0.00228686
AA[T>C]GT	0.00181008	0.00090572	0.00084074	0.00085385	0.00246270	0.00247105
AA[T>C]TA	0.00117349	0.00127199	0.00044750	0.00018649	0.00113255	0.00188073
AA[T>C]TC	0.00086696	0.00035543	0.00036180	0.00006122	0.00066257	0.00128213
AA[T>C]TG	0.00086898	0.00199140	0.00072526	0.00035146	0.00345028	0.00262134
AA[T>C]TT	0.00260316	0.00174805	0.00088352	0.00008957	0.00216017	0.00175965
AA[T>G]AA	0.00330889	0.00124180	0.00057818	0.00031173	0.00136912	0.00079224
AA[T>G]AC	0.00064754	0.00011994	0.00022261	0.00011758	0.00040643	0.00012142
AA[T>G]AG	0.00115607	0.00038029	0.00039215	0.00029272	0.00054728	0.00038631
AA[T>G]AT	0.00083892	0.00022526	0.00031437	0.00017370	0.00075590	0.00017091
AA[T>G]CA	0.00372670	0.00086531	0.00040543	0.00010142	0.00058644	0.00038641
AA[T>G]CC	0.00199570	0.00056001	0.00064311	0.00008110	0.00063317	0.00025473
AA[T>G]CG	0.00014869	0.00007650	0.00003137	0.00000702	0.00007841	0.00002336
AA[T>G]CT	0.00262824	0.00076745	0.00055414	0.00013771	0.00040865	0.00028163
AA[T>G]GA	0.00299327	0.00067957	0.00058811	0.00021505	0.00141274	0.00050630
AA[T>G]GC	0.00082396	0.00021200	0.00032154	0.00016634	0.00054445	0.00043304
AA[T>G]GG	0.00091176	0.00023300	0.00027700	0.00004046	0.00040285	0.00035153
AA[T>G]GT	0.00111166	0.00054524	0.00032199	0.00030650	0.00079529	0.00071268
AA[T>G]TA	0.00673271	0.00170559	0.00141281	0.00020328	0.00129962	0.00167132
AA[T>G]TC	0.00357809	0.00092960	0.00047534	0.00004304	0.00080655	0.00054778
AA[T>G]TG	0.00291070	0.00039738	0.00049464	0.00007672	0.00083191	0.00054499
AA[T>G]TT	0.00771050	0.00187328	0.00203989	0.00009555	0.00142965	0.00082394
AC[C>A]AA	0.00013883	0.00214313	0.00226074	0.00030894	0.00480807	0.00081218
AC[C>A]AC	0.00044752	0.00159839	0.00222223	0.00032936	0.00216201	0.00067413
AC[C>A]AG	0.00006965	0.00111275	0.00176914	0.00025162	0.00204746	0.00080487
AC[C>A]AT	0.00091444	0.00153136	0.00295687	0.00050594	0.00238460	0.00064670
AC[C>A]CA	0.00015640	0.00100018	0.00355417	0.00038684	0.00158732	0.00085144
AC[C>A]CC	0.00054101	0.00065173	0.00209697	0.00036488	0.00096278	0.00088837

AC[C>A]CG	0.00004981	0.00016335	0.00039905	0.00006903	0.00033780	0.00026315
AC[C>A]CT	0.00047720	0.00161163	0.00281907	0.00048101	0.00210558	0.00064430
AC[C>A]GA	0.00001080	0.00014795	0.00033818	0.00003382	0.00021009	0.00004881
AC[C>A]GC	0.00001830	0.00017219	0.00039273	0.00005313	0.00018847	0.00015364
AC[C>A]GG	0.00008783	0.00008120	0.00037397	0.00001709	0.00023115	0.00012697
AC[C>A]GT	0.00009380	0.00016043	0.00041396	0.00002073	0.00024748	0.00033380
AC[C>A]TA	0.00025613	0.00025292	0.00140373	0.00017156	0.00097460	0.00063279
AC[C>A]TC	0.00054801	0.00074396	0.00107822	0.00027665	0.00073238	0.00109066
AC[C>A]TG	0.00101555	0.00060046	0.00177018	0.00037169	0.00107811	0.00101057
AC[C>A]TT	0.00019686	0.00150972	0.00111098	0.00025428	0.00308052	0.00079605
AC[C>G]AA	0.00072467	0.00052210	0.00118288	0.00011190	0.00180408	0.00128151
AC[C>G]AC	0.00021447	0.00027667	0.00053603	0.00007156	0.00045161	0.00035111
AC[C>G]AG	0.00052763	0.00048859	0.00062709	0.00007566	0.00061966	0.00091423
AC[C>G]AT	0.00043271	0.00022981	0.00061801	0.00011674	0.00054981	0.00044886
AC[C>G]CA	0.00134324	0.00060476	0.00121797	0.00014802	0.00108964	0.00090410
AC[C>G]CC	0.00071656	0.00034845	0.00035698	0.00006695	0.00067326	0.00045914
AC[C>G]CG	0.00018102	0.00012425	0.00010723	0.00000043	0.00008463	0.00023737
AC[C>G]CT	0.00116027	0.00051334	0.00072011	0.00009159	0.00100159	0.00078919
AC[C>G]GA	0.00006394	0.00003893	0.00016252	0.00001061	0.00011536	0.00005362
AC[C>G]GC	0.00004316	0.00007970	0.00012380	0.00003349	0.00006267	0.00004639
AC[C>G]GG	0.00008621	0.00001082	0.00005212	0.00000644	0.00012107	0.00011067
AC[C>G]GT	0.00002531	0.00008241	0.00009406	0.00003188	0.00017402	0.00010326
AC[C>G]TA	0.00160978	0.00059265	0.00042065	0.00019390	0.00071363	0.00042704
AC[C>G]TC	0.00188473	0.00037553	0.00057146	0.00006169	0.00084021	0.00052894
AC[C>G]TG	0.00100500	0.00037249	0.00065637	0.00031073	0.00108618	0.00073517
AC[C>G]TT	0.00157613	0.00070215	0.00062924	0.00013662	0.00117267	0.00115571
AC[C>T]AA	0.00050447	0.00156396	0.00145710	0.00006488	0.00211209	0.00237486
AC[C>T]AC	0.00068486	0.00136993	0.00111532	0.00014790	0.00174479	0.00114324
AC[C>T]AG	0.00094668	0.00137692	0.00129471	0.00013322	0.00128409	0.00163817
AC[C>T]AT	0.00119431	0.00178069	0.00194881	0.00019424	0.00204266	0.00200609
AC[C>T]CA	0.00051062	0.00174911	0.00152636	0.00027352	0.00158381	0.00175890
AC[C>T]CC	0.00035402	0.00138056	0.00125731	0.00011382	0.00150190	0.00185394
AC[C>T]CG	0.00015409	0.00019249	0.00035041	0.00001591	0.00030072	0.00035324
AC[C>T]CT	0.00131532	0.00216227	0.00138499	0.00036568	0.00141183	0.00236447
AC[C>T]GA	0.00004839	0.00028481	0.00037575	0.00001851	0.00054826	0.00031135
AC[C>T]GC	0.00022045	0.00021948	0.00049906	0.00013416	0.00033641	0.00040076
AC[C>T]GG	0.00013131	0.00021848	0.00030342	0.00001321	0.00050001	0.00014384
AC[C>T]GT	0.00023745	0.00024213	0.00043465	0.00014630	0.00020768	0.00029402
AC[C>T]TA	0.00030997	0.00128148	0.00114066	0.00025459	0.00163894	0.00226444
AC[C>T]TC	0.00047650	0.00160199	0.00113824	0.00015102	0.00218480	0.00256147
AC[C>T]TG	0.00076959	0.00179582	0.00114469	0.00015285	0.00205496	0.00256186
AC[C>T]TT	0.00061117	0.00185684	0.00158415	0.00009548	0.00238987	0.00316609
AC[T>A]AA	0.00037403	0.00056015	0.00007309	0.00451770	0.00068867	0.00046875
AC[T>A]AC	0.00036373	0.00023064	0.00019504	0.00354354	0.00030253	0.00078882
AC[T>A]AG	0.00007762	0.00011888	0.00024096	0.00372293	0.00006771	0.00010624
AC[T>A]AT	0.00026276	0.00025219	0.00016715	0.00839783	0.00058336	0.00089092
AC[T>A]CA	0.00036889	0.00057223	0.00049316	0.00281062	0.00052204	0.00069200
AC[T>A]CC	0.00069473	0.00049984	0.00052325	0.00150110	0.00028788	0.00135168
AC[T>A]CG	0.00006887	0.00002529	0.00007644	0.00036723	0.00011981	0.00006204
AC[T>A]CT	0.00052722	0.00058192	0.00045751	0.00310029	0.00060508	0.00074180
AC[T>A]GA	0.00030340	0.00045479	0.00039740	0.00693873	0.00086632	0.00097276
AC[T>A]GC	0.00041506	0.00052023	0.00041075	0.00509228	0.00068092	0.00090240
AC[T>A]GG	0.00038247	0.00036780	0.00033043	0.00617601	0.00030048	0.00051733

AC[T>A]GT	0.00004008	0.00049320	0.00032118	0.01053435	0.00079607	0.00096120
AC[T>A]TA	0.00034633	0.00058054	0.00008143	0.00248781	0.00028021	0.00093220
AC[T>A]TC	0.00078918	0.00045619	0.00027403	0.00109854	0.00057330	0.00068282
AC[T>A]TG	0.00062784	0.00057499	0.00013021	0.00311265	0.00060345	0.00079874
AC[T>A]TT	0.00084815	0.00169633	0.00054563	0.00268283	0.00156694	0.00105814
AC[T>C]AA	0.00081969	0.00050288	0.00025182	0.00011529	0.00035221	0.00245405
AC[T>C]AC	0.00087228	0.00039251	0.00025405	0.00014437	0.00029337	0.00176097
AC[T>C]AG	0.00078270	0.00029221	0.00057772	0.00018861	0.00057242	0.00175837
AC[T>C]AT	0.00096733	0.00023525	0.00070744	0.00017376	0.00084754	0.00169054
AC[T>C]CA	0.00035192	0.00035730	0.00000682	0.00002526	0.00025723	0.00124071
AC[T>C]CC	0.00023681	0.00014947	0.00018588	0.00004322	0.00037309	0.00131330
AC[T>C]CG	0.00000519	0.00003764	0.00000637	0.00000000	0.00010428	0.00022179
AC[T>C]CT	0.00028276	0.00037716	0.00025699	0.00008725	0.00113057	0.00118391
AC[T>C]GA	0.00053686	0.00021214	0.00033608	0.00008283	0.00044925	0.00246661
AC[T>C]GC	0.00047621	0.00024143	0.00035163	0.00004982	0.00060698	0.00206956
AC[T>C]GG	0.00032851	0.00047483	0.00062276	0.00003677	0.00074469	0.00124159
AC[T>C]GT	0.00063091	0.00020903	0.00065116	0.00011967	0.00116245	0.00179405
AC[T>C]TA	0.00051800	0.00037184	0.00019952	0.00007649	0.00023836	0.00169123
AC[T>C]TC	0.00074095	0.00027084	0.00009801	0.00007813	0.00009893	0.00144992
AC[T>C]TG	0.00065761	0.00030206	0.00047746	0.00008789	0.00032531	0.00183750
AC[T>C]TT	0.00079398	0.00043849	0.00031266	0.00007155	0.00042583	0.00241735
AC[T>G]AA	0.00066488	0.00023908	0.00016905	0.00016979	0.00031597	0.00059738
AC[T>G]AC	0.00017654	0.00003031	0.00008218	0.00006811	0.00021109	0.00010943
AC[T>G]AG	0.00021272	0.00004305	0.00003236	0.00014884	0.00010661	0.00017664
AC[T>G]AT	0.00036358	0.00002423	0.00003355	0.00020177	0.00016168	0.00029071
AC[T>G]CA	0.00123148	0.00019130	0.00022549	0.00009797	0.00071651	0.00046013
AC[T>G]CC	0.00055581	0.00015590	0.00024524	0.00004298	0.00039090	0.00027853
AC[T>G]CG	0.00015377	0.00001136	0.00000255	0.00000749	0.00008225	0.00001421
AC[T>G]CT	0.00084610	0.00026042	0.00016989	0.00007164	0.00058101	0.00024755
AC[T>G]GA	0.00077707	0.00034105	0.00021997	0.00024403	0.00051438	0.00057512
AC[T>G]GC	0.00029986	0.00022263	0.00018138	0.00010613	0.00052042	0.00056874
AC[T>G]GG	0.00028486	0.00013997	0.00019462	0.00002491	0.00041975	0.00037822
AC[T>G]GT	0.00058823	0.00011114	0.00021342	0.00043432	0.00056977	0.00052605
AC[T>G]TA	0.00173261	0.00029710	0.00012544	0.00007042	0.00085274	0.00104688
AC[T>G]TC	0.00123508	0.00012171	0.00016994	0.00005437	0.00056842	0.00056503
AC[T>G]TG	0.00083727	0.00031965	0.00007707	0.00011517	0.00056135	0.00037052
AC[T>G]TT	0.00228869	0.00070382	0.00014695	0.00009764	0.00155817	0.00110991
AG[C>A]AA	0.00027925	0.00121259	0.00170127	0.00030036	0.00242896	0.00030486
AG[C>A]AC	0.00066374	0.00073765	0.00114271	0.00014300	0.00091088	0.00041672
AG[C>A]AG	0.00033625	0.00038166	0.00098791	0.00026365	0.00148806	0.00060529
AG[C>A]AT	0.00034793	0.00085161	0.00173715	0.00014711	0.00133896	0.00027651
AG[C>A]CA	0.00025972	0.00156595	0.00291527	0.00035991	0.00137552	0.00085442
AG[C>A]CC	0.00058966	0.00054435	0.00160909	0.00033314	0.00060628	0.00033523
AG[C>A]CG	0.00010417	0.00021666	0.00027255	0.00002151	0.00027767	0.00012991
AG[C>A]CT	0.00044123	0.00148590	0.00226508	0.00027919	0.00141405	0.00078371
AG[C>A]GA	0.00005973	0.00027528	0.00050834	0.00006500	0.00026866	0.00022122
AG[C>A]GC	0.00003390	0.00026479	0.00040460	0.00002524	0.00011054	0.00010833
AG[C>A]GG	0.00011123	0.00016382	0.00039767	0.00003530	0.00017888	0.00002300
AG[C>A]GT	0.00007563	0.00010342	0.00047699	0.00004198	0.00011159	0.00002431
AG[C>A]TA	0.00013206	0.00065041	0.00106833	0.00015529	0.00049267	0.00069226
AG[C>A]TC	0.00035020	0.00045517	0.00074465	0.00012129	0.00022458	0.00029266
AG[C>A]TG	0.00069832	0.00073869	0.00146361	0.00023836	0.00073907	0.00101279
AG[C>A]TT	0.00040003	0.00061304	0.00069819	0.00016671	0.00147855	0.00021372

AG[C>G]AA	0.00028099	0.00057861	0.00143223	0.00014643	0.00101354	0.00080755
AG[C>G]AC	0.00015669	0.00006427	0.00062129	0.00006831	0.00044901	0.00054943
AG[C>G]AG	0.00047397	0.00030684	0.00080193	0.00016793	0.00063851	0.00057852
AG[C>G]AT	0.00021877	0.00018195	0.00081868	0.00006576	0.00039749	0.00012532
AG[C>G]CA	0.00038610	0.00056510	0.00121029	0.00015874	0.00077796	0.00168711
AG[C>G]CC	0.00025151	0.00024426	0.00076086	0.00003167	0.00082831	0.00096002
AG[C>G]CG	0.00013146	0.00006841	0.00010790	0.00003297	0.00005673	0.00006065
AG[C>G]CT	0.00051713	0.00051886	0.00132994	0.00008518	0.00093686	0.00117055
AG[C>G]GA	0.00010435	0.00008099	0.00011279	0.00004639	0.00018879	0.00015623
AG[C>G]GC	0.00011707	0.00004068	0.00014780	0.00001107	0.00021613	0.00019869
AG[C>G]GG	0.00011437	0.00004137	0.00004835	0.00001202	0.00009813	0.00011703
AG[C>G]GT	0.00004292	0.00003137	0.00017886	0.00002153	0.00009206	0.00013737
AG[C>G]TA	0.00079178	0.00019478	0.00088632	0.00010950	0.00098363	0.00062104
AG[C>G]TC	0.00082548	0.00019989	0.00075814	0.00010218	0.00049034	0.00034948
AG[C>G]TG	0.00082186	0.00037519	0.00090031	0.00016509	0.00103140	0.00052957
AG[C>G]TT	0.00059213	0.00027270	0.00084370	0.00012141	0.00085137	0.00047682
AG[C>T]AA	0.00088046	0.00271626	0.00172061	0.00009045	0.00173360	0.00188703
AG[C>T]AC	0.00056414	0.00147184	0.00119505	0.00001859	0.00148677	0.00079044
AG[C>T]AG	0.00129367	0.00196830	0.00168226	0.00011165	0.00161286	0.00146747
AG[C>T]AT	0.00102688	0.00205055	0.00118085	0.00010238	0.00167078	0.00128497
AG[C>T]CA	0.00067430	0.00210860	0.00174355	0.00003955	0.00166278	0.00220819
AG[C>T]CC	0.00068462	0.00163549	0.00110203	0.00013087	0.00148109	0.00188044
AG[C>T]CG	0.00014572	0.00027094	0.00028695	0.00002548	0.00026049	0.00033184
AG[C>T]CT	0.00050916	0.00246229	0.00169215	0.00011023	0.00217971	0.00296071
AG[C>T]GA	0.00025633	0.00066631	0.00041592	0.00009235	0.00060436	0.00032332
AG[C>T]GC	0.00004986	0.00049128	0.00009095	0.00003074	0.00029368	0.00020787
AG[C>T]GG	0.00007076	0.00068270	0.00034741	0.00001957	0.00078222	0.00021651
AG[C>T]GT	0.00010747	0.00046099	0.00009616	0.00007465	0.00046167	0.00026690
AG[C>T]TA	0.00074627	0.00149802	0.00123723	0.00004911	0.00139483	0.00151972
AG[C>T]TC	0.00061855	0.00129171	0.00085782	0.00010765	0.00078872	0.00156272
AG[C>T]TG	0.00110938	0.00186638	0.00141694	0.00010713	0.00221387	0.00240304
AG[C>T]TT	0.00034355	0.00191211	0.00124263	0.00008379	0.00142108	0.00233243
AG[T>A]AA	0.00074974	0.00055851	0.00040788	0.00266004	0.00054832	0.00035651
AG[T>A]AC	0.00075452	0.00039148	0.00033200	0.00137024	0.00035077	0.00079686
AG[T>A]AG	0.00067041	0.00033460	0.00035284	0.00332493	0.00008048	0.00055221
AG[T>A]AT	0.00091441	0.00046553	0.00024545	0.00457732	0.00019442	0.00103048
AG[T>A]CA	0.00042188	0.00023224	0.00023196	0.00103231	0.00014889	0.00037695
AG[T>A]CC	0.00048880	0.00048647	0.00003026	0.00018387	0.00019567	0.00043022
AG[T>A]CG	0.00004709	0.00004400	0.00006654	0.00007365	0.00001433	0.00005358
AG[T>A]CT	0.00057696	0.00053377	0.00024212	0.00085916	0.00057857	0.00038127
AG[T>A]GA	0.00056914	0.00065145	0.00065947	0.00233071	0.00071110	0.00051015
AG[T>A]GC	0.00065762	0.00054305	0.00043438	0.00129207	0.00029249	0.00054168
AG[T>A]GG	0.00041516	0.00045681	0.00034163	0.00209057	0.00073904	0.00066096
AG[T>A]GT	0.00061481	0.00037450	0.00027368	0.00323737	0.00051708	0.00064248
AG[T>A]TA	0.00036617	0.00039515	0.00025134	0.00074906	0.00013719	0.00035943
AG[T>A]TC	0.00024557	0.00023610	0.00006546	0.00019633	0.00020630	0.00043253
AG[T>A]TG	0.00051958	0.00052580	0.00028651	0.00085445	0.00027360	0.00023413
AG[T>A]TT	0.00056144	0.00090434	0.00058135	0.00058068	0.00102129	0.00067003
AG[T>C]AA	0.00054685	0.00044779	0.00063155	0.00011672	0.00073956	0.00053248
AG[T>C]AC	0.00075265	0.00024644	0.00025823	0.00009290	0.00024542	0.00056540
AG[T>C]AG	0.00153951	0.00044147	0.00069276	0.00019215	0.00106707	0.00123393
AG[T>C]AT	0.00129070	0.00049961	0.00055081	0.00012100	0.00071392	0.00031362
AG[T>C]CA	0.00015581	0.00021150	0.00015010	0.00006682	0.00019396	0.00003399

AG[T>C]CC	0.00024136	0.00015263	0.00008916	0.00000215	0.00029756	0.00022017
AG[T>C]CG	0.00001845	0.00000614	0.00002878	0.00001609	0.00004979	0.00009867
AG[T>C]CT	0.00027187	0.00040074	0.00011561	0.00014802	0.00072490	0.00087077
AG[T>C]GA	0.00054058	0.00015838	0.00040746	0.00005956	0.00079350	0.00112456
AG[T>C]GC	0.00032504	0.00006154	0.00037888	0.00016584	0.00029460	0.00080746
AG[T>C]GG	0.00084122	0.00022365	0.00033002	0.00001897	0.00061213	0.00068354
AG[T>C]GT	0.00041064	0.00023108	0.00036308	0.00007603	0.00088286	0.00072473
AG[T>C]TA	0.00020562	0.00024071	0.00011680	0.00001292	0.00051318	0.00033695
AG[T>C]TC	0.00046861	0.00037991	0.00022446	0.00000006	0.00058087	0.00040885
AG[T>C]TG	0.00039383	0.00114219	0.00009843	0.00005675	0.00168322	0.00126969
AG[T>C]TT	0.00094658	0.00089601	0.00045243	0.00005740	0.00098039	0.00078387
AG[T>G]AA	0.00067913	0.00030495	0.00018586	0.00005498	0.00061813	0.00030132
AG[T>G]AC	0.00009892	0.00011940	0.00003374	0.00002598	0.00009040	0.00015722
AG[T>G]AG	0.00060770	0.00006906	0.00008401	0.00013447	0.00033434	0.00015449
AG[T>G]AT	0.00037797	0.00002562	0.00007807	0.00008963	0.00026507	0.00005329
AG[T>G]CA	0.00050171	0.00033264	0.00006991	0.00002526	0.00037039	0.00006824
AG[T>G]CC	0.00029284	0.00004762	0.00004884	0.00002176	0.00020963	0.00000630
AG[T>G]CG	0.00001273	0.00000645	0.00001142	0.00000609	0.00001176	0.00003577
AG[T>G]CT	0.00060098	0.00008433	0.00008975	0.00000184	0.00042754	0.00008775
AG[T>G]GA	0.00034668	0.00030266	0.00013002	0.00002414	0.00071871	0.00020561
AG[T>G]GC	0.00028576	0.00016769	0.00012282	0.00004893	0.00050323	0.00023673
AG[T>G]GG	0.00023707	0.00013923	0.00018276	0.00005947	0.00016376	0.00032747
AG[T>G]GT	0.00021786	0.00021700	0.00014936	0.00011638	0.00057304	0.00034636
AG[T>G]TA	0.00112883	0.00018783	0.00019207	0.00005271	0.00059798	0.00016640
AG[T>G]TC	0.00066435	0.00024013	0.00006118	0.00000105	0.00054654	0.00017369
AG[T>G]TG	0.00047615	0.00019498	0.00007504	0.00000363	0.00053203	0.00009409
AG[T>G]TT	0.00114962	0.00027786	0.00023319	0.00004213	0.00074749	0.00028186
AT[C>A]AA	0.00084187	0.00262739	0.00306110	0.00042504	0.00105230	0.00018650
AT[C>A]AC	0.00181769	0.00187869	0.00193676	0.00025253	0.00066554	0.00079886
AT[C>A]AG	0.00116879	0.00155689	0.00168904	0.00036647	0.00056900	0.00029616
AT[C>A]AT	0.00160221	0.00235840	0.00272748	0.00031140	0.00079176	0.00115286
AT[C>A]CA	0.00106613	0.00352532	0.00407352	0.00052695	0.00202905	0.00010174
AT[C>A]CC	0.00114678	0.00215926	0.00261188	0.00043661	0.00121445	0.00032487
AT[C>A]CG	0.00015752	0.00026749	0.00026405	0.00006538	0.00010106	0.00002332
AT[C>A]CT	0.00066538	0.00289078	0.00373931	0.00034417	0.00166323	0.00035313
AT[C>A]GA	0.00018273	0.00039412	0.00038851	0.00004678	0.00021697	0.00005362
AT[C>A]GC	0.00005832	0.00048446	0.00048175	0.00003404	0.00035337	0.00015497
AT[C>A]GG	0.00020888	0.00025361	0.00022876	0.00002189	0.00015206	0.00001308
AT[C>A]GT	0.00005388	0.00049406	0.00041674	0.00001257	0.00010855	0.00012864
AT[C>A]TA	0.00136921	0.00178421	0.00210909	0.00019532	0.00077757	0.00054039
AT[C>A]TC	0.00261783	0.00217374	0.00273765	0.00022763	0.00058668	0.00101838
AT[C>A]TG	0.00264883	0.00243295	0.00223662	0.00046002	0.00085773	0.00074931
AT[C>A]TT	0.00183189	0.00285934	0.00186249	0.00039567	0.00065182	0.00223542
AT[C>G]AA	0.00045895	0.00159759	0.00165885	0.00015229	0.00097689	0.00039611
AT[C>G]AC	0.00046101	0.00030522	0.00053605	0.00011567	0.00038867	0.00034948
AT[C>G]AG	0.00065318	0.00037125	0.00079791	0.00008781	0.00047949	0.00090348
AT[C>G]AT	0.00051943	0.00043512	0.00128460	0.00014390	0.00058366	0.00026597
AT[C>G]CA	0.00138824	0.00096542	0.00169394	0.00025237	0.00130152	0.00076509
AT[C>G]CC	0.00149371	0.00034679	0.00096128	0.00015704	0.00077658	0.00080166
AT[C>G]CG	0.00006226	0.00003100	0.00014387	0.00003470	0.00009295	0.00011352
AT[C>G]CT	0.00157124	0.00065809	0.00126785	0.00010386	0.00124921	0.00089372
AT[C>G]GA	0.00022199	0.00010786	0.00016163	0.00003285	0.00008436	0.00011422
AT[C>G]GC	0.00010929	0.00005176	0.00014006	0.00000287	0.00010959	0.00032648

AT[C>G]GG	0.00005355	0.00001109	0.00008688	0.00001995	0.00008443	0.00016433
AT[C>G]GT	0.00005579	0.00006897	0.00028457	0.00004409	0.00015324	0.00015405
AT[C>G]TA	0.00132783	0.00135375	0.00152114	0.00008297	0.00125440	0.00039952
AT[C>G]TC	0.00178388	0.00094077	0.00087674	0.00022757	0.00054411	0.00056821
AT[C>G]TG	0.00091057	0.00045771	0.00083291	0.00023920	0.00092399	0.00048252
AT[C>G]TT	0.00135997	0.00127888	0.00125721	0.00025976	0.00152372	0.00010815
AT[C>T]AA	0.00110454	0.00309826	0.00226555	0.00024571	0.00095335	0.00175243
AT[C>T]AC	0.00163605	0.00178866	0.00172576	0.00006709	0.00125020	0.00073425
AT[C>T]AG	0.00135583	0.00267617	0.00132581	0.00021277	0.00086769	0.00138001
AT[C>T]AT	0.00171512	0.00379714	0.00205472	0.00024477	0.00201546	0.00197480
AT[C>T]CA	0.00038297	0.00208938	0.00167514	0.00022991	0.00119785	0.00156889
AT[C>T]CC	0.00060428	0.00296816	0.00197302	0.00014359	0.00167786	0.00071329
AT[C>T]CG	0.00001541	0.00019540	0.00014961	0.00001849	0.00008220	0.00031453
AT[C>T]CT	0.00125794	0.00309956	0.00186130	0.00018374	0.00201486	0.00184054
AT[C>T]GA	0.00011240	0.00056753	0.00032006	0.00001407	0.00044240	0.00034620
AT[C>T]GC	0.00007745	0.00054388	0.00033031	0.00008584	0.00049688	0.00034529
AT[C>T]GG	0.00014181	0.00039001	0.00011266	0.00003315	0.00031723	0.00021761
AT[C>T]GT	0.00025404	0.00028829	0.00022889	0.00005771	0.00035904	0.00054660
AT[C>T]TA	0.00016631	0.00154645	0.00155554	0.00021533	0.00109586	0.00116479
AT[C>T]TC	0.00020795	0.00175582	0.00130720	0.00012682	0.00107638	0.00170266
AT[C>T]TG	0.00030952	0.00202600	0.00121709	0.00015519	0.00112728	0.00200490
AT[C>T]TT	0.00017292	0.00191268	0.00132068	0.00010859	0.00126956	0.00140521
AT[T>A]AA	0.00121558	0.00081869	0.00052331	0.00405240	0.00052118	0.00090117
AT[T>A]AC	0.00131797	0.00048686	0.00035910	0.00268479	0.00022026	0.00089564
AT[T>A]AG	0.00085754	0.00021889	0.00028657	0.00360177	0.00016040	0.00022777
AT[T>A]AT	0.00193365	0.00113095	0.00049142	0.00666130	0.00052489	0.00068787
AT[T>A]CA	0.00127516	0.00065835	0.00029889	0.00180425	0.00002098	0.00064406
AT[T>A]CC	0.00148862	0.00059058	0.00029528	0.00065448	0.00015643	0.00084691
AT[T>A]CG	0.00011722	0.00006744	0.00006723	0.00012803	0.00002752	0.00008664
AT[T>A]CT	0.00181323	0.00085109	0.00050606	0.00207215	0.00009718	0.00063703
AT[T>A]GA	0.00066888	0.00017715	0.00032905	0.00334342	0.00035350	0.00039318
AT[T>A]GC	0.00066462	0.00049966	0.00035169	0.00224977	0.00021684	0.00060777
AT[T>A]GG	0.00045948	0.00025097	0.00026646	0.00381030	0.00018980	0.00046075
AT[T>A]GT	0.00095178	0.00046738	0.00048406	0.00587520	0.00070624	0.00026748
AT[T>A]TA	0.00569652	0.00175608	0.00142721	0.00235366	0.00042129	0.00241579
AT[T>A]TC	0.00490753	0.00145505	0.00117864	0.00082677	0.00034698	0.00186947
AT[T>A]TG	0.00501184	0.00160050	0.00119331	0.00225939	0.00069653	0.00144710
AT[T>A]TT	0.01066235	0.00438891	0.00326217	0.00203167	0.00097979	0.00408089
AT[T>C]AA	0.00106374	0.00048323	0.00042357	0.00000808	0.00008681	0.00084486
AT[T>C]AC	0.00109365	0.00032609	0.00014851	0.00016378	0.00027742	0.00082337
AT[T>C]AG	0.00102139	0.00026541	0.00033049	0.00017710	0.00060940	0.00133017
AT[T>C]AT	0.00136952	0.00038605	0.00035808	0.00017807	0.00031739	0.00062735
AT[T>C]CA	0.00036676	0.00012628	0.00015554	0.00003657	0.00014805	0.00005458
AT[T>C]CC	0.00030088	0.00016672	0.00005618	0.00006293	0.00009933	0.00056044
AT[T>C]CG	0.00000860	0.00001846	0.00003800	0.00000056	0.00003004	0.00005442
AT[T>C]CT	0.00040062	0.00024034	0.00012920	0.00007954	0.00039492	0.00050314
AT[T>C]GA	0.00033177	0.00013027	0.00011564	0.00001799	0.00011383	0.00051117
AT[T>C]GC	0.00016390	0.00013020	0.00025242	0.00002543	0.00010943	0.00060226
AT[T>C]GG	0.00035834	0.00025800	0.00020764	0.00004632	0.00043461	0.00036651
AT[T>C]GT	0.00032088	0.00028743	0.00017535	0.00005456	0.00043641	0.00082668
AT[T>C]TA	0.00015744	0.00017310	0.00025075	0.00004711	0.00009262	0.00052520
AT[T>C]TC	0.00000433	0.00003459	0.00006950	0.00000948	0.00006528	0.00012140
AT[T>C]TG	0.00055723	0.00050574	0.00029720	0.00012202	0.00101191	0.00077601

AT[T>C]TT	0.00046989	0.00042857	0.00022581	0.00005216	0.00047902	0.00046173
AT[T>G]AA	0.00290156	0.00101539	0.00057985	0.00028162	0.00090043	0.00057078
AT[T>G]AC	0.00061073	0.00029445	0.00020467	0.00011192	0.00021699	0.00021871
AT[T>G]AG	0.00100845	0.00014504	0.00026009	0.00019920	0.00066723	0.00024710
AT[T>G]AT	0.00106956	0.00027646	0.00022274	0.00033098	0.00078238	0.00035592
AT[T>G]CA	0.00326791	0.00090552	0.00088647	0.00010025	0.00105546	0.00036500
AT[T>G]CC	0.00194334	0.00060172	0.00052322	0.00008933	0.00059176	0.00012751
AT[T>G]CG	0.00012765	0.00001408	0.00001113	0.00000674	0.00007952	0.00002311
AT[T>G]CT	0.00327564	0.00085594	0.00057894	0.00016122	0.00095049	0.00008933
AT[T>G]GA	0.00206021	0.00056704	0.00050522	0.00006281	0.00071696	0.00019930
AT[T>G]GC	0.00086343	0.00025411	0.00012676	0.00013543	0.00053352	0.00023178
AT[T>G]GG	0.00074705	0.00024121	0.00010154	0.00007725	0.00044114	0.00017179
AT[T>G]GT	0.00120244	0.00015319	0.00039679	0.00030098	0.00052969	0.00045785
AT[T>G]TA	0.00446585	0.00139017	0.00086549	0.00016884	0.00191116	0.00138098
AT[T>G]TC	0.00320565	0.00081063	0.00027777	0.00015116	0.00103958	0.00013919
AT[T>G]TG	0.00152698	0.00049324	0.00037264	0.00010185	0.00067992	0.00042925
AT[T>G]TT	0.00747602	0.00214030	0.00094457	0.00021322	0.00237061	0.00054582
CA[C>A]AA	0.00087972	0.00254506	0.00345401	0.00047798	0.00263747	0.00024018
CA[C>A]AC	0.00065768	0.00188078	0.00312771	0.00032145	0.00120996	0.00021509
CA[C>A]AG	0.00078737	0.00125299	0.00280335	0.00035494	0.00102579	0.00017360
CA[C>A]AT	0.00086009	0.00173715	0.00316087	0.00039097	0.00126455	0.00011145
CA[C>A]CA	0.00058873	0.00155335	0.00369062	0.00040229	0.00085809	0.00031274
CA[C>A]CC	0.00053839	0.00106179	0.00175285	0.00038571	0.00098334	0.00072807
CA[C>A]CG	0.00007422	0.00032837	0.00041533	0.00002976	0.00010230	0.00006840
CA[C>A]CT	0.00049708	0.00141917	0.00191577	0.00037367	0.00102866	0.00047271
CA[C>A]GA	0.00001199	0.00028032	0.00056878	0.00002771	0.00030727	0.00004732
CA[C>A]GC	0.00014528	0.00032039	0.00089256	0.00002336	0.00023405	0.00019855
CA[C>A]GG	0.00006102	0.00015988	0.00062293	0.00010581	0.00039059	0.00028464
CA[C>A]GT	0.00013940	0.00034222	0.00091109	0.00009266	0.00022869	0.00025313
CA[C>A]TA	0.00018953	0.00052370	0.00131074	0.00012061	0.00061135	0.00035806
CA[C>A]TC	0.00031569	0.00073292	0.00105620	0.00020126	0.00034990	0.00038087
CA[C>A]TG	0.00008672	0.00102795	0.00250246	0.00036023	0.00100656	0.00097322
CA[C>A]TT	0.00007871	0.00099389	0.00162335	0.00028496	0.00123757	0.00060177
CA[C>G]AA	0.00095618	0.00040028	0.00115652	0.00010878	0.00098429	0.00053570
CA[C>G]AC	0.00059029	0.00017889	0.00060490	0.00014606	0.00053572	0.00018176
CA[C>G]AG	0.00088377	0.00085792	0.00114698	0.00010704	0.00225671	0.00150522
CA[C>G]AT	0.00038550	0.00016938	0.00099973	0.00006687	0.00055543	0.00024873
CA[C>G]CA	0.00094718	0.00047171	0.00160366	0.00009109	0.00124041	0.00057625
CA[C>G]CC	0.00057800	0.00037567	0.00067392	0.00003166	0.00056893	0.00033057
CA[C>G]CG	0.00021278	0.00011234	0.00011069	0.00000626	0.00014010	0.00005338
CA[C>G]CT	0.00111328	0.00046457	0.00070204	0.00008907	0.00060591	0.00052913
CA[C>G]GA	0.00009105	0.00005762	0.00018269	0.00004384	0.00021155	0.00018122
CA[C>G]GC	0.00012905	0.00015134	0.00041341	0.00002745	0.00023213	0.00056653
CA[C>G]GG	0.00017812	0.00005546	0.00009712	0.00000189	0.00014717	0.00012327
CA[C>G]GT	0.00010196	0.00019240	0.00036451	0.00001409	0.00032365	0.00015034
CA[C>G]TA	0.00099716	0.00062775	0.00088331	0.00000799	0.00061098	0.00055216
CA[C>G]TC	0.00125863	0.00061592	0.00034022	0.00006203	0.00082112	0.00048513
CA[C>G]TG	0.00155977	0.00065098	0.00110147	0.00010249	0.00091105	0.00059800
CA[C>G]TT	0.00192413	0.00079900	0.00077089	0.00017698	0.00167144	0.00045820
CA[C>T]AA	0.00048231	0.00160229	0.00135904	0.00013308	0.00167600	0.00104920
CA[C>T]AC	0.00072679	0.00164211	0.00101605	0.00005014	0.00142698	0.00135294
CA[C>T]AG	0.00101178	0.00153490	0.00156751	0.00006860	0.00161686	0.00166448
CA[C>T]AT	0.00139285	0.00211064	0.00134067	0.00032237	0.00275095	0.00218478

CA[C>T]CA	0.00081794	0.00178083	0.00151978	0.00013730	0.00190070	0.00211293
CA[C>T]CC	0.00053735	0.00184925	0.00124212	0.00018275	0.00138357	0.00203367
CA[C>T]CG	0.00033466	0.00030887	0.00016670	0.00003790	0.00019564	0.00030852
CA[C>T]CT	0.00066104	0.00239975	0.00110246	0.00013619	0.00237840	0.00247781
CA[C>T]GA	0.00046019	0.00091311	0.00022733	0.00010699	0.00111225	0.00080895
CA[C>T]GC	0.00044913	0.00094881	0.00107691	0.00024110	0.00181004	0.00046198
CA[C>T]GG	0.00038584	0.00091459	0.00076719	0.00013093	0.00083502	0.00125859
CA[C>T]GT	0.00034583	0.00095574	0.00035165	0.00023007	0.00114091	0.00067677
CA[C>T]TA	0.00056113	0.00098550	0.00112992	0.00003377	0.00078721	0.00114294
CA[C>T]TC	0.00102053	0.00113141	0.00098838	0.00004790	0.00094401	0.00131885
CA[C>T]TG	0.00102139	0.00183477	0.00129347	0.00020085	0.00178177	0.00276013
CA[C>T]TT	0.00083165	0.00172572	0.00098139	0.00009138	0.00178079	0.00235223
CA[T>A]AA	0.00058837	0.00085673	0.00080210	0.00326416	0.00090468	0.00037163
CA[T>A]AC	0.00030728	0.00046782	0.00010220	0.00288267	0.00021408	0.00047667
CA[T>A]AG	0.00015294	0.00045358	0.00029538	0.00438702	0.00037270	0.00069230
CA[T>A]AT	0.00014711	0.00033318	0.00020387	0.00873547	0.00047887	0.00000996
CA[T>A]CA	0.00047102	0.00055496	0.00029882	0.00143112	0.00038215	0.00031093
CA[T>A]CC	0.00047777	0.00033100	0.00040357	0.00048701	0.00012176	0.00048487
CA[T>A]CG	0.00001942	0.00001642	0.00004255	0.00013860	0.00009308	0.00001789
CA[T>A]CT	0.00050326	0.00041260	0.00037576	0.00199177	0.00039078	0.00079181
CA[T>A]GA	0.00023753	0.00085767	0.00041513	0.00299054	0.00103618	0.00055209
CA[T>A]GC	0.00021478	0.00061291	0.00062538	0.00292435	0.00055913	0.00054850
CA[T>A]GG	0.00026972	0.00032227	0.00037870	0.00577464	0.00065228	0.00025545
CA[T>A]GT	0.00015483	0.00056219	0.00046610	0.00837026	0.00077065	0.00069360
CA[T>A]TA	0.00042906	0.00051391	0.00046255	0.00144292	0.00050494	0.00070790
CA[T>A]TC	0.00058452	0.00054453	0.00015991	0.00058429	0.00031604	0.00041449
CA[T>A]TG	0.00042361	0.00056176	0.00036125	0.00186793	0.00034754	0.00048141
CA[T>A]TT	0.00069453	0.00110351	0.00048014	0.00196949	0.00088075	0.00100185
CA[T>C]AA	0.00061887	0.00041231	0.00024413	0.00025826	0.00091672	0.00126641
CA[T>C]AC	0.00096960	0.00039910	0.00009946	0.00053424	0.00090040	0.00169698
CA[T>C]AG	0.00094576	0.00097195	0.00046493	0.00090627	0.00229720	0.00143281
CA[T>C]AT	0.00075601	0.00077016	0.00032639	0.00158483	0.00129475	0.00138441
CA[T>C]CA	0.00044111	0.00026066	0.00001490	0.00007036	0.00047208	0.00090242
CA[T>C]CC	0.00036126	0.00012261	0.00012828	0.00003850	0.00032343	0.00087810
CA[T>C]CG	0.00000542	0.00001300	0.00002210	0.00000790	0.00004801	0.00018330
CA[T>C]CT	0.00048136	0.00036775	0.00021559	0.00009114	0.00083530	0.00135388
CA[T>C]GA	0.00057757	0.00026080	0.00026637	0.00028398	0.00109615	0.00196762
CA[T>C]GC	0.00017186	0.00037297	0.00049959	0.00006809	0.00118189	0.00199329
CA[T>C]GG	0.00080528	0.00023170	0.00070535	0.00033803	0.00207479	0.00246227
CA[T>C]GT	0.00127413	0.00045081	0.00056633	0.00056173	0.00149558	0.00198304
CA[T>C]TA	0.00053736	0.00035672	0.00026599	0.00001468	0.00083666	0.00106526
CA[T>C]TC	0.00075592	0.00041456	0.00022298	0.00002900	0.00063840	0.00113917
CA[T>C]TG	0.00079720	0.00189138	0.00059723	0.00024332	0.00304159	0.00196017
CA[T>C]TT	0.00186509	0.00117883	0.00045516	0.00020471	0.00182884	0.00231921
CA[T>G]AA	0.00078551	0.00040242	0.00010220	0.00018506	0.00049728	0.00053200
CA[T>G]AC	0.00035398	0.00012513	0.00020136	0.00005954	0.00020681	0.00005636
CA[T>G]AG	0.00071806	0.00037406	0.00013890	0.00042742	0.00047880	0.00071317
CA[T>G]AT	0.00044407	0.00019032	0.00019029	0.00014498	0.00030800	0.00008142
CA[T>G]CA	0.00088575	0.00040236	0.00039485	0.00002906	0.00044204	0.00018674
CA[T>G]CC	0.00045036	0.00026117	0.00004930	0.00003527	0.00027625	0.00029899
CA[T>G]CG	0.00006664	0.00000479	0.00001414	0.00000052	0.00002379	0.00006489
CA[T>G]CT	0.00100842	0.00036810	0.00006874	0.00004001	0.00047799	0.00028841
CA[T>G]GA	0.00107138	0.00042912	0.00022797	0.00015112	0.00072448	0.00072716

CA[T>G]GC	0.00068618	0.00026876	0.00016257	0.00018180	0.00053383	0.00065133
CA[T>G]GG	0.00027686	0.00026983	0.00038620	0.00005550	0.00059083	0.00046757
CA[T>G]GT	0.00091446	0.00025449	0.00039817	0.00032770	0.00042253	0.00060139
CA[T>G]TA	0.00138395	0.00038175	0.00045555	0.00000698	0.00046614	0.00054779
CA[T>G]TC	0.00123296	0.00034074	0.00022093	0.00001290	0.00058721	0.00071272
CA[T>G]TG	0.00108355	0.00039660	0.00020206	0.00007094	0.00021775	0.00031010
CA[T>G]TT	0.00267623	0.00090524	0.00070747	0.00016665	0.00071106	0.00096355
CC[C>A]AA	0.00013258	0.00044034	0.00233670	0.00046126	0.00062754	0.00038783
CC[C>A]AC	0.00068608	0.00033850	0.00286084	0.00053570	0.00055940	0.00076226
CC[C>A]AG	0.00030256	0.00051719	0.00305478	0.00061918	0.00138180	0.00065567
CC[C>A]AT	0.00059972	0.00057104	0.00376294	0.00041541	0.00068812	0.00045578
CC[C>A]CA	0.00001948	0.00088223	0.00371509	0.00060469	0.00066789	0.00055842
CC[C>A]CC	0.00037799	0.00055745	0.00198031	0.00044339	0.00031953	0.00069465
CC[C>A]CG	0.00000537	0.00006586	0.00046362	0.00010418	0.00013966	0.00017179
CC[C>A]CT	0.00039186	0.00080734	0.00300226	0.00039091	0.00102099	0.00114519
CC[C>A]GA	0.00000982	0.00002555	0.00038760	0.00003971	0.00005789	0.00026215
CC[C>A]GC	0.00004777	0.00012264	0.00044903	0.00008854	0.00021443	0.00027777
CC[C>A]GG	0.00009382	0.00005841	0.00084382	0.00007756	0.00032829	0.00025980
CC[C>A]GT	0.00001453	0.00005615	0.00054518	0.00003742	0.00020648	0.00027978
CC[C>A]TA	0.00009097	0.00008042	0.00126350	0.00018599	0.00022514	0.00065834
CC[C>A]TC	0.00059270	0.00013876	0.00164980	0.00022748	0.00040763	0.00125053
CC[C>A]TG	0.00027092	0.00033631	0.00223758	0.00032683	0.00049144	0.00119193
CC[C>A]TT	0.00096497	0.00031120	0.00134344	0.00029626	0.00076037	0.00168629
CC[C>G]AA	0.00085028	0.00035479	0.00062332	0.00011828	0.00105385	0.00056840
CC[C>G]AC	0.00015928	0.00018469	0.00034824	0.00007490	0.00034262	0.00053694
CC[C>G]AG	0.00119235	0.00029099	0.00097750	0.00008146	0.00071600	0.00067489
CC[C>G]AT	0.00023625	0.00016059	0.00039287	0.00000992	0.00067920	0.00038214
CC[C>G]CA	0.00114736	0.00041439	0.00118029	0.00016768	0.00104914	0.00074789
CC[C>G]CC	0.00058878	0.00022056	0.00063108	0.00008007	0.00064847	0.00049990
CC[C>G]CG	0.00014270	0.00007894	0.00011921	0.00000511	0.00019693	0.00011157
CC[C>G]CT	0.00117912	0.00032483	0.00071437	0.00011639	0.00104293	0.00066359
CC[C>G]GA	0.00010323	0.00004644	0.00012578	0.00001939	0.00017420	0.00027974
CC[C>G]GC	0.00005696	0.00007522	0.00012985	0.00000027	0.00020838	0.00028593
CC[C>G]GG	0.00011165	0.00015144	0.00026148	0.00000507	0.00011006	0.00056914
CC[C>G]GT	0.00012307	0.00013902	0.00016343	0.00000010	0.00026981	0.00018215
CC[C>G]TA	0.00113507	0.00039682	0.00057420	0.00003008	0.00048132	0.00045880
CC[C>G]TC	0.00157273	0.00023468	0.00038882	0.00016748	0.00099407	0.00067061
CC[C>G]TG	0.00108289	0.00048137	0.00045865	0.00010322	0.00108218	0.00078738
CC[C>G]TT	0.00195847	0.00064380	0.00081345	0.00016727	0.00129222	0.00115532
CC[C>T]AA	0.00031418	0.00141161	0.00136577	0.00011378	0.00122261	0.00128539
CC[C>T]AC	0.00025025	0.00135299	0.00147866	0.00011811	0.00140267	0.00108113
CC[C>T]AG	0.00112427	0.00234300	0.00258585	0.00027740	0.00172103	0.00190154
CC[C>T]AT	0.00104737	0.00125829	0.00185027	0.00024163	0.00198043	0.00126935
CC[C>T]CA	0.00012939	0.00237342	0.00193995	0.00029432	0.00182972	0.00182986
CC[C>T]CC	0.00032858	0.00154251	0.00134785	0.00021710	0.00137131	0.00124177
CC[C>T]CG	0.00010404	0.00021382	0.00040224	0.00004028	0.00045823	0.00032688
CC[C>T]CT	0.00108525	0.00218304	0.00167467	0.00041415	0.00171960	0.00184656
CC[C>T]GA	0.00020855	0.00025765	0.00034548	0.00009596	0.00056431	0.00019143
CC[C>T]GC	0.00003378	0.00029628	0.00063552	0.00014814	0.00080515	0.00097147
CC[C>T]GG	0.00033260	0.00118114	0.00041231	0.00016824	0.00160627	0.00119311
CC[C>T]GT	0.00023250	0.00028465	0.00049950	0.00021415	0.00047256	0.00118468
CC[C>T]TA	0.00023174	0.00124786	0.00166829	0.00015086	0.00154385	0.00132295
CC[C>T]TC	0.00053017	0.00156459	0.00165026	0.00030873	0.00149048	0.00173499

CC[C>T]TG	0.00048348	0.00167066	0.00189980	0.00029587	0.00190218	0.00227502
CC[C>T]TT	0.00039151	0.00189702	0.00198547	0.00032573	0.00173990	0.00269080
CC[T>A]AA	0.00027709	0.00024811	0.00025738	0.00657363	0.00040854	0.00047350
CC[T>A]AC	0.00044337	0.00010396	0.00009589	0.00577711	0.00014571	0.00015960
CC[T>A]AG	0.00004545	0.00003767	0.00021402	0.00848052	0.00011172	0.00004200
CC[T>A]AT	0.00002113	0.00002173	0.00008226	0.01287866	0.00010368	0.00003300
CC[T>A]CA	0.00030168	0.00049619	0.00045742	0.00593920	0.00026142	0.00080790
CC[T>A]CC	0.00091667	0.00052619	0.00069172	0.00420047	0.00052309	0.00186910
CC[T>A]CG	0.00004016	0.00005007	0.00002534	0.00080954	0.00004764	0.00021485
CC[T>A]CT	0.00066078	0.00052058	0.00047359	0.00703654	0.00049941	0.00109994
CC[T>A]GA	0.00031941	0.00020589	0.00040723	0.00951720	0.00077989	0.00071914
CC[T>A]GC	0.00028738	0.00038831	0.00048183	0.00978506	0.00037514	0.00095090
CC[T>A]GG	0.00029096	0.00036862	0.00048558	0.01415350	0.00060267	0.00045050
CC[T>A]GT	0.00007667	0.00013303	0.00021053	0.01812334	0.00042894	0.00077063
CC[T>A]TA	0.00015701	0.00033655	0.00025104	0.00367232	0.00027541	0.00044867
CC[T>A]TC	0.00049863	0.00029610	0.00027262	0.00299371	0.00032012	0.00087238
CC[T>A]TG	0.00014407	0.00026145	0.00021620	0.00637546	0.00029242	0.00068368
CC[T>A]TT	0.00059528	0.00084631	0.00056295	0.00619927	0.00070408	0.00133206
CC[T>C]AA	0.00046189	0.00022305	0.00026459	0.00007371	0.00045779	0.00135694
CC[T>C]AC	0.00069215	0.00020884	0.00023880	0.00017195	0.00012499	0.00138448
CC[T>C]AG	0.00077844	0.00036976	0.00018467	0.00041845	0.00033990	0.00156088
CC[T>C]AT	0.00055226	0.00021893	0.00014536	0.00024764	0.00052369	0.00130978
CC[T>C]CA	0.00056400	0.00033427	0.00015873	0.00008746	0.00042896	0.00124836
CC[T>C]CC	0.00046778	0.00024559	0.00018711	0.00013620	0.00033910	0.00216131
CC[T>C]CG	0.00002587	0.00005161	0.00003396	0.00001068	0.00012015	0.00028531
CC[T>C]CT	0.00039906	0.00056162	0.00030307	0.00012743	0.00037051	0.00164786
CC[T>C]GA	0.00037125	0.00032719	0.00030788	0.00006302	0.00028978	0.00227247
CC[T>C]GC	0.00021480	0.00021573	0.00019164	0.00005889	0.00027862	0.00188039
CC[T>C]GG	0.00033296	0.00042601	0.00040182	0.00011015	0.00088900	0.00183696
CC[T>C]GT	0.00028716	0.00020675	0.00056831	0.00008934	0.00064190	0.00190033
CC[T>C]TA	0.00031154	0.00016803	0.00012787	0.00007132	0.00011993	0.00075409
CC[T>C]TC	0.00042384	0.00020599	0.00032152	0.00007831	0.00018620	0.00137542
CC[T>C]TG	0.00045899	0.00040194	0.00036924	0.00012541	0.00034386	0.00132491
CC[T>C]TT	0.00048084	0.00037021	0.00019588	0.00008887	0.00028798	0.00229499
CC[T>G]AA	0.00052361	0.00019654	0.00019421	0.00008776	0.00033721	0.00030576
CC[T>G]AC	0.00011413	0.00011315	0.00000330	0.00020108	0.00008973	0.00015247
CC[T>G]AG	0.00035086	0.00012656	0.00027693	0.00023772	0.00024848	0.00004770
CC[T>G]AT	0.00020058	0.00006541	0.00008087	0.00024813	0.00023843	0.00014455
CC[T>G]CA	0.00111700	0.00024048	0.00015625	0.00012218	0.00029516	0.00051118
CC[T>G]CC	0.00087669	0.00025049	0.00020072	0.00011686	0.00033712	0.00022095
CC[T>G]CG	0.00013240	0.00001421	0.00004717	0.00002435	0.00002000	0.00011153
CC[T>G]CT	0.00100640	0.00024460	0.00026375	0.00016944	0.00034687	0.00027647
CC[T>G]GA	0.00072525	0.00014657	0.00024304	0.00023372	0.00063189	0.00020869
CC[T>G]GC	0.00032586	0.00010846	0.00024446	0.00026973	0.00051884	0.00036554
CC[T>G]GG	0.00055943	0.00006339	0.00012588	0.00005667	0.00041751	0.00043498
CC[T>G]GT	0.00051269	0.00011358	0.00012148	0.00074595	0.00050622	0.00023280
CC[T>G]TA	0.00078437	0.00032669	0.00036492	0.00007217	0.00049895	0.00051213
CC[T>G]TC	0.00116040	0.00016461	0.00018601	0.00002264	0.00073563	0.00051504
CC[T>G]TG	0.00080945	0.00018886	0.00006427	0.00010674	0.00046418	0.00032149
CC[T>G]TT	0.00141456	0.00056323	0.00038105	0.00011195	0.00081798	0.00099850
CG[C>A]AA	0.00001676	0.00003427	0.00011948	0.00000343	0.00003540	0.00002211
CG[C>A]AC	0.00001849	0.00002731	0.00016142	0.00000420	0.00008930	0.00004501
CG[C>A]AG	0.00005328	0.00002895	0.00012609	0.00000460	0.00008373	0.00011259

CG[C>A]AT	0.00004525	0.00013403	0.00008456	0.00000158	0.00006670	0.00005235
CG[C>A]CA	0.00013189	0.00021576	0.00016765	0.00007172	0.00004846	0.00008373
CG[C>A]CC	0.00010972	0.00022143	0.00029989	0.00002415	0.00006619	0.00025342
CG[C>A]CG	0.00004806	0.00001134	0.00004345	0.00001478	0.00002070	0.00004488
CG[C>A]CT	0.00011831	0.00011377	0.00047051	0.00005990	0.00011677	0.00038884
CG[C>A]GA	0.00000192	0.00002018	0.00006858	0.00000072	0.00000751	0.00003747
CG[C>A]GC	0.00002323	0.00009301	0.00013830	0.00000018	0.00010743	0.00003129
CG[C>A]GG	0.00001706	0.00004495	0.00015637	0.00000003	0.00009505	0.00005382
CG[C>A]GT	0.00003432	0.00002503	0.00005399	0.00000436	0.00000894	0.00001147
CG[C>A]TA	0.00007917	0.00001934	0.00004643	0.00000324	0.00002987	0.00004044
CG[C>A]TC	0.00007944	0.00000745	0.00006726	0.00000457	0.00005969	0.00010202
CG[C>A]TG	0.00009086	0.00008674	0.00003706	0.00000096	0.00002191	0.00006029
CG[C>A]TT	0.00010861	0.00011844	0.00012187	0.00000019	0.00002538	0.00003977
CG[C>G]AA	0.00000687	0.00006880	0.00005968	0.00000881	0.00011615	0.00005651
CG[C>G]AC	0.00002205	0.00002764	0.00007776	0.00000001	0.00003480	0.00001320
CG[C>G]AG	0.00002841	0.00004722	0.00006704	0.00001296	0.00003322	0.00008794
CG[C>G]AT	0.00001559	0.00002474	0.00003613	0.00000482	0.00000909	0.00004222
CG[C>G]CA	0.00009528	0.00006141	0.00011515	0.00000186	0.00012122	0.00008788
CG[C>G]CC	0.00001728	0.00007790	0.00026983	0.00001670	0.00016448	0.00008823
CG[C>G]CG	0.00001957	0.00000874	0.00003367	0.00000305	0.00002001	0.00003032
CG[C>G]CT	0.00012605	0.00007070	0.00021089	0.00000791	0.00007316	0.00011294
CG[C>G]GA	0.00000456	0.00001458	0.00002414	0.00000884	0.00000431	0.00001588
CG[C>G]GC	0.00003977	0.00002408	0.00001646	0.00001076	0.00003084	0.00007349
CG[C>G]GG	0.00001426	0.00002806	0.00007596	0.00000616	0.00001735	0.00002015
CG[C>G]GT	0.00002017	0.00001221	0.00000833	0.00000000	0.00003371	0.00002931
CG[C>G]TA	0.00005207	0.00002199	0.00003028	0.00000426	0.00003529	0.00001346
CG[C>G]TC	0.00004473	0.00003474	0.00004835	0.00000546	0.00008382	0.00008550
CG[C>G]TG	0.00008815	0.00001806	0.00010039	0.00000991	0.00006533	0.00009831
CG[C>G]TT	0.00006648	0.00001695	0.00008788	0.00000012	0.00011060	0.00008548
CG[C>T]AA	0.00001244	0.00026283	0.00018974	0.00001937	0.00012913	0.00019983
CG[C>T]AC	0.00005746	0.00034575	0.00007948	0.00000423	0.00030962	0.00020166
CG[C>T]AG	0.00001019	0.00030324	0.00025415	0.00001496	0.00038823	0.00019019
CG[C>T]AT	0.00013844	0.00013808	0.00024728	0.00000387	0.00030763	0.00004383
CG[C>T]CA	0.00004841	0.00043218	0.00044757	0.00000050	0.00023543	0.00027950
CG[C>T]CC	0.00012265	0.00078654	0.00042441	0.00003074	0.00054147	0.00040645
CG[C>T]CG	0.00001413	0.00004991	0.00002370	0.00002171	0.00002814	0.00020646
CG[C>T]CT	0.00009670	0.00088727	0.00057884	0.00005828	0.00060958	0.00060396
CG[C>T]GA	0.00004294	0.00022187	0.00017648	0.00000856	0.00016967	0.00011526
CG[C>T]GC	0.00006713	0.00015306	0.00036436	0.00003657	0.00045408	0.00006985
CG[C>T]GG	0.00003567	0.00022062	0.00023327	0.00001212	0.00045757	0.00016904
CG[C>T]GT	0.00000513	0.00009516	0.00013299	0.00001377	0.00018340	0.00005876
CG[C>T]TA	0.00000480	0.00008284	0.00014376	0.00001382	0.00007669	0.00023523
CG[C>T]TC	0.00007579	0.00027003	0.00029550	0.00001625	0.00012444	0.00025447
CG[C>T]TG	0.00006329	0.00030469	0.00025698	0.00001291	0.00027690	0.00034551
CG[C>T]TT	0.00001376	0.00024123	0.00023831	0.00000795	0.00023755	0.00019913
CG[T>A]AA	0.00004783	0.00005216	0.00007171	0.00027443	0.00002091	0.00001294
CG[T>A]AC	0.00002712	0.00004608	0.00002065	0.00019679	0.00000584	0.00002360
CG[T>A]AG	0.00002212	0.00001753	0.00002278	0.00045051	0.00001417	0.00002083
CG[T>A]AT	0.00002020	0.00000990	0.00004815	0.00069419	0.00001150	0.00005107
CG[T>A]CA	0.00011289	0.00001378	0.00001725	0.00009169	0.00003511	0.00004235
CG[T>A]CC	0.00011642	0.00001030	0.00003247	0.00003989	0.00001675	0.00010010
CG[T>A]CG	0.00000450	0.00000216	0.00001143	0.00000256	0.00002897	0.00002362
CG[T>A]CT	0.00010423	0.00007213	0.00003969	0.00023237	0.00008258	0.00005975

CG[T>A]GA	0.00008123	0.00003541	0.00004118	0.00038110	0.00010837	0.00010406
CG[T>A]GC	0.00009957	0.00008357	0.00002474	0.00017045	0.00006733	0.00005981
CG[T>A]GG	0.00008864	0.00004765	0.00003523	0.00037083	0.00012679	0.00005573
CG[T>A]GT	0.00003848	0.00006620	0.00004765	0.00052887	0.00021037	0.00006302
CG[T>A]TA	0.00003585	0.00006353	0.00002557	0.00006188	0.00000804	0.00011120
CG[T>A]TC	0.00002932	0.00003218	0.00003383	0.00004285	0.00001343	0.00002288
CG[T>A]TG	0.00007772	0.00001438	0.00002095	0.00008362	0.00004159	0.00004554
CG[T>A]TT	0.00017646	0.00002929	0.00003960	0.00010473	0.00004394	0.00005628
CG[T>C]AA	0.00002345	0.00005575	0.00001793	0.00000428	0.00002867	0.00011339
CG[T>C]AC	0.00005579	0.00001247	0.00002173	0.00001649	0.00001508	0.00003702
CG[T>C]AG	0.00005770	0.00003667	0.00007148	0.00000644	0.00012630	0.00001239
CG[T>C]AT	0.00011182	0.00013697	0.00003449	0.00004049	0.00007892	0.00002884
CG[T>C]CA	0.00002200	0.00006870	0.00002219	0.00001109	0.00003907	0.00007504
CG[T>C]CC	0.00001744	0.00005774	0.00002061	0.00000433	0.00005930	0.00016646
CG[T>C]CG	0.00000068	0.00000380	0.00000506	0.00000596	0.00000360	0.00001960
CG[T>C]CT	0.00009998	0.00003674	0.00004933	0.00000849	0.00013688	0.00008400
CG[T>C]GA	0.00009154	0.00001745	0.00003485	0.00000183	0.00013237	0.00011024
CG[T>C]GC	0.00007942	0.00003281	0.00006633	0.00005469	0.00016712	0.00006035
CG[T>C]GG	0.00003182	0.00003554	0.00008335	0.00000912	0.00008064	0.00015227
CG[T>C]GT	0.00007511	0.00001155	0.00004617	0.00001888	0.00008989	0.00021558
CG[T>C]TA	0.00001605	0.00000793	0.00002222	0.00000604	0.00001387	0.00002497
CG[T>C]TC	0.00003732	0.00004733	0.00002067	0.00001673	0.00006783	0.00001947
CG[T>C]TG	0.00006108	0.00018473	0.00001729	0.00002641	0.00025754	0.00024453
CG[T>C]TT	0.00004866	0.00002876	0.00011663	0.00001314	0.00013956	0.00008581
CG[T>G]AA	0.00000267	0.00001997	0.00002732	0.00000490	0.00003703	0.00003711
CG[T>G]AC	0.00000520	0.00000622	0.00000722	0.00000000	0.00000303	0.00000056
CG[T>G]AG	0.00000476	0.00001895	0.00001230	0.00000957	0.00004050	0.00000272
CG[T>G]AT	0.00000990	0.00001516	0.00003325	0.00001664	0.00000346	0.00000040
CG[T>G]CA	0.00002536	0.00001820	0.00001274	0.00000375	0.00000320	0.00000233
CG[T>G]CC	0.00000859	0.00000670	0.00000342	0.00000486	0.00001119	0.00003851
CG[T>G]CG	0.00000062	0.00000124	0.00000050	0.00000000	0.00000010	0.00000719
CG[T>G]CT	0.00005313	0.00001344	0.00000756	0.00001365	0.00001404	0.00001575
CG[T>G]GA	0.00003320	0.00002193	0.00001518	0.00000840	0.00001098	0.00008419
CG[T>G]GC	0.00002197	0.00000544	0.00003573	0.00002404	0.00005164	0.00005623
CG[T>G]GG	0.00001386	0.00000279	0.00000488	0.00000900	0.00002303	0.00008755
CG[T>G]GT	0.00002498	0.00004458	0.00001611	0.00001003	0.00003002	0.00002716
CG[T>G]TA	0.00003497	0.00000546	0.00000525	0.00000209	0.00001801	0.00002247
CG[T>G]TC	0.00001666	0.00000963	0.00001376	0.00000027	0.00005351	0.00010147
CG[T>G]TG	0.00001360	0.00000730	0.00003449	0.00000326	0.00002512	0.00002678
CG[T>G]TT	0.00007579	0.00003074	0.00004243	0.00000425	0.00005381	0.00001225
CT[C>A]AA	0.00104707	0.00195932	0.00265393	0.00045817	0.00081645	0.00046233
CT[C>A]AC	0.00242396	0.00158078	0.00224758	0.00034351	0.00027794	0.00135443
CT[C>A]AG	0.00174849	0.00144109	0.00222877	0.00038578	0.00036208	0.00122244
CT[C>A]AT	0.00200365	0.00172586	0.00251838	0.00023259	0.00079149	0.00110123
CT[C>A]CA	0.00097264	0.00246269	0.00465210	0.00060927	0.00102300	0.00050714
CT[C>A]CC	0.00144057	0.00191942	0.00389669	0.00035964	0.00085978	0.00111017
CT[C>A]CG	0.00017667	0.00026746	0.00059101	0.00001831	0.00021751	0.00008044
CT[C>A]CT	0.00144554	0.00277829	0.00443114	0.00074859	0.00110389	0.00068006
CT[C>A]GA	0.00008017	0.00029846	0.00046823	0.00004929	0.00029193	0.00018651
CT[C>A]GC	0.00015290	0.00023109	0.00028909	0.00003388	0.00015796	0.00016067
CT[C>A]GG	0.00020416	0.00061827	0.00073554	0.00009338	0.00033720	0.00029245
CT[C>A]GT	0.00008020	0.00031815	0.00038840	0.00004297	0.00027266	0.00014290
CT[C>A]TA	0.00046008	0.00071148	0.00131271	0.00022154	0.00021127	0.00010131

CT[C>A]TC	0.00086286	0.00107532	0.00147419	0.00021648	0.00018990	0.00060339
CT[C>A]TG	0.00086934	0.00103452	0.00193304	0.00033324	0.00070433	0.00097106
CT[C>A]TT	0.00067571	0.00160565	0.00157876	0.00017719	0.00053197	0.00048992
CT[C>G]AA	0.00050409	0.00098298	0.00094646	0.00017872	0.00087598	0.00074692
CT[C>G]AC	0.00058516	0.00038272	0.00056195	0.00006190	0.00030484	0.00040125
CT[C>G]AG	0.00103309	0.00040976	0.00071140	0.00020594	0.00044860	0.00062576
CT[C>G]AT	0.00073754	0.00021879	0.00040741	0.00009990	0.00052125	0.00044872
CT[C>G]CA	0.00108381	0.00107955	0.00178967	0.00037551	0.00089751	0.00089174
CT[C>G]CC	0.00154873	0.00077291	0.00118054	0.00012519	0.00134559	0.00096420
CT[C>G]CG	0.00010386	0.00007356	0.00014140	0.00005586	0.00015289	0.00018763
CT[C>G]CT	0.00195601	0.00092745	0.00168052	0.00009448	0.00127573	0.00147440
CT[C>G]GA	0.00014415	0.00011023	0.00014298	0.00002626	0.00020155	0.00025004
CT[C>G]GC	0.00005585	0.00005297	0.00006504	0.00000910	0.00011542	0.00020441
CT[C>G]GG	0.00020984	0.00008975	0.00019092	0.00003697	0.00019894	0.00020396
CT[C>G]GT	0.00009886	0.00008970	0.00014958	0.00000003	0.00009363	0.00013222
CT[C>G]TA	0.00145385	0.00113118	0.00075458	0.00011615	0.00134926	0.00080317
CT[C>G]TC	0.00148258	0.00106309	0.00043402	0.00013873	0.00124713	0.00115613
CT[C>G]TG	0.00144138	0.00105915	0.00099885	0.00008252	0.00107454	0.00059571
CT[C>G]TT	0.00185888	0.00138419	0.00090715	0.00032772	0.00167927	0.00099770
CT[C>T]AA	0.00184440	0.00237564	0.00165624	0.00012240	0.00114419	0.00099045
CT[C>T]AC	0.00184743	0.00196847	0.00134104	0.00010001	0.00164780	0.00046506
CT[C>T]AG	0.00243337	0.00292818	0.00112538	0.00018214	0.00167059	0.00214220
CT[C>T]AT	0.00249125	0.00290917	0.00198906	0.00008483	0.00193535	0.00170159
CT[C>T]CA	0.00084641	0.00239221	0.00189273	0.00027233	0.00208619	0.00151947
CT[C>T]CC	0.00100496	0.00399556	0.00224209	0.00031167	0.00297564	0.00156200
CT[C>T]CG	0.00009994	0.00043518	0.00009341	0.00002199	0.00039440	0.00011416
CT[C>T]CT	0.00174981	0.00525485	0.00244223	0.00024643	0.00308208	0.00200011
CT[C>T]GA	0.00009207	0.00040311	0.00018440	0.00001063	0.00046912	0.00046229
CT[C>T]GC	0.00011774	0.00026145	0.00026833	0.00001561	0.00025228	0.00053817
CT[C>T]GG	0.00025478	0.00074659	0.00048329	0.00007600	0.00103384	0.00075119
CT[C>T]GT	0.00006731	0.00047373	0.00036236	0.00001685	0.00068501	0.00056928
CT[C>T]TA	0.00020076	0.00149977	0.00099313	0.00010971	0.00086589	0.00137120
CT[C>T]TC	0.00060076	0.00197935	0.00105024	0.00014250	0.00126061	0.00132434
CT[C>T]TG	0.00070594	0.00218154	0.00127981	0.00010349	0.00128204	0.00161635
CT[C>T]TT	0.00074919	0.00179738	0.00136205	0.00008156	0.00124816	0.00160082
CT[T>A]AA	0.00043584	0.00059360	0.00034805	0.00428543	0.00027963	0.00042137
CT[T>A]AC	0.00056448	0.00023218	0.00021856	0.00348490	0.00007267	0.00032271
CT[T>A]AG	0.00011444	0.00002085	0.00002164	0.00475267	0.00008468	0.00015669
CT[T>A]AT	0.00058204	0.00017998	0.00015394	0.00780039	0.00034737	0.00027770
CT[T>A]CA	0.00076256	0.00033480	0.00034252	0.00247008	0.00037746	0.00076529
CT[T>A]CC	0.00100238	0.00043341	0.00043107	0.00131475	0.00022755	0.00121019
CT[T>A]CG	0.00005410	0.00005971	0.00002445	0.00019726	0.00003097	0.00002904
CT[T>A]CT	0.00134859	0.00079200	0.00056098	0.00387064	0.00043462	0.00087786
CT[T>A]GA	0.00056937	0.00026322	0.00034947	0.00366554	0.00050768	0.00036558
CT[T>A]GC	0.00038063	0.00013316	0.00032619	0.00265974	0.00026075	0.00050641
CT[T>A]GG	0.00031670	0.00016417	0.00025519	0.00504701	0.00023796	0.00052996
CT[T>A]GT	0.00057190	0.00031919	0.00014761	0.00596980	0.00011080	0.00006979
CT[T>A]TA	0.00063460	0.00021681	0.00057285	0.00265369	0.00025347	0.00039165
CT[T>A]TC	0.00095713	0.00035216	0.00023707	0.00139364	0.00008367	0.00047840
CT[T>A]TG	0.00050078	0.00034302	0.00029371	0.00332310	0.00038338	0.00026752
CT[T>A]TT	0.00118256	0.00085409	0.00082425	0.00312788	0.00072790	0.00088084
CT[T>C]AA	0.00065567	0.00015502	0.00010881	0.00004936	0.00026762	0.00091735
CT[T>C]AC	0.00084802	0.00032688	0.00029848	0.00019028	0.00017316	0.00109817

CT[T>C]AG	0.00089385	0.00054126	0.00012721	0.00030546	0.00041513	0.00071111
CT[T>C]AT	0.00091446	0.00046044	0.00030248	0.00027853	0.00023435	0.00110345
CT[T>C]CA	0.00033231	0.00012559	0.00013139	0.00011650	0.00032248	0.00056699
CT[T>C]CC	0.00061007	0.00021495	0.00007972	0.00008860	0.00025524	0.00123973
CT[T>C]CG	0.00003348	0.00002235	0.00004618	0.00000684	0.00001605	0.00004005
CT[T>C]CT	0.00077231	0.00025271	0.00036094	0.00011740	0.00028865	0.00094163
CT[T>C]GA	0.00015089	0.00028408	0.00017721	0.00006851	0.00031094	0.00072667
CT[T>C]GC	0.00022515	0.00011348	0.00018060	0.00000730	0.00014984	0.00043428
CT[T>C]GG	0.00031768	0.00019182	0.00036521	0.00007025	0.00057868	0.00076397
CT[T>C]GT	0.00039929	0.00028988	0.00019194	0.00008664	0.00031904	0.00053459
CT[T>C]TA	0.00082690	0.00044379	0.00020751	0.00013646	0.00026934	0.00111366
CT[T>C]TC	0.00086159	0.00042241	0.00021623	0.00006743	0.00024732	0.00138042
CT[T>C]TG	0.00143242	0.00057240	0.00070353	0.00021417	0.00090430	0.00098081
CT[T>C]TT	0.00148841	0.00052860	0.00070705	0.00004719	0.00053190	0.00148183
CT[T>G]AA	0.00121169	0.00051511	0.00044937	0.00022440	0.00057483	0.00040859
CT[T>G]AC	0.00026983	0.00022515	0.00010476	0.00018164	0.00019004	0.00035129
CT[T>G]AG	0.00058043	0.00032409	0.00019058	0.00010976	0.00013924	0.00014360
CT[T>G]AT	0.00072063	0.00009367	0.00009131	0.00029916	0.00031658	0.00029152
CT[T>G]CA	0.00183416	0.00043197	0.00025202	0.00018655	0.00049638	0.00064572
CT[T>G]CC	0.00138262	0.00042153	0.00020985	0.00006175	0.00041403	0.00041979
CT[T>G]CG	0.00007627	0.00002133	0.00002867	0.00000009	0.00010658	0.00006865
CT[T>G]CT	0.00185648	0.00059812	0.00018756	0.00015378	0.00064739	0.00080073
CT[T>G]GA	0.00097301	0.00024163	0.00050164	0.00023970	0.00059553	0.00042850
CT[T>G]GC	0.00044666	0.00024229	0.00020382	0.00026238	0.00036650	0.00032343
CT[T>G]GG	0.00061966	0.00011723	0.00031682	0.00004388	0.00044832	0.00022522
CT[T>G]GT	0.00071327	0.00008541	0.00015287	0.00045503	0.00057410	0.00034686
CT[T>G]TA	0.00183996	0.00065525	0.00047250	0.00014102	0.00097876	0.00090893
CT[T>G]TC	0.00186113	0.00057032	0.00040048	0.00004442	0.00059075	0.00031210
CT[T>G]TG	0.00130425	0.00049131	0.00020343	0.00012893	0.00074985	0.00054956
CT[T>G]TT	0.00302738	0.00104861	0.00077115	0.00020800	0.00155630	0.00098754
GA[C>A]AA	0.00094215	0.00321915	0.00345696	0.00041620	0.00344066	0.00028832
GA[C>A]AC	0.00070119	0.00152656	0.00200453	0.00029880	0.00042535	0.00017763
GA[C>A]AG	0.00081800	0.00151505	0.00214805	0.00023387	0.00075885	0.00041331
GA[C>A]AT	0.00034057	0.00118560	0.00218937	0.00026118	0.00048067	0.00003669
GA[C>A]CA	0.00038425	0.00170472	0.00196249	0.00015263	0.00086935	0.00004628
GA[C>A]CC	0.00051121	0.00069323	0.00093715	0.00014233	0.00041318	0.00013743
GA[C>A]CG	0.00009800	0.00015921	0.00023592	0.00001250	0.00005903	0.00006297
GA[C>A]CT	0.00035087	0.00113685	0.00144634	0.00023534	0.00069940	0.00032347
GA[C>A]GA	0.00005379	0.00028716	0.00028348	0.00002551	0.00026105	0.00004464
GA[C>A]GC	0.00004149	0.00022190	0.00018423	0.00001776	0.00007083	0.00004328
GA[C>A]GG	0.00008437	0.00034188	0.00038288	0.00002640	0.00024873	0.00012386
GA[C>A]GT	0.00009422	0.00014147	0.00036045	0.00003950	0.00012265	0.00005325
GA[C>A]TA	0.00008113	0.00073113	0.00092007	0.00019913	0.00071873	0.00013928
GA[C>A]TC	0.00023213	0.00042560	0.00081841	0.00015429	0.00008420	0.00033244
GA[C>A]TG	0.00062147	0.00092447	0.00124676	0.00017399	0.00015061	0.00030601
GA[C>A]TT	0.00009606	0.00109069	0.00095649	0.00011184	0.00081539	0.00007421
GA[C>G]AA	0.00057947	0.00063916	0.00093240	0.00008416	0.00091032	0.00024407
GA[C>G]AC	0.00018454	0.00020289	0.00043841	0.00004830	0.00023829	0.00013720
GA[C>G]AG	0.00024447	0.00120600	0.00140699	0.00022128	0.00258208	0.00111211
GA[C>G]AT	0.00011194	0.00012869	0.00049879	0.00005661	0.00036124	0.00001238
GA[C>G]CA	0.00086666	0.00026768	0.00084170	0.00007548	0.00084508	0.00049592
GA[C>G]CC	0.00032548	0.00021955	0.00046383	0.00003615	0.00030177	0.00017461
GA[C>G]CG	0.00006878	0.00008184	0.00006887	0.00000723	0.00002093	0.00004847

GA[C>G]CT	0.00063942	0.00021798	0.00033093	0.00008872	0.00041565	0.00033107
GA[C>G]GA	0.00010513	0.00010887	0.00008200	0.00004282	0.00005710	0.00028020
GA[C>G]GC	0.00001283	0.00005287	0.00014415	0.00001537	0.00012049	0.00022579
GA[C>G]GG	0.00010266	0.00007304	0.00008898	0.00000110	0.00009061	0.00017231
GA[C>G]GT	0.00008387	0.00004578	0.00018776	0.00001094	0.00013778	0.00006696
GA[C>G]TA	0.00071584	0.00029773	0.00050406	0.00005757	0.00053777	0.00041716
GA[C>G]TC	0.00066889	0.00027562	0.00045562	0.00008102	0.00040805	0.00037673
GA[C>G]TG	0.00073808	0.00014936	0.00059324	0.00002715	0.00059759	0.00023656
GA[C>G]TT	0.00081188	0.00055583	0.00078523	0.00004353	0.00090236	0.00019236
GA[C>T]AA	0.00062859	0.00106634	0.00075043	0.00001179	0.00108967	0.00094002
GA[C>T]AC	0.00041471	0.00079599	0.00044793	0.00004798	0.00078177	0.00102041
GA[C>T]AG	0.00099329	0.00133862	0.00087456	0.00004192	0.00112296	0.00099225
GA[C>T]AT	0.00107042	0.00187858	0.00104391	0.00020426	0.00256423	0.00114795
GA[C>T]CA	0.00014674	0.00095466	0.00054165	0.00004179	0.00104668	0.00168318
GA[C>T]CC	0.00037161	0.00121105	0.00039911	0.00006563	0.00066431	0.00065609
GA[C>T]CG	0.00006397	0.00008428	0.00008156	0.00001894	0.00016219	0.00012045
GA[C>T]CT	0.00018396	0.00180610	0.00037449	0.00016195	0.00109857	0.00118914
GA[C>T]GA	0.00057889	0.00096689	0.00018971	0.00014060	0.00089535	0.00006789
GA[C>T]GC	0.00027124	0.00068489	0.00036049	0.00005261	0.00062983	0.00026631
GA[C>T]GG	0.00065525	0.00122378	0.00035534	0.00010192	0.00150272	0.00087992
GA[C>T]GT	0.00026169	0.00049853	0.00033024	0.00014095	0.00076578	0.00037740
GA[C>T]TA	0.00024557	0.00062312	0.00059726	0.00002634	0.00049377	0.00090006
GA[C>T]TC	0.00041464	0.00059340	0.00050339	0.00000688	0.00040086	0.00053798
GA[C>T]TG	0.00045781	0.00070502	0.00073236	0.00002054	0.00089486	0.00100518
GA[C>T]TT	0.00044665	0.00123771	0.00035697	0.00008163	0.00103553	0.00130400
GA[T>A]AA	0.00038989	0.00089025	0.00057340	0.00199107	0.00099987	0.00024986
GA[T>A]AC	0.00039762	0.00020674	0.00014767	0.00138085	0.00012172	0.00053142
GA[T>A]AG	0.00010038	0.00013161	0.00022243	0.00244108	0.00040505	0.00043886
GA[T>A]AT	0.00029695	0.00030645	0.00025085	0.00431060	0.00028112	0.00005648
GA[T>A]CA	0.00029011	0.00043322	0.00015757	0.00048555	0.00040045	0.00059921
GA[T>A]CC	0.00021603	0.00023657	0.00029877	0.00009185	0.00025167	0.00036286
GA[T>A]CG	0.00004139	0.00006228	0.00004248	0.00005872	0.00000288	0.00008202
GA[T>A]CT	0.00022287	0.00032643	0.00029395	0.00058810	0.00033598	0.00021735
GA[T>A]GA	0.00065895	0.00058681	0.00038596	0.00201680	0.00069760	0.00022329
GA[T>A]GC	0.00050304	0.00038513	0.00028253	0.00114553	0.00036911	0.00028727
GA[T>A]GG	0.00053905	0.00059471	0.00022573	0.00317047	0.00048089	0.00061715
GA[T>A]GT	0.00020487	0.00054880	0.00022867	0.00393474	0.00044496	0.00040252
GA[T>A]TA	0.00059934	0.00057091	0.00024104	0.00059515	0.00028178	0.00074391
GA[T>A]TC	0.00049993	0.00035232	0.00016759	0.00017451	0.00025645	0.00088827
GA[T>A]TG	0.00039040	0.00034547	0.00017589	0.00067249	0.00027760	0.00044558
GA[T>A]TT	0.00054346	0.00088473	0.00020453	0.00048570	0.00047850	0.00096315
GA[T>C]AA	0.00044276	0.00045997	0.00023352	0.00014341	0.00115955	0.00091705
GA[T>C]AC	0.00069375	0.00060271	0.00010052	0.00020587	0.00072593	0.00087445
GA[T>C]AG	0.00045879	0.00093762	0.00022195	0.00023403	0.00169348	0.00133937
GA[T>C]AT	0.00065910	0.00055050	0.00044116	0.00058640	0.00087802	0.00040343
GA[T>C]CA	0.00013810	0.00017885	0.00019406	0.00005808	0.00018553	0.00049034
GA[T>C]CC	0.00017770	0.00006053	0.00003081	0.00000905	0.00023814	0.00068061
GA[T>C]CG	0.00003737	0.00000222	0.00001444	0.00000416	0.00004627	0.00014790
GA[T>C]CT	0.00039507	0.00018330	0.00014095	0.00006303	0.00063140	0.00037828
GA[T>C]GA	0.00056986	0.00002684	0.00042912	0.00009227	0.00077563	0.00173536
GA[T>C]GC	0.00029237	0.00006340	0.00016832	0.00009640	0.00074383	0.00112934
GA[T>C]GG	0.00047388	0.00048074	0.00073479	0.00017936	0.00164867	0.00146176
GA[T>C]GT	0.00077197	0.00063964	0.00027104	0.00026923	0.00107802	0.00105531

GA[T>C]TA	0.00063281	0.00034093	0.00022051	0.00003806	0.00051011	0.00075406
GA[T>C]TC	0.00045814	0.00022055	0.00018743	0.00005206	0.00033514	0.00065625
GA[T>C]TG	0.00039967	0.00153792	0.00048865	0.00007606	0.00232696	0.00116535
GA[T>C]TT	0.00119258	0.00100239	0.00035908	0.00009984	0.00095657	0.00077392
GA[T>G]AA	0.00060522	0.00033174	0.00020616	0.00006418	0.00020727	0.00019430
GA[T>G]AC	0.00019417	0.00005718	0.00004684	0.00000456	0.00008492	0.00001314
GA[T>G]AG	0.00013761	0.00027650	0.00009774	0.00021882	0.00052122	0.00049387
GA[T>G]AT	0.00021412	0.00014347	0.00005444	0.00008418	0.00021645	0.00006879
GA[T>G]CA	0.00081566	0.00018933	0.00017691	0.00001135	0.00047989	0.00027752
GA[T>G]CC	0.00047730	0.00009529	0.00005947	0.00002759	0.00015026	0.00012290
GA[T>G]CG	0.00004762	0.00002255	0.00000640	0.00000269	0.00004419	0.00002379
GA[T>G]CT	0.00062940	0.00019525	0.00028185	0.00001809	0.00013647	0.00019091
GA[T>G]GA	0.00071062	0.00038349	0.00013617	0.00010057	0.00044885	0.00027408
GA[T>G]GC	0.00019758	0.00018850	0.00015353	0.00002956	0.00024770	0.00052652
GA[T>G]GG	0.00056702	0.00013823	0.00004158	0.00003863	0.00023770	0.00014515
GA[T>G]GT	0.00047882	0.00024992	0.00029528	0.00011212	0.00015475	0.00015721
GA[T>G]TA	0.00126868	0.00029330	0.00022877	0.00001593	0.00028079	0.00020989
GA[T>G]TC	0.00095164	0.00033464	0.00007610	0.00001585	0.00042383	0.00026030
GA[T>G]TG	0.00047793	0.00006136	0.00019558	0.00002397	0.00024823	0.00015860
GA[T>G]TT	0.00160769	0.00067109	0.00016417	0.00006544	0.00033620	0.00029981
GC[C>A]AA	0.00064686	0.00089810	0.00161756	0.00026320	0.00061767	0.00016771
GC[C>A]AC	0.00077158	0.00065687	0.00141219	0.00024859	0.00044753	0.00061578
GC[C>A]AG	0.00055927	0.00024455	0.00173091	0.00036142	0.00082430	0.00067586
GC[C>A]AT	0.00104602	0.00076794	0.00193690	0.00027720	0.00039166	0.00016579
GC[C>A]CA	0.00013169	0.00058302	0.00279642	0.00040342	0.00032725	0.00105673
GC[C>A]CC	0.00063803	0.00059593	0.00163017	0.00029210	0.00016745	0.00074125
GC[C>A]CG	0.00003525	0.00006903	0.00061976	0.00007342	0.00006690	0.00012280
GC[C>A]CT	0.00030616	0.00047069	0.00255799	0.00025436	0.00049722	0.00071763
GC[C>A]GA	0.00007368	0.00007797	0.00035499	0.00004114	0.00022384	0.00011166
GC[C>A]GC	0.00004381	0.00012813	0.00024703	0.00001201	0.00010280	0.00026692
GC[C>A]GG	0.00015460	0.00028030	0.00041351	0.00003385	0.00027394	0.00008932
GC[C>A]GT	0.00009329	0.00003681	0.00030325	0.00001120	0.00019103	0.00010335
GC[C>A]TA	0.00012296	0.00029603	0.00103598	0.00021761	0.00010161	0.00070629
GC[C>A]TC	0.00054531	0.00034956	0.00177589	0.00016323	0.00048441	0.00082379
GC[C>A]TG	0.00077629	0.00045450	0.00227408	0.00035022	0.00079576	0.00096207
GC[C>A]TT	0.00064725	0.00023940	0.00130487	0.00031581	0.00054454	0.00072680
GC[C>G]AA	0.00041600	0.00016016	0.00048438	0.00006153	0.00072347	0.00038250
GC[C>G]AC	0.00023746	0.00018965	0.00019934	0.00001467	0.00023636	0.00019416
GC[C>G]AG	0.00046045	0.00033704	0.00045578	0.00003221	0.00043687	0.00037369
GC[C>G]AT	0.00021210	0.00008944	0.00012191	0.00004453	0.00044519	0.00014568
GC[C>G]CA	0.00078125	0.00032759	0.00041900	0.00010812	0.00075399	0.00080420
GC[C>G]CC	0.00049397	0.00006869	0.00046717	0.00002885	0.00035201	0.00029885
GC[C>G]CG	0.00013003	0.00007336	0.00005588	0.00002143	0.00028326	0.00018338
GC[C>G]CT	0.00089619	0.00015752	0.00055041	0.00003447	0.00066647	0.00056354
GC[C>G]GA	0.00008102	0.00002638	0.00010575	0.00001391	0.00006721	0.00020951
GC[C>G]GC	0.00003289	0.00003044	0.00007996	0.00000001	0.00011573	0.00014997
GC[C>G]GG	0.00006406	0.00008595	0.00011973	0.00001868	0.00021803	0.00018467
GC[C>G]GT	0.00010661	0.00007377	0.00006288	0.00001380	0.00016054	0.00001555
GC[C>G]TA	0.00059510	0.00021369	0.00027242	0.00007353	0.00048484	0.00033129
GC[C>G]TC	0.00141563	0.00021782	0.00031907	0.00007833	0.00086917	0.00053308
GC[C>G]TG	0.00102860	0.00026718	0.00048972	0.00003750	0.00102304	0.00073033
GC[C>G]TT	0.00149624	0.00050834	0.00034739	0.00002283	0.00069955	0.00089413
GC[C>T]AA	0.00018348	0.00143565	0.00111251	0.00010249	0.00118400	0.00126769

GC[C>T]AC	0.00068503	0.00095588	0.00125750	0.00008249	0.00109274	0.00092014
GC[C>T]AG	0.00072426	0.00177371	0.00129511	0.00020927	0.00113642	0.00130956
GC[C>T]AT	0.00093585	0.00122113	0.00184883	0.00026280	0.00118441	0.00115067
GC[C>T]CA	0.00038992	0.00210732	0.00156501	0.00011008	0.00142219	0.00213105
GC[C>T]CC	0.00070039	0.00194924	0.00109827	0.00024195	0.00158430	0.00108559
GC[C>T]CG	0.00006891	0.00037888	0.00034674	0.00004493	0.00031019	0.00044325
GC[C>T]CT	0.00133141	0.00258376	0.00155236	0.00018689	0.00159781	0.00202200
GC[C>T]GA	0.00021802	0.00058528	0.00050794	0.00013831	0.00064804	0.00023238
GC[C>T]GC	0.00015173	0.00036255	0.00014229	0.00013264	0.00072238	0.00043824
GC[C>T]GG	0.00020084	0.00045836	0.00068172	0.00016373	0.00054839	0.00057302
GC[C>T]GT	0.00005195	0.00014320	0.00050395	0.00016754	0.00035898	0.00032759
GC[C>T]TA	0.00033539	0.00085855	0.00097734	0.00004242	0.00068388	0.00122138
GC[C>T]TC	0.00101445	0.00168551	0.00150565	0.00016199	0.00113470	0.00209608
GC[C>T]TG	0.00109581	0.00179099	0.00202542	0.00016865	0.00194014	0.00222816
GC[C>T]TT	0.00082294	0.00131188	0.00115066	0.00011678	0.00147848	0.00203009
GC[T>A]AA	0.00001339	0.00012013	0.00015993	0.00572114	0.00020001	0.00033679
GC[T>A]AC	0.00036999	0.00009511	0.00022015	0.00415821	0.00018056	0.00022799
GC[T>A]AG	0.00000056	0.00000182	0.00000125	0.00606277	0.00001091	0.00000119
GC[T>A]AT	0.00002360	0.00001627	0.00001312	0.01032488	0.00009490	0.00032089
GC[T>A]CA	0.00039637	0.00037407	0.00019619	0.00321609	0.00053679	0.00073799
GC[T>A]CC	0.00034883	0.00033106	0.00037866	0.00131273	0.00035730	0.00064056
GC[T>A]CG	0.00002185	0.00000686	0.00001182	0.00034016	0.00000694	0.00016791
GC[T>A]CT	0.00044389	0.00040527	0.00004581	0.00375104	0.00038636	0.00082895
GC[T>A]GA	0.00003982	0.00058497	0.00018042	0.00769044	0.00062504	0.00056190
GC[T>A]GC	0.00031069	0.00022801	0.00040857	0.00567458	0.00032069	0.00057696
GC[T>A]GG	0.00036598	0.00021892	0.00045489	0.00885111	0.00059141	0.00109683
GC[T>A]GT	0.00003474	0.00009863	0.00013194	0.01237379	0.00045819	0.00018757
GC[T>A]TA	0.00027006	0.00022335	0.00013324	0.00228308	0.00018794	0.00020694
GC[T>A]TC	0.00029896	0.00025618	0.00021201	0.00152086	0.00016259	0.00048175
GC[T>A]TG	0.00018788	0.00019628	0.00027009	0.00335462	0.00032576	0.00039609
GC[T>A]TT	0.00074646	0.00084787	0.00042541	0.00342394	0.00079653	0.00068906
GC[T>C]AA	0.00068378	0.00030433	0.00022604	0.00007152	0.00051264	0.00179261
GC[T>C]AC	0.00120584	0.00017767	0.00014818	0.00003893	0.00028045	0.00133104
GC[T>C]AG	0.00067831	0.00008689	0.00044077	0.00005887	0.00068512	0.00123673
GC[T>C]AT	0.00050340	0.00030487	0.00047314	0.00005000	0.00059739	0.00156234
GC[T>C]CA	0.00029787	0.00032197	0.00010454	0.00006236	0.00052637	0.00092720
GC[T>C]CC	0.00039427	0.00014729	0.00003850	0.00006465	0.00031064	0.00097720
GC[T>C]CG	0.00000359	0.00001609	0.00002940	0.00000098	0.00002538	0.00019540
GC[T>C]CT	0.00059806	0.00054032	0.00011251	0.00003359	0.00081654	0.00113990
GC[T>C]GA	0.00067015	0.00025983	0.00019131	0.00004458	0.00073469	0.00157783
GC[T>C]GC	0.00024980	0.00017491	0.00023141	0.00004226	0.00036928	0.00098375
GC[T>C]GG	0.00057915	0.00035071	0.00065506	0.00009797	0.00049526	0.00158926
GC[T>C]GT	0.00038985	0.00017624	0.00032034	0.00006243	0.00055430	0.00128499
GC[T>C]TA	0.00037947	0.00026048	0.00012143	0.00004288	0.00018274	0.00059586
GC[T>C]TC	0.00074112	0.00013145	0.00029578	0.00009887	0.00045413	0.00124161
GC[T>C]TG	0.00057276	0.00032571	0.00011740	0.00000818	0.00074229	0.00092559
GC[T>C]TT	0.00071120	0.00033948	0.00032708	0.00000228	0.00058479	0.00204786
GC[T>G]AA	0.00031690	0.00009135	0.00008234	0.00002946	0.00035454	0.00032173
GC[T>G]AC	0.00014578	0.00000967	0.00008110	0.00003860	0.00008689	0.00012005
GC[T>G]AG	0.00015304	0.00004377	0.00000634	0.00011938	0.00008758	0.00005092
GC[T>G]AT	0.00015326	0.00006920	0.00002296	0.00011074	0.00011927	0.00012381
GC[T>G]CA	0.00066212	0.00009970	0.00004255	0.00002604	0.00043334	0.00029428
GC[T>G]CC	0.00032331	0.00003706	0.00002437	0.00001392	0.00015721	0.00011963

GC[T>G]CG	0.00002958	0.00000364	0.00002296	0.00001029	0.00002410	0.00005569
GC[T>G]CT	0.00038205	0.00009457	0.00003003	0.00007436	0.00036982	0.00027614
GC[T>G]GA	0.00044055	0.00007441	0.00013593	0.00014571	0.00021596	0.00025532
GC[T>G]GC	0.00021353	0.00003852	0.00011462	0.00010936	0.00021633	0.00019985
GC[T>G]GG	0.00037849	0.00006170	0.00016109	0.00003185	0.00033034	0.00034212
GC[T>G]GT	0.00016709	0.00007149	0.00014761	0.00033355	0.00022309	0.00013031
GC[T>G]TA	0.00056825	0.00012076	0.00004268	0.00003285	0.00031084	0.00033991
GC[T>G]TC	0.00048565	0.00006090	0.00008961	0.00002170	0.00036813	0.00022069
GC[T>G]TG	0.00018116	0.00017247	0.00003391	0.00000311	0.00040519	0.00030706
GC[T>G]TT	0.00097927	0.00016282	0.00008770	0.00002967	0.00036525	0.00074455
GG[C>A]AA	0.00003702	0.00100712	0.00036153	0.00012604	0.00143280	0.00012270
GG[C>A]AC	0.00016314	0.00055715	0.00072034	0.00011213	0.00051908	0.00037989
GG[C>A]AG	0.00007164	0.00058327	0.00072840	0.00025949	0.00086559	0.00055832
GG[C>A]AT	0.00023882	0.00076698	0.00097907	0.00016028	0.00072159	0.00044092
GG[C>A]CA	0.00040744	0.00112649	0.00225734	0.00035349	0.00065042	0.00033315
GG[C>A]CC	0.00015726	0.00055234	0.00097210	0.00006191	0.00041638	0.00056318
GG[C>A]CG	0.00007133	0.00012832	0.00038718	0.00005879	0.00019891	0.00015133
GG[C>A]CT	0.00035354	0.00097673	0.00148517	0.00023180	0.00097539	0.00035405
GG[C>A]GA	0.00002473	0.00032412	0.00043367	0.00005161	0.00011900	0.00000678
GG[C>A]GC	0.00003620	0.00052986	0.00044512	0.00001421	0.00026109	0.00024712
GG[C>A]GG	0.00011532	0.00056923	0.00057339	0.00007202	0.00038897	0.00010108
GG[C>A]GT	0.00000967	0.00028483	0.00060900	0.00003409	0.00022080	0.00015812
GG[C>A]TA	0.00016952	0.00014826	0.00075904	0.00014636	0.00034993	0.00033722
GG[C>A]TC	0.00057420	0.00037841	0.00049065	0.00010625	0.00028007	0.00016087
GG[C>A]TG	0.00044285	0.00079231	0.00134187	0.00024156	0.00042123	0.00101952
GG[C>A]TT	0.00040600	0.00042240	0.00070108	0.00007404	0.00052435	0.00022077
GG[C>G]AA	0.00010046	0.00015783	0.00059715	0.00002670	0.00034547	0.00042752
GG[C>G]AC	0.00016434	0.00012015	0.00011294	0.00005412	0.00025629	0.00005750
GG[C>G]AG	0.00022061	0.00028125	0.00052162	0.00004109	0.00082552	0.00044209
GG[C>G]AT	0.00006200	0.00013405	0.00039388	0.00003229	0.00022337	0.00014091
GG[C>G]CA	0.00039149	0.00020602	0.00071304	0.00002945	0.00060196	0.00033975
GG[C>G]CC	0.00019212	0.00014375	0.00033214	0.00002968	0.00020756	0.00052098
GG[C>G]CG	0.00001396	0.00004324	0.00007825	0.00000144	0.00006664	0.00016307
GG[C>G]CT	0.00022327	0.00026602	0.00050402	0.00007150	0.00033380	0.00041473
GG[C>G]GA	0.00005013	0.00008676	0.00007185	0.00001855	0.00009497	0.00004533
GG[C>G]GC	0.00010245	0.00009099	0.00020295	0.00000386	0.00012011	0.00020294
GG[C>G]GG	0.00005221	0.00002160	0.00015126	0.00000695	0.00015576	0.00013926
GG[C>G]GT	0.00005590	0.00004785	0.00016837	0.00002872	0.00005705	0.00017405
GG[C>G]TA	0.00045831	0.00009654	0.00038193	0.00001453	0.00025349	0.00038572
GG[C>G]TC	0.00051008	0.00009554	0.00024448	0.00004612	0.00039048	0.00021830
GG[C>G]TG	0.00053706	0.00044631	0.00064078	0.00006740	0.00054869	0.00054563
GG[C>G]TT	0.00026369	0.00026361	0.00027456	0.00001186	0.00050252	0.00042649
GG[C>T]AA	0.00068775	0.00233258	0.00148948	0.00007254	0.00141746	0.00125205
GG[C>T]AC	0.00050808	0.00170958	0.00102595	0.00007270	0.00115977	0.00081157
GG[C>T]AG	0.00102068	0.00307397	0.00181593	0.00007356	0.00172284	0.00174035
GG[C>T]AT	0.00079872	0.00267433	0.00107385	0.00016122	0.00188397	0.00084220
GG[C>T]CA	0.00045086	0.00220654	0.00163918	0.00018433	0.00200885	0.00190748
GG[C>T]CC	0.00057844	0.00172446	0.00128689	0.00012191	0.00191855	0.00106198
GG[C>T]CG	0.00015346	0.00038046	0.00036520	0.00006561	0.00034951	0.00027831
GG[C>T]CT	0.00057977	0.00298615	0.00171567	0.00017643	0.00282354	0.00151614
GG[C>T]GA	0.00026536	0.00069103	0.00053648	0.00006017	0.00075487	0.00048758
GG[C>T]GC	0.00000600	0.00074987	0.00040044	0.00012565	0.00096274	0.00044460
GG[C>T]GG	0.00064039	0.00130459	0.00093969	0.00008813	0.00089197	0.00081471

GG[C>T]GT	0.00026974	0.00084059	0.00025134	0.00012816	0.00076210	0.00082449
GG[C>T]TA	0.00037272	0.00130912	0.00085769	0.00009058	0.00090346	0.00109033
GG[C>T]TC	0.00068300	0.00172685	0.00096309	0.00014138	0.00150829	0.00137749
GG[C>T]TG	0.00079882	0.00231293	0.00192627	0.00006422	0.00198492	0.00211817
GG[C>T]TT	0.00028240	0.00165693	0.00116801	0.00007179	0.00131647	0.00161836
GG[T>A]AA	0.00015742	0.00016082	0.00023598	0.00142749	0.00013134	0.00018196
GG[T>A]AC	0.00033650	0.00020930	0.00017509	0.00098797	0.00010317	0.00014153
GG[T>A]AG	0.00019001	0.00015606	0.00004272	0.00264245	0.00007180	0.00019204
GG[T>A]AT	0.00025052	0.00023114	0.00015664	0.00324436	0.00015140	0.00006279
GG[T>A]CA	0.00043293	0.00014235	0.00015458	0.00057813	0.00016310	0.00015607
GG[T>A]CC	0.00017423	0.00024593	0.00021610	0.00017406	0.00013975	0.00032151
GG[T>A]CG	0.00001787	0.00006027	0.00000537	0.00004916	0.00000556	0.00004252
GG[T>A]CT	0.00038868	0.00036412	0.00029286	0.00063709	0.00014772	0.00022853
GG[T>A]GA	0.00031238	0.00024282	0.00017829	0.00103463	0.00042465	0.00033188
GG[T>A]GC	0.00040092	0.00012662	0.00015521	0.00090808	0.00023234	0.00040372
GG[T>A]GG	0.00055338	0.00041398	0.00022766	0.00132462	0.00048065	0.00046165
GG[T>A]GT	0.00026428	0.00016717	0.00024203	0.00215304	0.00021714	0.00027643
GG[T>A]TA	0.00024946	0.00014427	0.00024103	0.00030261	0.00010677	0.00012055
GG[T>A]TC	0.00029822	0.00010438	0.00024650	0.00014441	0.00005295	0.00019585
GG[T>A]TG	0.00030321	0.00035208	0.00010889	0.00030624	0.00014368	0.00048480
GG[T>A]TT	0.00055453	0.00043712	0.00039384	0.00033053	0.00050755	0.00036201
GG[T>C]AA	0.00040846	0.00022296	0.00009674	0.00000129	0.00047879	0.00029940
GG[T>C]AC	0.00049641	0.00007266	0.00015403	0.00006135	0.00031498	0.00030553
GG[T>C]AG	0.00045710	0.00044635	0.00021238	0.00009334	0.00049660	0.00060748
GG[T>C]AT	0.00081214	0.00014638	0.00021023	0.00005786	0.00025212	0.00004982
GG[T>C]CA	0.00021150	0.00031891	0.00002742	0.00003060	0.00026655	0.00034795
GG[T>C]CC	0.00016725	0.00017948	0.00001895	0.00002208	0.00016574	0.00030717
GG[T>C]CG	0.00000844	0.00004368	0.00000848	0.00000024	0.00001673	0.00007287
GG[T>C]CT	0.00038021	0.00038449	0.00026789	0.00002406	0.00070294	0.00045592
GG[T>C]GA	0.00024216	0.00008458	0.00025808	0.00003589	0.00028778	0.00040862
GG[T>C]GC	0.00019532	0.00016271	0.00005291	0.00016459	0.00038969	0.00031102
GG[T>C]GG	0.00038242	0.00037881	0.00016630	0.00004383	0.00044900	0.00065175
GG[T>C]GT	0.00021554	0.00017973	0.00014796	0.00003313	0.00015494	0.00019865
GG[T>C]TA	0.00031943	0.00012718	0.00004349	0.00000116	0.00029565	0.00021105
GG[T>C]TC	0.00017545	0.00034458	0.00022865	0.00003673	0.00030058	0.00041686
GG[T>C]TG	0.00028668	0.00058415	0.00019637	0.00007146	0.00125744	0.00068492
GG[T>C]TT	0.00065880	0.00061099	0.00020932	0.00003313	0.00081278	0.00026649
GG[T>G]AA	0.00010231	0.00005271	0.00007020	0.00006035	0.00024031	0.00011982
GG[T>G]AC	0.00010150	0.00004102	0.00000755	0.00001784	0.00003975	0.00002118
GG[T>G]AG	0.00010571	0.00005350	0.00002800	0.00006356	0.00010768	0.00014232
GG[T>G]AT	0.00007188	0.00003744	0.00003801	0.00002579	0.00006667	0.00003153
GG[T>G]CA	0.00018206	0.00001672	0.00004325	0.00000289	0.00014006	0.00013480
GG[T>G]CC	0.00010408	0.00001566	0.00001678	0.00000775	0.00008440	0.00006243
GG[T>G]CG	0.00000222	0.00000269	0.00000093	0.00000045	0.00000545	0.00000451
GG[T>G]CT	0.00012819	0.00007120	0.00006097	0.00002086	0.00013628	0.00004844
GG[T>G]GA	0.00026373	0.00009270	0.00003880	0.00003088	0.00018245	0.00008542
GG[T>G]GC	0.00003182	0.00008248	0.00004538	0.00002719	0.00022202	0.00014691
GG[T>G]GG	0.00009977	0.00004828	0.00009399	0.00000672	0.00020118	0.00015652
GG[T>G]GT	0.00017935	0.00004810	0.00001840	0.00004286	0.00012525	0.00011893
GG[T>G]TA	0.00028969	0.00004186	0.00004180	0.00000000	0.00017980	0.00005901
GG[T>G]TC	0.00029677	0.00005531	0.00005240	0.00000831	0.00007894	0.00000349
GG[T>G]TG	0.00021113	0.00002720	0.00006015	0.00001138	0.00008618	0.00014433
GG[T>G]TT	0.00033634	0.00002396	0.00001163	0.00002473	0.00012085	0.00012865

GT[C>A]AA	0.00056141	0.00148533	0.00177668	0.00018508	0.00065536	0.00026239
GT[C>A]AC	0.00110744	0.00107699	0.00129160	0.00014342	0.00028350	0.00028405
GT[C>A]AG	0.00096754	0.00106117	0.00154286	0.00029661	0.00070820	0.00060799
GT[C>A]AT	0.00138584	0.00118543	0.00203617	0.00021170	0.00038174	0.00044291
GT[C>A]CA	0.00041885	0.00159617	0.00224081	0.00024512	0.00043910	0.00041576
GT[C>A]CC	0.00047324	0.00127351	0.00196527	0.00027117	0.00074037	0.00033264
GT[C>A]CG	0.00000333	0.00015545	0.00020739	0.00001814	0.00007338	0.00005650
GT[C>A]CT	0.00044177	0.00158847	0.00218923	0.00014810	0.00067656	0.00049634
GT[C>A]GA	0.00005848	0.00026704	0.00020703	0.00003988	0.00019389	0.00007791
GT[C>A]GC	0.00003329	0.00033995	0.00015345	0.00000553	0.00008252	0.00010859
GT[C>A]GG	0.00001677	0.00027042	0.00034585	0.00001046	0.00023095	0.00002257
GT[C>A]GT	0.00003863	0.00028589	0.00017387	0.00000639	0.00015491	0.00003998
GT[C>A]TA	0.00029840	0.00063614	0.00095771	0.00027195	0.00019070	0.00037473
GT[C>A]TC	0.00086795	0.00111876	0.00154240	0.00028795	0.00051553	0.00012948
GT[C>A]TG	0.00054256	0.00102921	0.00140945	0.00017981	0.00063425	0.00023991
GT[C>A]TT	0.00040110	0.00112458	0.00133626	0.00023445	0.00047803	0.00051900
GT[C>G]AA	0.00011866	0.00069769	0.00057255	0.00010981	0.00041012	0.00013007
GT[C>G]AC	0.00019074	0.00013040	0.00029615	0.00001098	0.00031978	0.00022822
GT[C>G]AG	0.00051056	0.00023700	0.00083795	0.00010624	0.00062800	0.00020943
GT[C>G]AT	0.00015750	0.00018651	0.00081009	0.00007658	0.00029871	0.00009939
GT[C>G]CA	0.00065045	0.00035183	0.00083799	0.00004222	0.00050500	0.00031491
GT[C>G]CC	0.00059001	0.00047337	0.00055723	0.00003655	0.00073129	0.00031298
GT[C>G]CG	0.00003294	0.00003847	0.00004933	0.00002545	0.00007049	0.00002656
GT[C>G]CT	0.00093117	0.00049425	0.00080200	0.00016454	0.00094866	0.00067678
GT[C>G]GA	0.00009986	0.00001918	0.00003280	0.00001500	0.00005869	0.00011840
GT[C>G]GC	0.00001468	0.00003757	0.00004011	0.00001836	0.00007849	0.00015817
GT[C>G]GG	0.00005582	0.00003702	0.00003888	0.00000787	0.00007868	0.00007219
GT[C>G]GT	0.00005698	0.00004013	0.00011796	0.00000399	0.00007003	0.00007607
GT[C>G]TA	0.00067853	0.00065794	0.00062005	0.00012304	0.00056105	0.00047692
GT[C>G]TC	0.00188173	0.00095047	0.00048250	0.00008841	0.00090249	0.00061658
GT[C>G]TG	0.00103869	0.00051592	0.00070873	0.00006165	0.00045660	0.00075092
GT[C>G]TT	0.00124192	0.00098181	0.00101988	0.00017770	0.00130762	0.00065350
GT[C>T]AA	0.00092597	0.00178260	0.00146272	0.00006573	0.00070583	0.00109898
GT[C>T]AC	0.00093713	0.00152540	0.00057471	0.00014154	0.00078092	0.00105118
GT[C>T]AG	0.00140057	0.00192774	0.00114173	0.00019525	0.00066359	0.00118846
GT[C>T]AT	0.00151192	0.00269323	0.00135736	0.00015932	0.00136410	0.00098347
GT[C>T]CA	0.00035182	0.00146504	0.00087873	0.00021499	0.00130809	0.00148423
GT[C>T]CC	0.00062162	0.00227301	0.00143308	0.00009840	0.00111145	0.00124819
GT[C>T]CG	0.00007981	0.00019227	0.00007769	0.00001922	0.00013308	0.00002369
GT[C>T]CT	0.00081424	0.00314757	0.00150161	0.00017181	0.00138085	0.00170638
GT[C>T]GA	0.00019242	0.00018625	0.00011711	0.00000404	0.00017728	0.00043939
GT[C>T]GC	0.00003387	0.00006061	0.00023900	0.00003507	0.00019066	0.00049993
GT[C>T]GG	0.00004302	0.00024182	0.00028481	0.00001825	0.00018054	0.00064562
GT[C>T]GT	0.00009928	0.00015739	0.00015590	0.00007208	0.00008956	0.00054488
GT[C>T]TA	0.00019285	0.00112127	0.00057955	0.00011421	0.00065639	0.00121006
GT[C>T]TC	0.00068845	0.00174383	0.00143184	0.00003732	0.00075737	0.00149079
GT[C>T]TG	0.00035538	0.00165958	0.00111335	0.00004782	0.00088364	0.00143492
GT[C>T]TT	0.00052930	0.00171672	0.00092461	0.00015773	0.00075588	0.00169508
GT[T>A]AA	0.00039326	0.00057678	0.00036533	0.00245431	0.00026924	0.00013741
GT[T>A]AC	0.00041971	0.00029085	0.00016059	0.00187461	0.00012270	0.00036142
GT[T>A]AG	0.00007838	0.00014553	0.00001059	0.00298622	0.00006673	0.00007906
GT[T>A]AT	0.00054680	0.00043452	0.00037431	0.00494101	0.00018826	0.00036496
GT[T>A]CA	0.00046352	0.00029967	0.00027239	0.00122690	0.00015591	0.00029478

GT[T>A]CC	0.00053551	0.00039529	0.00015033	0.00039407	0.00011715	0.00031869
GT[T>A]CG	0.00000405	0.00004668	0.00002717	0.00008537	0.00001125	0.00007557
GT[T>A]CT	0.00073034	0.00051095	0.00020386	0.00161683	0.00031883	0.00027879
GT[T>A]GA	0.00031349	0.00026184	0.00021199	0.00232377	0.00047266	0.00022257
GT[T>A]GC	0.00027043	0.00013722	0.00013182	0.00169404	0.00010866	0.00039943
GT[T>A]GG	0.00023628	0.00027983	0.00015665	0.00302372	0.00023003	0.00031624
GT[T>A]GT	0.00034565	0.00018202	0.00015052	0.00411978	0.00021619	0.00019465
GT[T>A]TA	0.00034258	0.00040797	0.00015418	0.00124981	0.00016072	0.00046056
GT[T>A]TC	0.00054807	0.00053351	0.00028532	0.00058928	0.00034687	0.00015321
GT[T>A]TG	0.00019258	0.00019942	0.00025964	0.00152154	0.00046219	0.00043121
GT[T>A]TT	0.00082821	0.00089828	0.00074673	0.00158760	0.00096631	0.00054402
GT[T>C]AA	0.00050729	0.00025626	0.00013529	0.00004998	0.00030083	0.00048543
GT[T>C]AC	0.00055158	0.00012695	0.00009548	0.00004596	0.00006246	0.00062531
GT[T>C]AG	0.00073549	0.00008811	0.00023869	0.00004553	0.00030820	0.00028109
GT[T>C]AT	0.00084617	0.00024107	0.00019662	0.00012589	0.00022341	0.00064666
GT[T>C]CA	0.00010866	0.00020371	0.00010918	0.00002026	0.00019622	0.00021362
GT[T>C]CC	0.00011690	0.00006142	0.00007046	0.00002170	0.00021301	0.00031626
GT[T>C]CG	0.00000575	0.00003033	0.00002529	0.00000547	0.00000599	0.00000260
GT[T>C]CT	0.00030589	0.00013224	0.00011802	0.00005741	0.00054460	0.00041855
GT[T>C]GA	0.00025198	0.00001302	0.00011065	0.00001743	0.00013293	0.00028404
GT[T>C]GC	0.00012000	0.00016586	0.00006099	0.00000003	0.00002076	0.00029421
GT[T>C]GG	0.00022339	0.00011883	0.00012787	0.00004659	0.00021005	0.00034989
GT[T>C]GT	0.00024168	0.00009713	0.00008743	0.00001124	0.00019191	0.00037214
GT[T>C]TA	0.00011470	0.00010051	0.00012020	0.00002878	0.00012449	0.00031118
GT[T>C]TC	0.00016068	0.00006922	0.00000691	0.00002658	0.00020364	0.00017726
GT[T>C]TG	0.00035476	0.00038862	0.00012367	0.00005171	0.00068888	0.00063461
GT[T>C]TT	0.00039186	0.00020540	0.00031931	0.00002570	0.00046908	0.00019408
GT[T>G]AA	0.00073822	0.00024756	0.00027786	0.00012507	0.00027744	0.00025238
GT[T>G]AC	0.00022408	0.00006948	0.00009285	0.00004719	0.00007257	0.00014427
GT[T>G]AG	0.00027792	0.00008835	0.00004782	0.00010443	0.00027232	0.00027841
GT[T>G]AT	0.00046096	0.00017349	0.00009522	0.00014493	0.00020809	0.00012006
GT[T>G]CA	0.00098717	0.00012789	0.00024337	0.00008474	0.00058871	0.00024107
GT[T>G]CC	0.00063591	0.00021397	0.00009525	0.00004546	0.00032535	0.00001238
GT[T>G]CG	0.00001787	0.00001325	0.00001532	0.00000359	0.00004559	0.00001081
GT[T>G]CT	0.00099730	0.00023694	0.00024632	0.00009565	0.00046652	0.00008840
GT[T>G]GA	0.00067279	0.00022176	0.00011420	0.00012259	0.00038699	0.00022835
GT[T>G]GC	0.00025492	0.00007735	0.00010568	0.00011201	0.00027390	0.00016164
GT[T>G]GG	0.00027004	0.00007605	0.00014512	0.00000746	0.00022143	0.00036912
GT[T>G]GT	0.00038516	0.00011501	0.00017804	0.00025432	0.00026514	0.00044143
GT[T>G]TA	0.00139057	0.00056561	0.00009184	0.00014531	0.00061707	0.00034937
GT[T>G]TC	0.00164302	0.00020530	0.00031684	0.00005533	0.00038194	0.00079648
GT[T>G]TG	0.00118328	0.00048890	0.00013038	0.00006871	0.00046014	0.00049101
GT[T>G]TT	0.00284141	0.00095959	0.00086643	0.00011079	0.00082706	0.00064773
TA[C>A]AA	0.00099597	0.00318116	0.00406225	0.00051199	0.00338658	0.00016832
TA[C>A]AC	0.00067963	0.00127380	0.00238028	0.00034177	0.00057222	0.00024154
TA[C>A]AG	0.00086150	0.00134070	0.00285497	0.00034473	0.00057080	0.00018988
TA[C>A]AT	0.00074575	0.00142824	0.00370730	0.00027115	0.00079979	0.00008369
TA[C>A]CA	0.00031779	0.00102553	0.00193542	0.00022964	0.00076371	0.00012762
TA[C>A]CC	0.00028488	0.00040876	0.00092853	0.00018758	0.00035887	0.00077069
TA[C>A]CG	0.00007937	0.00013749	0.00010306	0.00003637	0.00004381	0.00011693
TA[C>A]CT	0.00031896	0.00091548	0.00178897	0.00023084	0.00067445	0.00062838
TA[C>A]GA	0.00000794	0.00011522	0.00032790	0.00004413	0.00009094	0.00018703
TA[C>A]GC	0.00006479	0.00006859	0.00018801	0.00001119	0.00009682	0.00011040

TA[C>A]GG	0.00002792	0.00011268	0.00018187	0.00003507	0.00009651	0.00013070
TA[C>A]GT	0.00005711	0.00022339	0.00044230	0.00003458	0.00023385	0.00010591
TA[C>A]TA	0.00040498	0.00065092	0.00140788	0.00027846	0.00057915	0.00057741
TA[C>A]TC	0.00050949	0.00048156	0.00074581	0.00014893	0.00015505	0.00078305
TA[C>A]TG	0.00059889	0.00071002	0.00144485	0.00020783	0.00017665	0.00085375
TA[C>A]TT	0.00042448	0.00073576	0.00144289	0.00011142	0.00055693	0.00064379
TA[C>G]AA	0.00062994	0.00038155	0.00126052	0.00001426	0.00096895	0.00071414
TA[C>G]AC	0.00007935	0.00008194	0.00065619	0.00007642	0.00033303	0.00005226
TA[C>G]AG	0.00035550	0.00071303	0.00130064	0.00018450	0.00169305	0.00087406
TA[C>G]AT	0.00020225	0.00029416	0.00094384	0.00009623	0.00050204	0.00002058
TA[C>G]CA	0.00070760	0.00038322	0.00120789	0.00013327	0.00081014	0.00014264
TA[C>G]CC	0.00030514	0.00010115	0.00057253	0.00003971	0.00038808	0.00023571
TA[C>G]CG	0.00009365	0.00004911	0.00006276	0.00000642	0.00003713	0.00000648
TA[C>G]CT	0.00049178	0.00057053	0.00051963	0.00000211	0.00071124	0.00021934
TA[C>G]GA	0.00009444	0.00009084	0.00030502	0.00000974	0.00008709	0.00012310
TA[C>G]GC	0.00010379	0.00001653	0.00008646	0.00000003	0.00013245	0.00007493
TA[C>G]GG	0.00004084	0.00002354	0.00008526	0.00000639	0.00008522	0.00017756
TA[C>G]GT	0.00003569	0.00011067	0.00034688	0.00001460	0.00011873	0.00014772
TA[C>G]TA	0.00138715	0.00065238	0.00094195	0.00004327	0.00094346	0.00051869
TA[C>G]TC	0.00127927	0.00039083	0.00039954	0.00001761	0.00049533	0.00037455
TA[C>G]TG	0.00111729	0.00039845	0.00080987	0.00011789	0.00101627	0.00028775
TA[C>G]TT	0.00186495	0.00045556	0.00062788	0.00007959	0.00148640	0.00045078
TA[C>T]AA	0.00088426	0.00229462	0.00152101	0.00002876	0.00205863	0.00180880
TA[C>T]AC	0.00083280	0.00082903	0.00056577	0.00004037	0.00089752	0.00105737
TA[C>T]AG	0.00137663	0.00136395	0.00125233	0.00012817	0.00129625	0.00168588
TA[C>T]AT	0.00189413	0.00234540	0.00135423	0.00021470	0.00240789	0.00231264
TA[C>T]CA	0.00099574	0.00133981	0.00085720	0.00003733	0.00094554	0.00146022
TA[C>T]CC	0.00072817	0.00105089	0.00073056	0.00009152	0.00085808	0.00115661
TA[C>T]CG	0.00009007	0.00014192	0.00012524	0.00000393	0.00004828	0.00022376
TA[C>T]CT	0.00073767	0.00190637	0.00110567	0.00011357	0.00128982	0.00180545
TA[C>T]GA	0.00024617	0.00093578	0.00026938	0.00018343	0.00086405	0.00024815
TA[C>T]GC	0.00018103	0.00045169	0.00028875	0.00003565	0.00076573	0.00023216
TA[C>T]GG	0.00041436	0.00050079	0.00014725	0.00007042	0.00074721	0.00048374
TA[C>T]GT	0.00042464	0.00056191	0.00030729	0.00014260	0.00126837	0.00100986
TA[C>T]TA	0.00092212	0.00219371	0.00136005	0.00004304	0.00152377	0.00181016
TA[C>T]TC	0.00150599	0.00126853	0.00065950	0.00008315	0.00153555	0.00082155
TA[C>T]TG	0.00163292	0.00228653	0.00154171	0.00012656	0.00192843	0.00126019
TA[C>T]TT	0.00147244	0.00211717	0.00102469	0.00020177	0.00257725	0.00198733
TA[T>A]AA	0.00082553	0.00087145	0.00056027	0.00403176	0.00110448	0.00051731
TA[T>A]AC	0.00061509	0.00039848	0.00045221	0.00340216	0.00014204	0.00013261
TA[T>A]AG	0.00025431	0.00012450	0.00031283	0.00406230	0.00023454	0.00038485
TA[T>A]AT	0.00008864	0.00053419	0.00038607	0.01040049	0.00057009	0.00000914
TA[T>A]CA	0.00065977	0.00049804	0.00015392	0.00119240	0.00011545	0.00020830
TA[T>A]CC	0.00055492	0.00021207	0.00026216	0.00042367	0.00025248	0.00045504
TA[T>A]CG	0.00002585	0.00002604	0.00003193	0.00012745	0.00000244	0.00003304
TA[T>A]CT	0.00058660	0.00044049	0.00044720	0.00170987	0.00044444	0.00016205
TA[T>A]GA	0.00047990	0.00071409	0.00037355	0.00321538	0.00059624	0.00030443
TA[T>A]GC	0.00038615	0.00035207	0.00036588	0.00260512	0.00024035	0.00026516
TA[T>A]GG	0.00034206	0.00005609	0.00036083	0.00406008	0.00024805	0.00005003
TA[T>A]GT	0.00043011	0.00070629	0.00054317	0.00886528	0.00048754	0.00006994
TA[T>A]TA	0.00073912	0.00082082	0.00064395	0.00202876	0.00008349	0.00089938
TA[T>A]TC	0.00079416	0.00047257	0.00030784	0.00063017	0.00017989	0.00050784
TA[T>A]TG	0.00055720	0.00028847	0.00056228	0.00174928	0.00018919	0.00061829

TA[T>A]TT	0.00147790	0.00150182	0.00108848	0.00220459	0.00042664	0.00191432
TA[T>C]AA	0.00167453	0.00113782	0.00095378	0.00102936	0.00204792	0.00186016
TA[T>C]AC	0.00125737	0.00110346	0.00049016	0.00112644	0.00140821	0.00112013
TA[T>C]AG	0.00137867	0.00153580	0.00084085	0.00212490	0.00277701	0.00145913
TA[T>C]AT	0.00184294	0.00190925	0.00140993	0.00548621	0.00292017	0.00159521
TA[T>C]CA	0.00042156	0.00028634	0.00015724	0.00005089	0.00058180	0.00056599
TA[T>C]CC	0.00034000	0.00017944	0.00006849	0.00008644	0.00031162	0.00087634
TA[T>C]CG	0.00002634	0.00002769	0.00002140	0.00000372	0.00002484	0.00009489
TA[T>C]CT	0.00104104	0.00045816	0.00016740	0.00021033	0.00095374	0.00072976
TA[T>C]GA	0.00093482	0.00052443	0.00081163	0.00027947	0.00195282	0.00166802
TA[T>C]GC	0.00039131	0.00053011	0.00045623	0.00029340	0.00126609	0.00102098
TA[T>C]GG	0.00091144	0.00072497	0.00064949	0.00041471	0.00217340	0.00143038
TA[T>C]GT	0.00200458	0.00135212	0.00063704	0.00139249	0.00326507	0.00153415
TA[T>C]TA	0.00126528	0.00112501	0.00071800	0.00031572	0.00152263	0.00117243
TA[T>C]TC	0.00100916	0.00068508	0.00035161	0.00008990	0.00067876	0.00076590
TA[T>C]TG	0.00099947	0.00166673	0.00074830	0.00031748	0.00286746	0.00134543
TA[T>C]TT	0.00379892	0.00268130	0.00151812	0.00039697	0.00293606	0.00188285
TA[T>G]AA	0.00126503	0.00059241	0.00062646	0.00023964	0.00075604	0.00020515
TA[T>G]AC	0.00033531	0.00021979	0.00011562	0.00011735	0.00019003	0.00011348
TA[T>G]AG	0.00057572	0.00018026	0.00032711	0.00058694	0.00042437	0.00029453
TA[T>G]AT	0.00039626	0.00053318	0.00043641	0.00044653	0.00059486	0.00022441
TA[T>G]CA	0.00098099	0.00032182	0.00019003	0.00011211	0.00053613	0.00031334
TA[T>G]CC	0.00050303	0.00019341	0.00021714	0.00003114	0.00019694	0.00012705
TA[T>G]CG	0.00001541	0.00001007	0.00001303	0.00000380	0.00000960	0.00004484
TA[T>G]CT	0.00072833	0.00032032	0.00031068	0.00010841	0.00042797	0.00017221
TA[T>G]GA	0.00087634	0.00059509	0.00015718	0.00022953	0.00074365	0.00052430
TA[T>G]GC	0.00040135	0.00024171	0.00007564	0.00012470	0.00062677	0.00044430
TA[T>G]GG	0.00047876	0.00008485	0.00014905	0.00006169	0.00023842	0.00011126
TA[T>G]GT	0.00082603	0.00047977	0.00013755	0.00032589	0.00055146	0.00045927
TA[T>G]TA	0.00243165	0.00079973	0.00046598	0.00014044	0.00079317	0.00052691
TA[T>G]TC	0.00158336	0.00034388	0.00025434	0.00001918	0.00058219	0.00059543
TA[T>G]TG	0.00098602	0.00045276	0.00018766	0.00010887	0.00052221	0.00009427
TA[T>G]TT	0.00399379	0.00170828	0.00133885	0.00015959	0.00130400	0.00094001
TC[C>A]AA	0.00051935	0.00068082	0.00179116	0.00040583	0.00047550	0.00017480
TC[C>A]AC	0.00075037	0.00069956	0.00156248	0.00026188	0.00019133	0.00034792
TC[C>A]AG	0.00047727	0.00042789	0.00209261	0.00024169	0.00085193	0.00056457
TC[C>A]AT	0.00050990	0.00112752	0.00248595	0.00025976	0.00063330	0.00057810
TC[C>A]CA	0.00066887	0.00115447	0.00358421	0.00040446	0.00075795	0.00066112
TC[C>A]CC	0.00067987	0.00118533	0.00210541	0.00023546	0.00018037	0.00117893
TC[C>A]CG	0.00015454	0.00011921	0.00026536	0.00002461	0.00017633	0.00019434
TC[C>A]CT	0.00114652	0.00092418	0.00292636	0.00033838	0.00071551	0.00180864
TC[C>A]GA	0.00005171	0.00003309	0.00013246	0.00003830	0.00006678	0.00011568
TC[C>A]GC	0.00007676	0.00010355	0.00016169	0.00006766	0.00001564	0.00029085
TC[C>A]GG	0.00004659	0.00002849	0.00027563	0.00002508	0.00018703	0.00010913
TC[C>A]GT	0.00003608	0.00010637	0.00025653	0.00004534	0.00015540	0.00032020
TC[C>A]TA	0.00044045	0.00034551	0.00098886	0.00014281	0.00017135	0.00088268
TC[C>A]TC	0.00118359	0.00026376	0.00098714	0.00010644	0.00031251	0.00130805
TC[C>A]TG	0.00093172	0.00044372	0.00164772	0.00015192	0.00022883	0.00201855
TC[C>A]TT	0.00127404	0.00034486	0.00160897	0.00026621	0.00053329	0.00198992
TC[C>G]AA	0.00048954	0.00019873	0.00074373	0.00017591	0.00054335	0.00036786
TC[C>G]AC	0.00011149	0.00014693	0.00030476	0.00006145	0.00033599	0.00009317
TC[C>G]AG	0.00051805	0.00011873	0.00056125	0.00011103	0.00046244	0.00021065
TC[C>G]AT	0.00023207	0.00027603	0.00051564	0.00008841	0.00025584	0.00019428

TC[C>G]CA	0.00158231	0.00051186	0.00114300	0.00018516	0.00092027	0.00060492
TC[C>G]CC	0.00057985	0.00020112	0.00058126	0.00003459	0.00080482	0.00040106
TC[C>G]CG	0.00002670	0.00002662	0.00011275	0.00002593	0.00017919	0.00016077
TC[C>G]CT	0.00113639	0.00036842	0.00063451	0.00015722	0.00081950	0.00089032
TC[C>G]GA	0.00002309	0.00003775	0.00012190	0.00000785	0.00002825	0.00006704
TC[C>G]GC	0.00005337	0.00002380	0.00006644	0.00001762	0.00009691	0.00017551
TC[C>G]GG	0.00004471	0.00001746	0.00001316	0.00001089	0.00008108	0.00012381
TC[C>G]GT	0.00004676	0.00001041	0.00013855	0.00003562	0.00010514	0.00009527
TC[C>G]TA	0.00109271	0.00035242	0.00056138	0.00005233	0.00078028	0.00023634
TC[C>G]TC	0.00123654	0.00038639	0.00032408	0.00011194	0.00058770	0.00065927
TC[C>G]TG	0.00123032	0.00019946	0.00045731	0.00007025	0.00086002	0.00048683
TC[C>G]TT	0.00194508	0.00042275	0.00104568	0.00011829	0.00116884	0.00067970
TC[C>T]AA	0.00064732	0.00160885	0.00166906	0.00014595	0.00148087	0.00120462
TC[C>T]AC	0.00060466	0.00123654	0.00089883	0.00013301	0.00132272	0.00090024
TC[C>T]AG	0.00116905	0.00237308	0.00157256	0.00028743	0.00153829	0.00155994
TC[C>T]AT	0.00124994	0.00174438	0.00225416	0.00045813	0.00222546	0.00120103
TC[C>T]CA	0.00060362	0.00319943	0.00298770	0.00038632	0.00323407	0.00237020
TC[C>T]CC	0.00056493	0.00272375	0.00214696	0.00034482	0.00196977	0.00134194
TC[C>T]CG	0.00033644	0.00029020	0.00041420	0.00010329	0.00015681	0.00022917
TC[C>T]CT	0.00191185	0.00413552	0.00261063	0.00043700	0.00248057	0.00284718
TC[C>T]GA	0.00021681	0.00046628	0.00038499	0.00005705	0.00045940	0.00010428
TC[C>T]GC	0.00006550	0.00050157	0.00057636	0.00012135	0.00060937	0.00054638
TC[C>T]GG	0.00023315	0.00051546	0.00010852	0.00006948	0.00063492	0.00048203
TC[C>T]GT	0.00032140	0.00052556	0.00036335	0.00022324	0.00042606	0.00065799
TC[C>T]TA	0.00048441	0.00245265	0.00145665	0.00008693	0.00208608	0.00170202
TC[C>T]TC	0.00073538	0.00220103	0.00188301	0.00038510	0.00187178	0.00210694
TC[C>T]TG	0.00095252	0.00257800	0.00269482	0.00042669	0.00235378	0.00251163
TC[C>T]TT	0.00123517	0.00310410	0.00257015	0.00049324	0.00261007	0.00303741
TC[T>A]AA	0.00032563	0.00031596	0.00032471	0.00696103	0.00058764	0.00052773
TC[T>A]AC	0.00051075	0.00027866	0.00030848	0.00677643	0.00023738	0.00053680
TC[T>A]AG	0.00001075	0.00001484	0.00006216	0.00848429	0.00000725	0.00007150
TC[T>A]AT	0.00023788	0.00004238	0.00022013	0.01484743	0.00022497	0.00022256
TC[T>A]CA	0.00126297	0.00051848	0.00057434	0.00490720	0.00028708	0.00109150
TC[T>A]CC	0.00131524	0.00073309	0.00055930	0.00188841	0.00033950	0.00159038
TC[T>A]CG	0.00017398	0.00001784	0.00008768	0.00081528	0.00005156	0.00016218
TC[T>A]CT	0.00115717	0.00098041	0.00062146	0.00749637	0.00035495	0.00175246
TC[T>A]GA	0.00050226	0.00039578	0.00041254	0.00774034	0.00044382	0.00091146
TC[T>A]GC	0.00085154	0.00049351	0.00022593	0.00701052	0.00027475	0.00093970
TC[T>A]GG	0.00045825	0.00047009	0.00049237	0.00793763	0.00019695	0.00052924
TC[T>A]GT	0.00048533	0.00030826	0.00063391	0.01632976	0.00035624	0.00091203
TC[T>A]TA	0.00075593	0.00059229	0.00054692	0.00369818	0.00039711	0.00063378
TC[T>A]TC	0.00085069	0.00053364	0.00038502	0.00215193	0.00039863	0.00117570
TC[T>A]TG	0.00073339	0.00056989	0.00053976	0.00448958	0.00032868	0.00048951
TC[T>A]TT	0.00157556	0.00122626	0.00123419	0.00602288	0.00038404	0.00187306
TC[T>C]AA	0.00110939	0.00087377	0.00033443	0.00044790	0.00076585	0.00155526
TC[T>C]AC	0.00120427	0.00058949	0.00049007	0.00049480	0.00039982	0.00179561
TC[T>C]AG	0.00097816	0.00064804	0.00078595	0.00129034	0.00085080	0.00176913
TC[T>C]AT	0.00107655	0.00067578	0.00073094	0.00155073	0.00103997	0.00139654
TC[T>C]CA	0.00076370	0.00076942	0.00013222	0.00020148	0.00034686	0.00073544
TC[T>C]CC	0.00045102	0.00019079	0.00045232	0.00017517	0.00045850	0.00122566
TC[T>C]CG	0.00004733	0.00007670	0.00003706	0.00001561	0.00014055	0.00008458
TC[T>C]CT	0.00069998	0.00075252	0.00010846	0.00034122	0.00067972	0.00146904
TC[T>C]GA	0.00075408	0.00047283	0.00049508	0.00019550	0.00053970	0.00161041

TC[T>C]GC	0.00054058	0.00033830	0.00070293	0.00021187	0.00052875	0.00126680
TC[T>C]GG	0.00083408	0.00054970	0.00073691	0.00041688	0.00080206	0.00123484
TC[T>C]GT	0.00101522	0.00050719	0.00115224	0.00058156	0.00124046	0.00187082
TC[T>C]TA	0.00069583	0.00055733	0.00016868	0.00015775	0.00039558	0.00099358
TC[T>C]TC	0.00109079	0.00080770	0.00040725	0.00023931	0.00016466	0.00144230
TC[T>C]TG	0.00107863	0.00047808	0.00043120	0.00040071	0.00073046	0.00139268
TC[T>C]TT	0.00148701	0.00134383	0.00058219	0.00029138	0.00110516	0.00261357
TC[T>G]AA	0.00067769	0.00022721	0.00010838	0.00031626	0.00039434	0.00020068
TC[T>G]AC	0.00008098	0.00006948	0.00016115	0.00024730	0.00013590	0.00016589
TC[T>G]AG	0.00022865	0.00004516	0.00007721	0.00040571	0.00033061	0.00004150
TC[T>G]AT	0.00015299	0.00013303	0.00008889	0.00052083	0.00019866	0.00021713
TC[T>G]CA	0.00119264	0.00044671	0.00030512	0.00021520	0.00056638	0.00033649
TC[T>G]CC	0.00060275	0.00023169	0.00017385	0.00002971	0.00048637	0.00033370
TC[T>G]CG	0.00015396	0.00001924	0.00002986	0.00003331	0.00008388	0.00008785
TC[T>G]CT	0.00117433	0.00033994	0.00020709	0.00019868	0.00070010	0.00016496
TC[T>G]GA	0.00087801	0.00009911	0.00005479	0.00027348	0.00041994	0.00054218
TC[T>G]GC	0.00033417	0.00024036	0.00024069	0.00047251	0.00054864	0.00023469
TC[T>G]GG	0.00042118	0.00013386	0.00014351	0.00011017	0.00027470	0.00027429
TC[T>G]GT	0.00034049	0.00017994	0.00051561	0.00093786	0.00027639	0.00038877
TC[T>G]TA	0.00146616	0.00024580	0.00016551	0.00010470	0.00056455	0.00079828
TC[T>G]TC	0.00136568	0.00018550	0.00022122	0.00009794	0.00078253	0.00050947
TC[T>G]TG	0.00069363	0.00022903	0.00033335	0.00012399	0.00053847	0.00023357
TC[T>G]TT	0.00247922	0.00044291	0.00051551	0.00022192	0.00133095	0.00089620
TG[C>A]AA	0.00019222	0.00094771	0.00170163	0.00022635	0.00125026	0.00015278
TG[C>A]AC	0.00040413	0.00085774	0.00103113	0.00022616	0.00065840	0.00006013
TG[C>A]AG	0.00053806	0.00061073	0.00085392	0.00014434	0.00044849	0.00016690
TG[C>A]AT	0.00030495	0.00140889	0.00188042	0.00020205	0.00081238	0.00014263
TG[C>A]CA	0.00011396	0.00128350	0.00211088	0.00027442	0.00087562	0.00061234
TG[C>A]CC	0.00047356	0.00096960	0.00141669	0.00015906	0.00057003	0.00060059
TG[C>A]CG	0.00009721	0.00008984	0.00022062	0.00000854	0.00007987	0.00004773
TG[C>A]CT	0.00062948	0.00149490	0.00247769	0.00026501	0.00098029	0.00059636
TG[C>A]GA	0.00006693	0.00019885	0.00023754	0.00003968	0.00007953	0.00004306
TG[C>A]GC	0.00014452	0.00026897	0.00023962	0.00001132	0.00008457	0.00004442
TG[C>A]GG	0.00001671	0.00021559	0.00051195	0.00003155	0.00011162	0.00011628
TG[C>A]GT	0.00001234	0.00015574	0.00052896	0.00001760	0.00018937	0.00003379
TG[C>A]TA	0.00018015	0.00033105	0.00099411	0.00017590	0.00016375	0.00044069
TG[C>A]TC	0.00029656	0.00044951	0.00082046	0.00015596	0.00035709	0.00049433
TG[C>A]TG	0.00072542	0.00051000	0.00116295	0.00024968	0.00028387	0.00098107
TG[C>A]TT	0.00052624	0.00061430	0.00092357	0.00024311	0.00074841	0.00083332
TG[C>G]AA	0.00021867	0.00019875	0.00057145	0.00013970	0.00050606	0.00042435
TG[C>G]AC	0.00009346	0.00009417	0.00046884	0.00004336	0.00018884	0.00003196
TG[C>G]AG	0.00018786	0.00030654	0.00051444	0.00010306	0.00051088	0.00056075
TG[C>G]AT	0.00004159	0.00007022	0.00065966	0.00003513	0.00030177	0.00006179
TG[C>G]CA	0.00037512	0.00028170	0.00096607	0.00004216	0.00061864	0.00015064
TG[C>G]CC	0.00036014	0.00023586	0.00069573	0.00004770	0.00047534	0.00023411
TG[C>G]CG	0.00002751	0.00000737	0.00006489	0.00000142	0.00005136	0.00001381
TG[C>G]CT	0.00050229	0.00028175	0.00079588	0.00010622	0.00050794	0.00046059
TG[C>G]GA	0.00002885	0.00002211	0.00008446	0.00000259	0.00008803	0.00001913
TG[C>G]GC	0.00003375	0.00005152	0.00015803	0.00000058	0.00014240	0.00011232
TG[C>G]GG	0.00000099	0.00002769	0.00011578	0.00001109	0.00005849	0.00011063
TG[C>G]GT	0.00003954	0.00002301	0.00012260	0.00001420	0.00009196	0.00011748
TG[C>G]TA	0.00052472	0.00027092	0.00052224	0.00007728	0.00050357	0.00047067
TG[C>G]TC	0.00065733	0.00024303	0.00029874	0.00008611	0.00027734	0.00011225

TG[C>G]TG	0.00032378	0.00024557	0.00062993	0.00003314	0.00054686	0.00053574
TG[C>G]TT	0.00042004	0.00032706	0.00080907	0.00009640	0.00073516	0.00032398
TG[C>T]AA	0.00082720	0.00282477	0.00181033	0.00008064	0.00253722	0.00130219
TG[C>T]AC	0.00036514	0.00229502	0.00081187	0.00010507	0.00193884	0.00061039
TG[C>T]AG	0.00119959	0.00222878	0.00203817	0.00006065	0.00202461	0.00170242
TG[C>T]AT	0.00094906	0.00341112	0.00194457	0.00012611	0.00194618	0.00098825
TG[C>T]CA	0.00035417	0.00268028	0.00181376	0.00012218	0.00200401	0.00130918
TG[C>T]CC	0.00060202	0.00256881	0.00167225	0.00013396	0.00229242	0.00176661
TG[C>T]CG	0.00015901	0.00027513	0.00024250	0.00002416	0.00017826	0.00004349
TG[C>T]CT	0.00098215	0.00391470	0.00278888	0.00023848	0.00317017	0.00184484
TG[C>T]GA	0.00000693	0.00097891	0.00006774	0.00002964	0.00044149	0.00029689
TG[C>T]GC	0.00001677	0.00066791	0.00008459	0.00012204	0.00061976	0.00048226
TG[C>T]GG	0.00007710	0.00079955	0.00025806	0.00013702	0.00112495	0.00029013
TG[C>T]GT	0.00005777	0.00025041	0.00006401	0.00013460	0.00043257	0.00056162
TG[C>T]TA	0.00035471	0.00206649	0.00173129	0.00007362	0.00187571	0.00185757
TG[C>T]TC	0.00068173	0.00175573	0.00102309	0.00007970	0.00163810	0.00130667
TG[C>T]TG	0.00113637	0.00223674	0.00162480	0.00018356	0.00249182	0.00191906
TG[C>T]TT	0.00069664	0.00264226	0.00179465	0.00017184	0.00250190	0.00246992
TG[T>A]AA	0.00041593	0.00019287	0.00024597	0.00451212	0.00037094	0.00001023
TG[T>A]AC	0.00041094	0.00016209	0.00045976	0.00332277	0.00010734	0.00011919
TG[T>A]AG	0.00000106	0.00001147	0.00007233	0.00575436	0.00001780	0.00002343
TG[T>A]AT	0.00023687	0.00013529	0.00015582	0.01152603	0.00020137	0.00023679
TG[T>A]CA	0.00051651	0.00037210	0.00023593	0.00180856	0.00018339	0.00023057
TG[T>A]CC	0.00088288	0.00043431	0.00013917	0.00047224	0.00032349	0.00052506
TG[T>A]CG	0.00004564	0.00002934	0.00008030	0.00009009	0.00001562	0.00005092
TG[T>A]CT	0.00051114	0.00067346	0.00038320	0.00219919	0.00050389	0.00063585
TG[T>A]GA	0.00056471	0.00029861	0.00040708	0.00244940	0.00057715	0.00040470
TG[T>A]GC	0.00041843	0.00031836	0.00039229	0.00206541	0.00040814	0.00051498
TG[T>A]GG	0.00060867	0.00020043	0.00055312	0.00227405	0.00053090	0.00026037
TG[T>A]GT	0.00060195	0.00048936	0.00052225	0.00614389	0.00030995	0.00033007
TG[T>A]TA	0.00058209	0.00017693	0.00019843	0.00134085	0.00026597	0.00100371
TG[T>A]TC	0.00051697	0.00027355	0.00034247	0.00052528	0.00015081	0.00041186
TG[T>A]TG	0.00081359	0.00025567	0.00042188	0.00195285	0.00033105	0.00048983
TG[T>A]TT	0.00098481	0.00099839	0.00078879	0.00128647	0.00052407	0.00112454
TG[T>C]AA	0.00114662	0.00045384	0.00068067	0.00010825	0.00070372	0.00037483
TG[T>C]AC	0.00101171	0.00013625	0.00029758	0.00016334	0.00039461	0.00089514
TG[T>C]AG	0.00141612	0.00068538	0.00071652	0.00043925	0.00086112	0.00060920
TG[T>C]AT	0.00161001	0.00078808	0.00076526	0.00064662	0.00134999	0.00003021
TG[T>C]CA	0.00033391	0.00024732	0.00020618	0.00010447	0.00042251	0.00028355
TG[T>C]CC	0.00060542	0.00026022	0.00020126	0.00008607	0.00063424	0.00032471
TG[T>C]CG	0.00000134	0.00001329	0.00000048	0.00000667	0.00000903	0.00006563
TG[T>C]CT	0.00072340	0.00052709	0.00016523	0.00023793	0.00122478	0.00090062
TG[T>C]GA	0.00046449	0.00034813	0.00042787	0.00004470	0.00076875	0.00063928
TG[T>C]GC	0.00036950	0.00043346	0.00039272	0.00039452	0.00069754	0.00059136
TG[T>C]GG	0.00069135	0.00032039	0.00062092	0.00010309	0.00106660	0.00059449
TG[T>C]GT	0.00101546	0.00069037	0.00049538	0.00015769	0.00098272	0.00064631
TG[T>C]TA	0.00076355	0.00049562	0.00020900	0.00014708	0.00061333	0.00013023
TG[T>C]TC	0.00051387	0.00070496	0.00056363	0.00001865	0.00094759	0.00030991
TG[T>C]TG	0.00039257	0.00111693	0.00053716	0.00039817	0.00229920	0.00105430
TG[T>C]TT	0.00145230	0.00133787	0.00105704	0.00013737	0.00162071	0.00070556
TG[T>G]AA	0.00052629	0.00015087	0.00004001	0.00021305	0.00048810	0.00011201
TG[T>G]AC	0.00014692	0.00008393	0.00003072	0.00007176	0.00015611	0.00006253
TG[T>G]AG	0.00022849	0.00001408	0.00005205	0.00017695	0.00010013	0.00019573

TG[T>G]AT	0.00024735	0.00003858	0.00010677	0.00029253	0.00014987	0.00006336
TG[T>G]CA	0.00048902	0.00011156	0.00003820	0.00005311	0.00025760	0.00006975
TG[T>G]CC	0.00022997	0.00006118	0.00002419	0.00001074	0.00025242	0.00010863
TG[T>G]CG	0.00000323	0.00002352	0.00000857	0.00000071	0.00001280	0.00005067
TG[T>G]CT	0.00041312	0.00021327	0.00007680	0.00007595	0.00038913	0.00005752
TG[T>G]GA	0.00051372	0.00014584	0.00018083	0.00011530	0.00027785	0.00030881
TG[T>G]GC	0.00028404	0.00010082	0.00014229	0.00008448	0.00046081	0.00012726
TG[T>G]GG	0.00030014	0.00010687	0.00005310	0.00010459	0.00027117	0.00034537
TG[T>G]GT	0.00025565	0.00022194	0.00026241	0.00020977	0.00070499	0.00030985
TG[T>G]TA	0.00090755	0.00010445	0.00006421	0.00006190	0.00046439	0.00029991
TG[T>G]TC	0.00068290	0.00015554	0.00011240	0.00003221	0.00049688	0.00006203
TG[T>G]TG	0.00033550	0.00016880	0.00021158	0.00003967	0.00027491	0.00008110
TG[T>G]TT	0.00113621	0.00042252	0.00035337	0.00002629	0.00062982	0.00012288
TT[C>A]AA	0.00100376	0.00268802	0.00232709	0.00028121	0.00083270	0.00072034
TT[C>A]AC	0.00146065	0.00164008	0.00138771	0.00023072	0.00064767	0.00078262
TT[C>A]AG	0.00154875	0.00124432	0.00115449	0.00020021	0.00034864	0.00064815
TT[C>A]AT	0.00250751	0.00201161	0.00185492	0.00057418	0.00050816	0.00105761
TT[C>A]CA	0.00098591	0.00318107	0.00338443	0.00029510	0.00099046	0.00081312
TT[C>A]CC	0.00117903	0.00189342	0.00221707	0.00018686	0.00099134	0.00106911
TT[C>A]CG	0.00011171	0.00019380	0.00029898	0.00001691	0.00007901	0.00001118
TT[C>A]CT	0.00199718	0.00322881	0.00336090	0.00038031	0.00093013	0.00137669
TT[C>A]GA	0.00002061	0.00042132	0.00044282	0.00000385	0.00012667	0.00015343
TT[C>A]GC	0.00011099	0.00019622	0.00011646	0.00001686	0.00009029	0.00003580
TT[C>A]GG	0.00004303	0.00025802	0.00022573	0.00000592	0.00015402	0.00013120
TT[C>A]GT	0.00012506	0.00030696	0.00003811	0.00000562	0.00005290	0.00016422
TT[C>A]TA	0.00075135	0.00109281	0.00074678	0.00029505	0.00023229	0.00074675
TT[C>A]TC	0.00097585	0.00172029	0.00100847	0.00023545	0.00018331	0.00077885
TT[C>A]TG	0.00105211	0.00147089	0.00091328	0.00025099	0.00011035	0.00159214
TT[C>A]TT	0.00060816	0.00196110	0.00049860	0.00040253	0.00034388	0.00191998
TT[C>G]AA	0.00076110	0.00089689	0.00100098	0.00016876	0.00087574	0.00059247
TT[C>G]AC	0.00037941	0.00029447	0.00034732	0.00008516	0.00022591	0.00029447
TT[C>G]AG	0.00068333	0.00062590	0.00033506	0.00009332	0.00067816	0.00041550
TT[C>G]AT	0.00066670	0.00044747	0.00067744	0.00011577	0.00053908	0.00005631
TT[C>G]CA	0.00160672	0.00060302	0.00128082	0.00007397	0.00117049	0.00052792
TT[C>G]CC	0.00132883	0.00033845	0.00058535	0.00012703	0.00058822	0.00074967
TT[C>G]CG	0.00011949	0.00003637	0.00002122	0.00000055	0.00001844	0.00006592
TT[C>G]CT	0.00275271	0.00070256	0.00093890	0.00021162	0.00089909	0.00133515
TT[C>G]GA	0.00016634	0.00011608	0.00005391	0.00002566	0.00008510	0.00015251
TT[C>G]GC	0.00004182	0.00000989	0.00005470	0.00001947	0.00008188	0.00014496
TT[C>G]GG	0.00007884	0.00004563	0.00009024	0.00002364	0.00005253	0.00005208
TT[C>G]GT	0.00009595	0.00005318	0.00014310	0.00000458	0.00008664	0.00011745
TT[C>G]TA	0.00231700	0.00150144	0.00037924	0.00015990	0.00095050	0.00067065
TT[C>G]TC	0.00264445	0.00090589	0.00054865	0.00023038	0.00074137	0.00095944
TT[C>G]TG	0.00135497	0.00054758	0.00068234	0.00014224	0.00129794	0.00066228
TT[C>G]TT	0.00306155	0.00166356	0.00126972	0.00015226	0.00183769	0.00119880
TT[C>T]AA	0.00180064	0.00395673	0.00201549	0.00018068	0.00217890	0.00157492
TT[C>T]AC	0.00143793	0.00196744	0.00132467	0.00003001	0.00145532	0.00079246
TT[C>T]AG	0.00258056	0.00298341	0.00153494	0.00017950	0.00126960	0.00092470
TT[C>T]AT	0.00355739	0.00385636	0.00236272	0.00016115	0.00294115	0.00179833
TT[C>T]CA	0.00086556	0.00426108	0.00267243	0.00034817	0.00199541	0.00162492
TT[C>T]CC	0.00101130	0.00473957	0.00270164	0.00023141	0.00287943	0.00148550
TT[C>T]CG	0.00014417	0.00020792	0.00011902	0.00002519	0.00025880	0.00019173
TT[C>T]CT	0.00295182	0.00919441	0.00388869	0.00050315	0.00505411	0.00255672

TT[C>T]GA	0.00032768	0.00076295	0.00047047	0.00007249	0.00038693	0.00006198
TT[C>T]GC	0.00014340	0.00042475	0.00012779	0.00005355	0.00032654	0.00011039
TT[C>T]GG	0.00021178	0.00059614	0.00022144	0.00008350	0.00092128	0.00014536
TT[C>T]GT	0.00015123	0.00096620	0.00029838	0.00015208	0.00068365	0.00040075
TT[C>T]TA	0.00127928	0.00229282	0.00158158	0.00012947	0.00151442	0.00179976
TT[C>T]TC	0.00179238	0.00314831	0.00182064	0.00030586	0.00114123	0.00166277
TT[C>T]TG	0.00207140	0.00276591	0.00206212	0.00013922	0.00159857	0.00273675
TT[C>T]TT	0.00193172	0.00444368	0.00254720	0.00031496	0.00179707	0.00270210
TT[T>A]AA	0.00075446	0.00213411	0.00040236	0.00569391	0.00096076	0.00238507
TT[T>A]AC	0.00131137	0.00061172	0.00074171	0.00356551	0.00022912	0.00079514
TT[T>A]AG	0.00066864	0.00021958	0.00026554	0.00461285	0.00004548	0.00009927
TT[T>A]AT	0.00198887	0.00141930	0.00171083	0.01061966	0.00019156	0.00135361
TT[T>A]CA	0.00195325	0.00105723	0.00135709	0.00208294	0.00013460	0.00119463
TT[T>A]CC	0.00270644	0.00084439	0.00098408	0.00077695	0.00043375	0.00152006
TT[T>A]CG	0.00013402	0.00010955	0.00011704	0.00012440	0.00003581	0.00002037
TT[T>A]CT	0.00297944	0.00207503	0.00126773	0.00335995	0.00037166	0.00190014
TT[T>A]GA	0.00087981	0.00085609	0.00023525	0.00448448	0.00030148	0.00082866
TT[T>A]GC	0.00101454	0.00048474	0.00041159	0.00270932	0.00017208	0.00064524
TT[T>A]GG	0.00073914	0.00049446	0.00061205	0.00547445	0.00019825	0.00064031
TT[T>A]GT	0.00150025	0.00065960	0.00069230	0.00899233	0.00071551	0.00119282
TT[T>A]TA	0.00198280	0.00100855	0.00080807	0.00281945	0.00017856	0.00150953
TT[T>A]TC	0.00187519	0.00099302	0.00059934	0.00104216	0.00044526	0.00102927
TT[T>A]TG	0.00161931	0.00048767	0.00072480	0.00227066	0.00030457	0.00055768
TT[T>A]TT	0.00414926	0.00273270	0.00184409	0.00240535	0.00063797	0.00240603
TT[T>C]AA	0.00189978	0.00072700	0.00125335	0.00057425	0.00142281	0.00137874
TT[T>C]AC	0.00163803	0.00061721	0.00045469	0.00056450	0.00068003	0.00091819
TT[T>C]AG	0.00166220	0.00097793	0.00097528	0.00158020	0.00124239	0.00150092
TT[T>C]AT	0.00273419	0.00137775	0.00139908	0.00231440	0.00121379	0.00138156
TT[T>C]CA	0.00043986	0.00056551	0.00039917	0.00009802	0.00029882	0.00033749
TT[T>C]CC	0.00057596	0.00012180	0.00034885	0.00001372	0.00046729	0.00066083
TT[T>C]CG	0.00001008	0.00004241	0.00004964	0.00000226	0.00003353	0.00004081
TT[T>C]CT	0.00126761	0.00074170	0.00061376	0.00020674	0.00075685	0.00081712
TT[T>C]GA	0.00079803	0.00053421	0.00031501	0.00015947	0.00065903	0.00077391
TT[T>C]GC	0.00046347	0.00013476	0.00033517	0.00017715	0.00053213	0.00075857
TT[T>C]GG	0.00094581	0.00044106	0.00056357	0.00050695	0.00178755	0.00118481
TT[T>C]GT	0.00099445	0.00051453	0.00101156	0.00049882	0.00139135	0.00100531
TT[T>C]TA	0.00088789	0.00081226	0.00093124	0.00016204	0.00061820	0.00095807
TT[T>C]TC	0.00098701	0.00052975	0.00057479	0.00013479	0.00022295	0.00038786
TT[T>C]TG	0.00122978	0.00118277	0.00050802	0.00035702	0.00197744	0.00140053
TT[T>C]TT	0.00243217	0.00151495	0.00117209	0.00022631	0.00131177	0.00084381
TT[T>G]AA	0.00239264	0.00101275	0.00105764	0.00021640	0.00129009	0.00051711
TT[T>G]AC	0.00056833	0.00031007	0.00008249	0.00018349	0.00030319	0.00002690
TT[T>G]AG	0.00079606	0.00018209	0.00030999	0.00027067	0.00039683	0.00015857
TT[T>G]AT	0.00114128	0.00058971	0.00041073	0.00059331	0.00064677	0.00008634
TT[T>G]CA	0.00299564	0.00091724	0.00064965	0.00013412	0.00097289	0.00050025
TT[T>G]CC	0.00177430	0.00058797	0.00016200	0.00009729	0.00088286	0.00021727
TT[T>G]CG	0.00011295	0.00000747	0.00001478	0.00000444	0.00007091	0.00001573
TT[T>G]CT	0.00333827	0.00046723	0.00108493	0.00016175	0.00163573	0.00068544
TT[T>G]GA	0.00168609	0.00069465	0.00066685	0.00019717	0.00067368	0.00078409
TT[T>G]GC	0.00081550	0.00027986	0.00030151	0.00022592	0.00070042	0.00036997
TT[T>G]GG	0.00087805	0.00038573	0.00014328	0.00004734	0.00040565	0.00028585
TT[T>G]GT	0.00126626	0.00043557	0.00104552	0.00077824	0.00090514	0.00069560
TT[T>G]TA	0.00455043	0.00173840	0.00117419	0.00017241	0.00146166	0.00094889

TT[T>G]TC	0.00329758	0.00071029	0.00036642	0.00011742	0.00109192	0.00049736
TT[T>G]TG	0.00150634	0.00056433	0.00033490	0.00010422	0.00103098	0.00037825
TT[T>G]TT	0.00780104	0.00209623	0.00175771	0.00041084	0.00348298	0.00135707

SBS_G	SBS_H	SBS_I	SBS_J	SBS_K	SBS_L	SBS_M
0.00115313	0.00883842	0.00063521	0.00745277	0.00160291	0.00144713	0.00297377
0.00046608	0.00199437	0.00057912	0.00204632	0.00056466	0.00028344	0.00083606
0.00017828	0.00199680	0.00049761	0.00433812	0.00039211	0.00060028	0.00045929
0.00101428	0.00292153	0.00045667	0.00396439	0.00092399	0.00054852	0.00204081
0.00191610	0.00312186	0.00039758	0.00216151	0.00133868	0.00081535	0.00138152
0.00092731	0.00268689	0.00034880	0.00122887	0.00089470	0.00101701	0.00060412
0.00001512	0.00033876	0.00005486	0.00019530	0.00015517	0.00013752	0.00002609
0.00084935	0.00558769	0.00031444	0.00104679	0.00038475	0.00046053	0.00108345
0.00008824	0.00040764	0.00000366	0.00028067	0.00013563	0.00006674	0.00017771
0.00007174	0.00019354	0.00005838	0.00019077	0.00000676	0.00006118	0.00008754
0.00003286	0.00024290	0.00003204	0.00028635	0.00002409	0.00004941	0.00006049
0.00015129	0.00071865	0.00002006	0.00037874	0.00010781	0.00004928	0.00017496
0.00057286	0.00342283	0.00027642	0.00225446	0.00058355	0.00062256	0.00075270
0.00027308	0.00268698	0.00020801	0.00167083	0.00033542	0.00048910	0.00051069
0.00056503	0.00236953	0.00017610	0.00214693	0.00025285	0.00095147	0.00071054
0.00086961	0.00726781	0.00034118	0.00225337	0.00056103	0.00057811	0.00033903
0.00320947	0.00107463	0.00052328	0.00075163	0.00088660	0.00035255	0.00089499
0.00069637	0.00030978	0.00009638	0.00030822	0.00014501	0.00011173	0.00018507
0.00079164	0.00427420	0.00008613	0.00029223	0.00080009	0.00022341	0.00093208
0.00161609	0.00036114	0.00045530	0.00027531	0.00025941	0.00016725	0.00040649
0.00172437	0.00066619	0.00024211	0.00059438	0.00086097	0.00025801	0.00053806
0.00055859	0.00041110	0.00035814	0.00010055	0.00031136	0.00013913	0.00021670
0.00008379	0.00002376	0.00000971	0.00003387	0.00005429	0.00003006	0.00007258
0.00106513	0.00070684	0.00021185	0.00036885	0.00028494	0.00006535	0.00049129
0.00017635	0.00013650	0.00007123	0.00023609	0.00021767	0.00001886	0.00004657
0.00000513	0.00014798	0.00005348	0.00003390	0.00005193	0.00008846	0.00005768
0.00012820	0.00014616	0.00003829	0.00008286	0.00001244	0.00001693	0.00014164
0.00009912	0.00032789	0.00005566	0.00006845	0.00008680	0.00005177	0.00024164
0.00167456	0.00099620	0.00038912	0.00093352	0.00049623	0.00034511	0.00061326
0.00084162	0.00055822	0.00030314	0.00046941	0.00064239	0.00019008	0.00037804
0.00140882	0.00105588	0.00025145	0.00057751	0.00035084	0.00031404	0.00033792
0.00127505	0.00213577	0.00036835	0.00111320	0.00091496	0.00021872	0.00076826
0.00087397	0.00211780	0.00028381	0.00042327	0.00085878	0.00118084	0.00087285
0.00050648	0.00042761	0.00019191	0.00085459	0.00072221	0.00077180	0.00061100
0.00147393	0.00084503	0.00026611	0.00070108	0.00112215	0.00090241	0.00084219
0.00138154	0.00862305	0.00043978	0.00096348	0.00189463	0.00142094	0.00157081
0.00091801	0.00161125	0.00020818	0.00050557	0.00050026	0.00104719	0.00042456
0.00046512	0.00099015	0.00014923	0.00028743	0.00091418	0.00068344	0.00048070
0.00012138	0.00015161	0.00005899	0.00003176	0.00006370	0.00012684	0.00000171
0.00081919	0.00228505	0.00026972	0.00072340	0.00065161	0.00102890	0.00092528
0.00047552	0.00014636	0.00012384	0.00063710	0.01199137	0.00434890	0.00099555
0.00038194	0.00009009	0.00002399	0.00092428	0.00982546	0.00430590	0.00058288
0.00064360	0.00006998	0.00039294	0.00069994	0.00879033	0.00388430	0.00067792
0.00027561	0.00041458	0.00029028	0.00077961	0.01042781	0.00501237	0.00054370
0.00018549	0.00346203	0.00025418	0.00059836	0.00062206	0.00041704	0.00038991
0.00064673	0.00255320	0.00018117	0.00046712	0.00099243	0.00066410	0.00061728
0.00045726	0.00203776	0.00014873	0.00034853	0.00099897	0.00109356	0.00062291
0.00086840	0.00550140	0.00008119	0.00071505	0.00077441	0.00109474	0.00033870
0.00142250	0.00181794	0.00395720	0.00015821	0.00107844	0.00272178	0.00083587

0.00036627	0.00021855	0.00102453	0.00026747	0.00025541	0.00206438	0.00039679
0.00014310	0.00046125	0.00431235	0.00055259	0.00043789	0.00071444	0.00047253
0.00037902	0.00059497	0.00815338	0.00021950	0.00055213	0.00271619	0.00037861
0.00049166	0.00113954	0.00057944	0.00025481	0.00032876	0.00237951	0.00055371
0.00029875	0.00072972	0.00009250	0.00028739	0.00019343	0.00126136	0.00056466
0.00006618	0.00002739	0.00003252	0.00000105	0.00031213	0.00012979	0.00000007
0.00042476	0.00150604	0.00022978	0.00016768	0.00042555	0.00170484	0.00030439
0.00059282	0.00113093	0.00142108	0.00065263	0.00105440	0.00020231	0.00054363
0.00029822	0.00051927	0.00037116	0.00039410	0.00043415	0.00032142	0.00047778
0.00052919	0.00083133	0.00218195	0.00052492	0.00035589	0.00023377	0.00050424
0.00072824	0.00125670	0.00418167	0.00063164	0.00069961	0.00040026	0.00119519
0.00211340	0.00185842	0.00204188	0.00137545	0.00088739	0.00380807	0.00039614
0.00052556	0.00068239	0.00023112	0.00066910	0.00084082	0.00135947	0.00056492
0.00033332	0.00077778	0.00139529	0.00068586	0.00050471	0.00129510	0.00024397
0.00269588	0.00253058	0.00117080	0.00285313	0.00292372	0.00595537	0.00112947
0.00147597	0.00044756	0.00255151	0.00111189	0.00109620	0.00213098	0.00842456
0.00074522	0.00078311	0.00148633	0.00040243	0.00051304	0.00208116	0.00759441
0.00126502	0.00028405	0.00626109	0.00051359	0.00140474	0.00101200	0.00462613
0.00131283	0.00009867	0.00624017	0.00103546	0.00097502	0.00343392	0.00839587
0.00066613	0.00049260	0.00007691	0.00021660	0.00028045	0.00067095	0.00525667
0.00032970	0.00027706	0.00002858	0.00015540	0.00012139	0.00050139	0.00308094
0.00004786	0.00000849	0.00003019	0.00009550	0.00003882	0.00004921	0.00032273
0.00070305	0.00119252	0.00009160	0.00063628	0.00045703	0.00058530	0.00292182
0.00076329	0.00040754	0.00061145	0.00074010	0.00040113	0.00229713	0.00521672
0.00014138	0.00025300	0.00012195	0.00024470	0.00070429	0.00081596	0.00450157
0.00072875	0.00046280	0.00120686	0.00073179	0.00050826	0.00121642	0.00312196
0.00061105	0.00004866	0.00229995	0.00030011	0.00093479	0.00137915	0.00576300
0.00141766	0.00049197	0.00030505	0.00073121	0.00091062	0.00095711	0.00321204
0.00067175	0.00029657	0.00014282	0.00022415	0.00065094	0.00051391	0.00336018
0.00156334	0.00027323	0.00027303	0.00087448	0.00169648	0.00120280	0.00350153
0.00204630	0.00066651	0.00039056	0.00082171	0.00098660	0.00173232	0.00341066
0.00173032	0.00023395	0.00090163	0.00082020	0.00060310	0.00018106	0.00046478
0.00029509	0.00003232	0.00007853	0.00024388	0.00034223	0.00017506	0.00011042
0.00041985	0.00067313	0.00084355	0.00014792	0.00032414	0.00004495	0.00036283
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0.00123380	0.00034267	0.00019065	0.00051940	0.00083661	0.00004320	0.00057313
0.00037994	0.00018044	0.00009422	0.00017323	0.00043238	0.00011660	0.00018466
0.00015588	0.00007346	0.00005315	0.00016181	0.00016958	0.00009162	0.00014666
0.00062032	0.00030625	0.00033043	0.00021872	0.00070636	0.00008188	0.00082451
0.00036901	0.00013005	0.00006108	0.00026638	0.00005105	0.00001565	0.00009615
0.00030645	0.00016245	0.00000649	0.00000219	0.00000286	0.00006873	0.00020483
0.00020243	0.00004233	0.00007809	0.00006901	0.00028063	0.00014950	0.00005820
0.00016993	0.00015734	0.00002980	0.00013208	0.00030924	0.00004378	0.00006981
0.00095033	0.00024330	0.00028638	0.00077863	0.00055199	0.00004703	0.00047763
0.00116128	0.00021819	0.00004986	0.00058843	0.00087171	0.00006849	0.00053044
0.00085899	0.00043224	0.00014897	0.00025001	0.00096935	0.00003862	0.00048393
0.00107388	0.00036376	0.00029102	0.00044915	0.00065414	0.00004787	0.00078539
0.00081847	0.00044265	0.00023647	0.00054678	0.00102376	0.00044218	0.00105180
0.00077757	0.00033985	0.00014705	0.00061409	0.00035108	0.00044718	0.00096757
0.00142217	0.00055856	0.00021525	0.00068985	0.00143923	0.00065100	0.00139250
0.00059719	0.00036828	0.00036776	0.00094020	0.00072717	0.00053820	0.00104787
0.00112826	0.00046916	0.00033644	0.00066808	0.00125800	0.00083178	0.00134032
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0.00027594	0.00011052	0.00010049	0.00011228	0.00037220	0.00024116	0.00012159
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0.00019828	0.00008082	0.00357087	0.00015291	0.00017592	0.00013966	0.00029019
0.00005669	0.00010945	0.00582253	0.00002489	0.00019384	0.00004898	0.00011236
0.00000017	0.00015550	0.01285583	0.00025954	0.00032944	0.00000564	0.00000063
0.00084654	0.00070034	0.00252806	0.00073168	0.00022978	0.00032417	0.00083669
0.00056245	0.00052017	0.00032433	0.00077488	0.00053822	0.00043704	0.00081555
0.00004172	0.00006655	0.00061179	0.00006569	0.00011900	0.00005420	0.00013840
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0.00124281	0.00033650	0.00190449	0.00071821	0.00063089	0.00157715	0.00557589
0.00157726	0.00022397	0.00061842	0.00053010	0.00063867	0.00186061	0.00314070
0.00113371	0.00063901	0.00010802	0.00117968	0.00063474	0.00183442	0.00464008
0.00162655	0.00058387	0.00118775	0.00098772	0.00063448	0.00194064	0.00262704
0.00327749	0.00058577	0.00058405	0.00143340	0.00119895	0.00824078	0.00499813
0.00181335	0.00019720	0.00177749	0.00079152	0.00042059	0.00015317	0.00033480
0.00039281	0.00015521	0.00033095	0.00012706	0.00001473	0.00006854	0.00012727
0.00048860	0.00002929	0.00092511	0.00021732	0.00005967	0.00000532	0.00032169
0.00115307	0.00029768	0.00183328	0.00025932	0.00042178	0.00016585	0.00035116
0.00100354	0.00024722	0.00043240	0.00077994	0.00055280	0.00013963	0.00044031
0.00025111	0.00014763	0.00005060	0.00042206	0.00066133	0.00005680	0.00045226
0.00007726	0.00004814	0.00003078	0.00001503	0.00008071	0.00000000	0.00004784
0.00073301	0.00016290	0.00037678	0.00077207	0.00109377	0.00018820	0.00051506
0.00111173	0.00051474	0.00143855	0.00049897	0.00047198	0.00019292	0.00025737
0.00064933	0.00037573	0.00026209	0.00041891	0.00032557	0.00012353	0.00037658
0.00064620	0.00021865	0.00042877	0.00052445	0.00029852	0.00019443	0.00016706
0.00105633	0.00082808	0.00160154	0.00028048	0.00054361	0.00020566	0.00019142
0.00197851	0.00031795	0.00075418	0.00068636	0.00119650	0.00045462	0.00065969

0.00129603 0.00023791 0.00021707 0.00035864 0.00065802 0.00027992 0.00088851
0.00091556 0.00023445 0.00064485 0.00037060 0.00064689 0.00017617 0.00027185
0.00321990 0.00047700 0.00046295 0.00122334 0.00176162 0.00050028 0.00165916

Supplementary Table 3: DBS de novo signatures extracted from 962 ccRCC cases

Mutation Type	DBS_A	DBS_B	DBS_C	DBS_D
AC>CA	0.02366703	0.00336775	0.00871864	0.00503114
AC>CG	0.00227259	0.00024070	0.00123794	0.00190918
AC>CT	0.02530510	0.00120051	0.01500850	0.00237222
AC>GA	0.01886240	0.00979680	0.01336069	0.00158594
AC>GG	0.00606627	0.00025675	0.00303981	0.00263499
AC>GT	0.01210391	0.00039230	0.01328509	0.00031640
AC>TA	0.03117654	0.00100704	0.02076491	0.00933111
AC>TG	0.01090834	0.00052358	0.01315592	0.00013060
AC>TT	0.02771023	0.00894749	0.01870809	0.00251075
AT>CA	0.00745664	0.00035310	0.00438687	0.00223810
AT>CC	0.00199375	0.00071658	0.00036248	0.00123446
AT>CG	0.00062550	0.00024766	0.00115627	0.00155349
AT>GA	0.00320348	0.00048533	0.00325604	0.00845878
AT>GC	0.00029339	0.00006107	0.00051382	0.00036851
AT>TA	0.01265032	0.00094795	0.00663457	0.00293144
CC>AA	0.00000034	0.43149542	0.00006840	0.00037896
CC>AG	0.01069506	0.05513403	0.03117881	0.00397481
CC>AT	0.00251755	0.05439674	0.18239298	0.00553983
CC>GA	0.00613710	0.01711114	0.00879231	0.00085171
CC>GG	0.00303396	0.00159962	0.00647223	0.00268544
CC>GT	0.00877437	0.01029889	0.00962892	0.00415748
CC>TA	0.01174007	0.01922109	0.01065654	0.00994449
CC>TG	0.00371166	0.00453298	0.01253201	0.00199377
CC>TT	0.01994498	0.02259226	0.02331462	0.00585993
CG>AT	0.00199051	0.00074045	0.00123265	0.00146010
CG>GC	0.00000149	0.00011289	0.00002680	0.00015095
CG>GT	0.00023008	0.00229093	0.00073928	0.00024229
CG>TA	0.00076082	0.00013215	0.00106621	0.00051120
CG>TC	0.00088981	0.00123202	0.00040084	0.00127668
CG>TT	0.00385159	0.00364178	0.00196773	0.00039108
CT>AA	0.01866839	0.01251507	0.00912480	0.00960691
CT>AC	0.01044261	0.00105475	0.01680585	0.00569839
CT>AG	0.00487010	0.00758323	0.00589755	0.00057029
CT>GA	0.00229986	0.00036805	0.00165370	0.00312897
CT>GC	0.00192350	0.00002641	0.00112548	0.00063377
CT>GG	0.00127382	0.00021524	0.00155999	0.00050315
CT>TA	0.01209123	0.00629426	0.00725058	0.01808698
CT>TC	0.01511165	0.00038343	0.01002106	0.00065994
CT>TG	0.00161340	0.00335153	0.00164227	0.00600496
GC>AA	0.07193145	0.05005780	0.03041251	0.01018321
GC>AG	0.04367477	0.00613555	0.06265972	0.00971442
GC>AT	0.06658159	0.00441783	0.06394111	0.01683102
GC>CA	0.01934822	0.00304958	0.02012463	0.00996847
GC>CG	0.00134651	0.00010475	0.00151306	0.00098246
GC>TA	0.01574442	0.00191257	0.02921590	0.00031415
TA>AT	0.00004551	0.00002355	0.00080078	0.16094933
TA>CG	0.00024178	0.00003704	0.00017513	0.00644311

TA>CT	0.00000115	0.00000158	0.00000294	0.11690854
TA>GC	0.00010873	0.00039910	0.00017728	0.00286647
TA>GG	0.00164896	0.00023969	0.00232373	0.00980494
TA>GT	0.00000134	0.00001143	0.00000427	0.05618043
TC>AA	0.05738055	0.10510628	0.01678459	0.18018691
TC>AG	0.01623893	0.00700311	0.01266632	0.00799556
TC>AT	0.09761582	0.01399790	0.07436840	0.02395770
TC>CA	0.03758678	0.01225332	0.02086271	0.01512029
TC>CG	0.00461543	0.00030517	0.00192777	0.00047311
TC>CT	0.03709320	0.00702436	0.03345495	0.01822673
TC>GA	0.01735198	0.02777206	0.01095548	0.00704212
TC>GG	0.00085244	0.00055880	0.00294207	0.00095776
TC>GT	0.01022388	0.00427079	0.00600282	0.00543547
TG>AA	0.00405486	0.00701607	0.01027081	0.02281667
TG>AC	0.00407385	0.00039912	0.00462812	0.00386415
TG>AT	0.02921129	0.01260417	0.02621180	0.04884615
TG>CA	0.00729840	0.00125693	0.00835943	0.00243813
TG>CC	0.00426512	0.00100426	0.00416147	0.00013112
TG>CT	0.02111919	0.03522433	0.01305388	0.01212043
TG>GA	0.00031042	0.00342604	0.00131824	0.01915110
TG>GC	0.00024495	0.00176492	0.00032325	0.00051919
TG>GT	0.00656801	0.00348369	0.00940186	0.00525343
TT>AA	0.03259363	0.00031315	0.01825792	0.06266200
TT>AC	0.01724393	0.00007458	0.01251459	0.01054644
TT>AG	0.01346197	0.00024223	0.00384538	0.01556096
TT>CA	0.01574796	0.00124235	0.01394452	0.00064064
TT>CC	0.00753410	0.00114737	0.00778031	0.00275531
TT>CG	0.00495335	0.00030501	0.00097545	0.00098567
TT>GA	0.00263981	0.00021763	0.00233771	0.00134789
TT>GC	0.00153457	0.00065014	0.00174095	0.00271044
TT>GG	0.00064174	0.00007683	0.00041688	0.00018887

Supplementary Table 4: ID de novo signatures extracted from 962 ccRCC cases

Mutation Type	ID_A	ID_B	ID_C	ID_D	ID_E	ID_F
1:Del:C:0	0.04567465	0.03959383	0.05169788	0.15988547	0.00598192	0.01119788
1:Del:C:1	0.02797802	0.02834772	0.10619410	0.07668555	0.00337925	0.01268544
1:Del:C:2	0.02474707	0.02548941	0.05287559	0.05656766	0.00358347	0.00693091
1:Del:C:3	0.01074624	0.01501404	0.03862287	0.01753668	0.00640787	0.00509897
1:Del:C:4	0.00473704	0.00311503	0.01125206	0.01645293	0.01409584	0.00090085
1:Del:C:5	0.00013677	0.00015788	0.00573968	0.00289307	0.03909607	0.00000534
1:Del:T:0	0.05593128	0.05209673	0.21323872	0.01044800	0.00352757	0.01603023
1:Del:T:1	0.07799480	0.05887788	0.11431327	0.01029226	0.00362691	0.01010581
1:Del:T:2	0.10128431	0.09680363	0.05769072	0.04608796	0.00629419	0.00553007
1:Del:T:3	0.06992223	0.08486703	0.03864648	0.04501117	0.01185383	0.00730351
1:Del:T:4	0.04242773	0.05898071	0.01990450	0.02247403	0.02767773	0.00264716
1:Del:T:5	0.02767169	0.02668056	0.00484058	0.00331168	0.52871977	0.00932823
1:Ins:C:0	0.00140539	0.00268627	0.00228553	0.00802225	0.00141326	0.00189702
1:Ins:C:1	0.00310469	0.01190495	0.00057783	0.00434865	0.00028021	0.00262378
1:Ins:C:2	0.00650760	0.00995578	0.00147472	0.00152820	0.00046851	0.00233340
1:Ins:C:3	0.00095311	0.00384631	0.00171284	0.00535204	0.00087751	0.00053871
1:Ins:C:4	0.00075185	0.00124437	0.00010835	0.00178330	0.00297922	0.00096749
1:Ins:C:5	0.00018192	0.00247994	0.00126133	0.00076543	0.01548702	0.01533615
1:Ins:T:0	0.00338543	0.01059001	0.00623642	0.01273514	0.00131540	0.00303558
1:Ins:T:1	0.01114678	0.05001842	0.01262155	0.04366576	0.00098499	0.00696539
1:Ins:T:2	0.02797255	0.06496764	0.01057210	0.01246541	0.00797916	0.00294911
1:Ins:T:3	0.01604607	0.03467960	0.00581943	0.02138124	0.00631098	0.00397184
1:Ins:T:4	0.00813642	0.01826837	0.00330097	0.00747613	0.00517927	0.01019681
1:Ins:T:5	0.00862787	0.01141538	0.00027934	0.00810925	0.20356757	0.71254885
2:Del:R:0	0.02738081	0.01899729	0.02385067	0.00531908	0.00212788	0.00697668
2:Del:R:1	0.01657289	0.01527170	0.05613034	0.00686159	0.00962082	0.00786121
2:Del:R:2	0.00176823	0.00271441	0.02322644	0.00259928	0.00391385	0.00081943
2:Del:R:3	0.00004526	0.00000508	0.00668162	0.00162252	0.00308157	0.00008133
2:Del:R:4	0.00000264	0.00013938	0.00180121	0.00009264	0.00238556	0.00000128
2:Del:R:5	0.00002713	0.00033155	0.00049256	0.00004971	0.00170746	0.00908999
3:Del:R:0	0.01747805	0.00830384	0.00495202	0.00640941	0.00065568	0.00085513
3:Del:R:1	0.00369437	0.00442482	0.00300516	0.04175318	0.01135199	0.00402274
3:Del:R:2	0.00020688	0.00101398	0.00049782	0.00662158	0.00416974	0.00072389
3:Del:R:3	0.00002859	0.00012623	0.00010400	0.00144214	0.00075939	0.00034662
3:Del:R:4	0.00014070	0.00010707	0.00005494	0.00042429	0.00027355	0.00041264
3:Del:R:5	0.00002529	0.00012581	0.00004982	0.00004988	0.00026979	0.00095975
4:Del:R:0	0.01479737	0.00432191	0.00285339	0.00267925	0.00045399	0.00253246
4:Del:R:1	0.00155242	0.00282176	0.00219556	0.03414144	0.00630123	0.00087049
4:Del:R:2	0.00019428	0.00049624	0.00016080	0.00609582	0.00150216	0.00055856
4:Del:R:3	0.00014137	0.00030331	0.00011157	0.00284355	0.00047298	0.00005845
4:Del:R:4	0.00017950	0.00002833	0.00002620	0.00149221	0.00040760	0.00004483
4:Del:R:5	0.00004106	0.00005775	0.00001370	0.00024504	0.00011625	0.00015941
5:Del:R:0	0.08640731	0.02637961	0.01685377	0.03963449	0.00118000	0.01151070
5:Del:R:1	0.00179741	0.00066907	0.00003437	0.00890581	0.00125434	0.00105385
5:Del:R:2	0.00014993	0.00007916	0.00001160	0.00101002	0.00030375	0.00041557
5:Del:R:3	0.00000428	0.00002216	0.00000767	0.00012459	0.00024243	0.00039729
5:Del:R:4	0.00001100	0.00000068	0.00003031	0.00013068	0.00003504	0.00002449

5:Del:R:5	0.00000486	0.00000016	0.00000160	0.00003316	0.00000000	0.00001927
2:Ins:R:0	0.00131017	0.01327078	0.00376734	0.00467326	0.00069850	0.00079899
2:Ins:R:1	0.00496079	0.03761989	0.00326139	0.00965539	0.00074549	0.00176121
2:Ins:R:2	0.00255983	0.01482784	0.00154666	0.00069771	0.00036582	0.00111137
2:Ins:R:3	0.00111662	0.00198405	0.00024006	0.00014453	0.00070678	0.00038910
2:Ins:R:4	0.00019010	0.00009008	0.00022169	0.00035338	0.00283440	0.00085584
2:Ins:R:5	0.00000000	0.00000000	0.00000259	0.00000447	0.01604505	0.01247321
3:Ins:R:0	0.00022246	0.00865556	0.00077334	0.00112265	0.00014192	0.00004713
3:Ins:R:1	0.00260436	0.01083659	0.00152975	0.00236294	0.00008173	0.00326703
3:Ins:R:2	0.00076024	0.00180257	0.00004958	0.00034517	0.00011615	0.00013113
3:Ins:R:3	0.00001802	0.00010385	0.00004653	0.00019643	0.00006336	0.00000246
3:Ins:R:4	0.00001908	0.00000111	0.00001575	0.00004620	0.00008206	0.00003226
3:Ins:R:5	0.00000511	0.00001603	0.00001267	0.00021737	0.00080299	0.00022094
4:Ins:R:0	0.00051305	0.00437409	0.00052016	0.00177570	0.00007667	0.00110616
4:Ins:R:1	0.00146061	0.00616363	0.00136458	0.00369197	0.00008860	0.00134557
4:Ins:R:2	0.00003755	0.00024774	0.00039980	0.00051294	0.00001220	0.00010071
4:Ins:R:3	0.00000575	0.00001410	0.00000479	0.00004434	0.00001956	0.00032367
4:Ins:R:4	0.00004356	0.00000379	0.00003082	0.00003926	0.00012585	0.00003464
4:Ins:R:5	0.00001886	0.00000013	0.00000719	0.00003508	0.00017442	0.00033368
5:Ins:R:0	0.00169903	0.00986342	0.00072143	0.00312092	0.00021345	0.00288815
5:Ins:R:1	0.00961198	0.01049779	0.00229238	0.03027008	0.00000207	0.00734443
5:Ins:R:2	0.00008009	0.00005798	0.00021296	0.00031177	0.00001341	0.00073318
5:Ins:R:3	0.00001105	0.00001508	0.00000302	0.00024075	0.00000000	0.00009278
5:Ins:R:4	0.00002791	0.00001564	0.00005035	0.00007010	0.00002940	0.00006336
5:Ins:R:5	0.00000060	0.00000000	0.00000260	0.00002938	0.00001517	0.00008769
2:Del:M:1	0.02295662	0.01834514	0.03953384	0.01178741	0.00878102	0.01384915
3:Del:M:1	0.01432145	0.00868454	0.00210806	0.00534125	0.00024588	0.00043961
3:Del:M:2	0.00862177	0.00535650	0.00445127	0.01517452	0.00482535	0.00242646
4:Del:M:1	0.01218121	0.00467114	0.00334573	0.00602835	0.00110265	0.00134347
4:Del:M:2	0.00689000	0.00263392	0.00271152	0.01511699	0.00201347	0.00320370
4:Del:M:3	0.00346396	0.00308300	0.00175756	0.02194731	0.00342820	0.00108620
5:Del:M:1	0.07235323	0.02028793	0.01006779	0.03894039	0.00090061	0.01457186
5:Del:M:2	0.04230004	0.01043606	0.00828299	0.02699744	0.00036043	0.00939854
5:Del:M:3	0.02318097	0.00315420	0.00336542	0.01344129	0.00078338	0.00789983
5:Del:M:4	0.00948080	0.00259087	0.00213513	0.01032579	0.00040781	0.00539862
5:Del:M:5	0.00685006	0.00147219	0.00074925	0.00907690	0.00002163	0.00391333

ID_G
0.02427346
0.01653538
0.00723916
0.00238724
0.00161771
0.00040209
0.02206832
0.02702172
0.03381388
0.03092700
0.01269154
0.00091003
0.01113755
0.00549012
0.00491284
0.00138246
0.00013315
0.00057055
0.00470687
0.02711207
0.00765007
0.01251956
0.00133620
0.20775494
0.01139054
0.01063727
0.00122996
0.00138111
0.00025716
0.26470486
0.00283847
0.00963829
0.00204616
0.00184129
0.00528419
0.01877467
0.00598991
0.01275140
0.00222670
0.00183112
0.00048765
0.00090341
0.02276130
0.00387492
0.00071546
0.00126991
0.00101609

0.00024180
0.00800270
0.00076319
0.00367039
0.00149233
0.00026296
0.00627382
0.00143898
0.00325991
0.00060292
0.00009298
0.00024214
0.00016757
0.00242465
0.00133313
0.00004390
0.00007284
0.00001080
0.00060184
0.00560176
0.00961935
0.00018173
0.00013212
0.00007598
0.00011373
0.00973970
0.00558147
0.01170115
0.00321518
0.00821426
0.00956410
0.02139428
0.01564384
0.01204341
0.00216538
0.00556800

Supplementary Table 5: Activities of decomposed COSMIC signatures in ccRC

Sample	SBS1	SBS2	SBS4	SBS5	SBS12	SBS13
PD37458a	0	0	0	0	0	0
PD37459a	111,46342	0	0	0	0	0
PD37461a	103,148125	0	803,426267	0	0	0
PD37462a	0	0	592,225655	0	0	0
PD37463a	0	0	1854,26578	0	0	0
PD37464a	0	0	749,037887	0	0	0
PD37466a	0	0	990,395761	0	0	0
PD37467a	361,93139	0	0	0	0	0
PD37468a	0	0	899,469536	0	0	348,854818
PD37469a	318,84131	0	0	0	0	0
PD37470a	679,221639	0	1018,85172	2426,00948	0	0
PD37472a	266,236623	0	1160,76569	0	0	0
PD37473a	0	0	0	0	0	0
PD37474a	101,088005	0	555,326711	0	0	0
PD37475a	0	0	894,486428	0	0	0
PD37476a	0	0	573,336357	0	0	0
PD37478a	0	0	0	0	0	0
PD37479a	0	0	1117,89755	0	0	0
PD37480a	267,893251	0	836,667923	0	0	0
PD37481a	0	0	0	0	0	305,177055
PD37482a	422,211793	0	0	0	0	124,465707
PD37483a	300,805189	0	649,003858	1204,06867	0	0
PD37484a	0	0	0	0	0	0
PD37485a	143,020751	0	0	0	0	0
PD37486a	143,377659	0	520,828289	0	0	0
PD42572a	0	0	0	0	0	0
PD42573a	219,212494	0	0	0	0	0
PD42574a	0	0	0	0	0	0
PD42576a	0	0	0	0	0	0
PD42578a	344,012616	0	0	0	0	0
PD42580a	144,334997	0	0	0	0	0
PD42585a	0	0	1402,72906	0	0	0
PD42586a	83,3815805	0	244,252304	0	0	0
PD42587a	0	0	1087,72915	0	0	0
PD42590a	140,318388	0	1090,44456	0	0	133,396146
PD42591a	0	0	0	0	0	0
PD42592a	166,027959	0	0	0	0	0
PD42593a	222,851126	0	872,871777	0	0	0
PD42595a	0	0	0	0	0	130,368932
PD42596a	0	0	0	0	0	0
PD42671a	155,997566	0	854,16268	0	0	0
PD42672a	116,900744	0	0	0	0	0
PD42673a	220,571135	0	665,436755	0	0	0
PD42674a	143,335825	0	688,85377	0	0	0
PD42675a	130,464126	0	340,197994	0	0	0

PD42676a	158,509619	0	0	0	0	0
PD42677a	174,909989	0	0	0	0	0
PD42876a	0	0	0	0	0	0
PD42882a	0	0	1609,5674	0	0	0
PD42884a	0	0	725,223484	0	0	0
PD42885a	0	0	697,581815	0	0	0
PD42886a	324,035161	0	0	0	0	0
PD42887a	0	0	0	0	0	0
PD42890a	0	0	1760,9284	0	0	0
PD42891a	246,370948	0	730,725234	0	0	175,677083
PD42893a	222,797074	0	0	0	0	0
PD42894a	0	0	1229,9242	0	0	0
PD42895a	0	0	0	0	0	0
PD42896a	208,827912	0	1115,2735	0	0	0
PD42897a	210,755674	0	1425,16058	0	0	0
PD42898a	0	0	0	0	0	0
PD42899a	0	0	0	0	0	0
PD42900a	1477,65399	0	0	0	0	0
PD42901a	131,102692	0	0	0	291,93563	0
PD42902a	152,0695	0	0	0	0	0
PD42903a	0	0	575,653595	0	0	0
PD42904a	0	0	851,364747	0	0	0
PD42905a	0	0	0	0	0	0
PD42906a	0	0	0	0	0	0
PD46699a	253,905698	0	732,454092	0	0	0
PD46700a	223,409031	0	448,896061	0	0	0
PD46701a	170,795979	0	475,923436	0	0	120,749188
PD46702a	0	0	0	0	0	0
PD46703a	197,322696	0	854,608413	0	415,236904	0
PD46704a	154,259177	0	599,255398	0	0	139,624852
PD46705a	0	0	0	0	0	0
PD46706a	188,864385	0	708,824023	0	0	0
PD46707a	0	0	605,423126	0	0	0
PD46708a	209,482401	0	1004,00171	0	510,357171	0
PD46709a	224,848364	0	0	0	0	509,979057
PD46710a	187,040807	0	610,447783	0	0	0
PD46711a	0	0	0	0	0	0
PD46712a	0	0	0	0	0	0
PD46713a	231,642118	0	1197,80718	0	0	0
PD46714a	138,75943	0	702,873195	0	0	0
PD46716a	140,835341	0	0	0	0	0
PD46717a	168,804356	0	846,747529	0	0	0
PD46718a	98,5009278	0	0	0	0	0
PD46719a	110,697889	0	571,899536	0	0	0
PD46720a	505,588603	0	0	0	0	155,843721
PD46721a	306,444906	0	650,720992	0	0	0
PD46722a	122,731155	0	710,485624	992,762417	0	0
PD46723a	175,627545	0	0	0	0	0

PD46724a	131,217081	0	0	0	0	0
PD46725a	155,778816	0	0	0	0	0
PD46726a	145,638569	0	601,395722	0	0	0
PD46727a	259,942933	0	0	0	0	114,633629
PD46728a	171,237628	0	505,861631	0	0	0
PD46729a	284,775669	0	0	0	0	130,602618
PD46730a	173,444192	0	0	0	0	0
PD46731a	271,993097	0	676,132933	0	0	152,653734
PD46732a	177,602155	0	530,06905	1374,12215	0	0
PD46733a	322,113998	0	0	0	0	105,659429
PD46734a	263,913927	0	616,694846	0	0	175,844682
PD46735a	95,8728262	0	417,709504	0	0	0
PD46736a	263,163779	0	759,393042	0	0	0
PD46737a	200,307779	0	0	0	0	0
PD46738a	108,597944	0	483,525734	0	0	0
PD46739a	110,101626	0	0	0	0	0
PD46743a	0	0	1028,68458	0	0	0
PD46744a	190,701796	0	491,874699	0	0	0
PD46745a	176,270123	0	0	0	0	0
PD46748a	265,353844	0	0	0	0	0
PD46749a	0	0	1876,88594	0	0	0
PD46750a	140,454123	0	0	0	0	0
PD46752a	202,151265	0	0	0	0	206,635171
PD46753a	134,489281	0	206,553973	0	0	0
PD46754a	204,413462	0	0	0	0	0
PD46755a	183,173324	0	486,143886	0	0	0
PD46757a	171,941324	0	0	0	0	0
PD46763a	0	0	1053,80302	0	0	0
PD46764a	180,446318	0	612,269952	0	0	177,470192
PD46766a	90,9393565	0	413,181519	0	0	0
PD46767a	163,705223	0	0	0	0	81,1303405
PD46768a	0	0	385,77358	0	0	0
PD46769a	195,300639	0	0	0	0	91,7834527
PD46770a	226,539861	0	0	0	0	0
PD46771a	0	0	1053,77962	0	0	0
PD46772a	0	0	0	0	0	0
PD46773a	0	0	827,107079	0	0	0
PD46774a	0	0	1591,12507	0	0	0
PD46775a	0	0	0	3514,04369	0	0
PD46776a	207,409169	0	779,5633	0	0	0
PD46777a	225,409648	0	0	0	0	0
PD46779a	62,3059543	0	203,226676	0	0	0
PD46781a	103,924523	0	269,515863	0	0	0
PD46783a	485,768293	0	0	0	0	232,762224
PD46784a	178,25939	0	0	0	0	0
PD46785a	122,051826	0	0	0	0	0
PD46786a	242,997808	0	0	0	0	199,920237
PD46787a	122,933506	0	899,498916	0	0	0

PD46789a	197,236435	0	0	0	0	0
PD46790a	320,545029	0	569,262285	0	0	201,306833
PD46791a	252,155726	0	474,146649	0	0	0
PD46793a	186,633219	0	449,070352	0	0	0
PD46798a	143,077033	0	0	0	0	0
PD46799a	78,4320744	0	0	0	0	0
PD46800a	124,428433	0	0	0	0	131,778004
PD46801a	0	0	1372,9229	0	0	0
PD46806a	180,516975	0	0	0	0	0
PD46807a	0	0	0	0	0	0
PD46809a	132,351158	0	0	0	0	0
PD46810a	88,0024747	0	278,543255	0	0	0
PD46811a	253,748737	0	1316,95774	0	0	0
PD46812a	0	0	0	0	0	0
PD46815a	210,309376	0	0	0	0	110,868704
PD46817a	224,916292	0	511,666272	0	0	0
PD46819a	0	0	364,565526	0	0	0
PD46820a	103,432378	0	0	0	0	112,705837
PD46821a	112,554215	0	0	0	0	0
PD46822a	314,925094	0	725,527013	0	0	0
PD46824a	122,93769	0	662,71161	0	0	0
PD46826a	0	0	626,814724	0	0	0
PD46827a	0	0	607,106748	0	0	0
PD46828a	168,65394	0	621,561955	0	0	0
PD46829a	121,15582	0	0	0	0	0
PD46830a	203,436589	0	0	0	0	113,780128
PD46831a	0	0	956,474893	0	0	0
PD46832a	0	0	0	0	0	0
PD46833a	79,1267068	0	597,102179	0	0	0
PD46834a	211,208728	0	0	0	0	0
PD46835a	142,33334	0	324,760932	0	0	0
PD46836a	130,609003	0	871,158848	0	0	0
PD46838a	93,130741	0	359,076171	0	0	0
PD46839a	0	0	0	0	0	0
PD46841a	206,337933	0	1588,24931	0	0	0
PD46842a	0	0	500,00279	0	0	0
PD46844a	201,128737	0	0	0	0	0
PD46845a	0	0	0	0	0	0
PD46846a	607,76939	0	0	0	0	0
PD46847a	282,544145	0	1049,97459	0	0	0
PD46848a	414,47102	0	829,44165	0	0	0
PD46849a	0	0	0	0	0	0
PD46850a	92,0756949	0	0	0	0	0
PD46851a	0	0	1022,07401	0	0	0
PD46852a	0	0	0	0	0	0
PD46853a	147,631843	0	0	0	0	0
PD46854a	379,976386	0	1041,32298	0	0	179,204503
PD46855a	249,834206	0	1011,13708	0	0	0

PD46856a	345,871384	0	0	0	0	0
PD46857a	155,935619	0	681,638018	0	0	0
PD46858a	163,928414	0	0	0	0	0
PD46859a	159,798652	0	0	0	0	0
PD46860a	0	0	661,283797	0	0	0
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PD46862a	0	0	0	0	0	0
PD46863a	243,907312	0	722,131743	0	0	123,51893
PD46864a	244,001637	0	0	0	0	169,410859
PD46865a	276,334478	0	719,752424	0	0	0
PD46866a	0	0	1233,62636	0	0	0
PD46868a	180,563931	0	1171,27886	0	0	0
PD46869a	304,739924	0	782,430478	0	0	0
PD46870a	114,105746	0	0	0	0	0
PD46871a	172,35213	0	889,792573	0	0	0
PD46872a	279,063568	0	0	0	0	0
PD46873a	0	0	0	0	0	0
PD46874a	159,173038	0	816,039393	0	0	0
PD46875a	233,920138	0	737,328135	1051,904	0	0
PD46876a	83,4789175	0	0	0	0	0
PD46877a	140,652576	0	0	0	0	0
PD46878a	206,607754	0	0	0	0	93,0235128
PD46879a	246,857317	0	0	0	0	0
PD46882a	179,150994	0	0	0	0	0
PD46884a	405,603928	0	942,757926	0	0	0
PD46885a	0	0	915,708944	0	0	0
PD46886a	123,114382	0	543,121557	0	0	0
PD46887a	175,83732	0	1003,06412	0	0	0
PD46888a	102,386815	0	0	0	0	0
PD46889a	322,175401	0	0	0	0	122,527051
PD46891a	214,406589	0	543,318353	0	0	107,773759
PD46892a	0	0	586,415112	0	0	0
PD46901a	0	0	786,249889	0	0	0
PD46902a	209,033209	0	536,981143	0	0	0
PD46903a	173,352883	0	632,948916	0	0	0
PD46904a	124,541497	0	0	0	0	129,099787
PD46905a	277,80028	0	789,099605	0	0	424,782805
PD46907a	93,6438539	0	235,523809	0	0	0
PD46909a	334,007709	0	0	0	0	0
PD46911a	0	0	0	0	0	0
PD46912a	0	0	0	0	0	0
PD46913a	496,927614	0	920,665889	0	0	0
PD46914a	0	0	0	0	0	0
PD46916a	148,977929	0	848,101608	0	0	0
PD46917a	133,102582	0	375,177616	0	0	0
PD46918a	98,5814434	0	431,091775	0	0	0
PD46919a	0	0	289,910513	0	0	0
PD46920a	109,657984	0	268,960141	0	0	0

PD46922a	224,71215	0	0	0	0	0
PD46923a	310,116574	0	615,244741	1361,83524	0	118,135114
PD46924a	156,045044	0	613,750109	1477,3378	0	0
PD46925a	177,52791	0	543,794278	0	0	0
PD46926a	299,465022	0	0	0	0	132,12542
PD46928a	0	0	418,966316	0	0	0
PD46929a	242,112341	0	521,786177	0	0	99,5279678
PD46930a	419,547041	0	896,082245	0	0	328,489114
PD46931a	113,535537	0	0	0	0	0
PD46933a	123,952896	0	0	0	0	0
PD46934a	0	0	774,725925	0	0	0
PD46935a	238,234785	0	661,700153	0	0	140,330967
PD46936a	200,575564	0	0	0	0	0
PD46937a	74,4166893	0	241,496364	0	0	0
PD46938a	141,202822	0	653,048151	0	0	0
PD46939a	160,737193	0	0	0	0	277,008515
PD46940a	167,222503	0	0	0	0	0
PD46941a	0	0	0	0	0	0
PD46942a	326,903108	0	0	0	0	124,947461
PD46943a	204,138201	0	0	0	0	181,663026
PD46947a	127,985175	0	0	0	0	0
PD46948a	330,996444	0	676,868616	0	0	0
PD46949a	422,588484	0	688,630403	1553,62587	0	168,891547
PD46950a	0	0	1602,41964	0	0	0
PD46951a	129,924729	0	669,588091	0	0	0
PD46953a	0	0	0	0	0	0
PD46954a	0	0	0	0	0	0
PD46955a	0	0	964,353873	0	0	0
PD46956a	0	0	0	0	0	0
PD46957a	0	0	0	0	0	0
PD46958a	0	0	0	0	0	0
PD46959a	187,418375	0	0	0	0	0
PD46960a	0	0	1639,84094	0	0	0
PD46961a	0	0	1072,28767	847,674033	0	0
PD46962a	0	0	747,79527	1357,18388	0	0
PD46963a	0	0	1546,61379	0	0	0
PD46964a	157,908279	0	540,382052	1164,71746	0	166,582771
PD47583a	192,440872	0	590,705517	0	0	117,520699
PD47584a	151,057632	0	309,263734	0	0	0
PD47586a	75,3917553	0	0	0	0	0
PD47587a	112,95945	0	873,722379	0	0	0
PD47589a	137,644997	0	0	0	0	0
PD47590a	0	0	0	0	0	0
PD47591a	129,582962	0	603,456081	0	0	0
PD47592a	0	0	26104,6697	0	0	0
PD47593a	0	0	881,559117	0	0	0
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PD47597a	155,997249	0	638,752424	0	0	0

PD47598a	351,335584	0	528,395297	0	0	0
PD47599a	190,508611	0	835,14687	0	0	0
PD47600a	0	0	464,621606	0	0	0
PD47601a	131,807398	0	0	0	0	0
PD47605a	200,75615	0	0	0	0	0
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PD48851a	0	0	1429,67024	0	0	0
PD48852a	467,712731	0	761,89046	0	0	0
PD48855a	0	0	0	0	0	383,64374
PD48858a	158,719666	0	559,330536	1511,44976	0	140,42887
PD48859a	0	0	428,246487	0	0	0
PD48861a	0	0	1723,56096	0	0	0
PD48864a	162,517243	0	0	0	0	0
PD48865a	154,448574	0	410,996429	0	0	0
PD48866a	290,10735	0	756,43801	0	0	255,814117
PD48867a	172,255158	0	0	0	0	0
PD48868a	143,488326	0	864,863403	1824,17872	0	0
PD48869a	353,516843	0	1192,241	2796,27586	0	0
PD48871a	100,900295	0	319,940161	0	0	83,9510613
PD48872a	98,2495739	0	532,084287	0	0	0
PD48873a	197,864425	0	447,861464	739,543328	0	0
PD48875a	0	0	895,3079	0	0	0
PD48877a	201,440334	0	679,555617	0	0	0
PD48878a	0	0	0	0	0	0
PD48879a	123,702341	0	516,385069	0	0	0
PD48881a	345,67186	0	760,610948	0	0	0
PD48882a	0	0	0	0	0	0
PD48884a	185,325855	0	0	0	0	0
PD48885a	73,3697072	0	0	0	0	0
PD48886a	0	0	0	0	0	0
PD48887a	0	0	0	0	0	0
PD48890a	0	0	1234,98985	0	0	0
PD48898a	289,888751	0	0	0	0	0
PD48899a	398,149482	0	0	0	0	185,32447
PD48902a	0	0	951,883003	2260,46541	0	0
PD48904a	0	0	322,592709	0	0	80,0675888
PD48906a	213,398392	0	656,473079	0	0	0
PD48907a	0	0	517,982652	0	0	0
PD48909a	145,295144	0	497,920738	0	0	0
PD48911a	265,569535	0	1124,92492	0	0	0
PD48913a	141,736981	0	462,985409	0	0	105,27306
PD48914a	244,338894	0	0	0	0	0
PD48915a	230,209891	0	754,685677	0	0	185,464158
PD48916a	137,176696	0	393,67252	0	0	0
PD48919a	118,613847	0	0	0	0	0
PD48920a	220,163071	0	787,973544	0	0	0
PD48922a	123,413065	0	0	0	0	0

PD48924a	0	0	365,681738	0	0	0
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PD48931a	228,573252	0	1097,92511	0	0	0
PD48932a	253,332227	0	0	0	0	0
PD48933a	977,376838	0	0	0	1816,80646	0
PD48934a	235,330187	0	411,469428	1050,23081	0	0
PD48935a	192,469105	0	519,53858	0	0	0
PD48936a	151,352296	0	647,763385	0	0	0
PD48937a	183,558956	0	0	0	0	0
PD48939a	200,7299	0	0	0	0	0
PD48940a	245,183672	0	0	0	0	0
PD48942a	440,192264	253,089	968,424987	0	0	872,019079
PD48943a	354,247202	0	500,987304	0	0	142,201321
PD48944a	200,497263	0	0	0	0	0
PD48945a	252,228761	0	537,081594	0	0	133,289259
PD48946a	120,885024	0	435,749057	0	0	0
PD48948a	382,082086	0	762,767122	0	0	175,811322
PD48949a	181,272848	136,238	0	0	0	206,724741
PD48950a	255,733252	0	650,198344	0	0	0
PD50083a	201,240986	0	657,748481	0	0	0
PD50084a	0	0	0	0	0	0
PD50085a	208,627778	0	0	0	0	0
PD50086a	128,943729	0	573,743425	0	0	0
PD50087a	158,271221	0	0	0	0	0
PD50089a	0	0	0	0	0	0
PD50090a	139,373356	0	0	0	0	0
PD50092a	117,246751	0	368,732301	0	0	0
PD50094a	0	0	247,133137	0	0	0
PD50095a	103,569137	0	352,011941	0	0	0
PD50096a	167,669743	0	0	1117,34163	0	0
PD50097a	162,948761	0	676,743829	0	0	0
PD50099a	137,438308	0	453,425934	1019,09036	0	0
PD50100a	153,178969	0	0	0	0	134,723455
PD50101a	196,95322	0	0	0	0	0
PD50102a	153,205703	0	0	0	0	0
PD50103a	0	0	0	0	0	0
PD50105a	320,810252	0	1033,06609	0	0	0
PD50107a	150,342976	0	823,539606	1516,2904	0	0
PD50110a	175,420708	0	495,880619	0	0	0
PD50111a	230,027384	0	806,82923	0	0	277,139349
PD50114a	216,063359	0	568,09389	0	0	0
PD50115a	193,178096	0	676,268177	0	0	0
PD50116a	0	0	1163,15661	0	0	197,980363
PD50119a	0	0	0	0	0	219,573714
PD50120a	259,276174	0	628,989153	0	0	124,377415
PD50122a	162,774502	0	810,782012	1633,29283	0	0
PD50123a	375,870855	0	763,202689	0	0	168,744717
PD50124a	225,523535	0	440,086459	0	0	0

PD50127a	116,880252	0	0	0	0	0
PD50129a	322,465526	0	859,171738	0	0	0
PD50131a	366,33657	0	0	0	0	125,083583
PD50132a	0	0	0	0	0	0
PD50135a	270,367879	0	0	1216,8399	0	0
PD50137a	55,1935646	0	0	0	0	0
PD50138a	0	0	0	0	0	206,699472
PD50139a	135,360685	0	547,716241	1111,9471	0	0
PD50140a	213,521518	0	617,226548	0	0	0
PD50143a	93,2164971	0	0	0	0	0
PD50146a	167,244743	0	0	0	0	0
PD50147a	0	0	0	0	0	0
PD50148a	204,028149	0	677,040906	0	0	136,989857
PD50151a	120,885332	0	597,383881	0	0	0
PD50153a	141,426956	0	0	0	0	0
PD50154a	126,102017	0	0	0	0	0
PD50157a	0	0	497,714841	0	0	0
PD50160a	113,279494	0	0	896,729165	0	0
PD50161a	228,417397	0	0	0	0	145,200267
PD50162a	515,947574	0	738,802658	0	0	398,211776
PD50163a	299,460938	0	0	0	0	480,34154
PD50164a	109,041579	0	0	0	0	0
PD50165a	263,393654	0	0	0	0	147,182006
PD50166a	260,106913	0	507,971928	0	273,051468	0
PD50167a	273,393429	0	0	0	0	0
PD50168a	372,819091	0	852,832551	0	0	552,416012
PD50169a	126,427429	0	435,59347	0	0	0
PD50170a	342,795855	0	346,171401	1226,15859	0	109,982408
PD50171a	0	0	0	0	0	0
PD50172a	77,208717	0	0	0	0	0
PD50173a	147,415368	0	544,914737	1784,64183	0	0
PD50175a	170,391321	0	0	0	0	0
PD50177a	208,621862	0	0	987,060683	0	0
PD50181a	181,014619	0	933,326155	0	0	0
PD50183a	241,650858	0	0	0	0	0
PD50184a	153,393765	0	329,702087	0	0	0
PD50187a	204,457667	0	0	0	0	0
PD50188a	253,002175	0	762,709942	0	0	0
PD50190a	233,31287	0	0	0	578,127305	261,878379
PD50191a	239,345939	0	0	0	0	0
PD50194a	120,006012	0	291,566212	0	0	0
PD50196a	221,274783	0	647,262836	0	0	0
PD50197a	168,878444	0	0	0	0	0
PD50199a	213,650675	0	0	0	0	0
PD50200a	251,753853	0	0	0	0	0
PD50201a	171,675332	0	0	0	0	0
PD50202a	73,3910333	0	235,998373	0	0	55,9816904
PD50203a	205,467411	0	0	0	0	0

PD50207a	147,304658	0	0	0	0	0
PD50209a	152,417328	0	0	0	0	0
PD50210a	82,2981635	0	0	0	0	0
PD50212a	134,694652	0	0	0	0	0
PD50213a	163,778723	0	691,376888	0	0	0
PD50214a	0	0	527,379495	0	0	0
PD50215a	93,3531804	0	0	0	0	0
PD50216a	75,5072652	0	469,134006	0	0	0
PD50217a	335,08384	0	809,309821	0	0	0
PD50219a	116,692984	0	495,93652	0	0	0
PD50221a	51,8649414	0	0	0	0	0
PD50325a	299,671822	0	658,718303	0	0	0
PD50326a	0	0	0	0	0	0
PD50327a	161,309748	0	1030,45658	0	0	0
PD50329a	64,3011782	0	0	0	0	0
PD50334a	0	0	994,779084	0	0	0
PD50335a	371,101626	0	0	0	0	0
PD50337a	0	0	0	0	0	0
PD50339a	133,661647	0	642,537902	0	0	0
PD50340a	138,129213	0	597,529964	1114,28107	0	0
PD50341a	96,791724	0	798,005371	0	0	0
PD50342a	0	0	390,778856	0	0	0
PD50343a	158,537678	0	470,134938	0	0	0
PD50344a	303,741336	0	946,243244	0	0	0
PD50345a	309,812481	0	0	0	0	232,843899
PD50346a	185,462087	0	412,584069	0	0	0
PD50347a	211,530515	0	0	0	0	0
PD50350a	161,617158	0	568,48414	0	0	116,688942
PD50351a	167,116975	0	1124,32147	0	0	149,825189
PD50354a	0	0	471,343931	0	0	0
PD50357a	183,575027	0	796,214799	0	0	0
PD50360a	329,49808	0	848,635716	0	0	0
PD50387a	313,840397	0	0	0	0	0
PD50388a	167,839021	0	535,233157	0	0	0
PD50389a	285,941424	0	877,955857	0	0	0
PD50393a	0	0	1189,33229	0	0	0
PD50394a	200,734952	0	0	0	0	120,249448
PD50397a	148,407691	0	0	0	0	0
PD50401a	165,671846	0	0	0	0	0
PD50403a	5852,84315	0	0	0	0	0
PD50404a	124,048658	0	0	0	0	0
PD50405a	0	0	0	0	0	0
PD50406a	110,103128	0	722,080871	0	0	0
PD50408a	221,004472	0	0	0	0	0
PD50409a	203,292412	0	0	0	0	124,513667
PD50411a	114,039706	0	604,476873	0	0	0
PD50412a	119,333308	0	0	0	0	0
PD50413a	211,966303	0	688,852959	0	0	0

PD50415a	162,784079	0	907,900643	0	0	0
PD50418a	225,502718	0	0	0	0	0
PD50420a	421,369	285,772	1342,97219	0	0	524,011824
PD50421a	0	0	719,959365	0	0	0
PD50422a	227,6755	0	924,475291	0	0	0
PD50425a	278,865487	0	889,735686	0	0	0
PD50428a	0	0	329,370599	0	0	0
PD50429a	137,912449	0	921,735632	1620,34806	0	0
PD50430a	159,751672	0	450,267047	0	0	0
PD50431a	203,231496	0	639,092101	0	0	0
PD50432a	155,104154	0	0	0	0	0
PD50433a	110,462244	0	0	0	0	0
PD50434a	145,175456	0	0	0	0	0
PD50438a	247,632964	0	755,308898	0	0	0
PD50440a	209,251988	0	0	0	0	137,53032
PD50441a	3198,57556	0	0	0	2213,86631	0
PD50442a	146,03071	0	0	0	0	0
PD50443a	202,970861	0	676,265583	1014,86553	0	0
PD50444a	0	0	1257,81242	0	0	0
PD50449a	119,412798	0	0	0	0	0
PD50450a	183,896078	0	319,215339	0	0	0
PD50453a	0	0	1094,64199	0	0	0
PD50454a	81,515672	0	0	0	0	0
PD50455a	141,623629	0	0	0	0	0
PD50456a	316,87843	0	0	0	0	0
PD50457a	228,376088	0	522,65042	0	0	0
PD50458a	141,877614	0	0	0	0	0
PD50459a	0	0	803,161627	0	0	0
PD50460a	160,869111	0	0	0	0	0
PD50461a	168,198804	0	0	0	0	0
PD50462a	221,995569	0	0	0	0	0
PD50603a	152,379165	0	0	0	456,312048	0
PD50604a	123,377898	0	457,664319	0	0	0
PD50605a	128,091457	0	546,074437	1078,30604	0	0
PD50606a	239,795173	0	1091,07585	0	0	0
PD50607a	154,295019	0	361,562878	0	0	0
PD50610a	110,143104	0	0	0	0	0
PD50612a	181,303351	0	0	0	551,990218	0
PD50613a	194,33891	0	0	0	0	0
PD50614a	140,111527	0	357,943157	837,959036	0	0
PD50616a	307,852977	0	465,785834	0	0	0
PD50618a	220,852772	0	0	0	0	0
PD50619a	163,973421	0	0	0	0	0
PD50620a	238,0397	0	857,657005	0	0	0
PD50621a	0	0	1217,50412	0	0	148,883172
PD50622a	643,659726	0	517,773708	0	0	0
PD50625a	130,89677	0	659,214607	1142,58956	0	0
PD50627a	162,677035	0	0	0	0	0

PD50629a	158,279825	0	0	0	0	0
PD50630a	190,061955	0	916,862236	1475,64558	0	0
PD50632a	188,99233	0	923,864608	0	0	0
PD50634a	176,450683	0	469,063908	0	0	0
PD50637a	133,718286	0	0	0	0	0
PD50638a	168,887997	202,908	1110,41635	0	0	695,724754
PD51175a	0	0	635,990581	1493,21017	0	0
PD51176a	236,919098	0	0	0	0	0
PD51177a	242,358852	0	852,63286	0	0	0
PD51178a	255,569979	0	1673,46322	0	0	0
PD51179a	193,835659	0	380,785611	0	0	0
PD51180a	0	0	0	874,715181	0	0
PD51181a	206,032587	0	774,154974	0	0	0
PD51182a	174,786489	0	0	0	0	0
PD51183a	0	0	386,751318	0	0	135,987562
PD51184a	323,492486	0	1403,85921	0	0	0
PD51185a	243,254253	0	0	0	0	0
PD51186a	212,088912	0	398,647624	0	0	0
PD51187a	0	0	2279,30666	0	0	0
PD51188a	192,076466	0	1224,48759	0	0	142,309839
PD51189a	324,606215	0	614,572367	0	0	143,369298
PD51190a	120,57583	0	278,457454	0	0	0
PD51191a	201,36167	0	572,174712	0	0	0
PD51192a	142,594215	0	1168,34925	0	0	0
PD51194a	249,865262	0	692,869065	0	0	0
PD51195a	245,760994	0	634,452042	1081,86286	0	158,956731
PD51196a	220,064011	0	537,975252	0	0	0
PD51197a	0	0	0	0	0	0
PD51198a	179,683124	0	541,801321	0	0	0
PD51199a	298,056902	0	876,457123	0	0	0
PD51205a	213,692047	0	376,756841	0	0	0
PD51206a	278,29407	0	552,045382	0	0	0
PD51207a	0	0	994,744595	0	0	0
PD51209a	385,015744	0	0	0	0	0
PD51210a	0	0	741,769023	1635,2064	0	168,140449
PD51211a	248,039228	0	663,767226	0	492,422521	0
PD51213a	189,080706	0	1635,989	0	0	0
PD51214a	172,342231	0	715,052074	0	0	0
PD51215a	210,259476	0	794,829718	0	0	0
PD51216a	0	0	366,119002	0	0	0
PD51217a	0	0	0	0	0	0
PD51218a	0	0	0	0	0	0
PD51219a	336,332051	0	1098,72296	0	0	377,130746
PD51220a	169,306821	0	609,625565	0	0	0
PD51221a	325,912016	0	719,29247	0	0	0
PD51222a	0	0	0	0	0	122,096585
PD51223a	253,450481	0	679,800121	0	0	0
PD51224a	0	0	0	0	0	0

PD51225a	185,203754	0	687,454973	0	0	0
PD51226a	132,777019	0	0	0	0	124,485676
PD51227a	160,003705	0	0	0	0	0
PD51228a	172,884663	0	1195,46119	0	0	0
PD51229a	244,112373	0	503,829445	0	0	0
PD51231a	341,424514	0	842,643269	0	0	350,75937
PD51232a	169,178522	0	474,490633	0	0	128,413384
PD51233a	207,554112	0	0	0	0	0
PD51234a	0	0	699,358623	0	0	0
PD51235a	195,511805	0	794,043835	0	0	0
PD51236a	150,42369	0	0	0	0	0
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PD51238a	212,754529	0	719,052887	0	0	0
PD51239a	213,625495	0	0	0	0	0
PD51240a	178,563415	0	585,728566	0	0	145,949173
PD51241a	0	0	0	0	0	0
PD51242a	144,849434	0	722,682645	0	0	164,660135
PD51243a	96,739473	0	0	0	0	0
PD51244a	101,868442	0	0	0	0	0
PD51245a	139,891801	0	418,640967	0	0	0
PD51246a	0	0	1145,46402	0	0	0
PD51247a	0	0	0	0	0	0
PD51248a	221,555123	0	0	0	0	0
PD51250a	202,572207	0	0	0	0	0
PD51251a	0	0	724,674941	0	0	0
PD51252a	175,355184	0	716,04286	0	0	0
PD51253a	134,185509	0	569,883626	0	0	125,719292
PD51254a	208,32141	0	632,994265	1181,8895	0	0
PD51255a	255,938585	0	0	0	0	158,59307
PD51256a	396,414908	0	462,636975	1503,16729	0	0
PD51258a	0	0	0	0	0	0
PD51259a	0	0	335,857045	0	0	0
PD51260a	0	0	353,961001	0	0	0
PD51261a	0	0	0	0	0	0
PD51262a	0	0	497,372941	0	0	0
PD51263a	0	0	242,235566	0	0	0
PD51264a	222,46886	0	452,362288	0	0	0
PD51265a	227,939221	0	0	0	0	0
PD51266a	152,335024	0	460,403392	0	0	0
PD51267a	184,334042	0	0	2118,58194	0	155,223588
PD51268a	169,083368	0	540,054999	0	0	0
PD51269a	137,506205	0	571,667441	0	0	0
PD51270a	0	0	0	0	0	0
PD51271a	376,616882	0	0	0	0	0
PD51273a	189,994976	0	0	0	478,039379	0
PD51274a	137,464497	0	0	0	0	0
PD51275a	298,202516	0	713,475058	0	0	0
PD51276a	0	0	0	0	0	0

PD51277a	234,901115	0	0	827,05772	0	0
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PD51279a	203,740019	0	0	0	0	0
PD51280a	101,490457	0	532,681567	0	0	0
PD51281a	65,3446024	0	0	0	0	0
PD51282a	197,589104	0	873,091035	0	0	196,986025
PD51284a	170,673782	0	826,683871	0	0	0
PD51285a	260,440849	0	770,833435	0	0	0
PD51286a	0	0	549,230816	0	0	0
PD51287a	226,7152	0	893,262262	0	412,231535	0
PD51288a	181,44859	0	726,866848	1948,2188	0	0
PD51289a	207,039033	0	0	0	0	133,221441
PD51290a	73,7906824	0	0	0	0	0
PD51291a	151,943671	0	654,690657	0	0	0
PD51292a	178,046769	0	876,817015	0	0	0
PD51293a	245,526164	0	371,258101	0	0	0
PD51294a	172,529118	0	0	0	0	0
PD51295a	219,882551	0	1486,32991	0	0	0
PD51296a	153,737957	0	0	0	0	0
PD51297a	274,201313	0	0	0	0	128,670244
PD51298a	0	0	0	0	0	0
PD51300a	0	0	0	0	0	0
PD51301a	280,415565	0	649,093087	0	0	164,241055
PD51302a	142,558306	0	617,079978	0	0	0
PD51303a	143,918413	0	0	0	0	0
PD51304a	231,900114	0	0	0	0	0
PD51305a	0	0	0	0	0	0
PD51307a	235,350762	0	806,255721	0	0	170,16888
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PD51312a	160,513988	0	415,786501	1322,40162	0	0
PD51314a	327,168559	0	0	0	0	166,689047
PD51316a	199,485104	0	1476,83705	0	0	0
PD51318a	0	0	555,793597	0	0	0
PD51319a	102,122015	0	338,606028	0	0	0
PD51320a	0	0	869,483301	0	0	0
PD51321a	287,751708	0	476,178892	0	0	0
PD51322a	197,508922	0	1005,84886	1314,27925	0	0
PD51323a	151,465503	0	0	0	0	0
PD51324a	181,499608	0	1539,68942	0	0	0
PD51381a	185,257738	0	683,866077	0	0	153,795314
PD51382a	99,9043368	0	0	0	0	63,1134366
PD51385a	286,401517	0	0	0	0	0
PD51386a	0	0	650,497003	1252,27463	0	0
PD51387a	193,530918	0	0	0	0	0
PD51389a	0	0	1392,64363	0	0	0
PD51390a	135,648725	0	701,930858	0	0	0
PD51391a	191,60811	0	0	0	0	121,498609
PD51393a	69,5990966	0	0	0	0	0

PD51396a	0	0	0	0	0	0
PD51398a	334,560024	0	0	0	0	0
PD51399a	260,481477	0	0	0	0	136,305989
PD51400a	134,693001	0	569,401811	1196,89273	0	0
PD51401a	426,597646	0	933,07648	0	0	0
PD51402a	108,013905	0	372,39123	0	0	0
PD51404a	270,594065	0	1097,14739	0	0	0
PD51405a	93,084236	0	388,915794	0	0	0
PD51406a	294,756479	0	0	0	0	0
PD51407a	204,170398	0	765,442922	0	0	166,342277
PD51409a	182,634803	0	721,51415	0	0	0
PD51410a	127,300997	0	486,824127	0	0	0
PD51411a	0	0	279,086543	0	0	0
PD51412a	153,211778	0	741,715988	931,311865	0	98,511348
PD51413a	161,041914	0	880,939266	0	0	0
PD51414a	0	0	953,258133	0	0	0
PD51416a	292,963131	0	767,010788	0	0	0
PD51417a	98,4706112	0	454,230377	0	0	0
PD51418a	264,987614	0	0	2089,96325	0	0
PD51422a	0	0	0	1524,35252	0	356,251555
PD51423a	144,091852	0	0	0	0	0
PD51424a	0	0	0	0	0	0
PD51425a	209,420195	0	539,892154	0	0	0
PD51426a	163,917103	0	674,393874	0	0	101,434537
PD51427a	186,944435	0	0	0	0	102,957299
PD51508a	0	0	1113,92341	0	0	192,854752
PD51509a	131,662653	0	0	0	0	0
PD51510a	142,756502	0	593,26811	0	0	0
PD51511a	257,174396	0	1019,60367	0	0	126,243021
PD51512a	0	0	761,250347	993,949274	0	0
PD51513a	0	0	0	0	0	0
PD51514a	180,894097	0	606,553396	0	0	0
PD51515a	110,136411	0	401,36537	741,466668	0	0
PD51516a	146,292476	0	777,320626	0	0	0
PD51517a	208,569182	0	631,887442	0	0	118,183549
PD51518a	0	0	0	1316,0052	0	0
PD51519a	121,26278	0	0	0	0	192,934279
PD51521a	135,112825	0	866,435198	0	0	0
PD51522a	292,666982	0	788,23136	2237,78244	0	172,556956
PD51523a	163,343867	0	0	0	0	0
PD51524a	194,450605	165,26	0	0	0	202,797669
PD51525a	0	0	1606,43295	0	0	0
PD51526a	0	0	613,363375	0	0	0
PD51527a	194,587299	0	0	0	0	0
PD51528a	282,684095	0	696,039191	0	0	0
PD51529a	166,20045	0	826,962301	0	529,797034	0
PD51530a	0	0	514,698052	0	0	0
PD51531a	123,355829	0	0	0	0	0

PD51532a	0	0	1273,32027	2048,04602	0	0
PD51533a	164,870105	0	453,925794	0	0	0
PD51534a	126,845346	0	615,902715	1585,53767	0	0
PD51535a	0	0	0	642,138101	0	0
PD51536a	0	0	0	0	0	0
PD51537a	0	0	0	0	0	0
PD51538a	0	0	612,048049	1608,99142	0	0
PD51539a	0	0	1646,62327	0	0	0
PD51540a	0	0	0	0	0	0
PD51541a	159,112052	0	0	0	0	0
PD51542a	0	0	1906,46186	0	0	0
PD51543a	315,756024	0	0	0	0	0
PD51544a	0	0	0	0	0	0
PD51545a	187,938795	0	0	0	0	0
PD51546a	0	0	2497,09846	0	0	0
PD51549a	0	0	2330,17532	0	0	0
PD51550a	138,44275	0	306,418662	0	0	0
PD51551a	190,986556	0	1299,46233	0	0	176,495713
PD51552a	0	0	787,420944	0	0	0
PD51553a	122,372328	0	0	0	0	0
PD51554a	132,051851	0	0	0	0	0
PD51555a	0	0	0	0	0	0
PD51556a	99,362928	0	0	0	0	0
PD51557a	261,998692	0	0	0	0	0
PD51558a	0	0	984,51883	0	0	0
PD51559a	186,452545	0	666,328472	809,125771	0	0
PD51560a	94,6954225	0	0	0	0	0
PD51561a	203,309145	0	846,448702	0	0	0
PD51562a	166,646564	0	757,83498	0	0	0
PD51563a	211,003104	0	0	0	0	113,573838
PD51564a	98,7365997	0	444,101346	0	0	0
PD51565a	0	0	0	0	0	78,0064725
PD51566a	0	0	1085,32686	0	0	0
PD51567a	139,332117	0	968,019495	0	0	0
PD51568a	0	0	253,339543	853,612488	0	0
PD51569a	73,7367237	0	0	0	0	0
PD51570a	257,568546	0	808,767336	0	0	0
PD51571a	64,1423501	0	0	0	0	0
PD51572a	173,658212	0	1271,27833	0	0	0
PD51573a	5017,62079	0	0	0	3948,1521	0
PD51574a	151,931029	0	579,248837	0	0	0
PD51575a	138,238007	0	0	0	0	0
PD51576a	249,650111	0	917,727668	0	0	132,193712
PD51577a	111,085311	0	376,556613	0	0	0
PD51578a	0	0	750,308575	0	0	0
PD51579a	252,081434	0	0	0	0	202,906139
PD51580a	162,589683	0	658,072577	0	0	0
PD51581a	0	0	0	0	0	0

PD51582a	148,023978	0	0	0	0	0
PD51583a	166,184954	0	436,170613	0	0	0
PD51584a	92,2672967	0	437,209394	0	0	0
PD51585a	0	0	341,021646	0	0	0
PD51586a	69,7614336	0	312,674041	0	0	0
PD51587a	254,118085	0	451,755408	0	0	114,028189
PD51588a	262,263371	0	0	0	0	0
PD51589a	364,16957	0	770,314055	0	0	0
PD51590a	94,9953245	0	356,086304	0	0	0
PD51591a	134,603412	0	412,057613	0	0	0
PD51593a	350,547807	0	0	0	0	160,833461
PD51594a	210,842829	0	417,162139	0	0	0
PD51595a	177,645176	0	1521,13935	0	0	0
PD51596a	111,698781	0	871,413864	0	0	121,393461
PD51597a	107,4046	0	0	0	0	0
PD51598a	119,177246	0	0	0	0	0
PD51599a	273,82918	0	684,48426	0	0	170,243302
PD51600a	0	0	0	0	0	0
PD51601a	73,9304199	0	0	0	0	0
PD51637a	196,69563	0	0	0	0	0
PD51638a	184,368821	0	724,686494	0	0	0
PD51639a	141,032186	0	0	0	0	0
PD51640a	145,416642	0	0	0	0	0
PD51642a	117,605819	0	611,87734	0	0	0
PD51643a	126,85934	0	482,188276	0	0	0
PD51644a	151,450269	0	686,59096	0	0	0
PD51645a	233,209807	0	747,974339	0	0	0
PD51646a	142,068648	0	0	0	0	0
PD51648a	0	0	0	0	0	0
PD51649a	309,043376	0	0	1812,91647	0	0
PD51650a	232,667592	0	837,109285	0	0	0
PD51651a	117,291288	0	372,897064	0	0	0
PD51652a	161,94442	0	488,698786	0	0	0
PD51653a	136,935677	0	314,373278	0	0	0
PD51654a	229,180737	0	0	0	0	151,114334
PD51655a	133,922771	0	601,819855	0	0	0
PD51656a	228,02069	0	0	0	0	0
PD51657a	228,25007	0	0	1252,75535	0	0
PD51658a	0	0	221,273738	0	0	0
PD51659a	168,716495	0	692,592402	0	0	0
PD51660a	0	0	0	0	0	0
PD51661a	137,713753	0	373,570928	0	0	0
PD51662a	165,09008	0	789,136765	0	0	0
PD51663a	164,719029	0	743,413331	0	0	0
PD51664a	131,024619	0	483,466931	0	0	0
PD51665a	0	0	0	0	0	0
PD51666a	109,971052	0	0	1165,73	0	0
PD51667a	182,271061	0	0	0	0	0

PD51668a	234,432096	0	1460,90396	0	0	0
PD51669a	74,2360901	0	0	0	0	0
PD51670a	137,938382	0	0	0	0	100,654788
PD51671a	231,237322	0	0	0	0	0
PD51672a	128,079838	0	0	0	0	0
PD51673a	0	0	856,194273	0	0	0
PD51675a	160,76978	0	0	0	0	0
PD51676a	243,870085	0	0	0	0	0
PD51677a	227,33904	0	668,045793	0	0	202,734519
PD51678a	158,82924	0	246,095136	0	0	0
PD51679a	226,04839	0	675,138957	1458,46689	0	0
PD51680a	197,614836	0	537,818754	0	0	0
PD51681a	150,17844	0	451,75568	0	0	0
PD51682a	249,051127	0	0	0	0	0
PD51683a	218,26572	0	623,611839	0	0	0
PD51684a	269,35768	0	643,18039	0	0	0
PD51685a	103,251453	0	0	0	0	0
PD51687a	0	0	726,151394	0	0	0
PD51688a	229,854991	0	0	0	0	0
PD51689a	140,763521	0	0	0	0	0
PD51691a	340,561743	0	0	0	446,972149	157,800418
PD51693a	184,647182	0	600,207786	0	0	0
PD51694a	166,574679	0	524,055102	0	0	0
PD51695a	241,324674	0	0	0	0	0
PD51696a	118,7625	0	0	0	0	0
PD51697a	240,79802	0	0	0	0	0
PD51698a	128,677495	0	507,028195	0	0	146,254913
PD51699a	121,506086	0	267,771648	0	0	0
PD51700a	123,030149	0	591,078508	0	0	0
PD51701a	257,046871	0	0	0	0	0
PD51702a	138,382849	0	0	0	569,510373	0
PD51703a	98,0743498	0	342,751913	0	0	0
PD51704a	340,935718	0	0	0	0	0
PD51705a	0	0	952,602718	0	351,460948	142,320816
PD51706a	181,407804	0	0	1068,0648	0	0
PD51707a	217,656096	0	0	0	0	0
PD51708a	121,70499	0	323,093319	0	0	0
PD51709a	160,967075	0	369,128394	0	0	0
PD51710a	0	0	816,689256	0	0	0
PD51711a	159,577627	0	666,840673	0	0	0
PD51712a	169,602973	0	591,453545	0	0	0
PD51713a	192,423217	0	884,029422	0	0	0
PD51714a	191,48802	0	554,558354	0	0	0
PD51715a	250,919989	0	762,331622	0	0	0
PD51716a	164,585383	0	0	0	0	101,721936
PD51717a	122,295546	0	490,283718	0	0	0
PD51718a	267,18886	0	0	0	0	0
PD51719a	74,8313609	0	359,396443	0	0	0

PD51720a	70,1118728	0	287,741482	0	0	0
PD51721a	140,016679	0	0	0	0	0
PD51722a	94,8634061	0	0	0	0	0
PD51723a	170,083827	0	0	0	0	0
PD51724a	110,993114	0	0	0	0	0
PD51725a	224,233517	0	450,384266	0	0	0
PD51726a	271,290948	0	734,0021	0	0	0
PD51727a	202,258967	0	0	0	0	0
PD51728a	0	0	462,813941	0	0	0
PD51729a	388,486441	0	2051,29867	0	0	729,135935
PD51730a	166,768297	0	0	0	0	0
PD51732a	221,336483	0	0	0	0	239,692485
PD51733a	385,305285	0	0	0	0	105,596128
PD51734a	125,571429	0	1074,78813	0	0	0
PD51735a	80,3894777	0	0	1270,40277	0	0
PD51736a	320,936457	0	0	0	0	132,564083
PD51737a	232,247929	0	772,020702	0	433,705759	0
PD51740a	116,780392	0	0	0	0	0
PD51742a	177,487348	0	798,958828	0	0	0
PD51743a	0	0	0	0	0	0
PD51744a	233,531275	0	738,554095	0	0	195,577743
PD51745a	419,622963	0	0	0	0	186,687411
PD51746a	195,955268	0	0	0	0	0
PD51747a	185,018588	0	0	0	0	0
PD51748a	230,102022	0	933,222234	0	0	184,620894
PD51749a	207,824048	0	564,280299	0	0	331,343079
PD51750a	300,632689	0	0	1575,53638	0	276,412693
PD51754a	0	0	0	1277,59757	0	0
PD51766a	0	0	640,299261	0	0	0
PD51767a	189,387067	0	840,46616	1829,48625	0	0
PD51768a	119,272723	0	630,451688	0	0	0
PD51769a	210,231142	0	0	0	0	0
PD51770a	269,849121	166,985	1004,34705	0	0	530,258513
PD51771a	406,653582	0	808,825747	0	0	264,006353
PD51772a	174,632495	0	1092,81116	1112,03449	0	0
PD51773a	204,276916	0	743,509242	0	0	0
PD51774a	97,1296039	0	559,648039	0	0	0
PD51775a	137,250062	0	438,305214	0	0	0
PD51777a	291,341094	0	0	0	0	0
PD51778a	144,816605	0	592,838223	0	0	0
PD51779a	99,2538631	0	0	0	0	0
PD51780a	0	0	0	0	0	0
PD51781a	3890,63645	0	0	0	3604,40586	0
PD51782a	0	0	502,867337	0	0	0
PD51783a	0	0	1119,03476	0	0	0
PD51784a	220,134129	0	837,270579	0	0	0
PD51785a	426,624575	0	0	0	0	0
PD51786a	161,887524	0	0	0	0	0

PD51788a	197,906117	0	474,432115	0	0	0
PD51791a	203,272278	0	0	0	0	0
PD51793a	170,247042	0	942,482906	0	0	0
PD51794a	216,612216	0	828,092131	0	0	0
PD51801a	0	0	0	0	0	0
PD51803a	393,159392	0	1119,56238	0	0	0
PD51805a	195,241985	0	0	0	0	0
PD51806a	0	0	3047,06636	0	0	0
PD51812a	201,488805	0	1220,2038	0	0	184,153199
PD51814a	232,440489	0	0	0	0	139,856391
PD51815a	0	0	801,648184	0	0	0
PD51816a	132,163114	0	0	0	0	0
PD51817a	0	0	1173,33981	0	0	0
PD51818a	0	0	0	0	0	0
PD51820a	96,7008843	0	0	0	0	0
PD51821a	359,700499	0	642,131173	0	0	189,002323
PD51823a	320,614108	0	805,781198	0	0	0
PD55504a	324,444186	0	0	0	0	0
PD55505a	392,25344	0	560,278231	1468,44211	0	0
PD55506a	75,7744482	0	0	0	207,880679	0
PD55507a	208,966065	0	759,852983	0	721,930356	0
PD55508a	135,54269	0	625,025374	0	0	0
PD55509a	87,7763499	0	605,210228	1363,60375	0	0
PD55510a	112,637623	0	699,652618	0	748,726151	111,784151
PD55511a	419,517952	0	568,955079	0	1001,33194	0
PD55512a	115,794857	0	462,09554	0	394,952115	0
PD55513a	336,369779	0	443,935133	1228,13138	559,408903	0
PD55514a	618,655046	0	1922,13558	0	1816,38275	0
PD55515a	264,624894	0	542,000376	0	1004,81963	0
PD55516a	191,928668	0	1642,31981	0	2824,27234	0
PD55517a	246,219193	0	1006,73216	0	1351,47488	0
PD55519a	67,063219	0	0	0	0	0
PD55520a	228,809209	0	537,255241	0	0	0
PD55521a	0	0	688,785145	0	0	238,416324
PD55523a	389,688661	0	580,053833	0	789,568122	0
PD55524a	0	0	239,844653	0	0	0
PD55525a	85,1426648	0	0	0	336,507703	0
PD55526a	268,382601	0	675,622783	1295,57999	749,600344	0
PD55527a	0	0	957,966247	0	1442,66605	0
PD55528a	91,9511539	0	428,614208	0	0	0
PD55529a	108,401986	0	0	0	0	0
PD55530a	216,128231	0	0	0	343,27043	0
PD55531a	134,008659	0	854,044003	0	1007,76448	0
PD55532a	275,262385	0	958,718905	0	736,655843	0
PD55533a	408,349527	0	760,18126	0	789,952487	238,427543
PD55534a	160,701209	0	729,037161	0	1819,22733	0
PD55535a	234,732759	0	564,495088	0	690,678216	0
PD55536a	222,718621	0	894,685902	0	986,705333	0

PD55537a	153,934547	0	607,585795	1858,55366	969,98868	0
PD55538a	121,961594	0	423,388134	1541,38549	451,277508	0
PD55539a	176,762346	0	941,67095	0	928,875639	0
PD55540a	263,434172	0	962,867434	0	1808,05542	0
PD55541a	173,592942	0	803,175318	0	772,16415	0

C cases

SBS18	SBS21	SBS22a	SBS22b	SBS44	SBS40a
0	0	0	0	0	0 2426,299228
0	0	0	0	0	0 0
0	0	0	0	0	0 1032,533816
0	0	0	0	0	0 828,991193
0	0	6877,73047	8023,60306	0	0 2844,421347
0	0	659,635235	1048,78793	0	0 2028,332722
0	0	1348,97873	1301,09016	0	0 2821,482755
365,363817	0	0	0	0	0 1813,528231
723,801462	0	0	546,418614	0	0 2729,508785
0	0	0	2538,98498	0	0 1451,776277
0	0	0	0	0	0 0
0	0	0	0	0	0 3557,870316
0	0	0	0	0	0 1234,423832
0	0	0	0	0	0 0
0	0	0	0	0	0 1932,181925
0	0	0	0	0	0 0
0	0	0	0	0	0 1983,681764
0	0	0	0	0	0 2561,032409
0	0	0	0	0	0 2176,080595
0	0	0	0	0	0 2484,005787
0	0	0	0	0	0 1249,447536
480,044199	0	0	0	0	0 1671,95042
0	0	3717,83641	7771,94719	0	0 2217,550975
0	0	0	0	0	0 1187,970766
0	0	0	0	0	0 1774,545823
0	0	4014,77722	3462,89474	0	0 3120,31855
0	0	0	498,05738	0	0 1762,830239
576,042772	0	0	584,575611	0	0 1176,425865
0	0	1092,70738	3928,81292	0	0 2255,985523
0	0	0	0	0	0 2942,91094
0	0	0	0	0	0 947,8866982
0	0	1601,71205	1036,90901	0	0 3448,297267
0	0	0	0	0	0 776,3680248
0	0	4515,38091	4227,82254	0	0 2405,983929
0	0	0	0	0	0 2371,492484
0	0	27508,5665	14370,3824	0	0 0
0	0	0	773,077326	0	0 2346,131733
0	0	0	0	0	0 2025,408927
0	0	0	0	0	0 1686,629543
0	0	0	0	0	0 757,1145004
0	0	0	0	0	0 2303,248085
0	0	0	400,750432	0	0 1137,830809
0	0	0	421,542337	0	0 2277,637807
0	0	0	775,585533	0	0 1568,346748
0	0	0	0	0	0 646,5567598

0	0	0	248,646577	0	1810,545756
0	0	0	1066,65898	0	0
0	0	2791,5816	7986,55003	0	0
0	0	0	0	0	3067,140403
0	0	1756,4426	1628,70711	0	0
0	0	4399,81004	1072,56681	0	0
742,669999	0	1430,02835	0	0	3501,646302
0	0	3523,98322	5868,02983	0	0
0	0	3734,36023	5662,98667	0	4827,045553
688,058758	0	0	660,656757	0	1771,448801
0	0	0	332,49274	0	2420,044373
0	0	7870,0614	4302,52519	0	0
0	0	918,539109	1099,20636	0	2557,925123
0	0	1503,9148	3980,50681	0	2459,848917
0	0	2258,71095	3192,50638	0	3230,41057
0	0	19017,8387	9382,82473	0	0
0	0	13754,2166	5135,75643	0	0
2294,63153	1015,97478	0	1479,02201	1728,67854	0
0	0	0	0	0	2445,930079
0	0	0	0	0	1019,316964
0	0	1549,27205	943,654762	0	2224,407014
0	0	531,574286	0	0	1769,326947
0	0	7018,44489	8435,46908	0	3110,531069
0	0	2226,88905	2531,64154	0	1343,994465
0	0	0	0	0	2509,793503
0	0	0	0	0	1158,10961
0	0	0	0	0	935,9095043
0	0	0	0	0	1324,638144
0	0	0	0	0	2460,050107
0	0	0	0	0	1702,723764
0	0	6674,81529	0	0	0
0	0	0	0	0	2557,413144
0	0	0	0	0	1468,223427
0	0	0	0	0	3060,04855
0	0	0	367,337685	0	0
0	0	0	0	0	1882,547234
0	0	0	0	0	1258,260544
0	0	0	0	0	1452,430941
0	0	0	0	0	2379,777189
0	0	0	0	0	2323,873418
0	0	0	0	0	0
0	0	0	0	0	2351,582648
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2450,33549		0	31,054214	0	0	0
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750,6358814		0	19,081024	0	0	0
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1217,11109		0	8,46497232	0	0	0
974,1017208		0	15,5426546	0	0	0
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937,181173		0	0	0	0	0
1806,978283		0	12,1925247	0	0	0
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2847,607905		0	10,702656	0	0	0
682,8255967		0	8,31191589	0	0	0
1581,982639		0	0	0	0	0

1085,912108	0	0	0	0	0
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2258,478561	0	12,0308821	0	0	0
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1700,593996	0	14,885598	0	0	46,4633955
1039,417791	0	23,1799975	0	0	0
1386,255479	0	19,4410578	0	0	0
2247,356282	3530,828338	0	0	0	0
3270,673165	0	27,1067937	41,3668243	0	0
1827,737272	0	0	0	0	31,0551758
713,7610211	0	0	0	0	0
3761,899982	0	0	0	0	70,9932529
2690,798118	0	0	0	0	0
2089,577913	0	24,9141273	0	0	0
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1848,526783	0	0	0	0	0
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1384,062836	0	13,3880903	0	0	0
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0	0	16,5002006	0	0	0
0	0	12,0999541	0	0	0
1940,236241	0	14,8085097	0	0	0
785,6439575	0	0	0	0	0
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2484,172574	1465,757432	0	0	0	0
847,8728682	0	0	0	0	0
2018,14722	0	31,7479802	0	0	0
1566,741254	1445,439115	15,3708139	0	0	52,7755452
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2204,571246	0	14,9122724	0	0	0
1555,270065	0	12,5888725	0	0	0
1707,750377	0	11,0433667	14,7208961	0	0
1853,457075	0	0	0	0	0
1731,866707	972,5947292	0	0	0	0
2937,58614	0	13,7993469	0	0	0
2263,812571	0	13,285542	0	0	0
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492,6813934	0	0	0	0	0
646,4192834	0	12,4933482	0	0	0
958,8445231	0	11,7523772	0	0	0
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657,5017437	0	16,2195506	0	0	0
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3578,245371	0	12,0514714	0	0	45,8282185	0
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1539,612097	0	0	0	0	0	0
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979,9719463	0	0	16,095988	0	0	0
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733,8075111	1056,971869	0	0	0	0	0
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2569,694182	0	0	0	0	0
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1797,018804	0	0	0	0	0
1971,36633	0	0	0	0	0
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707,342735	0	0	0	0	0
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3253,923677	2146,045001	0	0	48,9142914	0
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865,9997131	0	10,7348181	0	0	0
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2459,129539	0	31,5416278	0	0	0
3314,545615	1558,055464	0	0	0	45,1299852
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1958,222777	0	13,6117341	22,5862145	0	0
1746,682726	0	0	11,1148948	0	0
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1818,865071	0	0	0	0	0
971,0265376	0	0	0	0	0
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2535,733885	0	0	0	0	0
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1899,831776	0	9,48769908	13,9288423	0	0
2096,04371	0	16,026284	0	0	56,7724701

557,3502764	0	13,4596718	0	0	0
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576,3570431	0	6,79497796	0	0	0
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882,0288087	0	8,10856448	0	0	0
769,5156311	0	0	0	0	39,8947208
895,5498355	0	16,1921915	0	0	0
2217,64185	0	0	21,5714459	0	0
1779,151717	0	24,408651	0	0	0
1764,145063	0	21,4638381	0	0	58,5264545
1544,169846	0	9,6414545	0	0	0
1086,528693	0	0	0	26,440056	0
1577,581262	0	20,5872005	0	0	0
1848,68359	0	0	14,3790247	0	0
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1112,610361	0	0	0	0	0
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1051,749646	0	0	0	0	0
1049,907273	0	7,94509606	0	0	0
2666,36449	0	0	20,3331497	0	0
1526,756182	0	0	0	0	0
2187,685637	0	15,1013944	0	49,4972382	0
828,7298862	0	0	13,2666444	0	0
1058,001246	0	8,00620971	0	17,1250092	0
941,2562522	0	9,65265717	0	0	0
2842,898975	0	0	0	0	49,7451416
2016,906635	0	17,4731612	0	0	0
1014,07705	0	11,1667749	13,1158015	0	0
1365,686893	0	16,4241786	0	0	0
621,8191462	0	8,07415558	0	0	0
2024,391205	0	0	0	0	0
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1921,708768	0	0	0	0	0
401,7208838	0	0	0	0	0
797,4025761	987,5462409	0	0	0	0
2128,789589	2079,029484	27,1991702	0	0	0
737,5946071	825,835879	0	0	0	31,119525
821,3854855	0	16,8949637	0	0	0
1438,319174	0	0	0	0	37,3930549
874,1115207	0	0	0	0	0
519,3280318	733,15093	0	0	0	0
483,6960921	0	0	0	0	0

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1189,494571	0	22,1005439	0	0	0
611,9578079	0	0	0	0	0
0	0	10,7849872	0	0	0
1765,357845	2527,596354	0	18,7326665	0	60,8876234
1043,140862	0	11,1297418	14,7948477	0	0
1650,326993	0	19,4339824	0	0	0
934,2274977	0	0	0	0	0
481,4056265	0	8,04874667	0	0	0
777,2310041	1203,711178	25,99781	0	0	0
543,0444592	0	0	0	0	0
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806,6989186	0	16,355922	0	0	0
552,4125323	0	0	0	0	0
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1141,565565	0	0	0	0	0
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2243,549353	0	0	0	0	0
4101,273151	0	29,9492318	0	0	57,1061622
1830,839251	0	15,1488535	0	0	0
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2016,604748	0	0	0	0	0
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2289,04081	0	0	0	0	0
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1040,406178	0	19,2165949	0	0	0
2163,599187	0	0	28,0245958	0	0
2284,625727	0	24,6292653	0	0	72,2419474
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757,0406744	0	9,66800288	0	0	0
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2574,333179	0	0	0	0	0
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1126,669368	0	10,8518738	0	0	0
2802,858592	2083,753721	0	0	46,6004983	0
940,4844476	0	0	0	0	0

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2665,657053	1141,240073	0	0	0	0
681,099329	0	0	0	0	0
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820,3938339	0	19,0533205	0	0	52,2433446
1365,014987	0	14,7057552	0	0	0
1495,503317	0	30,4737879	15,2730722	0	0
1227,758151	0	19,1755711	0	0	0
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2285,225325	0	0	24,8279174	0	0
1215,212828	0	0	0	0	0
2014,555106	0	27,3113784	0	0	0
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941,1382781	0	0	0	0	0
497,2173517	0	6,96558008	0	0	0
3140,078937	0	14,7503858	18,2306795	0	0
945,7462901	0	0	0	20,2542485	0
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465,5383344	0	0	0	0	0
3867,468522	0	12,3721405	0	0	0
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711,4540865	0	0	0	16,1996291	0
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1490,195483	0	17,8030802	0	0	0
1651,19334	0	0	0	0	0
952,5242075	0	0	0	0	0
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634,1076561	0	9,34412043	0	0	0
772,5473351	0	14,7676186	0	0	0
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1873,966573	0	0	0	0	0

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993,6044306	0	13,3876792	0	0	34,9543907
727,0169247	0	0	0	0	0
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773,0344737	0	9,63654998	0	0	0
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617,2809541	0	0	0	0	0
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3291,26565	0	16,350393	0	0	0
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614,0256029	0	0	0	0	0
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2725,829597	0	0	0	0	0
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1556,664857	0	12,0435221	16,5476852	0	0
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1571,370828	1751,772935	10,8976912	0	43,2507465	0
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2066,276947	0	12,6895018	0	0	65,5850267
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1477,659271	0	18,002245	16,2670249	0	0
1673,104267	0	0	0	0	0
1578,640037	0	9,33546226	0	0	0
1618,553107	1702,252495	12,1114505	0	0	0
557,2666694	0	8,35135578	0	0	0
696,0326843	0	0	0	0	0
1821,903463	0	12,2780642	0	0	0
1294,926782	0	8,04969965	0	0	0
1447,97089	0	0	0	0	0
1554,8293	0	9,23080114	0	0	0
1826,283215	1547,104584	13,3548736	0	0	0
1574,849857	0	11,0986373	0	0	45,0584087
939,1933332	0	7,09933963	0	0	0
681,7347583	0	0	0	0	0
1569,135903	0	8,26773156	0	0	0
2363,253669	0	0	0	0	0
2022,089049	0	31,2282727	22,8460249	0	0
1104,404816	0	0	0	0	28,1602309
639,3904719	0	15,4321341	0	0	0
1575,000552	0	0	0	0	43,7348952
815,0252789	1507,862774	9,31024277	0	0	0
805,7294348	0	0	0	0	0
0	0	8,58746424	0	0	0
0	0	20,7614043	0	0	0
0	0	63,4529639	0	0	0
0	0	10,0837441	0	0	0
1602,577051	0	11,0410241	17,8069217	0	0
1186,298101	0	19,0431907	0	0	0
786,2815754	0	0	0	0	0
1805,906244	0	10,924978	0	0	0

1207,441805	0	6,9032384	0	0	0
1438,240558	0	0	0	0	0
2458,085766	0	12,1463461	0	0	0
1450,29282	0	9,43513882	0	0	0
1872,2428	0	0	0	0	0
1875,406992	0	9,70238263	0	0	0
0	0	5,60267444	0	0	0
2013,839341	0	68,1756743	0	0	94,7806614
3277,74867	0	19,9258976	0	0	62,6519914
1291,1536	0	0	15,1380594	0	0
977,772188	0	25,8789168	16,5478476	0	0
2337,76072	1522,070445	0	0	0	42,4203823
0	0	42,2884742	0	0	0
1673,305401	0	0	0	0	40,606971
1137,61301	0	10,9038805	0	0	0
862,9339903	0	13,9608757	0	0	0
2242,73263	0	0	0	0	0
0	0	0	0	0	0
872,1459208	0	9,72065667	0	0	0
0	1242,763743	0	0	0	0
0	0	0	0	0	28,4619018
0	0	13,7502106	0	0	0
1218,593398	0	0	0	0	0
1262,783127	0	8,34217323	0	0	0
988,3530967	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	14,9397967	0	0	0
0	0	0	0	0	0
1341,535244	0	12,6077334	0	0	0
0	0	13,6575084	0	0	0
0	948,2035506	0	0	0	0
1265,501227	0	0	0	0	0
1918,81984	0	0	0	0	0
2017,359018	0	0	0	0	0
418,721711	685,7371729	0	0	0	0
540,4706191	0	0	0	0	0
0	0	0	0	0	0
0	0	11,1087521	0	0	0
449,6885017	0	9,41035822	0	0	0
0	0	0	0	0	0
778,7771224	1867,515755	0	0	0	0
0	0	9,84406614	0	0	0
877,2414816	0	14,901789	0	0	0
927,7883366	0	11,0132246	0	0	0
0	0	0	0	0	0
767,1962808	0	0	0	0	0
1000,283322	0	0	0	0	0

1113,476414	0	0	0	0	44,7107502
1038,862006	1427,243412	0	0	0	0
2106,807769	0	0	15,0596763	0	0
0	0	0	0	0	0
651,5436305	0	0	16,8171562	0	0

DBS_D	ID1	ID2	ID3	ID5	ID8	ID9	
	0	0	0	0	768,287543	173,323531	0
	0	0	0	0	427,138355	89,7917516	0
	0	0	0	0	300,617592	73,3874175	0
	0	0	0	0	327,605892	66,3302528	0
54,3095276		0	0	0	557,334721	109,992963	0
20,6747647		0	0	0	410,718027	70,7905682	0
	0	0	0	0	458,11253	75,74193	0
	0	78,0439373	0	0	511,043794	125,576515	0
	0	0	0	0	1438,25005	369,8961	0
	0	0	0	0	786,151893	128,34559	0
	0	75,9690428	0	0	1191,55737	286,763383	0
	0	0	0	0	788,567351	164,534258	0
	0	0	0	0	300,529258	77,9302179	0
	0	0	0	0	381,04837	85,9057966	0
16,8200029	63,9896853		0	0	805,653661	158,006463	0
	0	24,5781421	0	0	170,669806	42,3646702	0
	0	28,4568063	0	0	234,511253	66,9954564	0
	0	0	0	0	696,750353	180,597325	0
	0	85,8259961	0	0	495,894819	135,559318	0
	0	77,3265516	0	0	779,514648	171,53432	0
	0	38,4706295	0	0	289,843499	0	0
	0	0	0	0	428,762893	126,777791	0
58,8044233		0	0	0	0	70,9018783	0
	0	24,9370234	0	0	124,390376	0	0
	0	0	0	0	251,603183	67,8963732	0
31,8578776	111,3443		0	171,507722	421,088719	0	0
	0	86,0299251	0	0	246,879965	65,7170289	0
	0	37,745777	0	0	482,938612	98,3630399	0
51,2921945	49,2156513		0	0	906,256507	0	0
	0	65,4613674	0	0	603,209668	99,2726979	0
	0	41,7658964	0	0	287,413119	97,6842176	0
	0	0	0	0	790,571954	98,1583886	0
	0	44,0515062	0	0	238,947233	48,3620833	0
48,8779314	43,166622		0	0	285,15139	0	0
	0	35,3849008	0	0	316,972762	74,4606532	0
152,410163	81,2192539		0	0	0	0	0
20,5528298	179,717755		0	0	639,349639	123,027568	0
	0	44,1159474	0	0	314,470566	92,3832392	0
	0	50,6450043	0	0	376,71091	111,535805	0
	0	48,2083385	0	0	372,475381	0	0
	0	53,2701637	0	0	496,288539	133,373538	0
	0	0	0	0	550,280812	132,535611	0
	0	61,461741	0	0	640,789731	178,624356	0
	0	54,364007	0	0	335,883328	60,7935395	0
	0	51,5581204	0	0	501,798392	124,067916	0

0	41,0709979	0	0	424,161777	95,8556625	0
24,1236216	66,5518461	0	0	385,858999	105,682555	0
57,5584584	0	0	0	769,833096	173,433561	0
0	71,8501786	0	200,254104	723,517797	138,474562	0
0	67,9685122	0	0	780,544869	167,896491	0
25,0007484	36,6119647	0	132,177072	336,496155	68,2023277	0
0	169,99733	0	0	439,019478	102,392223	0
43,615999	0	0	0	776,52658	169,551553	0
84,6175018	81,1475608	0	0	1338,75746	285,145673	0
0	195,09298	0	0	457,637805	136,355488	0
17,3650082	86,5453636	0	0	452,630057	0	0
83,0633955	0	0	338,913546	1363,68595	212,477167	0
0	140,409633	0	0	945,746177	147,665106	0
0	73,9469419	0	0	541,003525	158,82954	0
34,2314455	79,0277756	0	0	636,140612	115,686767	0
132,982636	74,6442465	0	0	569,055519	0	0
93,3621029	87,0487774	0	0	439,444801	181,4927	0
23,7816113	895,131994	1933,37882	0	0	0	0
0	60,8027844	0	0	340,486105	60,2537841	0
0	53,5571053	0	0	410,321643	113,593654	0
0	66,9270382	0	0	549,94949	110,963525	0
0	34,8768893	0	0	434,825442	81,1581347	0
94,812297	52,5037607	0	0	373,989216	0	0
37,6632272	62,8262992	0	0	500,010544	87,9470691	0
0	273,815355	0	0	751,814887	133,480136	0
0	41,621034	0	0	270,306731	61,9437923	0
0	58,3468591	0	0	595,924651	139,548925	0
0	57,4951082	0	0	442,016682	139,503552	121,451248
0	68,8529963	0	0	913,245058	156,857184	0
0	73,498312	0	0	319,921589	73,17906	0
48,6134105	43,5635058	0	0	761,835137	147,971382	0
22,8534521	81,3562799	0	0	677,875755	154,332585	0
0	52,2467967	0	0	543,988782	145,425967	0
0	74,4627453	0	0	866,194846	147,714212	0
0	109,445086	73,6431469	0	157,070426	75,4627677	0
0	66,9038659	0	0	628,462818	146,27336	0
0	56,7485239	0	0	573,172218	117,939767	0
0	0	0	0	691,189473	112,283356	0
0	96,7550853	0	0	913,159818	182,134041	0
0	76,1351101	0	0	881,352953	178,744317	0
0	76,0362025	0	0	1040,20078	168,809564	0
0	69,6613804	0	0	953,898441	314,771871	0
0	56,3433589	0	0	199,050231	64,3478261	0
0	65,4269348	0	0	326,155066	91,2706485	0
0	118,919165	70,5427811	0	420,268392	135,893189	0
0	138,603108	0	0	239,771917	0	0
0	62,8990699	0	0	329,54682	109,28985	0
0	1072,42165	0	0	528,140858	0	0

13,0619603	57,4096488	0	0	187,779028	0	0
0	95,9170138	0	0	301,996369	0	0
0	77,1400056	0	0	631,690949	93,2469477	0
0	90,3052964	0	0	100,546067	0	0
0	131,496473	0	0	379,394312	82,587813	0
0	123,520315	0	0	358,481367	99,5887541	0
0	149,256431	0	0	0	0	0
0	128,196472	0	0	402,288411	111,411398	0
0	65,8717749	0	0	481,248681	116,702624	0
0	111,745626	0	0	316,563952	83,4072299	0
0	131,485559	0	0	518,43005	126,035413	0
0	57,8707861	0	0	213,91481	0	0
0	73,7079787	0	0	390,914504	95,0152191	0
0	71,4795273	0	0	269,732396	0	0
0	47,9571245	0	0	275,212395	58,9281232	0
0	69,3129073	0	0	336,646556	100,562369	0
0	1201,59128	0	0	1040,38342	0	0
0	67,4347454	0	0	444,281268	109,600648	0
0	67,2849693	0	0	482,177045	117,108678	0
0	167,953455	0	0	782,79581	182,34786	0
0	88,6183105	0	165,235402	517,522566	149,767619	0
0	44,6087299	0	0	318,527733	0	0
0	88,8395282	0	0	474,573921	82,9103671	0
0	41,5606434	0	0	138,550489	0	0
0	51,1172599	0	0	508,964601	111,881604	0
0	61,0731954	0	0	381,427371	83,2086293	0
0	61,6822881	0	0	408,611526	0	0
0	0	0	0	1312,11866	218,967801	0
0	53,9258581	0	0	290,949593	73,9702725	0
0	30,6368756	0	0	226,65321	0	0
0	35,9708165	0	0	258,723706	0	0
0	27,2983417	0	0	237,802263	53,304166	0
0	51,1640868	0	0	467,953741	86,1627621	0
0	39,0805429	0	0	465,142392	128,414685	0
0	63,8858535	0	0	670,733054	130,238798	0
0	61,6621184	0	0	801,422656	168,387476	0
33,3422514	45,6614974	0	0	455,319585	91,7775059	0
34,4726459	60,9217466	0	0	517,133649	119,796401	0
70,5648704	0	0	0	1114,18373	226,737958	0
0	82,8940549	0	176,694969	544,620316	0	0
0	57,2011023	0	0	742,229191	169,557929	0
0	35,6962835	0	0	0	0	0
0	33,5674019	0	0	165,654944	39,0406842	0
0	161,320775	66,2959111	0	303,895064	81,9286957	0
0	65,0176522	0	0	145,221507	0	0
0	108,707153	0	0	439,526004	97,8232107	0
0	79,6433097	0	0	0	69,7560608	0
0	47,6406766	0	0	330,409661	60,0183461	0

0	0	0	0	996,747822	197,710144	0
0	178,576021	0	0	160,39156	0	0
0	66,9513306	0	0	455,03239	149,869737	0
0	53,5486333	0	0	529,963207	152,417876	0
0	70,2108031	0	0	763,142466	152,596542	0
0	58,9572737	0	0	243,56447	56,4072891	0
0	51,3185619	0	0	0	0	0
0	51,4156447	0	0	478,849112	102,110879	0
0	94,9989253	0	0	1164,77614	195,252861	0
0	35,1043264	0	0	159,711297	0	0
0	44,2994669	0	0	289,151855	0	0
0	63,1388167	0	0	125,188908	0	0
0	55,6651097	0	0	364,949719	86,1496702	0
0	62,4478433	60,3278998	0	859,486282	200,352839	0
0	58,7562536	0	0	529,52253	99,4748502	0
0	57,7685212	0	0	376,132522	77,6890129	0
0	70,940179	0	0	317,804227	67,6887149	0
0	64,5668761	0	0	0	0	0
0	79,9969267	0	0	0	0	0
0	74,2739381	0	0	144,081271	0	0
0	51,8603094	0	0	529,590612	156,678462	0
0	29,2640637	0	0	387,919544	84,2062582	0
0	121,959956	0	0	585,79267	112,567703	0
0	62,964614	0	0	423,433217	72,6947824	0
0	64,2844104	0	0	688,503753	150,39847	0
0	105,551772	0	0	433,899277	75,9302395	0
32,6866188	61,9929642	0	0	914,57062	218,233267	0
0	80,7975322	0	0	973,261131	222,650413	0
0	66,0357997	0	0	319,366082	67,7078474	0
0	75,838368	0	0	359,379846	79,2130715	0
0	53,4973173	0	0	314,682973	61,4743069	0
0	38,1884768	0	0	259,026127	80,513387	0
0	25,5345783	0	0	194,288892	0	0
0	34,8991605	0	0	148,890902	0	0
0	110,867173	0	0	801,949506	169,466718	0
0	0	0	0	1050,01131	207,954485	0
0	67,8304359	0	0	432,37537	103,864685	0
0	128,79124	0	0	937,551399	172,579613	0
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0	75,3043285	0	0	640,812882	134,051101	0
0	157,978425	0	0	463,202214	0	0
0	46,0573604	0	0	702,613739	101,213354	0
0	67,0738758	0	0	343,885208	78,7312	0
0	34,2256052	0	0	400,607368	82,9445058	0
0	0	0	0	782,633763	175,660841	0
0	76,6574642	0	0	259,773763	63,366617	0
0	72,2211548	0	0	655,677559	150,025282	0
0	83,926746	0	0	755,465934	170,971947	0

0	164,611454	0	0	274,695575	85,1087672	0
0	61,4930063	0	83,3095856	225,372169	0	0
0	60,7847256	0	0	209,913073	76,3119907	0
0	42,5676312	0	0	515,356304	99,5614971	0
0	27,2281839	0	0	193,59011	45,921022	0
0	32,8496069	0	0	170,704167	0	0
0	58,1892575	0	0	400,352481	0	0
0	59,0990555	0	0	469,145712	73,8300875	0
0	96,3257185	37,9051705	103,87291	363,245283	88,2975689	0
0	82,0565608	0	0	761,478209	200,16933	0
0	40,5781017	0	0	370,651006	88,8530915	0
0	57,3426776	0	0	639,737596	153,519154	0
0	299,630454	0	0	371,18071	0	0
0	48,3153644	0	0	282,15063	82,0811193	0
0	54,8652396	0	0	630,967558	117,43574	0
0	71,7133161	0	0	544,722395	121,529864	0
0	17,7358697	0	0	0	0	0
0	0	0	0	1072,24015	214,68945	0
0	74,5430648	0	0	406,654491	81,3238706	0
0	55,1264625	0	0	324,189207	0	0
0	54,6681067	0	0	201,218011	0	0
0	61,7105232	0	0	343,997467	0	0
0	65,8501924	0	0	503,12823	113,831873	0
15,5445806	61,5781054	0	0	236,801236	0	0
0	53,7249978	0	0	394,318636	97,7670434	0
0	77,4897463	0	0	783,616516	163,222366	0
0	59,3358523	0	0	617,682432	115,566537	0
0	78,8530106	0	0	860,088432	133,372056	0
0	74,8753578	0	0	235,107229	0	0
0	64,1941228	0	0	390,162631	132,506589	0
0	108,965215	0	0	323,162968	91,2985882	0
0	62,6943185	0	0	863,126552	205,56959	0
0	62,9893396	0	0	670,28367	159,862709	0
0	85,5271845	0	0	357,829741	0	0
0	109,679788	0	0	456,563892	0	0
0	96,2716861	0	0	0	0	0
20,6400389	208,666542	0	0	487,152994	121,353986	0
0	59,1753884	0	0	170,772407	0	0
0	125,102896	0	0	730,219392	139,204222	0
0	37,6059289	0	0	0	0	0
0	50,3733384	0	0	225,339059	0	0
0	90,196079	73,3990458	0	620,625013	198,766031	0
0	42,2973243	0	0	299,019536	73,9111975	0
0	61,4410286	0	139,979677	478,924996	92,1219594	0
0	44,0387079	0	0	443,9524	140,477557	0
0	56,967896	0	0	440,657513	83,1115595	0
0	56,090228	0	0	183,298918	0	0
0	51,2849068	0	0	205,150477	0	0

0	61,1755587	0	0	626,578241	108,887183	0
0	99,1778724	0	0	479,423937	172,930462	0
0	38,9088605	0	0	517,852946	109,09616	0
0	61,4343063	0	0	207,750064	64,3523546	0
0	81,4823176	0	0	215,133306	58,8624147	0
0	0	0	0	877,537224	174,424032	0
0	43,3422078	0	0	223,583547	86,324228	0
0	378,782175	0	0	469,958283	0	0
0	46,5261258	0	0	309,338531	68,8440192	0
0	56,3974975	0	0	192,529473	56,4289872	0
0	0	0	0	551,942263	98,6825844	0
0	55,7431173	0	0	227,700689	58,9469195	0
0	70,4661842	0	0	527,974018	109,443686	0
0	55,5733153	0	0	202,38497	54,606945	0
0	79,6564519	0	0	527,647992	0	0
0	78,5336672	0	0	152,981148	0	0
0	60,2981674	0	0	327,489401	100,538693	0
0	54,2014202	0	0	403,401384	86,6374365	0
0	71,4902177	0	0	328,969682	0	0
0	72,8840757	0	0	732,701753	169,862223	0
0	49,2891599	0	0	383,631914	111,567413	0
0	67,8924315	0	0	302,984078	68,6964067	0
0	63,5328871	0	0	651,736558	213,266978	0
0	0	0	0	1207,98344	241,438254	0
0	68,7807363	0	0	560,24028	97,6710733	0
152,151627	78,9730772	0	0	0	0	0
14,3470543	43,4893584	0	0	0	0	0
41,9261688	0	0	202,874635	767,245459	0	0
48,9849096	0	0	0	882,683876	166,192706	0
37,4142281	58,0646504	0	0	501,293829	0	0
20,6169054	61,7756993	0	0	210,734883	0	0
0	52,3676319	0	0	640,435956	135,307673	0
0	84,140469	0	192,211554	771,126348	0	0
0	43,7428691	0	0	299,135928	89,8769855	0
0	61,7262926	0	0	788,833344	189,79072	0
0	0	0	0	1156,43934	242,456619	0
0	50,3079613	0	0	378,130332	108,510956	0
0	49,7202565	0	0	245,640774	0	0
0	46,7675317	0	0	119,75917	0	0
0	45,3381409	0	0	250,475191	59,1186671	0
0	48,2096404	0	0	372,576642	91,7349205	0
0	55,0241603	0	0	332,889699	85,9137723	0
0	38,2259847	0	0	517,042058	0	0
0	0	0	0	768,479099	197,587884	0
0	0	137,537976	451,139234	0	0	1340,36969
26,3396022	66,4902196	0	0	392,33834	0	0
0	0	0	0	1254,95678	261,923335	0
22,1719559	72,7458079	0	0	446,534836	100,785579	109,66755

0	53,1922522	0	0	512,770609	167,267428	0
0	52,9634714	0	0	372,984363	91,6683093	0
0	52,2764621	0	0	798,24382	142,109672	0
0	29,0156866	0	0	250,438053	52,1153031	0
0	98,6156135	0	0	455,599541	116,323763	0
0	63,0486674	0	0	448,080188	126,735719	0
0	57,5726656	0	0	691,201431	157,329401	0
0	69,56011	0	0	409,469178	103,637299	0
0	221,98291	73,1437078	110,959616	207,211776	89,4209119	0
0	135,227425	0	0	261,05398	0	0
0	68,2456423	0	0	579,9363	145,013058	0
0	44,0315629	0	0	481,615553	109,210986	0
0	0	0	0	861,958812	154,955547	0
0	55,5255189	0	0	260,89632	80,4396303	0
0	65,237882	0	0	220,477974	75,0399265	0
0	68,4707872	0	0	293,035157	88,6800817	0
0	53,0598374	0	0	458,12487	78,650775	0
0	40,2350654	0	0	179,920469	0	0
0	142,338699	0	0	853,618571	208,983203	0
0	45,5746478	0	0	345,276261	79,358433	0
0	50,9144878	0	0	202,498338	46,3043258	0
0	61,2559211	0	0	133,649969	53,2262481	0
0	124,707273	0	0	1024,9692	244,352626	0
0	48,5298135	0	0	722,870481	133,706227	0
0	55,7264591	0	0	241,332397	0	0
0	46,2331348	0	0	138,74576	0	0
0	127,96352	0	0	423,934972	96,2637273	0
0	63,2341458	0	0	454,517821	142,694385	0
0	53,0581924	0	0	639,649888	124,081692	0
0	42,1264372	0	0	291,492851	0	0
0	39,2375777	0	0	267,039284	0	0
114,792534	82,0318038	0	0	643,872788	0	0
0	87,6948863	0	0	810,914992	158,8872	0
0	84,8802323	0	0	485,089019	122,236202	0
0	75,4204706	0	0	0	0	0
0	64,0801172	0	0	677,162265	126,319028	0
0	45,5610559	0	0	155,07324	0	0
0	62,3356208	0	0	393,735799	79,2328689	0
0	40,939144	0	0	315,874589	102,167928	0
0	44,6943322	0	0	339,591267	0	0
0	85,1561771	0	0	830,815586	148,290824	0
0	51,9364973	0	0	274,388439	60,9784535	0
0	103,912068	0	0	418,89335	124,030103	0
0	73,6581335	0	0	233,310148	0	0
0	59,7103348	0	0	362,954768	97,3405601	0
0	44,78706	0	0	216,608534	0	0
0	90,4635977	0	0	714,656912	105,415755	0
0	50,8803229	0	0	568,399798	132,230761	0

0	39,3241259	0	0	208,71827	64,9772641	0
0	88,0838113	0	0	467,102319	97,7989196	0
0	62,3427301	0	0	766,87216	176,747211	0
0	147,865369	0	0	547,739445	0	0
0	501,075499	1444,36895	0	0	0	0
0	83,4525713	0	0	277,151984	63,2383787	0
0	40,8543854	0	0	326,399275	105,751567	0
0	53,7606942	0	0	340,698177	73,413947	0
0	69,5523355	0	0	332,447732	101,257648	0
0	87,7549194	0	0	500,88504	92,4982531	0
0	49,9203177	0	0	508,53449	85,0479603	0
0	360,335448	101,640049	0	488,557567	177,047067	0
0	71,3947312	0	0	527,926261	125,06788	0
0	50,6764238	0	0	252,80954	58,2410012	0
0	144,310725	0	0	266,925355	0	0
15,8980962	41,9683793	0	0	261,553445	0	0
0	84,4039601	0	0	346,461687	91,8849622	0
0	82,5262744	0	0	354,739561	88,2691735	0
0	61,2658307	0	0	422,29201	110,687773	0
0	66,0740832	0	0	395,663471	94,7741353	0
0	69,3253058	0	0	164,045725	0	0
0	62,9450951	0	0	551,750262	139,841148	0
0	126,36793	0	0	377,39942	0	0
0	42,204473	0	0	290,654918	76,3093621	0
53,7753942	65,4706166	0	0	641,720272	0	0
0	70,5286011	0	0	199,444122	0	0
0	33,7796503	0	0	311,500482	0	0
0	35,4248542	0	0	206,399934	0	0
0	0	0	0	539,249232	81,6998089	0
0	112,807464	0	0	194,073864	63,8648451	0
0	73,0972973	0	0	289,963537	76,9643738	0
0	53,1433995	0	0	413,667484	107,681193	0
27,5931079	79,5024578	0	0	699,606978	164,362115	0
0	0	0	0	617,409834	173,145025	0
0	78,765807	0	0	347,441062	101,758644	0
0	50,3683889	0	0	281,621641	0	0
0	136,519463	0	0	582,759649	104,908095	0
0	53,4290694	0	0	616,338459	148,637517	0
0	59,1121894	0	0	510,925989	159,352844	0
0	71,7437774	0	0	375,138038	95,8720124	0
0	55,8770226	0	0	499,770311	131,852799	0
0	66,3556024	0	0	563,417218	149,503288	0
0	90,5563495	0	0	1019,10348	249,185809	0
0	181,381897	0	0	707,689769	171,517694	0
0	78,0997638	0	0	324,591467	126,815863	0
0	69,6806164	0	0	360,922217	122,762806	0
0	91,2896651	0	0	447,645725	171,231996	0
0	75,5654572	0	0	190,742357	0	0

0	105,779229	0	0	293,045369	69,202791	0
0	100,640281	0	0	549,215507	148,205764	0
0	84,8393078	0	0	229,841388	0	0
0	56,1641564	0	0	779,960439	152,936685	0
0	105,233534	0	0	352,157568	121,667365	0
0	38,0317905	0	0	167,870184	0	0
0	104,485355	0	0	367,166975	93,9677334	0
0	70,8350436	0	0	547,490372	104,395427	0
0	58,3125077	0	0	463,294565	98,043996	0
0	60,4538199	0	0	0	0	0
0	46,1520358	0	0	274,395645	64,541133	0
28,2370169	119,234002	0	0	0	0	0
0	63,0857136	0	0	239,738477	59,4195027	0
0	47,9148037	0	0	409,923738	0	0
0	52,5685739	0	0	400,262078	100,293748	0
0	38,1265591	0	0	136,312876	0	0
0	30,8690369	0	0	239,785711	64,5683618	0
0	40,5602954	0	0	202,409368	61,5946179	0
0	67,7370554	0	0	201,434446	0	0
0	59,4865724	0	0	216,153532	62,0746679	0
0	152,707162	0	0	304,921914	99,0025037	0
0	62,104091	0	0	491,369949	113,372691	0
0	178,440349	0	0	242,641305	0	0
0	60,0624693	0	0	332,22695	0	0
0	142,942643	0	0	584,756573	103,020335	0
0	140,385682	0	0	436,311991	0	0
0	59,207375	0	0	237,595097	63,0284981	0
0	66,6350128	0	0	0	152,065464	0
0	68,0446346	0	0	411,123998	96,6464752	0
0	58,3641695	0	0	184,102096	0	0
0	64,4253577	0	0	938,042138	224,462406	0
0	79,3360459	0	0	888,598832	233,066914	0
0	77,9984971	0	0	315,811184	0	0
0	52,5812788	0	0	441,439119	94,8216277	0
0	67,9470365	0	0	792,350135	124,872714	0
0	41,0197798	0	0	322,940015	59,9537602	0
0	42,5967131	0	0	332,228931	92,3503307	0
0	50,6457139	0	0	651,427985	136,141924	0
0	168,660272	0	0	1048,76613	173,144181	0
0	81,3286167	0	0	265,81491	66,9174373	0
0	60,7955056	0	0	208,5374	68,6014291	0
0	72,9113631	0	0	430,927122	95,2741837	0
0	49,8045221	0	0	105,37544	0	0
0	48,6715056	0	0	227,73045	57,5064937	0
0	83,6812613	0	0	380,283928	75,7101067	0
0	123,988254	0	0	253,020115	0	0
0	46,1582452	0	0	113,841207	0	0
0	111,170607	0	0	223,07091	59,8178611	0

0	107,702469	0	0	434,165677	79,598538	0
0	69,4804924	0	0	0	0	0
0	67,218048	0	0	150,628205	0	0
0	78,3569523	0	0	182,036706	0	0
0	91,762068	0	0	546,878505	89,1333883	0
0	68,0852049	0	0	340,274033	91,8502716	0
0	81,6355819	0	0	237,516704	66,5111613	0
0	56,0803293	0	0	369,377396	84,7355612	0
0	154,050295	0	0	368,845217	88,5049445	0
0	78,7151413	0	0	377,202181	69,5724985	0
0	74,9175983	0	0	0	0	0
0	36,0479591	0	0	404,909572	87,206494	0
0	0	0	0	0	0	0
23,3310298	0	0	0	696,883536	185,657182	0
0	24,0362347	0	0	89,0708398	0	0
0	0	0	0	432,591406	107,876419	0
0	78,5174326	0	0	374,291606	103,493625	0
0	17,208968	0	0	0	0	0
0	42,0005828	0	0	526,716469	105,827241	0
0	43,4615721	0	0	244,153741	70,8947878	0
0	31,2027416	0	78,6567693	226,409702	0	0
0	0	0	0	329,075782	95,7392273	0
0	0	0	0	372,388611	95,9428011	0
0	73,4735137	0	0	498,895483	130,883297	0
0	0	0	0	257,656064	69,0441742	0
0	46,0276486	0	0	209,462773	78,481814	0
0	0	0	0	630,489935	146,446552	0
0	77,9242836	0	0	245,487215	67,3994348	0
0	59,4019	0	0	0	60,2235384	0
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0	34,6172881	0	0	457,996985	0	0
0	37,0158657	0	0	237,715953	68,8192997	0
0	0	0	0	146,318079	46,2297581	0
0	55,4589875	0	0	206,615657	58,6593924	0
0	107,334349	0	0	504,206748	114,352872	0
0	73,227564	0	0	557,752889	106,411033	0
0	31,477342	0	0	227,709432	69,2472733	0
0	51,0340581	0	0	397,149081	0	0
0	59,6973612	0	0	278,562995	76,9601965	0
0	146,447424	0	0	865,345602	154,383094	0
0	52,9126314	0	0	385,750669	90,143625	0
0	45,1902484	0	0	375,815396	0	0
0	44,156003	0	0	247,05154	0	0
0	105,344511	0	0	405,22175	108,062823	0
0	0	0	0	673,463008	218,486076	0
0	50,0414774	0	0	337,159893	76,8474341	0
0	0	0	0	792,92958	0	0
0	75,1279404	0	0	425,997467	141,875079	0

0	94,5680412	0	0	448,392595	86,5877641	0
0	65,0405219	0	0	180,15255	72,3308638	0
0	605,768215	0	0	723,787331	0	0
0	0	0	0	707,979947	129,552388	0
0	40,209331	0	0	380,626137	89,011681	0
0	42,0591466	0	0	489,457328	122,173669	0
0	29,9574466	0	0	190,544351	0	0
0	0	0	0	534,60177	98,7602539	0
0	0	0	0	423,338356	91,2737721	0
0	44,8512739	0	0	424,200849	68,8356695	0
0	25,8681348	0	0	208,022238	0	0
0	0	0	0	97,9841324	36,1748213	0
0	35,1489958	0	0	147,27448	60,7896798	0
0	97,9429935	0	0	511,584104	88,8949753	0
0	98,0532396	0	0	317,925278	75,8924706	0
0	2048,15267	5028,90754	0	0	0	0
0	0	0	0	749,174922	154,113242	0
0	57,9573696	0	0	577,508529	151,430549	0
0	53,17141	0	0	609,813166	135,864927	0
0	37,9131178	0	0	463,735181	79,2300781	0
0	28,8317394	0	0	197,939134	0	0
0	49,5105742	0	0	486,315159	0	0
0	47,7176349	0	0	148,271112	50,1422554	0
0	64,0333743	0	0	250,865517	63,324646	0
0	80,0072943	0	0	136,99092	0	0
0	30,7673946	0	0	233,687728	0	0
0	34,5441001	0	0	238,70854	62,8581041	0
0	56,0881677	0	0	522,653064	130,893107	0
0	34,6731678	0	0	232,316263	89,4547559	0
0	78,5429524	0	0	171,959692	0	0
0	77,9576506	0	0	725,710051	147,403264	0
0	56,6140867	0	0	766,970074	138,956038	0
0	34,1408145	0	0	168,280051	46,5569208	0
0	0	0	0	389,4302	72,7084256	0
0	40,3192067	0	0	282,735968	82,9283298	0
0	56,7604131	0	0	242,704451	0	0
0	42,1526424	0	0	0	0	0
0	89,1827497	0	158,599487	596,871687	108,677112	0
0	54,2318539	0	0	0	70,2086793	0
0	0	0	0	134,710899	0	0
0	0	0	0	318,93456	75,9412716	0
0	46,3949649	0	0	193,758562	56,1886485	0
15,2459502	30,327409	0	0	315,351646	100,555987	0
0	48,9051927	0	0	631,476807	130,377017	0
0	81,2962567	0	0	438,378587	111,651359	0
0	65,5925586	0	0	624,287465	162,250484	0
0	0	0	0	449,147723	136,197443	0
0	62,6440246	0	0	402,545887	73,4335439	0

0	0	0	0	657,174841	134,902552	0
0	0	0	0	828,346917	214,428168	0
0	32,9163378	0	0	362,784718	64,8462096	0
0	24,4858929	0	0	238,60904	71,7605283	0
0	40,7361113	0	0	412,723122	118,828306	0
0	0	0	0	362,970523	186,186147	0
0	59,2552486	0	0	297,083515	61,6062069	0
0	79,6642842	0	0	206,437057	58,7657146	0
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0	89,4361416	0	0	848,037683	191,370988	0
0	68,5106856	0	0	483,086726	107,807958	0
0	60,6696772	0	0	445,981993	96,8632576	0
0	93,0532862	0	0	568,061465	93,5017169	0
0	64,8682076	0	0	302,032999	0	0
0	61,7127691	0	0	0	0	0
0	42,6320563	0	149,677279	440,481981	127,375824	0
0	55,7169681	0	0	370,09399	0	0
0	54,6937842	0	0	397,764136	97,5748189	0
0	72,6530985	0	178,624888	526,329326	106,732302	0
0	75,4857754	0	0	639,994544	122,498845	0
0	44,7353979	0	0	324,553735	92,4281092	0
0	49,9185052	0	0	0	0	0
0	75,4134048	0	0	360,62117	86,5219202	0
0	76,7607184	0	111,336737	408,122271	100,54814	0
0	62,4325355	0	0	417,851726	0	0
0	107,67719	0	0	425,733698	123,946947	0
0	73,3608325	0	0	438,115113	105,243283	0
0	62,3768172	0	114,205462	478,719719	86,4041185	0
0	65,5211077	0	0	206,222725	0	0
0	118,026669	0	0	419,688286	86,9683404	0
0	47,7153837	0	0	356,722861	98,2709266	0
0	55,9303677	0	0	576,998338	136,291727	0
0	66,3664663	0	0	748,793607	205,745549	0
0	260,560364	0	0	669,783935	211,211246	0
0	103,402909	0	0	612,203888	195,012857	0
0	94,5263435	0	0	589,095627	0	0
0	0	0	0	686,65985	199,10662	0
0	57,6296703	0	0	328,897337	0	0
0	86,4095839	0	0	812,081042	198,484536	0
0	36,2920171	0	0	216,780074	0	0
0	81,8899255	0	0	913,093806	137,434887	0
0	45,1905628	0	0	409,038966	0	0
0	102,118541	0	0	662,532898	146,42308	0
0	54,9807741	0	0	320,76082	70,5092298	0
0	57,8816469	0	0	408,277643	80,8662927	0
0	77,2329314	0	0	197,600819	0	0
0	77,5246847	0	0	207,407025	54,4694084	0
0	69,0666884	0	0	197,411944	0	0

29,3091577	56,8187277	0	0	606,415069	153,523608	0
0	41,5106587	0	0	136,800118	0	0
0	67,3770995	0	0	219,643837	58,2723313	0
0	80,2575059	0	0	499,206451	128,287276	0
0	80,3420731	0	0	213,321044	0	0
0	92,7714268	0	0	442,251055	139,441591	0
0	53,0553871	0	0	0	0	0
0	42,1701424	0	0	567,042204	124,248202	0
0	116,616419	0	0	677,420974	177,402177	0
0	75,8381289	0	0	607,63105	144,693284	0
0	46,9302581	0	0	282,240342	0	0
0	100,756086	0	0	325,592005	102,970908	0
0	62,6134552	0	0	413,300775	88,5351349	0
0	39,9414315	0	0	446,743453	68,4075044	0
0	35,7491935	0	0	296,227166	73,3793788	0
0	0	0	0	417,648625	81,7676905	0
0	74,2148766	0	0	631,806642	128,658502	0
0	37,5067016	0	0	382,697357	88,9328963	0
0	59,8588544	0	0	431,653111	123,341843	0
0	40,9367461	0	0	161,964894	0	0
0	41,9655218	0	120,435206	490,565982	140,35809	0
0	51,1230359	0	0	838,589648	156,368004	0
0	136,665862	0	0	180,008079	70,0514059	0
0	53,9084497	0	0	528,037596	134,172256	0
0	60,5659089	0	0	300,426659	75,0720433	0
23,8969268	49,339499	0	0	702,923391	161,305802	0
0	37,2049583	0	0	294,918646	84,4803819	0
0	55,4167406	0	0	424,606548	123,885131	0
0	90,1857057	0	0	383,589077	122,73348	0
0	46,1054896	0	0	188,818804	0	0
0	46,3058725	0	0	300,26197	0	0
0	52,2241104	0	0	287,675931	0	0
0	33,0423915	0	0	381,948989	0	0
0	42,0883254	0	0	407,863759	107,165877	0
0	42,2941293	0	0	488,507669	132,560306	0
0	33,242477	0	0	0	32,5918559	0
0	42,3391875	0	0	380,806742	128,27289	0
0	0	0	0	582,357628	189,840553	0
0	48,3049403	0	0	171,639288	47,3750241	0
0	69,2174561	0	0	677,355982	166,780215	0
0	58,7739916	0	0	278,133941	0	0
0	41,8526414	0	0	229,780162	53,1297378	0
0	80,4813926	0	0	800,797269	175,668435	0
0	80,6951447	0	0	233,916286	0	0
0	111,578757	0	0	476,221222	105,526941	0
0	43,9752968	0	0	260,280139	0	0
0	166,646824	0	0	644,007457	148,221808	0
0	45,9512055	0	0	85,0198781	42,8959597	0

0	112,665689	0	0	212,95932	0	0
0	97,532276	0	0	358,294437	0	0
0	79,5142924	0	0	406,174163	83,8281434	0
0	47,5923824	0	0	407,795917	94,3662543	0
0	49,2276765	0	0	171,767863	0	0
0	132,800671	0	0	346,949518	79,1731657	0
0	72,4722383	0	0	290,692599	96,463941	0
0	81,1017046	0	0	332,434548	93,8159285	0
0	56,5237748	0	0	763,41393	187,666789	0
0	89,3646445	0	0	590,376501	115,281117	0
0	91,082361	0	0	389,78479	89,4172438	0
0	129,573425	0	0	329,985787	97,7708896	0
0	46,6232461	0	0	196,880805	0	0
0	45,366551	0	0	403,683499	0	0
0	66,3755409	0	0	459,591159	95,0184954	0
0	45,724117	0	0	170,84586	0	0
0	89,6368903	0	0	165,6533	0	0
0	143,888242	0	199,957488	869,528124	166,673262	0
0	58,4195696	0	0	334,962613	77,88787	0
0	160,834306	0	0	308,10786	0	0
0	65,4607565	0	0	751,764056	169,848038	0
0	42,9509792	0	0	366,518172	0	0
0	53,6128972	0	0	311,405641	0	0
0	43,488263	0	0	311,524151	72,6823954	0
0	129,223675	54,2842844	0	379,162913	0	0
0	45,9949703	0	0	638,511776	142,962239	0
0	76,6236434	0	0	543,633104	134,38781	0
0	56,780268	0	0	410,111321	88,8364401	0
0	89,8557473	0	0	664,881245	146,385697	0
0	65,6095959	0	0	325,004874	92,3918261	0
0	64,189555	0	0	362,695036	112,50236	0
0	99,81441	0	0	677,336411	207,608701	0
0	72,5417783	0	0	676,974385	124,933631	0
0	33,7260938	0	0	0	0	0
0	0	0	170,859548	916,441488	144,643917	0
0	60,2020894	0	0	955,374407	205,287079	0
0	60,126751	0	147,259404	586,031556	134,98836	0
0	50,5304444	0	0	590,228621	94,0311479	0
0	0	0	0	52,0106155	0	0
0	76,5933012	0	0	522,312631	0	0
0	69,4236982	0	0	0	0	0
0	91,2039685	0	0	263,143027	0	0
0	89,7152875	0	0	357,587472	93,1100879	0
0	50,087254	0	0	172,04479	57,3944781	0
0	107,074821	0	212,129075	860,610463	147,588025	0
0	100,550831	0	0	680,337989	183,021296	0
0	86,3517885	0	0	453,095941	125,948933	0
0	53,6149686	0	0	112,583546	0	0

0	53,061075	0	0	795,381802	145,338189	0
0	82,3247844	0	0	463,267764	112,200233	0
0	119,88688	0	0	275,129401	0	0
0	39,4733521	0	0	318,550338	91,8083184	0
0	125,210369	0	0	587,165208	120,274923	0
0	53,7505352	0	0	208,130454	0	0
0	90,4659876	0	0	486,736667	123,705278	0
0	32,9832421	0	0	111,660338	0	0
0	59,4122537	0	0	204,341171	60,198289	0
0	57,4581534	0	0	446,626285	83,0356548	0
0	72,6427085	0	0	680,045473	139,061299	0
0	41,2562488	0	0	311,693657	76,1165369	0
0	45,8031137	0	0	0	0	0
0	61,9593931	0	0	190,329365	0	0
0	27,820394	0	0	184,503444	0	0
0	52,3004505	0	0	375,670221	0	0
0	92,0099027	0	0	654,031907	178,121004	0
0	50,6028936	0	0	241,359909	68,1475205	0
0	96,6996262	0	0	1221,52642	276,153272	0
0	100,529603	0	0	229,691428	75,3485762	0
0	70,6409648	0	0	417,766645	86,3915688	0
0	0	0	0	749,980789	100,606549	0
17,2069224	42,1458652	0	0	402,425203	92,6516398	0
0	38,780778	0	0	276,510916	61,7756214	0
0	118,574777	0	0	204,787121	0	0
	77,8155569	0	0	551,348	146,411058	0
	0	0	0	584,351496	98,3851751	163,768199
	0	0	0	655,394596	159,174818	0
	66,9136616	0	0	262,754166	114,66533	0
	0	0	0	223,866003	0	0
	0	0	0	657,870319	127,312221	0
	0	0	0	683,491447	148,891811	0
	0	0	0	189,54564	63,3448667	0
	0	0	0	395,709344	89,4285919	0
	72,0474203	0	0	354,777656	134,498484	0
	0	0	0	798,18286	110,058991	0
	0	0	0	816,797972	164,978644	0
	62,0679842	0	0	246,145706	0	0
	42,2451033	0	0	402,798652	118,068562	0
	0	0	0	375,939258	81,3907521	0
	73,2576682	0	0	575,777079	112,434356	0
	0	0	172,664765	728,44543	150,641606	0
	0	0	87,0853868	229,805246	54,7874422	0
	58,3247509	0	0	821,521329	170,19565	0
	0	0	0	445,119559	132,852861	0
	0	0	0	1203,06517	193,472707	0
	0	0	0	430,728753	100,005034	0
	0	0	140,654108	559,702985	98,4586237	0

0	0	0	1262,0513	302,527407	0
0	0	0	272,363463	80,6691267	0
0	0	0	417,345459	0	0
0	0	0	184,095319	0	0
0	0	0	428,331654	136,232972	0
0	0	0	0	0	0
0	0	0	550,465752	75,2214165	0
0	0	150,524199	637,342792	83,5477363	0
54,2127109	0	0	525,381658	0	0
0	0	92,0349578	287,666066	69,0998906	0
0	0	163,738088	408,686725	0	0
0	0	0	515,450953	139,340086	0
0	0	0	0	0	0
0	0	0	747,04647	120,460805	0
0	0	0	0	0	0
50,6970556	0	229,396904	482,678546	144,92934	0
0	0	0	282,097753	79,5044409	0
57,2719657	0	0	783,995386	147,044834	0
34,0452403	0	118,916675	351,403317	104,054585	0
27,2978745	0	0	297,861423	85,5799138	0
0	0	0	351,000926	78,7450004	0
0	0	0	0	0	0
0	0	0	0	0	0
49,3158893	0	0	334,162295	0	0
0	0	0	503,892186	105,068894	0
43,3701986	0	0	266,482122	62,3666447	0
34,9370006	0	0	318,108873	68,2292803	0
51,1882979	0	0	396,649173	106,690111	0
0	0	0	693,084011	122,286448	0
0	0	0	236,417865	80,7182818	0
0	0	0	355,219304	97,1303087	0
0	0	0	179,829154	0	0
0	0	0	947,1749	175,625761	0
0	0	0	500,064549	102,840797	0
0	0	0	201,719137	56,3871642	0
29,641839	0	0	214,387021	58,0604082	0
0	0	0	531,918848	121,753612	0
0	0	0	103,684749	0	0
0	0	0	929,448636	185,157329	0
3692,93668	8787,22977	0	0	0	0
0	0	0	331,395801	0	0
0	0	0	382,67165	106,805441	0
0	0	0	483,162141	114,4878	0
0	0	0	661,698336	146,565086	0
0	0	0	637,13737	156,488451	0
92,6919788	0	0	326,187888	76,2831348	0
0	0	181,755217	828,996569	154,387686	0
0	0	0	342,775396	94,6019312	0

0	0	115,705816	456,914644	94,476813	0
0	0	92,4798646	345,005987	78,8351032	0
0	0	0	220,485874	0	0
0	0	0	0	0	0
0	0	0	0	0	0
29,7090136	0	0	288,34745	74,5271638	0
35,0114918	0	0	345,609952	116,6648	0
68,9102883	0	0	799,920894	192,61969	0
0	0	0	241,393432	67,3264419	0
0	0	0	174,413158	60,2231011	0
0	0	0	515,211439	126,540478	0
0	0	0	0	0	0
0	0	0	705,087999	134,350674	0
0	0	0	474,455918	103,385414	0
52,297939	0	0	377,113456	110,547837	0
0	0	0	380,350464	72,878719	0
64,1864284	0	0	431,932485	112,26126	0
0	0	0	177,400941	51,0383366	0
0	0	0	280,470916	0	0
0 45,4710907	0	0	249,58813	0	0
0 72,5945342	0	129,990223	377,919174	0	0
0 72,9596426	0	0	243,258263	62,9240373	0
0 70,3742633	0	0	829,803959	186,063885	0
0 69,5842778	0	0	346,475822	0	0
0 39,4245037	0	0	478,654879	118,350017	0
0 44,3450974	0	0	524,27636	0	0
0 87,0736997	0	78,2695402	188,109478	0	0
0 78,8884559	0	0	0	0	0
0 62,6098169	0	0	0	0	0
0 77,103718	0	0	510,21175	136,168893	0
0 72,3507459	0	0	328,726038	92,7835178	0
0 67,9790102	0	0	320,179063	77,8571395	0
0 37,2564345	0	0	172,426276	0	0
0 63,2640958	0	0	385,75921	92,0451214	0
0 9,62867611	0	0	0	0	0
0 59,3621117	0	0	345,639749	0	0
0 97,1338723	0	0	804,819874	135,110074	0
0 71,5781608	0	0	280,239646	74,7692482	0
0 57,1936101	0	0	149,225889	0	0
0 88,2816703	0	0	443,550966	109,927903	0
0 59,6304402	0	0	0	79,174799	0
0 56,8547515	0	0	249,006332	50,8157946	0
0 75,1834938	0	0	257,86549	57,5873286	0
0 59,0798615	0	0	530,95228	105,794207	0
0 55,646559	0	0	240,166405	57,8734842	0
0 51,3396695	0	0	0	0	0
0 82,2241712	0	0	347,849308	93,3818215	0
0 80,7596671	0	0	215,186598	62,3111861	0

0	55,3324351	0	0	516,689556	0	0
0	71,8524458	0	0	184,534683	0	0
0	61,3677524	0	0	159,380268	63,0051721	0
0	50,8221484	0	0	457,058458	99,2247619	0
0	65,4051952	0	0	449,436125	0	0
0	42,0305299	0	0	190,446812	0	0
0	59,6967357	0	0	442,247866	110,854076	0
0	0	0	0	581,01836	114,528103	0
0	75,7877382	0	0	245,605004	96,4099645	0
0	51,4823355	0	0	233,99567	79,1420754	0
0	63,9512463	0	0	0	0	0
0	34,6662806	0	0	231,426978	64,2171379	105,147648
0	33,8113078	0	0	221,297681	58,9878245	0
0	75,1643285	0	0	901,250441	201,57156	0
21,1017284	55,7387019	0	0	532,933827	112,080051	0
0	50,6693787	0	0	227,317542	63,632324	0
0	53,8645365	0	0	375,409116	90,7630406	0
17,814849	41,3758206	0	0	0	0	0
0	0	0	0	519,309982	141,736074	0
0	47,6925744	0	0	490,8587	109,001202	0
0	105,688392	0	0	512,897592	107,908814	0
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0	79,7423284	0	0	285,715527	85,410373	0
0	112,716517	0	0	265,84419	75,1161556	0
0	77,8004662	0	0	465,294766	98,1240079	0
0	86,4869846	0	0	523,570486	129,420667	0
0	51,0374558	0	0	283,351751	0	0
0	73,9109842	0	0	380,046645	75,258767	0
0	73,0939043	0	0	440,723206	117,785452	0
0	77,0137587	0	0	758,908347	169,5315	0
0	91,5725807	0	0	681,04478	148,584324	0
0	79,611996	0	0	272,392562	67,471747	0
0	87,3202826	0	0	396,04286	78,3296821	0
0	55,2555753	0	0	385,983821	90,8427882	0
0	88,0600461	0	0	167,875742	0	0
0	44,1391128	0	0	180,203984	70,8338587	0
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0	32,7746164	0	0	262,667677	60,8615487	0
0	59,7511941	0	0	304,505779	78,9687424	0
0	57,5320877	0	0	697,332004	147,738594	0
0	0	0	0	0	0	0
0	49,7135255	0	0	298,516386	95,1892212	0
0	58,991549	0	0	383,280527	0	0
0	67,7926389	0	0	801,543422	156,992184	0
0	45,3881899	0	0	0	0	0

0	40,5245968	0	0	214,382177	0	0
0	55,4567777	0	0	780,862166	174,417692	0
0	64,4068516	0	0	412,069722	74,6507648	0
0	50,7379454	0	0	391,882348	89,6157835	0
0	32,9959891	0	0	127,217328	0	0
0	64,3459623	0	0	274,537708	0	0
0	42,2736434	0	91,625312	109,289944	0	0
0	52,3013778	0	0	391,774284	77,3372183	0
0	41,9656642	0	0	439,58408	86,5310536	0
0	165,508471	0	0	380,487184	116,422462	0
0	85,5045668	0	0	320,861287	100,371731	0
0	58,0823568	0	0	627,480515	142,777763	0
0	86,753458	0	0	143,465569	0	0
0	49,9822947	0	0	434,672259	98,8688051	0
0	36,7835391	0	0	221,717447	0	0
0	105,080849	0	0	268,803699	81,2681255	0
0	88,2295146	0	0	788,758624	133,404315	0
0	63,0352135	0	0	522,428932	93,8845972	0
0	67,7265971	0	0	596,876178	116,052698	0
0	47,1902889	0	0	700,949082	118,20036	0
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0	81,9102635	0	0	235,999009	62,9757634	0
0	105,466439	0	0	341,750843	82,5480466	0
0	63,0124738	0	0	540,93781	141,779068	0
0	51,5751488	0	0	271,878907	54,0810567	0
0	62,3554105	0	0	522,998059	146,591847	0
0	27,7246031	0	0	333,213833	76,6975802	0
0	62,3521038	0	0	875,415018	174,185835	0
0	79,5456607	0	0	703,744446	131,820638	0
0	56,9741936	0	0	124,043326	0	0
0	64,4488945	0	0	260,665505	0	0
0	105,810081	0	0	282,670394	70,126654	0
0	76,3297794	0	0	887,928291	208,630262	0
0	73,7027558	0	0	674,90174	165,792723	0
0	107,247262	0	0	322,398431	0	0
0	55,5606432	0	0	286,152127	0	0
0	57,2992184	0	0	821,177164	153,906675	0
0	127,692383	0	0	330,170478	0	0
0	76,7625515	0	0	262,343817	80,4982124	0
0	56,216686	0	0	338,896049	66,741976	0
32,0745718	51,0515072	0	0	0	81,5572927	0
59,1843273	3535,60195	8025,09165	0	0	0	0
23,2967383	49,1574018	0	0	275,296975	0	0
35,0571872	54,0064342	0	214,891323	658,789726	114,587344	0
0	54,6270542	0	0	366,532869	0	0
0	100,622682	0	0	373,224046	71,985353	0
30,4410477	134,721679	0	0	658,423431	163,054976	0

0	46,3638013	0	0	419,579848	183,825995	0
0	74,7375762	0	0	573,158832	105,999564	0
0	67,3701468	0	0	800,652055	161,658102	0
0	47,5305009	0	0	454,616592	77,7419268	0
0	41,7665067	0	0	650,069229	144,881789	0
0	95,4841174	0	0	721,526499	158,435825	0
0	50,4085879	0	0	132,863861	0	0
64,7754041	76,7616782	0	305,235569	990,043117	209,738462	0
0	74,5076889	0	0	1128,91725	232,702015	0
0	0	0	0	407,5194	113,799927	0
0	62,2339734	0	0	565,608784	150,781158	0
0	57,0197674	0	0	929,953463	199,76601	0
0	79,8501246	0	0	496,321407	86,7188572	0
0	47,368198	0	0	511,854114	96,3089608	0
0	62,2540255	0	0	433,169857	119,464804	0
0	113,751331	0	0	404,533966	0	0
0	77,440761	0	0	515,668913	135,635353	0
0	181,420617	0	0	0	0	0
0	88,7419401	0	0	266,808055	69,9724502	0
0	30,5935148	0	0	0	0	0
0	73,1842005	0	0	155,197156	79,7106307	0
0	41,4191216	0	0	214,012412	55,5230986	0
0	41,9711114	0	0	288,356677	77,1023606	0
0	78,9541256	0	0	361,410023	0	0
0	97,0779472	0	0	428,036495	84,4155425	0
0	63,5417264	0	0	0	59,746621	0
0	59,2793657	0	0	182,678501	73,6161091	0
35,5615207	169,442625	65,0805987	0	0	95,7549616	0
0	73,2809565	0	0	132,627731	0	0
0	31,5320265	0	123,227699	186,1142	0	0
0	57,5362635	0	0	268,686509	74,1644784	0
0	49,2264912	0	0	0	0	0
0	87,3246957	0	0	251,150095	73,9282651	0
0	51,913282	0	0	322,113381	69,0235175	0
0	73,9145165	0	0	413,972071	111,860235	0
0	46,1221846	0	0	0	0	0
0	47,7906531	0	0	0	0	0
0	72,9134119	0	0	0	55,6059127	0
0	63,5285651	0	0	0	68,5209103	0
0	54,7926841	0	0	0	0	0
0	33,6640838	34,399403	0	0	0	0
0	69,7601582	0	0	309,169968	0	0
0	79,3106745	0	0	183,224001	0	0
0	163,24383	0	0	500,037861	0	0
0	129,149979	0	0	467,35432	0	0
0	76,7858436	0	0	285,669339	102,850021	0
0	62,9803094	0	0	0	99,2669723	0
0	57,2328138	0	0	348,084656	93,6277121	0

0	47,6594432	0	0	445,143369	0	0
0	0	0	0	359,368314	67,8730968	0
0	0	0	0	483,50498	85,0165319	0
0	46,3702572	0	96,0522454	269,980759	69,0981041	0
0	48,745866	0	0	307,940539	0	0

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Supplementary Table 6: Activities of de novo signatures in ccRCC cases

Sample	SBS_A	SBS_B	SBS_C	SBS_D	SBS_E
PD37458a	2066,939962	1466,558222	1029,446214	0	0
PD37459a	1690,289566	0	0	0	0
PD37461a	766,2892467	0	1190,732665	228,3584372	657,2326955
PD37462a	1547,408293	0	1242,06996	0	0
PD37463a	1861,67268	0	2591,077344	8292,082872	0
PD37464a	575,6001574	0	1192,959822	983,4371307	0
PD37466a	0	1317,980896	1423,617497	1839,388841	972,3947291
PD37467a	1107,605545	837,281499	0	0	0
PD37468a	4786,139753	2033,492295	1437,669834	0	0
PD37469a	1391,304264	0	0	0	986,4545949
PD37470a	2993,130443	0	0	0	0
PD37472a	1549,5298	1755,359132	1787,287178	299,9835511	0
PD37473a	1888,792607	0	0	0	0
PD37474a	1049,307411	0	700,663087	0	767,1485895
PD37475a	1327,64361	892,9579481	1254,374786	0	0
PD37476a	1369,399725	0	555,1355197	0	0
PD37478a	886,1412531	1010,630319	796,9918588	168,3581329	0
PD37479a	2934,275322	0	1852,048831	0	1259,56237
PD37480a	709,0789622	966,9365855	978,5572953	0	953,0213075
PD37481a	1980,225871	0	1455,731696	0	0
PD37482a	0	0	0	0	850,4293315
PD37483a	986,116575	0	1106,605814	0	1369,211322
PD37484a	0	0	1862,388886	4948,370293	0
PD37485a	1130,536592	0	0	0	0
PD37486a	414,3876132	1177,14235	0	0	0
PD42572a	0	2516,607279	0	4841,893319	0
PD42573a	0	863,1978196	0	0	764,7344522
PD42574a	672,5280849	0	953,2639371	494,8253751	1683,646961
PD42576a	1109,834697	0	2176,54652	1550,3825	0
PD42578a	1269,219281	1624,92446	0	0	0
PD42580a	999,2193387	0	0	0	0
PD42585a	1522,127053	0	2366,695041	1944,890562	1785,418905
PD42586a	669,4316975	0	0	0	0
PD42587a	0	0	1821,399195	5514,016816	0
PD42590a	0	0	2414,673395	631,5936127	0
PD42591a	0	0	0	32005,45774	0
PD42592a	992,8063179	1509,227007	0	0	0
PD42593a	0	0	1120,249969	320,6336534	853,0418874
PD42595a	1045,551696	0	681,9160685	0	791,3838932
PD42596a	821,4877975	0	0	0	0
PD42671a	1290,794592	1133,357431	1483,869336	0	0
PD42672a	1114,24313	0	850,0223657	0	0
PD42673a	2368,467652	0	832,5197763	0	0
PD42674a	0	774,756799	781,5675784	0	0
PD42675a	1150,28662	0	0	0	953,3358229
PD42676a	815,8535301	1228,622714	0	0	0
PD42677a	0	0	0	423,9090472	796,1850996

PD42876a	1772,985118	0	0	2922,23114	0
PD42882a	623,9415128	0	2732,041668	608,9952065	0
PD42884a	1309,895711	0	0	2031,852997	1220,020259
PD42885a	664,4111179	0	0	5248,032759	0
PD42886a	0	1528,406667	1288,726357	1716,735127	0
PD42887a	1844,941607	0	0	3996,459719	0
PD42890a	2641,055145	1745,597268	2933,909184	4898,874387	0
PD42891a	1093,49145	0	0	0	0
PD42893a	0	1249,314149	0	0	0
PD42894a	3040,908156	0	0	8818,93313	0
PD42895a	2114,602915	0	0	1056,262658	0
PD42896a	1100,902846	0	1957,655234	1850,837348	0
PD42897a	0	0	2481,350944	2925,508782	0
PD42898a	0	0	0	22592,43569	0
PD42899a	0	0	1899,760078	16283,55919	0
PD42900a	1255,899148	0	0	1057,565328	0
PD42901a	698,8472524	1530,362632	0	296,1429147	0
PD42902a	891,0827759	0	0	0	714,6691986
PD42903a	805,7604881	0	996,2934478	1663,547494	0
PD42904a	1058,303255	0	1657,492504	746,6689064	0
PD42905a	0	0	2760,892617	8678,905641	0
PD42906a	0	0	0	2545,674165	0
PD46699a	1293,696072	1112,852627	917,7587775	0	0
PD46700a	410,0354761	710,9220777	583,205989	0	750,4089163
PD46701a	1477,182012	0	0	0	0
PD46702a	1590,8754	0	0	0	0
PD46703a	2258,550146	1268,970227	1221,031226	0	0
PD46704a	570,0127975	0	812,1927204	0	0
PD46705a	1634,088583	0	0	7923,631335	0
PD46706a	1233,287873	1141,036597	1450,351371	0	0
PD46707a	1210,824621	0	663,8408096	0	889,4196922
PD46708a	1699,8223	1104,231432	1708,1454	0	0
PD46709a	0	0	0	0	0
PD46710a	1289,538778	851,4443682	860,7542954	0	0
PD46711a	1701,163792	0	0	0	0
PD46712a	1515,459752	881,7022621	0	0	0
PD46713a	2235,891918	1098,772043	1815,218888	0	0
PD46714a	1992,01779	1280,954287	831,8605622	0	0
PD46716a	2592,483006	0	0	0	0
PD46717a	1907,252003	0	1260,931094	0	0
PD46718a	356,931182	522,3386958	0	0	0
PD46719a	393,2917624	663,8962983	770,5202552	150,2260851	729,9715276
PD46720a	0	1818,662132	0	0	0
PD46721a	0	1270,752012	0	0	0
PD46722a	0	0	1203,652737	0	1076,593842
PD46723a	768,2065448	1828,735759	0	0	0
PD46724a	0	903,8944176	0	0	0
PD46725a	0	1022,288753	0	0	0
PD46726a	916,3358281	1562,793126	816,9543446	0	0
PD46727a	0	0	742,1789392	0	0

PD46728a	583,8776174	1010,111168	0	0	0
PD46729a	650,0896406	1306,220859	0	0	0
PD46730a	0	516,4743114	0	0	0
PD46731a	815,311866	946,4729271	1371,612279	0	0
PD46732a	815,2840865	0	0	0	1597,746212
PD46733a	0	1410,59088	0	0	721,7064243
PD46734a	1128,076015	0	1090,075339	455,4619963	1071,979839
PD46735a	0	651,219691	653,1732386	0	0
PD46736a	0	1629,033113	0	229,1976509	871,1264167
PD46737a	513,7090318	744,3806757	0	0	0
PD46738a	0	663,0751011	870,1866363	0	0
PD46739a	657,1460089	1059,223293	635,8640868	0	0
PD46743a	2713,727667	0	1758,34713	0	0
PD46744a	479,6888871	0	0	0	1117,291604
PD46745a	1121,050347	1147,689733	0	0	0
PD46748a	1588,535603	1486,890009	0	0	0
PD46749a	0	0	4050,491216	0	0
PD46750a	401,3815909	1003,13866	561,8053577	0	0
PD46752a	0	2028,905339	782,8042737	0	0
PD46753a	0	587,8213322	0	0	0
PD46754a	1248,502861	0	0	0	871,2680819
PD46755a	630,1995803	1224,022855	823,3452861	0	0
PD46757a	431,8415839	810,2713929	0	197,3590339	0
PD46763a	3732,400889	0	1672,589007	0	0
PD46764a	0	1208,706114	0	0	891,0018315
PD46766a	624,2232611	0	0	0	871,2667113
PD46767a	852,4403032	0	0	0	0
PD46768a	1460,646468	0	0	0	560,0252691
PD46769a	743,7016176	1044,799002	0	0	0
PD46770a	1419,450317	0	0	0	0
PD46771a	1332,077067	0	1722,308919	0	0
PD46772a	2154,61195	0	0	0	0
PD46773a	0	1590,465179	1357,940209	1603,066246	0
PD46774a	0	0	2893,038668	6236,388467	0
PD46775a	2750,572545	0	0	2640,290516	2059,856781
PD46776a	0	1215,0694	1306,653598	2146,135069	0
PD46777a	1818,03158	1463,145189	0	406,3750461	0
PD46779a	0	0	0	0	355,1711577
PD46781a	491,952797	0	0	0	571,8924455
PD46783a	0	1045,574618	0	0	1160,971534
PD46784a	0	572,663578	0	0	523,1538653
PD46785a	561,3951186	1593,514946	0	0	0
PD46786a	0	0	0	0	0
PD46787a	615,3018015	898,0215791	1634,950397	0	0
PD46789a	1983,762956	1138,851801	0	0	0
PD46790a	0	0	0	0	925,1405921
PD46791a	602,0910531	1927,634301	842,0214522	0	0
PD46793a	1332,315855	1061,247026	0	0	1279,535758
PD46798a	1517,464363	0	0	0	0
PD46799a	464,7211573	0	0	0	0

PD46800a	344,8044202	668,2780383	0	0	0
PD46801a	803,629049	1005,306399	2762,94625	0	0
PD46806a	2884,423625	1300,960549	0	0	0
PD46807a	844,5367272	0	0	0	0
PD46809a	647,12654	0	735,8886454	0	0
PD46810a	0	0	410,5237685	0	0
PD46811a	577,1332625	986,3125498	2031,250876	249,2113144	930,7524672
PD46812a	2560,305678	0	0	0	0
PD46815a	1100,283384	0	0	0	812,3470756
PD46817a	525,2990444	1145,484369	0	0	0
PD46819a	700,8056585	0	617,9466033	0	0
PD46820a	0	0	0	0	0
PD46821a	0	683,0761138	0	0	0
PD46822a	0	872,515235	741,5473649	0	861,9862871
PD46824a	1220,172482	1235,06389	0	0	0
PD46826a	761,2852712	0	904,4333635	206,5254201	0
PD46827a	932,1095017	1099,748647	1540,12169	0	0
PD46828a	0	0	677,055247	0	835,3721834
PD46829a	1275,172634	1275,277827	0	0	0
PD46830a	620,3853939	956,2320639	718,7035021	0	0
PD46831a	3063,60952	1578,587832	1946,34548	0	0
PD46832a	2600,528187	0	0	0	0
PD46833a	703,2501963	0	620,0025365	0	681,0819117
PD46834a	560,241636	999,2664749	0	0	0
PD46835a	662,7696951	750,6916617	0	0	0
PD46836a	0	0	1612,761465	0	755,8917835
PD46838a	0	0	0	0	0
PD46839a	410,5586876	0	0	0	522,2810447
PD46841a	1883,047781	0	2609,33448	0	0
PD46842a	2847,506506	0	0	0	1064,792129
PD46844a	770,9306829	1070,555323	0	0	0
PD46845a	1768,613125	2725,138439	0	0	0
PD46846a	919,7872469	1377,221077	0	0	0
PD46847a	1240,800535	0	1362,460745	0	0
PD46848a	735,0438926	0	858,1209724	0	998,9503635
PD46849a	1434,888808	798,3582493	0	228,5999637	0
PD46850a	659,1314873	1129,824875	0	0	0
PD46851a	723,5403965	0	1528,664965	0	772,9783251
PD46852a	1946,337285	0	699,7461506	0	906,5384113
PD46853a	529,127034	0	0	0	0
PD46854a	1111,238363	1239,409038	1166,6725	0	1608,207628
PD46855a	1789,264307	0	1556,877137	226,3766683	0
PD46856a	0	2276,641309	0	0	0
PD46857a	0	0	1132,856627	0	830,4830608
PD46858a	347,8949279	0	0	0	889,8746737
PD46859a	1103,065821	1116,24324	0	0	0
PD46860a	1182,239338	0	896,579901	0	0
PD46861a	0	633,9689793	668,1046924	412,735813	702,376737
PD46862a	869,9636152	0	728,1712769	396,1344319	0
PD46863a	0	0	1254,705524	0	921,7241718

PD46864a	0	1479,712051	0	0	1138,431833
PD46865a	1431,87695	1828,993868	1214,745691	0	0
PD46866a	1216,740206	0	1574,232806	0	0
PD46868a	1090,481234	0	2277,241921	0	0
PD46869a	734,1130177	0	0	0	0
PD46870a	744,7882583	0	0	0	0
PD46871a	1163,660337	0	909,3494632	0	1265,36628
PD46872a	1117,087451	878,3047508	0	196,0511174	1261,364212
PD46873a	0	0	0	0	427,3831501
PD46874a	3435,632064	0	1182,203464	0	0
PD46875a	0	980,1866924	864,4549833	0	1395,948245
PD46876a	661,6814931	0	0	0	0
PD46877a	0	417,066771	0	0	0
PD46878a	587,7720436	0	544,3333768	0	0
PD46879a	742,5329938	0	1083,734638	0	1059,047874
PD46882a	589,3104567	0	620,987487	0	760,6778387
PD46884a	0	1408,98001	892,3434228	0	962,791291
PD46885a	2013,095018	1168,057673	1156,539737	0	1158,026157
PD46886a	1152,234644	0	726,4366665	0	0
PD46887a	1362,107792	0	1528,054604	0	0
PD46888a	519,711352	599,5818581	0	0	0
PD46889a	0	1679,24217	0	0	0
PD46891a	0	969,1205523	0	0	0
PD46892a	2623,931747	0	755,4173629	0	0
PD46901a	1643,749267	853,8040792	1117,719004	0	0
PD46902a	718,0341911	1164,812197	690,3026864	0	0
PD46903a	716,0786593	0	1372,725969	0	0
PD46904a	0	0	649,3089895	368,593629	0
PD46905a	623,7137639	0	1038,354569	0	0
PD46907a	418,8816912	0	0	0	527,2800349
PD46909a	1595,839155	1766,252989	0	0	0
PD46911a	358,9058972	0	0	0	0
PD46912a	694,6990349	0	0	0	0
PD46913a	1505,518722	1167,316649	1786,633614	0	0
PD46914a	679,130768	0	531,4368216	0	0
PD46916a	621,9077282	0	1509,931641	0	0
PD46917a	1039,13024	0	0	0	0
PD46918a	648,2358857	0	612,6895526	0	1007,939418
PD46919a	321,5894964	0	0	0	0
PD46920a	0	560,0422896	0	0	535,0340575
PD46922a	1170,37396	0	0	0	0
PD46923a	780,6959184	0	0	0	1421,32068
PD46924a	796,8734153	0	0	0	1306,329848
PD46925a	0	865,2237572	0	0	700,4641611
PD46926a	0	1163,99402	0	0	0
PD46928a	1743,526852	1252,626027	1127,611013	0	0
PD46929a	535,4604216	853,0356168	708,7142252	0	0
PD46930a	0	0	0	0	0
PD46931a	567,6690238	0	506,3418825	0	0
PD46933a	0	0	0	0	754,6375793

PD46934a	522,1333694	907,5197196	1696,990773	0	0
PD46935a	0	1240,573426	620,6331439	0	801,4199631
PD46936a	1024,794272	1308,910713	0	0	0
PD46937a	278,1028211	0	0	0	0
PD46938a	643,6203104	1887,91026	1056,053589	0	0
PD46939a	0	916,5565356	0	0	0
PD46940a	600,1529091	1003,368373	867,8148867	0	0
PD46941a	753,0426709	1080,764967	802,7858349	0	0
PD46942a	429,4780946	0	0	0	0
PD46943a	2158,185251	0	1455,10426	0	0
PD46947a	724,3709383	1828,389409	0	0	0
PD46948a	460,3361568	752,1305931	772,1774332	0	796,449928
PD46949a	1316,160285	0	961,7093346	0	1499,805647
PD46950a	3200,552688	0	2161,819751	0	0
PD46951a	1347,039262	0	894,2400991	0	787,6409773
PD46953a	0	0	0	33451,5487	0
PD46954a	0	0	0	1600,769022	0
PD46955a	874,7418815	0	1311,315502	2295,005639	0
PD46956a	1367,148724	0	0	5269,946567	1843,931301
PD46957a	0	0	0	7841,958186	0
PD46958a	0	0	0	8335,476205	0
PD46959a	1747,586392	0	0	0	1020,977304
PD46960a	0	2125,868902	2782,536691	0	0
PD46961a	495,7208853	0	1504,387811	0	1367,732797
PD46962a	1769,981012	1062,624455	1185,48443	0	1086,834948
PD46963a	1749,375989	2303,465868	2538,820822	0	0
PD46964a	625,679921	0	680,4648392	0	1133,986363
PD47583a	0	731,1545102	0	0	1106,286722
PD47584a	0	0	0	0	724,4414162
PD47586a	0	577,4871692	0	120,7945463	0
PD47587a	947,8769645	0	1325,423791	0	0
PD47589a	565,2685199	812,2538555	0	0	0
PD47590a	0	1232,912613	1476,644903	1988,734236	0
PD47591a	2400,340827	0	0	0	0
PD47592a	0	0	29683,93651	7247,652162	7610,455987
PD47593a	0	0	1491,713865	2582,02181	0
PD47596a	2710,081994	1216,934141	1246,453811	422,7296428	0
PD47597a	0	935,1681018	0	369,0803708	870,6401722
PD47598a	789,2613932	989,7720073	940,0691825	0	0
PD47599a	524,4926236	0	1201,552377	0	1100,667813
PD47600a	2522,253159	875,1999909	0	0	0
PD47601a	439,3589702	0	0	0	0
PD47605a	889,9676783	0	0	0	905,2473607
PD47606a	0	0	1940,954782	0	1100,028102
PD48850a	877,4731767	1955,259011	1633,414653	0	0
PD48851a	653,8616538	0	2242,394792	0	0
PD48852a	0	1494,82319	0	0	0
PD48855a	0	0	0	0	1067,683433
PD48858a	1576,002883	0	1020,998411	0	1608,121433
PD48859a	893,3545509	0	0	0	930,9244432

PD48861a	1305,235388	0	3222,158928	0	0
PD48864a	665,9114644	1272,28566	0	0	0
PD48865a	0	0	831,288285	0	790,1207443
PD48866a	0	1650,765493	1232,20914	0	0
PD48867a	802,9640609	0	0	0	0
PD48868a	0	0	858,3945946	0	1047,893582
PD48869a	1922,393405	0	1165,861391	0	0
PD48871a	657,2681709	0	0	0	673,86028
PD48872a	1263,339395	0	615,0216556	0	0
PD48873a	0	0	558,8375495	0	790,65724
PD48875a	3215,479398	2153,179697	1373,898521	0	0
PD48877a	1586,91665	0	1058,089192	0	0
PD48878a	515,45646	0	0	0	0
PD48879a	0	0	814,5439539	243,1494708	0
PD48881a	0	1925,719776	0	0	0
PD48882a	811,1606328	0	0	1215,911864	1782,30708
PD48884a	1169,927253	1125,772437	0	1110,081548	1213,470445
PD48885a	804,0950096	0	0	0	613,0483941
PD48886a	354,3864231	0	0	0	565,1886573
PD48887a	0	0	0	15101,14285	0
PD48890a	1256,528427	0	2154,328838	1422,683206	0
PD48898a	795,6605541	1240,482151	0	0	0
PD48899a	0	847,3804754	0	0	0
PD48902a	1396,650003	0	1345,690259	0	1658,207358
PD48904a	389,059853	0	473,8064821	0	592,7435239
PD48906a	0	952,1030672	1001,979009	0	1289,201971
PD48907a	994,2051871	0	604,9713761	0	0
PD48909a	477,0053086	0	1171,240761	0	773,2576766
PD48911a	1871,98887	1490,51649	1859,382731	0	0
PD48913a	599,0084333	759,5199451	0	0	857,2249957
PD48914a	880,5115388	991,4200419	0	0	0
PD48915a	515,8786812	0	880,2388908	0	1043,979649
PD48916a	715,0193226	1125,931005	0	0	0
PD48919a	420,8635119	0	0	0	0
PD48920a	980,0296583	1740,742605	1269,957799	0	0
PD48922a	1285,887616	921,9527718	0	0	0
PD48924a	523,6512039	0	871,0273229	0	0
PD48929a	574,0038973	0	713,4573244	0	0
PD48931a	1218,031161	0	1735,577604	0	1010,387762
PD48932a	726,5999434	1869,119884	0	0	0
PD48933a	0	0	0	0	0
PD48934a	0	716,6861154	0	0	1506,188539
PD48935a	1068,326413	1189,875037	640,3001256	0	0
PD48936a	604,7452421	0	1007,220986	162,8873747	0
PD48937a	412,4351998	1210,964848	0	0	1038,092299
PD48939a	985,0960741	0	734,1036627	0	0
PD48940a	754,1193543	870,6204188	0	0	0
PD48942a	0	1362,937243	0	0	0
PD48943a	1190,013168	1493,335804	0	0	1147,806737
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PD48945a	0	941,2574325	667,3416258	0	0
PD48946a	383,0045055	0	0	0	1062,691276
PD48948a	550,3528305	0	0	0	0
PD48949a	0	2000,209327	0	0	0
PD48950a	0	0	1415,816059	0	1002,388672
PD50083a	708,2802261	1220,956826	1133,939169	0	0
PD50084a	351,6350711	0	0	0	608,903549
PD50085a	1308,958541	0	0	0	0
PD50086a	764,6650535	0	773,1616233	0	0
PD50087a	490,4448975	1341,951498	686,7859324	0	0
PD50089a	0	0	1428,653188	1904,145393	0
PD50090a	854,9997342	0	0	0	0
PD50092a	490,7522751	789,0368884	0	0	0
PD50094a	474,1111945	0	0	0	631,8710196
PD50095a	1004,501684	0	0	0	0
PD50096a	0	705,5615086	0	0	0
PD50097a	0	1195,511836	979,6658362	304,2122491	0
PD50099a	834,0191362	0	0	0	1160,081099
PD50100a	1692,323153	2031,310904	0	262,1973172	857,4006906
PD50101a	1219,251251	1099,859029	0	567,4955428	0
PD50102a	1034,064188	1057,985304	0	0	0
PD50103a	496,7302617	0	0	0	0
PD50105a	804,1977761	1770,940551	1372,917915	0	0
PD50107a	1406,374964	0	822,7700268	0	1725,315576
PD50110a	1667,992067	0	0	0	0
PD50111a	757,6250002	0	965,7540523	0	0
PD50114a	1068,702228	1332,961167	0	0	810,7157051
PD50115a	810,4086791	1179,735357	1173,85374	0	0
PD50116a	2265,19288	0	1785,731502	0	1324,206151
PD50119a	1288,500162	2148,83508	0	385,1764279	0
PD50120a	598,7603282	1204,143039	0	0	0
PD50122a	786,5422384	0	1043,819432	0	952,6564202
PD50123a	657,0038946	1644,962079	934,7878956	0	870,7179508
PD50124a	0	0	657,8847374	0	0
PD50127a	0	0	0	0	0
PD50129a	845,2967858	1196,945849	959,8733324	0	1360,980583
PD50131a	0	0	0	0	1196,449173
PD50132a	1487,73891	1379,825498	1120,151726	0	0
PD50135a	518,232888	1239,194724	0	0	902,9296535
PD50137a	497,5409781	0	0	0	417,0011706
PD50138a	647,5617974	1527,017682	867,6581315	0	0
PD50139a	1622,481634	0	0	0	0
PD50140a	774,1139792	0	801,3259227	0	1420,095421
PD50143a	0	0	0	0	310,5102483
PD50146a	0	731,1965605	900,410776	0	0
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PD50148a	0	0	747,0194281	0	0
PD50151a	560,3153545	0	0	0	774,8046127
PD50153a	519,9304007	0	0	804,1191174	1026,437223
PD50154a	410,0352482	697,9880312	0	0	0

PD50157a	0	0	651,163126	0	641,3694228
PD50160a	0	0	0	0	667,4932185
PD50161a	0	1044,742135	0	0	0
PD50162a	0	0	0	0	0
PD50163a	0	0	0	0	900,1429835
PD50164a	1005,935463	1229,118928	0	0	0
PD50165a	0	1930,718412	0	0	0
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PD50167a	0	1645,483738	1179,530998	595,2578968	0
PD50168a	0	0	1168,731046	302,1003522	0
PD50169a	528,9167599	0	0	0	1219,901409
PD50170a	0	795,7699242	0	0	1044,677357
PD50171a	997,2213021	912,3915513	0	0	0
PD50172a	455,9540731	562,2812867	0	0	0
PD50173a	2241,48441	0	0	0	1677,837976
PD50175a	2290,025453	1429,360568	0	0	0
PD50177a	498,1505301	0	0	0	1099,052597
PD50181a	1034,198362	0	1440,103154	0	0
PD50183a	1934,859126	1290,666362	0	0	0
PD50184a	353,8430307	806,6740576	0	0	850,4567397
PD50187a	686,2229154	1205,47276	0	0	0
PD50188a	1208,746109	0	1097,824553	0	0
PD50190a	1761,916269	2968,623097	0	0	0
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PD50196a	834,8473936	887,198616	0	0	0
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PD50200a	575,7947841	1533,624093	0	0	0
PD50201a	367,7457498	797,7844301	0	0	0
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PD50203a	0	708,174118	612,5839185	0	0
PD50207a	0	1619,899527	0	0	0
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PD50210a	0	0	0	0	468,3348036
PD50212a	0	0	0	0	0
PD50213a	0	1167,966231	853,2602427	0	1170,038303
PD50214a	632,0273917	0	687,1764835	211,2015038	0
PD50215a	675,2328675	1125,483472	0	0	0
PD50216a	608,4055442	0	0	0	0
PD50217a	0	1670,898393	762,8402847	0	0
PD50219a	0	1601,738166	875,7399358	0	0
PD50221a	0	634,0455985	0	0	0
PD50325a	930,6315769	970,153659	964,781148	0	840,6570709
PD50326a	367,8646119	0	0	0	0
PD50327a	1564,117234	0	1619,030259	0	0
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PD50334a	1144,813987	880,4090511	1454,078146	0	0
PD50335a	878,0001133	1083,650018	0	0	0
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PD50340a	0	0	852,5070555	0	1071,422579
PD50341a	684,5163611	0	1261,660739	0	0
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PD50343a	893,2772404	0	844,0830922	0	0
PD50344a	1331,670065	0	1809,446335	0	0
PD50345a	618,0446355	0	0	0	1031,058182
PD50346a	0	723,7904096	795,2026374	0	0
PD50347a	1540,343392	1047,048125	0	0	0
PD50350a	868,4060607	0	0	0	0
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PD50354a	733,2197177	0	811,7081939	0	0
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PD50360a	0	1598,457694	1087,113665	0	0
PD50387a	1464,772802	1960,909393	0	0	0
PD50388a	0	837,0110388	590,2227799	141,4977755	0
PD50389a	0	1759,839275	1588,884078	0	0
PD50393a	1119,835165	0	2225,116301	0	0
PD50394a	527,1569459	0	0	0	0
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PD50401a	569,0261532	787,1012164	559,570072	0	0
PD50403a	0	0	0	0	0
PD50404a	612,0674646	1349,286239	0	0	0
PD50405a	634,5111906	824,934231	0	0	0
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PD50408a	571,9228314	1211,599222	877,9713257	0	0
PD50409a	2464,223997	0	0	0	0
PD50411a	0	1143,298235	0	0	910,3121916
PD50412a	1543,994868	1617,069809	0	0	0
PD50413a	579,6908665	1777,613221	882,8806463	0	1235,264808
PD50415a	505,0130493	1087,089622	1251,370141	0	0
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PD50422a	552,3910236	1006,11351	1142,003144	0	0
PD50425a	581,6714087	0	1725,464385	0	0
PD50428a	1172,539208	0	867,9299834	0	0
PD50429a	1066,836939	0	1715,987766	0	1960,693872
PD50430a	728,4749224	0	0	0	0
PD50431a	569,939227	0	853,8774687	0	1477,109282
PD50432a	332,5234199	677,3444198	0	0	0
PD50433a	0	651,1518024	0	0	0
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PD50440a	449,8775925	1136,601135	0	0	0
PD50441a	0	0	0	0	1685,765409
PD50442a	1115,362644	0	1201,89599	0	0
PD50443a	752,6189843	1637,843095	0	0	1385,705383
PD50444a	908,2039605	1571,683222	2901,0041	0	0
PD50449a	1177,277964	0	623,9545185	0	0

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PD50454a	0	0	0	0	0
PD50455a	622,5434577	906,2073474	0	0	0
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PD50457a	524,6747668	762,8668788	1127,455972	0	0
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PD50459a	1816,184823	1385,129752	1254,058302	0	0
PD50460a	393,8832717	715,3748134	0	0	0
PD50461a	0	897,6658057	0	0	567,5113969
PD50462a	1944,295208	1238,396263	0	0	0
PD50603a	1638,855059	0	1029,913096	0	0
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PD50605a	893,5928026	685,0624649	0	0	946,9690825
PD50606a	0	0	1486,424945	1385,919713	1103,814361
PD50607a	471,2453886	0	582,4378883	0	1012,182477
PD50610a	0	722,0036329	0	0	704,3741891
PD50612a	792,2117167	1201,788256	823,1340739	0	0
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PD50614a	0	661,0188138	0	0	768,6067792
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PD50618a	0	1338,559631	0	0	0
PD50619a	1105,667563	1091,148631	0	0	0
PD50620a	655,5627614	1542,58956	1556,888935	0	0
PD50621a	0	1676,967649	1845,569887	0	0
PD50622a	689,8207383	1123,292823	0	0	868,6413694
PD50625a	1028,326578	0	773,4292706	0	1114,990234
PD50627a	790,6147652	0	0	0	931,5217694
PD50629a	1724,654912	0	0	0	0
PD50630a	1866,924928	0	1253,422484	0	1738,170196
PD50632a	535,6670278	857,5864667	1257,411781	0	905,0733425
PD50634a	0	0	854,6380278	0	0
PD50637a	1250,198817	0	0	0	0
PD50638a	0	0	1763,11311	0	0
PD51175a	627,4054552	0	831,0757224	0	1302,219824
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PD51177a	632,2127452	1212,067094	1722,843179	0	0
PD51178a	1230,084227	1222,537906	2917,077329	0	0
PD51179a	910,9393453	954,7229273	649,7904924	0	0
PD51180a	946,3468724	694,232632	0	0	866,8171327
PD51181a	657,0229233	1007,110505	1315,221509	0	0
PD51182a	416,9549203	0	0	0	0
PD51183a	751,436062	0	0	0	554,9612363
PD51184a	1022,334856	1102,320353	1977,598123	345,3761686	0
PD51185a	648,9913276	0	0	0	1330,860122
PD51186a	732,4374867	0	0	0	1016,98922
PD51187a	0	0	4807,28992	0	0
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PD51189a	648,2894308	0	1034,560873	0	0
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PD51191a	499,4137899	1046,682243	0	0	1004,681454
PD51192a	0	944,0490072	2107,629495	0	893,5702026
PD51194a	682,6106349	1710,372039	683,0858317	0	0
PD51195a	0	1338,221586	1110,486622	0	1131,404578
PD51196a	814,9113698	978,6941745	0	0	723,7644615
PD51197a	764,4902412	0	0	0	0
PD51198a	0	917,6335525	558,4488837	0	0
PD51199a	0	1236,191369	0	0	0
PD51205a	704,8575681	0	0	0	1340,560836
PD51206a	1010,73809	0	0	0	1179,717662
PD51207a	1386,083552	2204,837588	1026,563246	0	0
PD51209a	1568,397581	2003,499855	0	0	0
PD51210a	1763,282024	0	986,0839254	0	1607,986907
PD51211a	854,5735376	0	1022,028846	0	0
PD51213a	1098,05235	0	2863,697526	0	1355,626661
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PD51215a	1777,601917	1400,811281	915,8732822	0	0
PD51216a	0	1175,680627	954,311964	0	0
PD51217a	1716,520509	1251,796738	931,657998	0	0
PD51218a	876,9441306	0	0	0	0
PD51219a	1139,370822	0	2165,548282	0	1064,409241
PD51220a	439,6809206	0	869,9896559	0	0
PD51221a	544,9976455	0	993,2357823	0	958,8990595
PD51222a	660,7133747	0	0	0	0
PD51223a	0	1073,116922	1011,82961	0	0
PD51224a	0	1275,40381	0	0	0
PD51225a	1298,369364	1164,407206	719,773568	0	0
PD51226a	0	0	546,9214036	0	0
PD51227a	532,3935593	834,2096317	0	0	0
PD51228a	628,7973588	0	2174,996217	232,6638711	0
PD51229a	0	1063,142063	0	0	0
PD51231a	623,8162846	0	1197,72651	0	1284,217029
PD51232a	0	572,8125426	912,6928426	0	0
PD51233a	1321,024311	1317,909815	0	0	0
PD51234a	1179,189868	0	1104,370937	0	0
PD51235a	999,2484681	1351,782809	867,6829485	0	0
PD51236a	0	0	0	0	0
PD51237a	659,6636555	1204,712608	0	0	0
PD51238a	599,1812404	0	880,2079135	0	918,5399281
PD51239a	656,6370705	1237,717812	0	0	1494,074333
PD51240a	0	0	646,8955735	0	0
PD51241a	886,9362876	0	0	0	0
PD51242a	1040,140222	1500,435445	1343,600668	0	0
PD51243a	593,4325427	0	0	0	0
PD51244a	931,446459	1038,945932	0	0	664,4793391
PD51245a	0	479,2715088	0	0	786,9755164
PD51246a	966,7618071	0	2174,608144	0	0
PD51247a	1543,272883	1054,974738	0	0	0
PD51248a	0	0	0	0	0
PD51250a	936,9004649	832,4744242	0	0	982,5195588

PD51251a	711,4165984	0	1113,954003	0	0
PD51252a	1826,463688	1848,335633	824,5087594	0	0
PD51253a	475,3891233	892,5166543	1003,425167	0	0
PD51254a	626,3335939	0	918,4425676	0	1314,640454
PD51255a	604,0556815	0	1022,905164	0	1388,623757
PD51256a	0	0	0	0	1767,285815
PD51258a	731,27715	0	0	0	0
PD51259a	684,219262	0	654,2671632	0	633,3141555
PD51260a	649,8286189	586,4255228	520,17598	119,5575328	0
PD51261a	1407,788741	0	0	0	0
PD51262a	983,6124995	0	664,1138846	0	0
PD51263a	0	0	466,2401021	0	0
PD51264a	575,2024158	1349,808039	0	0	1424,499788
PD51265a	1742,41393	0	0	258,5278399	0
PD51266a	0	762,9630491	662,5580029	0	0
PD51267a	1580,888336	0	0	0	1622,065996
PD51268a	0	0	770,213071	0	1157,262223
PD51269a	0	0	931,7590503	561,2530777	1043,98834
PD51270a	2229,956257	0	1058,574196	0	854,2249326
PD51271a	0	0	0	0	878,8033292
PD51273a	946,9246637	1210,054933	850,8748242	0	0
PD51274a	786,1343241	0	0	0	691,4909825
PD51275a	998,1840454	1541,738612	1149,478428	0	0
PD51276a	497,8114822	0	0	0	371,2742797
PD51277a	0	966,6492706	0	0	797,5409931
PD51278a	432,7839246	0	0	0	1444,63021
PD51279a	707,1351447	1044,340327	0	0	0
PD51280a	666,3428626	710,4722824	956,8988897	0	0
PD51281a	437,0348993	0	0	0	0
PD51282a	675,0126538	0	1195,738682	0	0
PD51284a	0	0	1350,384679	0	0
PD51285a	0	1905,287214	1184,647061	0	0
PD51286a	1606,73428	0	971,9564666	0	0
PD51287a	844,1109637	0	874,1212913	0	0
PD51288a	0	0	0	0	2146,737593
PD51289a	0	0	0	0	903,1186782
PD51290a	280,802882	535,2964655	0	0	0
PD51291a	574,7532923	0	927,9602588	0	881,3608223
PD51292a	688,789784	0	983,4067731	0	1602,535
PD51293a	0	0	0	0	803,2246093
PD51294a	0	0	0	0	0
PD51295a	963,133016	1625,530164	3780,457553	0	0
PD51296a	814,3288545	0	0	0	917,5227964
PD51297a	0	1793,414249	795,68735	0	0
PD51298a	1558,43533	1993,5858	1233,265805	0	0
PD51300a	1327,102266	0	0	0	0
PD51301a	612,7028154	1227,297355	0	176,6878556	0
PD51302a	540,5470253	1231,387683	0	0	0
PD51303a	1124,297028	0	0	0	0
PD51304a	1302,129698	0	0	192,7895249	1023,880704

PD51305a	795,7855479	2448,41615	0	0	0
PD51307a	913,3213351	796,1778705	1363,267014	0	0
PD51309a	1525,542674	0	1799,08245	0	0
PD51312a	600,0648272	0	0	0	1233,711286
PD51314a	0	1467,079701	0	0	0
PD51316a	1405,814414	2408,276112	2532,070899	0	0
PD51318a	1416,911628	1099,415095	746,974554	0	0
PD51319a	0	0	417,0281589	0	481,814326
PD51320a	1875,394894	0	1387,553988	0	0
PD51321a	2130,104267	1182,688794	0	0	0
PD51322a	1319,838551	0	1640,624176	0	1519,673126
PD51323a	1440,402413	1789,651051	1251,445267	0	0
PD51324a	746,761084	0	2467,405389	209,4027322	1253,304994
PD51381a	0	0	953,2791367	0	0
PD51382a	0	617,3184467	0	0	0
PD51385a	0	0	0	3730,754121	0
PD51386a	924,1902379	0	640,2025729	0	0
PD51387a	0	792,8892964	0	0	0
PD51389a	1778,861497	1389,962665	1978,75229	0	0
PD51390a	1311,637494	0	854,1623418	0	989,8122128
PD51391a	807,821407	1130,197893	0	0	0
PD51393a	0	470,1033965	0	0	0
PD51396a	2352,67032	0	0	0	0
PD51398a	1349,091174	1355,320601	1136,136133	0	0
PD51399a	0	1088,58745	0	0	0
PD51400a	797,1975015	0	777,9782982	0	969,4064591
PD51401a	1296,79286	1384,90412	1118,205352	0	0
PD51402a	940,1559786	0	646,5755389	0	0
PD51404a	634,1181495	1112,269776	1641,579501	0	0
PD51405a	0	0	626,8418008	0	0
PD51406a	0	0	949,3767673	0	0
PD51407a	0	0	1066,822594	0	1406,980279
PD51409a	1263,540287	1652,600775	1193,083193	0	0
PD51410a	662,0146111	0	722,9081138	0	1108,7597
PD51411a	450,3453632	0	426,3582652	0	0
PD51412a	578,679437	0	705,7769164	0	0
PD51413a	0	0	1574,143607	0	1020,381027
PD51414a	612,2688065	846,8896223	1527,20249	0	0
PD51416a	695,2685171	1333,611797	1135,471794	0	0
PD51417a	985,6949886	0	1008,130945	0	0
PD51418a	2008,961426	0	0	0	1733,892244
PD51422a	0	0	0	0	1591,116965
PD51423a	687,5079225	1426,135624	0	0	0
PD51424a	1588,475865	0	0	0	0
PD51425a	862,0311991	0	801,9393208	0	0
PD51426a	454,9353837	953,2308999	1103,97683	0	0
PD51427a	0	1205,930449	0	0	0
PD51508a	1524,858262	0	2544,252043	0	0
PD51509a	1544,60097	0	663,8915339	0	0
PD51510a	1294,463776	1116,39706	0	0	0

PD51511a	815,8473185	0	1223,731568	0	906,6721282
PD51512a	0	0	830,6831578	174,734981	1683,573648
PD51513a	1553,965955	972,7522484	0	0	786,2682566
PD51514a	1216,711151	1117,00576	1258,442176	0	0
PD51515a	473,4210189	0	0	0	758,2411682
PD51516a	924,6689821	0	1279,862219	0	0
PD51517a	462,2632174	0	848,8055383	0	808,0935519
PD51518a	1616,794384	870,1322579	0	0	883,2640822
PD51519a	2327,242334	1208,1318	0	0	0
PD51521a	0	0	1168,624561	0	0
PD51522a	0	0	1351,540261	0	1608,543431
PD51523a	750,7683897	1090,368159	0	0	0
PD51524a	1004,966109	1013,79354	0	0	0
PD51525a	1446,181082	0	3866,526351	0	0
PD51526a	838,8743263	0	931,1956558	0	0
PD51527a	1543,272004	1395,155179	0	0	0
PD51528a	942,2845128	0	0	0	841,4099091
PD51529a	2180,923415	1303,745668	1083,082225	0	0
PD51530a	918,9563954	0	967,898955	0	0
PD51531a	1082,775979	0	716,2451665	0	0
PD51532a	2837,176683	0	1716,684819	0	1056,201691
PD51533a	393,064505	1055,349948	747,8718009	0	0
PD51534a	892,2485905	0	775,6708518	0	1437,204582
PD51535a	404,8125618	0	0	0	551,1301867
PD51536a	1374,752095	0	0	5360,890017	1255,742087
PD51537a	1931,155089	0	0	26587,9932	0
PD51538a	972,973472	0	0	1183,788794	0
PD51539a	0	0	2637,499889	4596,619543	0
PD51540a	0	0	0	6985,211947	0
PD51541a	0	1095,023159	0	413,7696986	711,0368683
PD51542a	0	0	3261,712606	10747,29715	0
PD51543a	591,4217711	848,0905431	0	450,7943285	965,6781256
PD51544a	0	0	0	6433,051729	2057,352389
PD51545a	1289,588274	0	806,619158	694,4424293	0
PD51546a	0	0	2885,079806	15426,80108	0
PD51549a	0	0	4185,356242	14356,44127	0
PD51550a	370,3471681	0	463,6072517	0	0
PD51551a	1221,517015	1266,59532	1934,406596	0	0
PD51552a	656,5214797	0	1484,620096	0	0
PD51553a	567,1966663	1178,55117	0	0	0
PD51554a	770,6646565	0	0	0	800,6871844
PD51555a	358,2517259	0	0	0	0
PD51556a	0	0	0	0	0
PD51557a	0	0	828,2035632	0	1033,024395
PD51558a	827,2692047	0	1759,146198	0	1298,999049
PD51559a	0	0	1242,662855	0	1207,668902
PD51560a	560,6189021	716,5474201	0	0	0
PD51561a	713,4372973	1242,247393	1068,90978	0	0
PD51562a	1324,025026	0	953,8858905	0	0
PD51563a	558,1991743	0	0	0	736,7447442

PD51564a	1137,166298	0	0	0	1114,753117
PD51565a	743,9331332	0	0	0	0
PD51566a	2664,734897	1346,139024	1357,695617	0	0
PD51567a	831,0660631	0	1417,40822	0	0
PD51568a	670,2046959	0	0	0	834,4850282
PD51569a	565,3019159	549,5151023	0	0	0
PD51570a	1180,353745	0	826,7577374	0	1014,078104
PD51571a	0	0	388,7957377	0	0
PD51572a	2130,18885	0	2003,89831	0	0
PD51573a	0	0	0	0	0
PD51574a	0	0	517,0099012	0	931,7640367
PD51575a	807,4472309	716,4782378	0	0	0
PD51576a	702,2233692	0	1167,884642	0	1554,267228
PD51577a	888,1604445	1165,128202	832,5337577	0	0
PD51578a	1355,856391	1290,332308	1657,61806	0	0
PD51579a	0	1418,49859	906,5643733	0	0
PD51580a	1165,413783	1667,89385	815,331216	0	0
PD51581a	0	0	683,4615087	0	0
PD51582a	1141,372128	0	0	0	0
PD51583a	0	856,6928273	567,6575689	0	0
PD51584a	0	0	509,7215062	0	0
PD51585a	0	0	479,3341668	0	689,4224185
PD51586a	0	0	0	0	601,7385902
PD51587a	0	1015,043824	708,2738075	0	0
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PD51589a	1737,634367	0	0	0	0
PD51590a	529,9924423	0	617,092804	0	0
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PD51593a	1056,247422	0	858,6155754	235,0959928	0
PD51594a	426,4555236	914,5214747	779,2644059	0	0
PD51595a	0	1462,42643	2986,392702	0	0
PD51596a	576,4715497	0	1164,454206	0	0
PD51597a	629,5349794	1163,683622	929,4228775	0	0
PD51598a	845,0702991	0	0	0	0
PD51599a	682,5850272	0	1176,509542	0	0
PD51600a	497,8403722	795,0715367	645,1141429	142,6737842	0
PD51601a	350,2480712	0	0	0	0
PD51637a	0	861,8996683	0	0	985,2728401
PD51638a	0	1082,846797	781,3953341	738,0277401	778,4559266
PD51639a	402,52921	0	0	0	817,813196
PD51640a	2095,476602	0	0	0	1069,99068
PD51642a	0	862,7618163	672,8197627	0	889,4867292
PD51643a	1126,718753	0	675,6349772	0	0
PD51644a	1010,403477	0	1288,359282	0	0
PD51645a	0	0	1099,965848	0	1226,523509
PD51646a	0	746,8274278	0	0	0
PD51648a	0	1414,288784	0	0	707,2233658
PD51649a	1900,065949	0	0	0	2121,07902
PD51650a	0	0	969,4667099	0	765,8769896
PD51651a	0	0	689,7290249	0	0

PD51652a	416,6398636	0	0	0	0
PD51653a	559,2873668	0	0	394,7458517	843,462579
PD51654a	506,627482	0	1156,275236	0	0
PD51655a	509,809753	1109,335449	848,2954479	0	0
PD51656a	1309,07612	1086,02591	0	0	0
PD51657a	0	0	0	0	1537,281088
PD51658a	484,8285488	0	449,9075226	0	0
PD51659a	790,8502252	1168,740582	794,0442055	0	986,5782364
PD51660a	444,1572646	0	775,2037389	0	0
PD51661a	520,4575162	663,6697631	0	0	668,8549672
PD51662a	0	0	752,3353261	0	1499,879331
PD51663a	1022,83212	909,4145111	916,7816957	0	0
PD51664a	0	793,5043003	617,902275	0	667,3769556
PD51665a	0	0	392,6820237	100,9127439	0
PD51666a	845,0218402	764,8693831	0	0	936,6232534
PD51667a	0	1048,617428	0	0	654,7287229
PD51668a	0	0	2729,516831	0	0
PD51669a	463,9688632	0	0	0	599,0355121
PD51670a	0	0	609,6287447	0	0
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PD51672a	762,2759363	0	634,6642822	0	0
PD51673a	0	0	1460,250139	0	0
PD51675a	844,2162778	625,3856653	0	0	1015,794126
PD51676a	1243,478924	0	0	0	1025,952083
PD51677a	584,1146994	0	794,153713	0	0
PD51678a	0	0	0	0	612,0208082
PD51679a	0	0	1053,483797	0	1159,78193
PD51680a	0	0	636,0110497	0	688,8048328
PD51681a	0	0	0	0	646,5215924
PD51682a	2037,584472	0	0	0	0
PD51683a	1131,7874	1069,478468	902,9103193	0	0
PD51684a	0	795,5230081	0	0	1270,588968
PD51685a	418,008458	961,7317999	0	0	0
PD51687a	0	0	758,2259935	2941,022819	0
PD51688a	1264,594081	0	0	0	0
PD51689a	1096,180478	0	0	0	975,4278277
PD51691a	899,0493943	1123,326883	900,1078093	0	0
PD51693a	885,3120392	0	766,4738562	0	866,347901
PD51694a	732,5048307	0	1138,680049	0	0
PD51695a	0	0	0	0	0
PD51696a	1279,54407	0	0	0	0
PD51697a	1088,873602	0	0	0	1197,815996
PD51698a	536,5959848	0	655,0922207	0	752,0559307
PD51699a	418,0196127	0	0	159,7786562	947,8231854
PD51700a	905,5480708	0	1144,198376	0	1079,815451
PD51701a	1661,124463	0	0	0	0
PD51702a	1550,572767	2094,010986	0	0	0
PD51703a	730,2349846	0	0	0	0
PD51704a	0	0	0	0	0
PD51705a	490,3012398	865,6834333	2132,872309	0	0

PD51706a	0	579,1980677	0	0	1061,312436
PD51707a	515,7266448	0	0	0	647,0794242
PD51708a	0	0	567,7362243	0	567,5888087
PD51709a	526,0516509	0	633,2498048	0	819,2596506
PD51710a	0	1801,026311	1455,424981	0	0
PD51711a	694,6775809	1132,21059	0	0	0
PD51712a	0	835,786673	808,6592958	0	905,8515008
PD51713a	0	1014,641994	1159,045482	0	0
PD51714a	1859,668627	0	1154,236771	0	0
PD51715a	807,302067	1015,041199	1077,618889	0	0
PD51716a	0	0	767,5894903	0	954,3742494
PD51717a	742,6859537	786,5169047	0	0	1181,344929
PD51718a	1479,870317	837,5472407	0	0	0
PD51719a	0	0	582,9018892	0	0
PD51720a	363,1389075	0	0	0	0
PD51721a	1696,905654	1426,516933	0	0	0
PD51722a	851,165486	733,1163147	0	0	0
PD51723a	618,3300842	898,2574909	0	0	1008,862695
PD51724a	0	546,7601946	0	0	957,4347823
PD51725a	471,8622135	0	0	0	0
PD51726a	0	0	1415,763314	0	0
PD51727a	904,4521861	0	0	0	827,0130739
PD51728a	1070,653021	0	924,787131	0	0
PD51729a	0	0	2372,234813	513,8923606	0
PD51730a	535,9526269	1252,856523	0	0	0
PD51732a	1838,22332	0	1363,055472	0	983,8172795
PD51733a	0	1124,964449	0	0	0
PD51734a	715,3923288	0	1743,486244	0	897,3107608
PD51735a	0	0	0	0	657,2188381
PD51736a	0	0	0	0	0
PD51737a	1619,994406	0	1432,63286	0	0
PD51740a	544,5635151	1789,240951	0	0	0
PD51742a	1099,183384	1445,32153	1212,499524	0	0
PD51743a	1538,184677	0	1189,219492	0	0
PD51744a	923,3460781	0	988,0122953	0	0
PD51745a	711,4323654	1530,080389	0	0	0
PD51746a	0	1565,974842	0	0	0
PD51747a	0	1502,839742	0	0	0
PD51748a	996,0908119	1496,054056	1331,203439	0	0
PD51749a	0	0	0	0	1249,577644
PD51750a	779,7565413	1378,359276	0	0	0
PD51754a	1201,85827	0	0	0	0
PD51766a	1609,941565	1965,79955	1338,084711	0	0
PD51767a	966,471146	0	1567,697537	0	1525,77479
PD51768a	456,9504103	0	1254,609132	0	0
PD51769a	438,2409836	0	0	0	0
PD51770a	0	0	1631,489904	0	0
PD51771a	1592,995892	1937,128027	1298,472541	0	0
PD51772a	1356,81523	1046,676606	1871,511586	0	1259,311383
PD51773a	594,4077419	0	1280,738139	0	951,7545541

PD51774a	421,8649521	815,5582988	791,339162	0	0
PD51775a	1460,060294	1382,732548	0	0	0
PD51777a	0	1048,506878	0	0	0
PD51778a	0	856,7406135	761,6253449	0	0
PD51779a	0	1378,053969	800,7520848	436,6772028	0
PD51780a	0	0	0	5518,233763	1904,689963
PD51781a	0	0	0	6225,210009	0
PD51782a	0	0	0	598,5279247	0
PD51783a	0	0	1575,418742	6054,132996	0
PD51784a	613,5551883	1260,420038	1596,110197	985,7879193	0
PD51785a	0	1666,497677	0	0	1237,112607
PD51786a	1057,620376	1703,952549	0	369,0652264	0
PD51788a	823,874715	0	0	421,3806146	1079,93371
PD51791a	1109,87473	0	0	0	963,6736209
PD51793a	2017,547175	0	1093,381426	0	1565,320874
PD51794a	1060,687912	1309,452129	1302,01487	0	0
PD51801a	1678,93729	987,205188	0	0	0
PD51803a	1152,91	2027,912498	1588,05592	0	0
PD51805a	0	560,9250019	0	0	742,8225379
PD51806a	0	0	5352,018028	5357,062184	0
PD51812a	2679,615477	0	1615,692269	0	0
PD51814a	607,7054945	1273,454389	825,913572	0	907,493274
PD51815a	727,2984159	1529,498534	1275,950858	0	0
PD51816a	2068,026606	870,4362987	0	0	0
PD51817a	0	2271,641033	2020,716655	0	1021,644449
PD51818a	1506,885551	0	552,5388443	0	0
PD51820a	824,1835536	899,5577351	0	271,5529839	0
PD51821a	0	1608,500409	791,0696265	0	0
PD51823a	1387,402588	0	876,9143598	0	0
PD55504a	0	1114,210347	0	0	0
PD55505a	0	1099,705758	0	0	1747,587362
PD55506a	0	0	0	0	0
PD55507a	0	0	0	0	0
PD55508a	0	0	1216,831755	0	676,7581937
PD55509a	685,8988882	0	788,7022627	0	1015,158433
PD55510a	886,4946152	0	0	0	0
PD55511a	696,8801714	1392,827695	0	0	0
PD55512a	0	0	0	0	751,4257522
PD55513a	0	841,5436152	0	0	731,2553036
PD55514a	0	0	1759,306732	1010,083114	0
PD55515a	0	894,0835943	0	0	0
PD55516a	0	0	1377,547389	0	0
PD55517a	0	1138,68688	0	0	0
PD55519a	0	0	0	0	0
PD55520a	744,4405893	0	0	147,382275	1134,538316
PD55521a	1116,499253	0	1057,752358	0	0
PD55523a	1336,804073	877,5581664	0	0	0
PD55524a	0	0	315,4163855	0	0
PD55525a	341,8550774	0	0	114,6712456	0
PD55526a	0	0	0	0	1527,687504

PD55527a	0	0	0	0	0
PD55528a	0	0	0	0	583,7381783
PD55529a	0	0	0	0	0
PD55530a	0	0	0	195,5725248	0
PD55531a	0	0	723,1307399	0	0
PD55532a	0	1467,507635	1121,947461	0	0
PD55533a	0	0	0	0	0
PD55534a	0	1000,287163	0	0	0
PD55535a	0	645,6723651	0	0	0
PD55536a	561,8663222	0	0	227,06108	0
PD55537a	598,8635175	0	0	0	0
PD55538a	782,460855	0	0	0	0
PD55539a	1538,096056	0	1117,496295	0	0
PD55540a	0	1559,701075	0	0	0
PD55541a	0	881,2462154	0	0	0

SBS_F	SBS_G	SBS_I	SBS_J	SBS_K	SBS_L
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0	0	7204,2477	0	0	0
713,9924598	523,2144986	905,257453	0	0	0
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0	0	0	615,1764055	761,8991086	0
0	1721,044779	0	919,6209572	0	0
931,1737758	818,1253165	2491,60687	0	757,8464551	0
1386,767841	1253,103896	0	0	1629,149255	0
0	0	0	634,3297779	618,3089829	0
0	0	0	380,022048	0	0
0	0	0	0	0	0
965,6413307	0	0	504,2734082	0	0
499,1539625	0	0	439,6685331	0	0
0	0	0	369,8057447	0	0
0	755,4456709	0	635,1061207	0	0
0	577,9953993	0	531,183055	587,1665255	0
1295,125419	1898,906492	0	880,226366	0	0
0	602,2405468	0	0	999,0858887	0
0	0	0	967,496453	717,6884605	0
0	0	6637,09458	0	0	0
0	517,2148039	0	354,853623	0	0
0	0	0	331,0883365	348,8930598	0
0	0	2937,12937	915,6736433	0	0
693,290241	472,3452789	325,192097	471,1773461	515,6587698	0
0	0	540,298557	898,1240915	0	0
1096,297506	0	3782,20095	0	0	0
0	0	0	0	555,8032691	0
0	0	0	307,7019377	245,9846764	0
0	0	902,52081	797,9567934	0	0
647,1761004	0	0	0	0	0
1076,805631	0	3513,36609	0	0	0
0	499,5157848	0	751,1548917	0	0
0	0	12178,5049	0	0	0
1209,836972	576,2660832	706,914847	685,1301593	0	873,2662232
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0	817,4216998	0	374,8289616	0	0
530,2222687	0	0	0	0	0
915,6398294	0	0	383,0496393	0	0
1439,485319	0	291,259877	388,8142559	0	0
0	590,3803595	0	0	0	0
0	0	643,175863	355,3773915	0	0
804,5332494	0	0	0	285,0645829	0
0	0	0	362,1195205	0	0
1319,533458	785,3978502	1059,74597	0	0	0

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1868,245296	0	578,784792	867,6660501	0	0
871,1487292	0	1470,24265	0	0	0
0	0	0	0	0	0
0	774,2782068	485,223473	1224,322985	611,8189269	0
1721,047989	0	5493,80743	0	0	0
1334,589914	0	4762,21674	1202,936073	0	0
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0	0	2933,88362	0	0	0
0	0	6784,76322	0	0	0
0	0	3575,62151	0	0	0
0	0	876,948273	3721,405003	0	7685,242292
0	523,5786627	0	395,2109873	0	0
0	0	342,574663	0	381,4625747	0
0	0	1123,07703	0	0	0
0	0	345,582719	413,4063877	0	0
0	0	7200,41778	0	0	0
0	0	2423,93711	0	339,1567248	0
1479,846164	701,8001052	0	995,1242386	0	605,0294162
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739,0002968	764,6143214	0	0	0	0
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661,6427302	0	0	0	0	0
847,2508181	0	0	0	0	0
864,0209698	0	0	0	0	0
0	1066,366466	0	0	532,3892339	0
767,5927664	594,2736597	0	402,685627	0	0
758,6816291	606,5140602	0	0	0	0
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510,3441457	0	0	258,2510715	0	0
593,8132482	0	0	350,6167614	0	0
963,1355451	1030,655233	0	1314,231385	1076,808464	0
0	877,8168618	0	499,8866206	622,2987933	0
0	449,366845	0	0	0	0
0	516,1564034	0	466,5348354	0	0
0	0	0	0	0	0
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1178,155295	0	0	0	336,256084	0
0	641,3279189	0	752,6432731	449,628523	0

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0	950,0148761	0	377,5746438	341,4977915	0
0	286,1527252	0	0	240,798443	425,054314
0	1167,09381	0	766,8748835	0	0
0	0	0	0	440,5083693	0
0	680,1585965	0	448,8783407	643,6300401	0
0	917,2541947	0	769,1571992	401,2244403	0
796,3984188	0	0	0	0	0
0	0	0	599,2141926	386,4991757	0
741,0876508	0	0	521,3958942	431,5920457	0
858,6996355	0	0	0	0	0
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0	820,6416508	355,160874	485,2043252	0	584,7927224
0	720,8650274	0	0	292,423277	0
817,5974631	0	0	0	367,0756758	0
0	964,1082079	0	450,1686128	453,2955893	0
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684,505722	0	0	324,6533577	329,3812041	0
0	1167,789613	0	445,4830078	0	0
720,2285305	0	0	0	229,1992597	0
0	0	0	0	443,6569657	0
0	0	0	504,5326635	457,6504288	0
699,0484518	0	0	333,0967305	0	0
0	0	0	0	0	0
0	1267,183794	0	0	434,4905795	0
0	0	0	304,2112713	0	0
653,5974894	0	0	406,866038	0	391,0152838
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753,7970884	1236,910623	0	0	0	0
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0	0	3116,14227	0	0	0
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0	616,9067257	0	0	0	0
0	218,8780772	0	0	0	0
0	0	0	0	0	0
0	1814,723148	0	436,5240285	758,6996931	714,0486944
0	0	0	278,480931	359,4527974	0
0	0	0	494,8394745	0	0
1009,475396	1071,96876	0	1594,787459	595,0048182	0
0	0	0	700,7543533	0	0
0	0	0	0	0	0
0	1243,535046	0	776,6978117	407,4975131	553,2860029
0	710,908757	0	429,990561	425,8078574	0
0	0	0	0	0	0
833,0523642	534,2708183	0	0	0	0
508,0106333	0	0	0	161,0073928	0

0	542,0206982	0	0	294,0074108	0
0	0	0	793,7357397	0	0
1762,014834	0	0	573,4458539	0	0
0	0	0	0	0	0
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1215,208418	633,9367752	0	0	0	0
0	639,1523421	0	0	0	0
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0	0	0	374,6074975	0	0
0	676,609839	0	0	0	0
469,813011	0	0	409,2431886	0	0
0	0	0	313,4845175	648,6870086	0
769,3656547	0	0	402,8270386	0	0
681,1252345	0	0	368,6675114	0	483,716602
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810,8895393	0	0	447,5949775	513,6706999	0
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1327,003109	0	0	0	0	0
296,2421084	0	0	0	0	0
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0	851,0452714	0	432,7176623	1196,540275	0
1551,811596	0	0	686,2595133	0	0
0	791,6203647	0	410,6957256	784,3121432	0
993,4498254	0	0	638,6584782	0	0
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0	580,508977	0	589,0624849	376,5082577	0
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0	0	0	407,1084208	0	0
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785,394604	0	344,090244	0	0	364,057456
0	1005,54882	0	0	462,8054882	0

0	1142,844807	0	697,4826515	430,9099018	0
0	1039,672328	0	784,9423329	0	0
791,0173902	0	0	670,0431992	0	0
724,153679	0	0	0	0	0
849,2816029	1085,781127	0	1151,854502	388,9765651	781,966584
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0	335,9496924	0	0	0	0
686,158489	0	0	0	328,9760848	0
0	707,5115994	0	0	389,6944555	0
0	726,1554225	0	0	317,1421031	0
0	639,9245953	0	0	284,8327158	0
0	0	0	696,6737519	722,9944752	0
0	0	0	549,1849216	0	0
682,4967068	0	0	373,7387292	0	0
1567,703577	854,0599291	0	0	0	0
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0	722,7807194	0	654,3560566	768,6484335	0
0	735,9487684	0	0	397,6357924	0
1184,071375	543,072221	0	0	0	0
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0	467,5447617	0	0	365,1975293	0
1078,677321	951,581147	0	691,5481832	0	0
519,9186296	927,3623642	0	357,2564174	0	0
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1594,126316	0	0	945,1930825	1024,149854	0
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740,8486114	0	0	426,835754	0	0
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0	705,0820695	0	421,8880107	528,0803795	0
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0	995,7147009	0	0	728,4954969	0
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1643,178977	888,1534074	0	625,4423395	0	0
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1419,88267	0	0	784,8111818	0	0
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853,9268495	0	0	0	0	0
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5362,95657	0	0	16894,52849	0	0
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2108,982703	0	570,374603	607,030646	0	477,5256788
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0	547,3413966	0	0	662,3879233	0
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835,2521956	0	0	0	0	807,1658242
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0	1093,499966	0	637,8717594	0	0
0	727,5864123	289,246195	1368,491457	701,4237704	706,6145166
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847,4438912	0	0	451,768362	399,4718183	0
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925,2506152	992,11617	0	1075,646779	616,3781049	0
561,3607876	428,7971805	0	0	0	0
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867,1918355	705,1355467	0	0	0	0
1148,891748	0	0	0	415,0538769	0
437,6024713	0	0	0	0	0
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0	0	689,442626	509,4872625	583,9710282	0
0	879,9433708	2462,04369	0	0	0
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628,5028794	0	0	0	0	0
433,790212	0	0	0	0	0
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1516,458319	0	1884,42285	724,8570602	0	0
646,5418073	662,7056244	0	472,8713861	572,8350555	0
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0	470,4268699	0	0	0	0
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0	1285,330379	0	854,4737564	384,3660856	0
0	510,8709723	0	0	0	0
0	0	0	0	0	0
0	0	0	722,9627322	0	0
898,207871	694,120454	0	0	0	0
702,7356726	0	0	309,4561429	0	0
786,9104527	0	0	0	367,7309609	0
755,4483537	0	0	0	557,8520365	0
0	758,8036475	0	488,8275103	403,2358328	0
0	0	0	0	0	4859,69256
0	0	0	0	429,5381134	0
0	0	0	0	0	0
622,6459191	0	0	301,5548225	0	0
0	423,9918341	0	560,7357561	391,9760187	0
636,7654509	0	0	404,4797318	0	0
695,7126757	0	0	0	368,8424998	0
1638,971096	5199,347277	0	2161,344517	655,2051548	0
0	695,0012157	0	0	788,0610267	0
0	0	0	0	482,1534316	0

0	1072,964263	0	475,2166391	433,4829146	0
657,9535417	0	0	0	0	0
1067,995567	922,926148	0	0	742,0053955	0
0	1102,1853	0	1067,662723	0	0
0	606,7639624	0	0	573,079275	0
1124,109303	0	0	594,3955229	510,3741855	0
456,0830108	555,6615163	0	495,0871048	0	339,0959244
1240,352911	582,1482163	0	0	423,3704977	0
610,0861154	541,0032155	0	1002,366809	0	0
0	0	0	447,0837911	0	0
0	0	6135,75015	773,5957788	0	0
570,2850785	0	1111,46677	613,7880823	0	0
534,1839298	0	210,199685	0	0	0
0	0	509,497616	0	0	0
791,6758395	0	0	0	0	0
0	477,9959561	0	0	257,6595642	380,6210628
0	0	0	0	0	0
0	0	1107,92683	0	0	0
0	864,2648551	0	0	0	0
0	0	758,939527	0	0	0
0	494,2019783	0	0	0	0
456,3444934	362,5981229	0	0	0	0
1034,326937	693,9047591	0	612,2937779	431,0044699	0
0	0	0	474,0324435	0	0
1288,339733	777,2982266	0	0	0	0
772,0591421	1407,343062	0	782,0581793	546,4853305	0
0	0	0	399,632037	0	0
817,1318495	616,2204627	0	672,6840328	0	0
0	1266,029519	0	0	0	0
1041,797047	1320,333921	0	1284,116254	0	0
0	914,6039598	0	0	632,8646867	0
734,4431791	611,9240252	0	0	0	0
0	736,7721374	0	0	827,9486779	0
817,4724171	0	0	392,1379361	532,1302372	0
1278,627967	557,8155707	0	0	0	0
0	687,8487488	0	492,3400111	728,4099021	0
0	700,5430052	0	0	719,233632	0
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0	267,598544	0	0	0	210,9052843
0	424,9226909	0	0	0	0
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0	1056,252488	0	0	378,3949045	0
1848,929455	0	0	0	0	0
698,0221049	0	1099,33518	0	0	0
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840,3337181	0	0	0	0	0
545,6067245	0	0	0	284,1315178	0
0	964,2819915	0	537,7423164	468,059362	0
0	1921,556602	0	1834,550988	1184,779541	0
979,9959668	2552,165924	0	1058,441404	449,3154639	0
753,5657898	0	0	365,7483926	0	0
0	932,1131833	0	941,0816521	411,9792301	0
1285,88729	0	0	0	416,7580362	445,7996473
1163,480669	0	0	483,9325865	0	600,3172129
0	3335,960296	0	0	541,9995328	0
0	0	0	0	0	0
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803,556659	0	0	314,4773725	0	0
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0	660,1431619	0	0	0	0
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745,7964582	0	0	464,9326597	0	0
0	545,2139633	0	0	616,0802571	0
0	0	0	0	361,034087	0
0	438,3536787	0	411,3139524	440,5440711	0
1353,24903	603,2225651	0	446,2738057	0	0
0	1504,342286	0	581,8162409	0	0
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416,9796444	0	0	0	210,3882892	0
0	442,4267105	276,089211	485,6718965	466,0071227	0
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0	495,8751038	0	359,0152233	306,1924445	0
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526,0563887	0	0	0	0	0
717,3777132	720,1137376	0	483,6490326	421,7838318	733,4896779
737,7024275	0	0	0	0	0
0	0	0	0	0	0
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363,9799644	0	0	0	0	0
0	694,8324183	0	518,717475	0	0
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780,4368445	0	0	2597,411283	877,7086971	0
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534,4316116	0	0	0	0	0
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742,6384061	680,0419568	0	0	433,1870946	0
0	1412,11616	0	0	584,1850589	0
608,0543577	501,6125019	0	326,7561403	436,636803	0
1025,046983	0	0	0	504,1897072	0
0	1022,165412	0	0	0	452,3593032
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492,7491478	0	0	0	0	0
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697,1281076	0	0	0	726,5835481	0
0	398,671265	0	385,0075779	243,9546228	0
0	788,1412716	0	645,4221257	728,0762562	0
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742,5126069	0	0	576,4565136	0	0
0	595,9255228	0	406,7659435	549,1667509	0
0	677,7042032	0	0	0	0
800,5201847	0	0	356,8024834	0	0
1132,516378	0	0	543,9661135	0	0
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0	0	0	2924,330994	557,4510864	0
3203,009059	4287,634746	0	3502,472866	0	1749,807233
960,7950868	0	0	0	0	0
0	682,2232703	200,830213	576,8161362	0	0
863,1388908	0	0	905,7829448	449,2948565	0
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1012,533824	0	0	316,0912454	0	0
0	0	0	0	435,1811752	0
0	0	0	0	313,5042762	0
428,879407	0	0	274,7397452	0	0
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839,3563944	879,0797577	0	860,9876503	0	0
0	878,8637974	0	510,5652614	0	0
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1929,978316	0	0	0	0	0
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755,6033468	662,0567158	0	0	0	568,2490141

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774,9630743	410,8216387	0	387,7727585	577,5540711	0
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439,0772933	377,1434602	0	0	271,7701379	0
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998,6414503	0	0	1017,242527	552,5703243	0
1439,326021	625,627925	0	1008,416499	0	0
0	0	0	0	300,7895793	0
0	0	0	0	284,5395943	0
0	0	0	717,5789415	473,82126	0
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1696,102484	616,1162296	0	543,310056	0	0
1507,330504	0	0	313,3679065	0	0
0	0	0	0	327,3491446	0
846,7138108	0	0	0	737,8901025	0
0	539,8636994	0	476,0115354	359,6100268	0
524,6295707	0	0	325,6525037	388,3314563	0
819,0221657	0	0	0	553,9557831	0
0	748,5053417	0	1571,689587	0	0
791,6965119	0	0	0	1598,286224	0
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907,6887179	659,6465701	0	0	0	0
0	635,114811	0	0	0	0
0	598,0899895	0	384,0751469	0	0
518,6736921	0	0	0	388,1550171	0
955,3308629	0	0	608,702336	0	0
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1353,585252	0	0	648,2892238	0	0
858,419932	0	0	622,9239308	0	0
741,6020072	0	0	0	357,0294721	0
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899,8186457	0	0	373,9216137	368,1003867	0
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0	861,0075527	0	0	0	0
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0	0	0	0	319,7562044	0
0	767,6741837	0	0	0	443,0993265
1731,552243	0	0	1039,479075	0	0
0	677,3587614	0	527,4615573	0	0
0	898,8849399	0	0	726,9544688	0
0	343,181109	0	0	0	0

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0	687,4121695	0	1266,246919	427,3275212	0
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1165,004692	0	0	0	0	0
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1289,309184	790,9696765	0	1219,749957	555,0193214	0
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1601,503657	0	0	0	0	510,8123904
1486,990871	0	0	562,8898841	0	0
0	718,9073548	0	0	0	0
1311,329907	0	0	621,5994593	0	0
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1299,764506	0	0	518,8498612	0	0
566,8015635	0	0	0	0	0
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0	714,594489	0	1060,298766	0	0
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0	505,947542	0	1548,488087	0	0
1070,030446	0	0	0	0	0
0	771,6627113	0	357,6318139	298,7746155	0
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0	881,2361782	0	0	0	0
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0	1792,388114	0	0	550,8398293	0
0	690,1816063	0	432,653443	0	0
807,7371083	0	0	0	494,9518268	0
1452,52371	524,4820126	0	0	0	0
750,8257108	0	0	421,1320245	475,2335636	0
626,0713501	0	0	0	262,2749395	0
701,2616185	439,1570921	0	0	509,3494684	0
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613,9191729	742,9527773	0	363,5337721	344,2674974	0
903,5262195	0	0	0	0	0
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1965,701057	0	0	295,4140202	0	0
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647,3462076	0	0	735,5694591	0	0
1120,387049	0	0	0	0	0
938,7137225	0	0	1187,068692	331,4226755	0
0	546,9988197	0	0	350,5817672	0

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800,6186579	0	0	2167,973111	589,0350462	0
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722,4010252	0	0	0	0	0
749,9017158	0	0	0	0	0
543,3012915	0	0	0	0	0
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1145,649768	0	0	0	0	0
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791,5289221	1068,057161	0	0	0	0
558,0161418	0	0	0	353,9415061	0
871,1589666	0	372,552352	319,0463982	0	0
0	840,2074367	0	510,6184695	0	0
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520,8751342	0	0	0	342,0548409	0
1575,503134	811,823604	0	927,6798616	0	869,2280644
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786,6713265	0	0	0	399,612483	0
673,0217947	459,1199821	0	453,6837298	450,9629454	0
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1236,420076	578,0142148	0	0	0	0
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1102,80021	748,6761871	0	367,7750923	0	0
446,0456666	0	0	0	0	0
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393,2798885	0	0	274,7334283	242,2903826	0
1495,97871	0	0	484,8195872	0	0
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0	994,3388678	699,888428	0	0	0
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672,6550141	701,764441	0	400,8014171	0	0
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0	706,143555	0	797,6049606	335,1631078	0
0	407,6464203	0	0	0	0
914,5658627	0	0	2422,280258	829,8788612	0
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738,9779995	0	0	535,6719387	0	0
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648,0501406	0	0	388,9909503	278,0545187	0
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593,1189907	0	0	606,585063	0	0
1242,96516	0	0	694,1740361	0	0
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0	789,1389801	730,207513	0	708,501524	0
0	0	7002,34756	0	0	0
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0	0	5242,78645	0	0	0
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0	988,9182925	0	546,0802759	0	0
0	506,1674021	0	0	0	0
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593,0928521	626,2656109	0	0	451,4210984	0
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0	0	0	0	0	0
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0	0	0	0	0	0
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0	521,9611213	0	489,2913986	0	0
368,9662181	0	0	0	0	0
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0	0	0	0	2550,846985	21050,63189
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647,8287882	0	0	0	0	0
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1012,181988	0	0	0	0	0
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0	1496,456863	0	886,002318	441,3989898	0
1171,803866	0	0	0	0	0
1400,657728	0	0	364,6841507	0	0
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769,6152167	0	0	280,4089721	394,1286028	0
699,0330113	0	0	297,0423309	0	0
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0	618,7915903	0	351,93677	597,0434673	0
0	424,8723066	0	0	636,288896	0
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955,447024	875,2575409	0	764,7568379	726,5761981	0
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0	685,6066469	0	556,6092547	0	0
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0	3324,491061	0	0	589,8573092	0
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0	429,5028902	0	0	267,4535845	416,8680869	0
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0	815,4489107	0	776,0924793	0	0	0
0	940,6456398	0	511,8342288	474,0957556	0	0
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868,1910942	740,6073905	0	0	0	0	0
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0	900,4260311	0	565,2510096	756,2041827	0	0
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1696,567991	0	0	0	0	0	0
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881,9442348	1637,504041	0	0	0	0	0
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535,3139859	0	0	0	0	0	0
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768,9092285	1244,008868	0	0	652,6082233	0
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1452,691823	0	0	0	313,1804477	0
1903,368782	0	0	0	0	0
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SBS_M	DBS_A	DBS_B	DBS_C	DBS_D	ID_A	ID_B	
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0	0	13,3155104		0	17,487442	228,250656	213,56819
0	0	29,0125979		0	0	230,97083	202,457543
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0	87,3350338	25,8447287		0	0	1183,1362	504,972398
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0	111,731934	18,7388697		0	0	828,178552	596,788504
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0	27,0386951	0		0	0	189,033583	0
0	0	11,1387507		0	0	245,261265	195,161574
0	0	23,5768238		0	0	510,123244	271,426379
0	0	11,4477241		0	0	120,855143	0
0	0	13,146752		0	0	214,683774	0
0	59,0473182	18,2819142		0	0	602,975361	228,450487
0	0	31,2917476		0	0	400,976934	0
0	81,0555331	15,0777451		0	0	442,864585	423,3486
0	0	13,9792408		0	0	199,307615	147,385037
0	37,1166264	24,1764805		0	0	332,732502	0
0	0	24,0283176		0	50,004286	161,862185	0
0	23,3930772	0		0	0	92,6364517	0
0	0	17,0773094		0	0	232,349462	0
0	0	30,7448958		0	30,4406977	0	0
0	0	13,2165648		0	0	168,065946	0
0	0	20,346905		0	20,5190725	256,899672	248,943481
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0	35,602786	0		0	0	300,93386	447,314695
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0	39,0105923	38,7851281		0	0	289,27745	435,532192
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1606,491133	0	20,1657082	46,5275304	68,2341502	412,387973	845,25004
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0	42,584859	26,25629	0	0	339,290962	582,291259
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0	44,1397454	22,8158906	0	0	506,818088	676,60739
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0	39,7947179	20,2453968	0	0	189,025542	0
0	0	19,6728624	41,7725503	0	583,231816	553,828472
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415,2042106	31,4598797	12,4661576	0	0	265,037571	263,405931
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0	25,3453575	0	0	0	167,714043	149,846131
0	49,6678341	12,6551507	0	0	215,445084	280,04228
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0	40,9812138	0	0	0	328,858125	266,804495
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0	0	0	0	0	296,737731	203,537898
401,5315778	27,4649554	11,4356708	0	0	327,686722	197,492694
0	0	28,6415275	0	0	285,853169	460,830829
0	34,10635	0	0	0	512,077686	250,252955
0	0	26,4401659	0	24,331685	274,843611	0
0	0	40,4234253	0	31,7551415	388,785295	0
1812,344014	0	19,918561	43,739659	65,7691451	700,60876	435,773651
0	32,4774467	13,1181982	0	19,8912723	0	228,068013
0	0	12,8917586	0	0	499,551035	297,563885
0	0	0	0	0	0	0
0	0	9,30032128	0	0	112,407835	0
0	29,1555273	0	0	0	0	0
0	11,7313009	0	0	0	0	0
0	36,5089997	0	0	0	296,706826	236,649251
0	34,7054521	0	0	0	154,22991	0
0	0	23,7324749	0	0	180,178867	135,30432
0	49,290076	14,1347063	0	0	595,847455	536,476753
0	0	18,0327214	0	0	0	0
0	0	28,2784435	0	0	354,594391	0
0	31,802979	0	0	0	400,652883	0
0	0	0	0	0	473,754482	330,244828
0	0	0	0	0	161,361006	0

0	0	0	0	0	0	0	125,722659
0	33,8667634	26,2629948	0	0	0	289,927834	0
640,1510667	85,1812448	0	0	0	0	515,124383	907,136226
0	16,010159	0	0	0	0	0	0
0	0	14,6384419	0	0	0	203,713808	0
0	0	0	0	0	0	0	0
0	0	34,716226	0	0	0	0	181,239279
0	48,1106648	16,4340488	0	0	0	531,612761	514,375922
0	46,1967308	0	0	0	0	254,216466	288,46804
0	0	0	23,1616809	0	0	168,127189	218,272549
0	0	20,11489	0	0	0	185,261994	192,425724
0	0	0	14,437078	0	0	0	0
0	0	0	0	0	0	0	0
0	0	10,4520625	0	0	0	0	0
0	25,8421906	12,2146279	0	17,8361641	0	391,628991	0
0	42,565729	11,0859841	0	0	0	207,905651	192,305251
0	0	22,9834317	47,2699552	0	0	228,177432	424,029882
0	0	14,1465504	0	0	0	0	254,760126
0	0	0	0	0	0	460,330466	252,121466
0	0	11,7052147	0	0	0	0	268,335663
0	0	22,3760419	0	34,5081528	0	644,815211	545,630761
0	92,9021793	0	0	0	0	583,944282	507,411995
0	0	26,4277499	0	0	0	199,324504	160,073064
0	0	17,6636157	0	0	0	201,704919	208,458374
0	0	14,8326538	0	0	0	0	231,727529
0	0	26,7224766	0	0	0	181,124785	0
440,1483077	0	0	21,1378268	0	0	0	185,53373
0	17,6063159	0	0	0	0	0	0
0	0	53,6554859	0	0	0	475,792847	303,494139
0	69,1354453	16,4207331	34,9290681	0	0	641,367233	603,809773
0	26,7591754	0	0	0	0	275,482374	0
0	55,3909068	26,4462024	0	0	0	540,989899	436,107588
0	30,816122	12,6977574	0	0	0	389,442661	210,469947
0	0	0	59,8725002	0	0	321,492437	419,441658
0	0	15,7185422	0	0	0	229,542299	234,631667
0	0	0	0	0	0	263,151477	465,014126
0	26,1073059	0	0	0	0	224,589518	199,564285
0	0	54,3338463	0	0	0	209,971315	149,572303
0	38,2162603	0	0	0	0	544,794844	258,856263
0	0	0	0	0	0	145,217976	148,0319
0	38,2953409	17,223268	0	0	0	490,75606	248,702605
0	0	26,8515212	49,278412	0	0	421,92098	475,56578
0	0	22,327129	0	0	0	185,33915	0
0	0	31,2922626	0	0	0	0	0
0	0	12,2677973	0	0	0	172,501922	0
0	48,7057363	0	0	0	0	210,502228	312,448837
0	0	13,4959885	22,6271169	0	0	146,656727	0
0	0	8,65298803	0	11,5829006	0	0	0
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0	0	13,5525925	28,9801497	0	0	218,593477	199,47983

0	0	27,3058639	0	0	205,994109	0
0	40,9442694	19,7016058	0	27,4669472	604,828524	0
0	0	40,9077837	41,963376	0	0	249,837558
0	0	35,3225223	56,1976881	0	381,243653	393,668768
0	0	18,272537	0	0	214,186753	0
385,3424538	38,8771696	0	0	0	180,464222	0
0	0	34,8191395	0	0	377,268495	0
0	41,6889125	0	0	0	348,747875	302,581299
0	0	0	0	0	0	0
0	63,9735898	0	0	0	636,471799	707,200628
0	34,9283887	14,3832217	0	0	223,467525	0
0	26,7676192	0	0	0	135,324933	226,954103
0	0	0	0	0	0	112,835706
0	0	0	0	0	154,589235	168,361177
0	0	0	0	0	350,58665	0
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0	25,8009436	12,6919842	0	0	268,968013	0
0	66,2256365	13,3028512	0	0	502,943217	443,338558
0	32,2523861	14,2571377	0	0	318,33133	426,855347
0	51,2025944	25,0768192	0	0	412,687918	420,553168
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0	22,0433908	12,5452687	0	0	406,447653	0
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539,4657511	41,8029305	13,4565638	0	0	434,916213	600,485356
0	0	28,6115163	0	0	516,155584	220,912966
0	0	19,3790341	0	0	0	296,477839
0	0	27,3888162	0	0	229,292219	275,35995
0	0	13,3415706	0	0	0	0
0	0	0	0	25,3550752	298,951356	0
0	0	0	0	0	0	0
0	41,8349575	0	0	0	362,880753	361,629432
0	0	0	0	0	0	0
0	0	0	0	0	0	155,585074
0	49,9947487	46,0313538	0	0	540,423247	0
0	0	0	30,9576401	0	217,348865	0
0	0	29,1456766	0	0	223,061291	234,603623
0	0	0	27,7936963	0	359,533505	201,480638
0	0	0	0	0	258,133335	230,777733
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	360,95182	311,620533
0	0	15,2766309	0	0	521,451433	0
0	0	36,1330368	0	0	351,234997	0
323,7975774	0	0	0	0	179,552466	0
0	0	16,878101	0	0	132,247038	0
0	0	15,1721966	59,7356047	0	384,705003	631,3078
0	0	19,8357037	0	0	195,84861	0
0	0	33,1959838	0	0	0	0
0	0	10,3108116	0	0	204,870394	141,56133
0	0	12,790271	0	0	0	134,216236

0	0	43,307328	0	0	272,222599	310,166835
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0	38,4561794	0	0	0	298,985555	344,820833
0	19,7682991	0	0	0	110,073647	0
0	0	27,2219307	0	0	236,086643	304,042271
0	0	0	0	0	0	0
0	45,7371978	18,8633702	0	0	0	225,758577
0	37,3177754	14,0340402	0	0	243,39619	232,433315
0	0	0	0	0	167,344483	171,800087
0	0	0	0	0	487,714821	408,342186
0	35,0649798	10,5272175	0	0	288,673825	0
0	0	14,051355	0	0	0	0
0	0	11,6350366	0	0	672,122486	0
662,4476986	65,346364	49,513932	54,0752993	0	636,080085	741,792633
0	0	24,3349497	0	0	326,345652	346,966781
0	0	50,9655131	0	151,924563	0	0
0	0	0	0	12,3304241	0	0
683,6559196	0	29,88551	0	38,0645465	0	459,0452
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0	34,6259003	0	0	42,8483007	236,123681	231,967497
0	0	28,3091884	0	21,032117	0	0
0	29,2532874	0	0	0	401,032223	254,010374
0	0	38,9824782	0	0	232,032726	494,948085
0	0	32,190598	0	0	228,769532	0
0	55,7691484	16,5713412	0	0	571,755578	0
0	61,6923586	44,8601136	45,8680737	0	624,994299	759,617137
0	0	28,4766451	0	0	290,888593	0
0	0	16,5576642	0	0	0	153,450272
0	0	0	0	0	0	0
0	0	0	25,8032728	0	148,7795	146,855976
0	0	13,6798841	42,2627076	0	273,398353	0
0	0	23,6871511	0	0	205,152408	0
0	0	14,5859185	0	25,1780448	0	327,047587
0	0	13,8952167	0	0	524,446694	367,870504
0	214,691544	415,763845	0	0	0	0
736,5545357	0	17,546969	0	23,7897202	0	246,063667
563,3651354	68,314681	16,6874995	0	0	671,78987	832,766718
0	30,6933849	0	0	0	219,55177	244,379759
411,3150672	36,4125395	20,8338954	0	0	498,760869	0
0	0	24,6870612	0	0	218,228324	197,910717
0	0	0	30,8026907	0	447,146951	490,463667
0	0	12,3365558	0	0	0	179,196712
0	0	14,0674116	0	0	307,157855	188,390002
0	0	32,5275902	50,7681734	0	286,94374	0
0	39,4427637	24,155897	0	0	465,92543	467,037096
0	0	51,7502135	0	0	197,956458	223,158246
0	0	32,6990339	0	0	178,972551	0
0	0	25,2198134	0	0	0	0
0	0	13,008453	0	24,1119181	354,434075	350,380948
0	0	12,698713	0	0	285,339379	250,446502

0	0	46,8469572	0	0	544,558546	411,238172
0	0	11,2321893	0	0	156,733165	0
0	0	12,2036384	0	0	208,8241	0
504,8529031	0	36,3145047	0	0	0	194,817195
0	30,6616036	0	0	0	254,039019	305,110673
492,0224717	0	10,8903607	0	0	136,467294	0
799,8273363	0	26,7037294	0	22,2273497	518,185574	380,058353
0	32,042788	0	0	0	197,683749	170,329144
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0	0	0	0	0	124,174904	0
0	0	21,981604	42,3940455	0	649,645423	737,640884
0	0	0	0	0	317,155176	393,181359
0	17,0597237	0	0	0	0	164,935679
0	0	14,2349433	0	0	0	97,7788137
0	0	23,6074349	0	0	198,834794	0
581,3093714	0	28,9923461	0	0	391,597713	0
0	0	13,1251618	0	0	378,922557	213,126554
0	16,7990136	0	0	0	0	175,832205
0	0	11,9579694	0	0	141,694668	132,755589
0	0	31,449994	0	116,377782	0	374,322113
0	53,3416447	39,0329886	0	26,73711	430,010002	430,222588
0	39,7155693	0	0	0	370,333795	0
0	10,8542569	0	0	0	0	0
1003,31663	0	33,0198505	0	0	428,762556	254,078258
0	0	14,5087766	0	0	0	105,154542
0	0	23,9600426	0	0	234,823775	182,484592
0	28,5410058	0	0	0	198,410136	0
0	0	9,15552007	0	0	0	246,788922
727,1597431	0	38,2496562	0	0	383,207388	618,607268
0	29,6292168	18,8152019	0	0	151,053151	160,944208
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0	0	14,1649194	0	0	135,023693	0
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0	0	0	33,0533594	0	367,460175	385,404597
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0	0	13,9929804	0	0	275,747407	205,405454
0	0	34,8658281	0	0	431,123905	454,266627
0	0	0	0	0	232,448922	330,381802
1228,344259	0	0	0	0	0	0
0	0	11,8755374	0	0	170,243843	0
0	0	13,5240505	0	0	235,508507	165,044976
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0	49,4899196	22,0681178	0	27,9841265	395,641487	0
0	31,5887541	13,9135251	0	0	381,608118	192,288139
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0	26,5598512	0	0	0	167,091989	0
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460,1437369	0	16,202613	28,1186567	0	265,633755	176,395326
0	39,6296611	19,9833447	0	0	248,626373	0
0	0	8,89047486	0	0	0	0
0	38,4971573	16,5526881	0	0	392,993639	293,466264
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0	0	13,5689943	0	0	0	0
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0	0	0	0	21,0801162	473,723585	230,504113
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0	0	26,7050247	0	0	526,611783	213,809119
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0	0	30,3330508	0	0	186,247973	190,742442
0	52,2791844	14,3156008	0	0	427,815939	190,148766
0	29,2865171	16,2689494	0	0	397,779509	0
0	51,9388907	28,6804415	0	0	718,722718	357,940313
0	32,9601282	18,6514459	0	0	437,175479	267,855583
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0	0	19,3347676	0	0	234,180718	205,039229
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0	0	21,7105618	0	0	0	0
0	38,9994116	0	0	0	146,749953	181,819464
0	29,5302995	21,6827944	0	17,1648067	428,892187	0
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418,0074377	0	0	0	0	399,449512	0
0	0	0	23,0532398	0	0	0
487,6964618	0	23,308732	0	0	218,845241	171,455562
0	43,4537101	27,3407277	0	0	250,937421	265,136608
0	36,5787113	0	0	0	267,624629	168,793272
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728,8608307	0	15,007432	0	0	0	239,529934
0	28,720952	0	0	0	286,670384	0
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0	30,6420058	18,8326786	0	0	252,466262	279,223032
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0	42,3327152	12,9332746	0	0	0	247,839509
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0	47,0895394	0	0	0	684,128369	323,484594
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0	44,0731613	22,3220813	0	0	251,125048	189,084153
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341,8343954	0	10,6760307	0	0	260,226562	0
0	63,2664137	17,1073366	0	0	326,704246	396,372387
0	61,4754447	18,4421337	0	0	499,673149	629,428558
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0	0	10,8502535	32,7006604	0	181,799174	0
0	0	0	0	0	260,533967	235,508525
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436,898321	26,3593473	28,5084433	0	0	0	339,89523
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0	25,5531863	12,1682597	0	0	265,65934	0
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0	0	0	23,9722577	0	172,112368	218,161923
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0	0	21,1238579	0	0	0	216,588935
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0	0	11,347786	28,4953549	0	212,713777	309,454172
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635,558362	0	15,1899109	0	23,192033	497,657062	0
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0	27,5977374	0	0	0	211,049728	191,999032
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0	0	30,2970119	0	0	263,793565	275,444767
0	27,3547625	15,8363624	0	0	167,740453	143,715659
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0	35,2374793	12,0113217	0	0	222,330444	183,179095
0	40,4863902	27,986074	0	0	312,417441	281,326212
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0	0	35,0001141	0	0	0	0
0	0	0	0	0	173,266037	0
0	0	25,8971725	0	0	176,746981	222,166209
0	0	0	0	0	197,643501	0
0	41,0066454	0	0	0	138,247439	0
0	24,8658495	9,68576146	0	0	130,192471	0
0	0	43,0992849	0	0	315,200971	202,388977
0	0	61,039072	0	0	278,852764	363,756923
0	0	0	0	0	271,555927	0
0	0	25,9962275	0	0	0	280,956338
0	0	0	0	0	163,444027	0
0	52,6005063	0	51,0023416	0	457,64383	581,328788
0	41,2055995	16,9638357	0	18,0885049	313,415382	0
0	22,0123084	13,4880469	0	0	0	353,517816
0	0	33,9980819	0	0	0	143,299062
0	0	0	0	0	316,419454	0
0	0	17,1801811	0	0	658,003743	253,31496
0	0	13,6266224	0	0	205,734548	0
0	62,2385846	0	0	0	300,276963	647,779147
0	0	21,6294056	0	0	368,745839	0
0	0	38,4094661	0	0	247,174893	251,475478
0	0	0	0	0	0	0
0	0	49,6561728	59,3928504	0	409,492425	428,197674
0	55,1643358	13,3120087	0	0	258,817909	557,062397
0	0	42,5030557	0	0	263,743293	0
0	0	41,2305197	37,9757681	0	363,493587	186,959346
0	0	0	0	0	0	146,577708
0	0	12,6279324	0	0	300,35088	297,037653
0	25,2115265	0	0	0	230,040109	267,8882
0	0	0	0	0	232,248523	197,224754
0	20,4863867	0	0	0	130,181018	94,310651
0	23,0247342	0	0	0	90,536585	0
0	0	16,828116	0	0	155,891389	0
0	40,6500696	15,0129976	0	0	0	404,292766
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0	0	9,8677221	0	0	504,142298	0
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0	42,5149762	0	0	0	227,857921	313,497379

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0	16,7856211	0	0	0	0	0
0	44,8701309	12,8368154	0	19,4589093	438,543613	426,525647
0	0	27,5341408	0	0	444,782528	394,696016
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400,7246083	0	10,1146776	0	0	241,688768	170,382283
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0	0	14,6665405	0	0	0	172,170737
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560,6331823	0	0	32,1676503	0	212,743983	409,781816
0	0	0	0	0	159,596312	0
0	0	12,153817	0	0	97,0288828	0
360,8006214	0	10,0359824	0	0	214,428682	214,450095
0	0	18,6022993	0	13,9500398	155,295519	0
0	48,8687528	0	0	0	239,623416	156,619837
0	49,8341002	15,2939914	0	0	357,485713	390,002564
0	0	54,6562513	0	0	269,311062	0
0	35,658214	16,8432054	0	0	496,81054	281,637024
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0	0	0	29,983889	0	245,624649	263,23224
0	38,0902332	0	0	0	448,972415	251,379066
0	46,6845652	22,4551822	0	0	622,674179	348,47963
0	25,4386149	23,0037886	0	0	175,594878	187,898457
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0	34,3662196	0	0	0	274,186555	247,620298
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0	0	0	28,5556988	0	147,424456	0
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413,2441225	0	12,2685098	33,1110016	0	197,76919	396,714262
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0	0	0	48,3793927	0
0	0	0	60,8481004	0
91,4614661	99,1583343	0	62,6107389	0
306,288813	0	0	0	0
133,954925	0	0	0	0
621,980394	2124,34075	200,512213	0	0
333,909886	0	0	74,8798268	0
232,052103	0	72,3666965	58,078844	0
151,574677	0	0	88,1197045	0
0	136,882494	0	53,5348804	0
0	0	0	46,8518361	0
0	0	0	50,7196321	0
0	0	0	33,1127311	0
0	0	0	105,704043	0
0	133,164272	0	56,5270574	0
0	177,800364	0	55,6186037	0
122,84163	212,413641	0	79,0672546	0
0	115,691453	113,525365	238,851926	0
0	0	39,9023183	148,007533	0
0	171,924432	0	73,435439	0
125,852624	0	0	47,8781225	0

182,038838	0	0	53,9505175	0
92,1243638	140,384364	0	46,2751698	60,8015057
0	0	0	64,4477634	0
0	188,652211	41,0459348	56,9910689	0
0	0	48,9425193	0	0
0	0	0	44,1546493	0
171,652476	0	0	167,141036	0
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0	0	0	50,2380014	0
0	0	0	64,5638956	0
0	0	70,0429816	114,26219	0
189,814957	0	78,4141834	0	0
0	0	0	57,5765091	0
0	0	0	39,6084393	53,6687829
129,091069	135,650008	41,3258688	131,769825	0
210,014457	0	0	52,6266095	72,3703214
180,002783	0	0	43,7318855	0
82,6592531	0	0	37,7315352	0
0	0	0	0	58,4089935
679,135315	0	0	63,7446147	0
221,201519	0	0	96,3925407	0
0	0	0	96,4406397	0
0	0	0	81,5355545	0
198,273343	0	0	53,6511291	0
0	0	0	34,0440706	69,8308216
0	0	0	58,7417897	0
0	0	0	0	0
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0	0	0	87,7792909	0
0	0	0	56,7995486	0
0	0	0	105,956191	0
0	0	35,2174063	80,5997835	0
103,039461	0	0	52,2823459	0
0	0	0	35,4775457	55,3890707
162,133684	0	0	69,5356258	95,4468766
0	0	0	50,025056	0
0	105,173395	0	35,3932939	0
116,987159	0	45,8661781	84,044343	0
0	0	0	67,0778456	0
0	0	0	160,729507	0
0	0	2209,22237	0	0
0	0	0	76,7412904	74,3435791
0	0	0	0	0
0	129,280593	0	48,0637162	0
0	0	39,4411222	53,4978211	75,4994987
0	0	0	64,0798942	104,831335
142,925141	0	0	40,3865438	0
0	184,570394	150,388895	409,964981	0
117,830167	0	0	75,4744648	0
75,9865899	0	0	50,6326871	0

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0	0	0	54,6335399	0
122,294752	127,77778	48,1816125	69,0598227	0
0	0	26,174665	63,063895	52,448566
0	0	0	67,5130598	0
93,729892	0	0	138,394488	0
0	134,497041	0	47,360824	0
364,102036	0	0	55,120459	0
0	0	0	75,5716657	0
113,682905	0	0	37,196544	0
0	0	0	0	75,8536448
131,287927	0	0	0	0
0	0	0	121,156404	0
99,9086362	109,884189	0	72,414333	0
141,949796	0	0	51,8457496	0
171,090318	0	0	79,7972953	0
132,939035	0	0	45,2350309	0
91,4784612	0	0	74,159331	65,3692907
0	0	0	42,8424148	0
0	0	0	135,012216	0
116,140424	0	0	57,2027706	0
121,768452	0	46,8802751	0	74,0933449
124,699825	0	37,8393453	65,7314898	0
0	0	0	51,1395978	0
0	154,660737	48,8344801	51,5542928	0
223,240108	0	0	99,4022183	0
137,098935	0	0	192,245136	0
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0	143,791217	0	62,2342213	0
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0	0	29,4084372	76,7046071	0
0	0	0	114,658263	57,7663787
140,484621	0	0	97,4482929	0
71,8368912	0	35,4668958	78,9929472	64,0036636
138,568763	0	0	58,0164475	0
0	117,96766	0	118,431234	0
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0	132,84979	0	119,596106	0
129,157674	146,88024	0	66,1662305	0
148,162626	0	39,7391042	38,879663	69,3832833
0	0	17,7359147	38,6131888	110,135744
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132,708501	121,882785	0	125,308247	70,2572981
0	0	0	54,518009	70,8485493
97,1195984	0	0	0	79,9812461
110,854008	0	0	48,2707704	0
0	0	0	37,7260772	0

96,6916272	0	0	0	0
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114,485041	132,448196	0	54,4628889	0
0	0	43,6975133	195,957529	0
0	0	46,6271486	0	95,8589461
0	0	46,3533452	135,342455	85,0660652
125,758689	0	55,040506	142,027413	0
0	100,638981	0	50,9912014	0
0	0	0	76,1193132	0
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0	0	0	57,8046404	0
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86,7134909	0	0	72,0052497	59,1094684
111,738147	0	42,9721493	53,7157845	0
170,226745	0	57,612668	48,9751698	0
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80,8303826	0	0	45,3180383	0
149,452025	0	0	0	0
193,055405	0	102,742441	178,388145	0
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0	0	0	47,5964269	43,6527962
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0	0	0	82,2300383	0
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0	0	0	102,643267	82,3477121
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225,74957	169,756146	0	79,0092668	80,6305491
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0	0	0	78,3560077	65,8254713
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101,041632	0	38,5951777	71,4020731	0
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0	0	0	0	0
117,602072	124,266852	43,4956733	87,3781723	0
0	0	0	20,9459149	0

135,768076	0	0	46,1002794	0
0	96,9446787	0	53,8022969	0
67,3043912	0	0	0	0
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82,0846717	0	0	0	0
0	0	0	50,8928564	0
0	0	0	0	0
0	0	0	95,881596	0
94,4462828	118,641457	0	71,8673533	0
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0	0	0	0	0
0	0	0	50,4256298	0
108,63814	0	0	128,754773	0
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99,9923531	0	0	53,5943934	0
0	0	0	60,7703119	0
0	0	0	178,905839	0
113,772278	0	51,1119787	0	0
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0	0	0	39,0367835	0
0	0	0	41,3083722	56,2982553
160,032216	0	0	42,580647	0
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107,572373	0	0	107,528574	0
0	106,19554	0	74,1666778	0
0	0	93,0384216	725,689077	0
174,506885	155,486412	50,1903994	0	0
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113,857423	0	0	0	0
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119,726101	0	0	50,1205773	0
0	0	0	27,9928475	0
0	0	0	0	0
0	80,881441	0	38,5183432	0
110,4335	0	0	111,230086	0
108,098207	0	47,5167124	107,256956	0
0	0	7735,44844	372,44223	0
0	0	0	0	0
120,981155	0	0	63,3438953	0
127,474248	0	0	46,3069404	0
0	0	0	45,2081705	0

77,0607113	0	0	32,2215538	0
137,454254	231,910275	79,8589814	0	0
0	97,9200316	0	60,1032555	0
0	0	0	79,254018	0
0	84,612908	0	96,5841845	0
66,0470396	0	0	34,8528872	0
0	0	31,8556507	35,2006356	0
0	0	0	60,2793255	0
0	0	0	40,0441997	0
0	0	0	90,0104298	0
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165,075311	0	0	62,3958918	0
67,962512	76,8532541	0	42,9006608	0
109,189512	0	0	0	0
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0	0	0	51,165357	0
0	0	0	43,6906464	0
133,258817	140,911951	0	102,093976	0
0	94,5225686	0	49,5463389	48,3212854
0	0	0	19,1522978	0
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115,418576	0	0	49,9798696	0
126,741978	0	50,8740695	88,7095404	0
0	0	0	76,8493585	0
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151,73858	0	0	35,4065531	0
181,14947	0	0	47,8881716	0
90,2844321	0	0	36,0610947	0
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0	189,617469	0	42,7010866	0
0	0	0	45,0339196	0
97,5011533	108,936396	0	54,9299033	0
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0	0	0	55,8066115	77,7570866
68,8734988	0	0	58,4562305	54,0806148
144,129956	134,674564	0	0	0
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121,100993	0	0	40,7907173	70,0335678
0	180,815039	56,7266051	63,0131598	0
148,410085	164,03175	0	79,4808431	0
0	0	0	47,1258066	0
0	58,6928545	0	55,0654956	0

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112,765403	0	0	88,0691757	0
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127,745461	136,355242	0	127,030919	0
124,586945	0	0	71,7441532	0
101,878957	0	0	57,2436945	0
0	0	0	62,8570476	49,9832424
101,085112	143,743532	43,6987039	116,712461	68,0534553
126,244847	0	44,4021074	0	69,3334749
114,039975	0	0	0	83,3915348
146,212927	0	0	73,4901896	0
0	0	71,9757909	300,461084	0
0	0	0	108,325132	0
117,491325	0	0	104,77086	0
154,05504	240,939442	55,7924257	0	0
105,543457	0	0	46,2040843	59,6493395
196,406515	0	0	85,6065849	0
0	0	0	27,6583081	0
211,257281	0	0	100,741931	0
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169,382042	165,148932	57,1417434	111,931926	0
88,6248701	0	0	53,3369689	57,3651828
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118,033893	0	0	47,0094704	0
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86,5470504	0	0	79,2733473	50,5097498
140,741079	0	0	116,449216	0
0	72,9474082	0	52,3376835	38,5432856
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0	255,393238	0	98,5188966	103,996859
141,085414	0	0	86,5035729	0
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0	132,906877	0	98,6465904	0
0	115,479263	0	69,06895	0
133,360158	0	0	39,8989562	0
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139,01605	0	0	83,6605744	0
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63,9949926	0	0	41,0363874	0
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208,191312	0	0	0	0
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154,279877	0	0	0	0
95,8482476	0	0	0	0
135,616759	149,369994	0	61,0011304	0
0	191,055171	55,5969846	98,0276907	0
0	87,5700005	27,1368923	42,2900327	0
82,1723206	0	0	41,4264947	0
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117,748909	0	0	0	0
127,222924	0	41,1132345	0	0
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101,531701	0	0	0	69,9376065
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145,688264	0	0	53,960701	0
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130,25401	0	0	110,078858	0
112,950845	0	34,4265562	0	59,9284817
194,438632	0	62,8424738	168,950002	0
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0	0	0	121,785813	61,0544731
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111,194201	0	0	80,4390127	0
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98,2838037	0	47,6168646	127,249161	78,2888591
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165,340868	0	0	0	0
0	158,863666	0	81,4311846	0
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167,054717	0	42,0453786	56,9906519	0
53,9904382	0	0	41,5375394	39,0602638
0	0	0	85,976678	70,3376943
213,582236	0	62,6455033	134,41282	96,7344162
79,2400571	0	0	57,6879608	0
108,906533	0	46,1312794	170,806827	0
0	0	0	69,0279549	0
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124,425861	0	87,2741091	122,347909	0
125,197578	0	0	48,562287	0

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153,761024	152,167297	0	98,5309645	0
107,798732	0	0	81,1488372	0
0	134,630257	0	56,6827951	0
204,58562	0	0	89,0208221	93,4471781
122,315265	0	0	75,7474535	0
0	59,4986225	0	26,2350918	51,1951416
221,844016	0	0	0	0
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164,973139	0	0	68,9813955	0
111,700021	0	0	53,4354669	0
0	0	0	0	0
158,886245	0	54,4265076	61,4301574	0
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220,126886	0	53,7830068	89,3100794	0
0	0	0	102,950672	0
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0	187,988683	0	109,499283	0
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146,378914	0	0	0	0
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115,862266	144,678591	0	40,8337088	0
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71,9004943	0	30,9144873	57,8959357	0
129,189986	0	0	51,8860415	0
141,647322	0	0	89,2585421	0
83,7036038	0	0	50,5600654	0
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0	87,6357601	0	73,9793381	0
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93,3436055	0	0	64,6266373	0
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0	0	0	68,9464335	0
177,872568	0	0	0	0
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82,1153137	0	0	31,229566	50,340446
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0	201,144901	0	84,1650973	0
237,195143	0	0	0	0
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69,6308892	87,1899544	0	0	0
161,499972	0	0	0	0
198,10883	0	0	0	0
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121,712556	0	39,1307197	0	0
105,118875	137,886848	0	84,2720159	0
186,879803	0	0	0	0
217,827288	0	51,2832106	0	0
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0	0	0	0	0
147,911184	0	0	82,0169076	0
210,342675	269,301162	0	0	0
75,6520615	0	0	0	0
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135,522082	129,503728	0	0	0
178,678002	0	0	0	0
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152,731477	0	43,5254682	0	0
213,848709	0	0	0	0
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190,878471	0	35,5554003	0	0
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315,293094	0	0	0	0
827,795049	0	0	0	0
174,981632	0	0	0	0
256,516016	0	0	0	0
492,603736	0	0	56,4309141	0
92,3054469	0	0	0	0
383,7821	0	0	0	0
159,819048	0	0	0	0
448,003073	0	0	0	0
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577,327998	0	0	0	0
593,859018	182,772259	0	61,0063369	0
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191,98495	0	0	59,6043559	0
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85,2083927	0	0	29,0282256	0
0	0	0	0	0
0	51,0516105	0	0	0
67,5347182	74,5883886	0	0	0
0	0	46,6200669	47,8055	0
0	0	0	38,4679712	0
0	87,6911085	0	48,3749914	0
0	0	0	34,3314635	0
111,747349	163,3528	0	57,0766026	0
0	0	0	0	0
0	0	32,6409314	0	0

0	0	0	0	0
0	0	0	0	0
220,592027	0	0	0	0
0	0	0	0	0
0	0	27,8918357	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
196,291855	0	0	0	0
0	0	13507,4318	796,331314	0
105,203714	0	0	0	0
0	0	0	0	0
101,387614	0	0	0	0
0	0	0	0	0
0	0	0	0	0
87,1454562	0	0	108,398865	0
224,667735	0	0	0	0
0	152,569149	0	0	0
0	0	0	0	0
0	0	0	0	0
91,1001201	0	0	0	0
0	0	0	0	0
52,7343291	0	0	0	0
0	0	0	32,1036877	0
0	0	0	40,4003251	0
0	0	0	71,876329	0
80,924306	0	0	0	0
0	0	0	0	0
133,219076	126,419093	0	35,7583106	0
0	11,9534812	0	0	0
149,932815	0	0	0	0
148,79298	130,326048	0	0	0
0	0	0	59,7562366	0
95,8113296	0	0	0	0
110,6721	0	0	63,9382545	0
0	0	0	0	0
0	0	0	0	0
0	0	0	44,1712603	0
169,214336	0	0	70,0984643	0
92,3149864	0	0	68,3296204	66,1999015
164,084294	0	0	0	0
0	0	0	68,6427493	0
0	0	46,5234211	0	0
0	0	0	44,829863	0
0	0	0	90,2772418	52,6543604
0	0	0	66,1215235	84,7385928
57,2807955	81,1674886	0	60,77929	48,3200049
135,708649	0	0	64,7923684	76,7988105
92,5659769	0	0	54,564991	94,3993552
117,751274	0	0	63,3626824	72,1186765

59,9941354	0	0	33,8302254	0
89,3989159	0	0	63,8837083	0
0	0	0	11,0256178	0
0	0	32,9629386	37,831457	83,3703282
167,579096	0	0	80,7408701	0
0	0	0	70,9007798	0
0	0	0	53,8875834	50,3937047
0	0	0	88,371534	79,0546494
105,363369	0	0	53,5562049	0
0	0	0	59,2001479	0
81,0994651	98,5857759	0	67,3071305	63,6597583
95,9736361	0	0	0	101,56576
0	0	0	49,19932	55,4341636
0	77,5565224	0	52,8743124	0
0	0	0	96,1863783	0
0	0	0	75,7016979	70,9950911
164,527942	0	0	54,998676	0
0	0	0	69,3911569	66,813869
0	0	0	53,1353645	65,7531
99,9119875	0	0	48,6480459	0
90,3790993	0	0	45,5741704	87,1219851
0	0	0	48,941601	0
0	0	0	61,381711	0
110,549989	0	0	0	0
0	0	0	75,0181233	0
0	0	0	48,7811496	0
110,739575	119,378131	0	68,781573	0
0	133,94515	0	0	0
96,9332107	0	0	34,7568358	0
0	0	0	66,4150989	0
135,171613	0	0	46,0535863	0
0	0	0	44,9087283	0
0	0	40,5590931	0	90,7524981
204,505674	0	36,3031666	31,691672	0
0	0	0	0	0
0	0	0	0	67,2271229
0	140,910821	0	105,17651	0
0	133,18146	0	71,5510235	0
0	0	33,4094175	83,3008591	0
0	152,334921	0	117,511396	58,5200451
0	0	0	69,7570745	0
116,803829	0	0	77,8287267	0
0	0	0	41,2738923	52,3402029
0	0	0	71,5422155	67,2018724
121,676331	0	50,5670296	75,5885632	0
156,031311	0	65,2833059	59,9758483	0
179,824547	0	64,3450266	75,4804381	0
0	0	0	73,2088041	62,2747001
124,505726	0	0	100,035658	0
0	0	0	0	85,8753339

0	90,2585509	34,5236416	82,7555497	62,848721
0	0	0	40,4960796	0
0	93,3183881	0	44,450026	45,4505886
0	0	0	64,8857125	0
0	0	0	114,48514	0
0	0	0	73,4056194	0
0	0	0	0	0
88,3186217	98,1526067	0	58,2747104	0
132,056852	0	54,1270832	52,1986722	0
0	0	0	0	0
0	0	0	52,3777159	0
0	0	44,3876263	42,2424488	0
191,083654	0	0	84,8177922	0
0	0	0	41,1949175	44,8965329
0	0	0	0	65,0001772
0	0	0	0	0
105,557856	0	0	59,9001093	0
0	126,226126	0	44,8200132	0
0	0	0	25,9797774	45,2917697
91,9720001	0	0	69,2305908	0
0	110,081385	37,5741637	0	58,9899978
89,4240748	0	0	49,1794086	0
0	0	0	0	0
0	181,712202	71,1359334	167,375946	0
0	0	34,8199423	86,8602107	0
0	0	0	60,6383248	0
0	91,6441042	32,7863091	91,9124925	0
130,81049	0	0	44,9569003	0
0	120,474801	0	28,681136	0
0	0	37,98621	105,445992	0
166,141741	0	0	70,7172129	0
128,796042	0	0	62,6110028	0
0	0	0	67,7347287	0
0	0	0	0	0
0	0	0	72,534872	0
151,605427	0	68,4627597	339,787692	0
0	0	32,144315	87,2330877	0
0	0	0	113,369256	0
0	158,982691	0	65,1350972	0
102,234067	0	0	58,9268797	0
165,228492	0	0	59,5884881	0
87,349105	0	0	34,6646675	0
217,309101	0	65,3283401	0	0
148,710255	0	0	74,3761925	0
0	0	0	58,8525901	0
0	0	0	69,2504217	0
0	0	37,7287594	102,484874	68,031964
0	0	0	83,4148429	0
153,567763	0	0	79,0756558	0
98,6118565	0	50,5728568	111,255897	0

73,6007538	0	0	52,5507685	60,3959846
161,208183	0	0	56,0157865	0
0	121,813215	0	137,546754	0
0	0	0	66,5148728	71,1597882
102,187133	0	0	51,7205712	66,7893963
314,822052	0	0	58,3724087	0
532,523329	0	12329,4698	803,337125	0
187,459379	0	0	40,1892262	0
278,512505	0	0	60,2829539	0
157,575118	0	0	41,2999658	67,6825362
86,5141226	0	0	107,762177	0
127,163027	0	0	155,85422	0
0	0	0	58,3028002	0
0	0	0	64,1794318	0
150,058776	0	55,35807	51,3619594	0
0	0	53,9024264	0	0
0	0	0	0	0
167,241421	0	0	82,1071691	0
0	0	24,0041591	44,4260323	44,8869401
433,07504	223,812989	58,626533	85,1550859	0
196,245153	0	0	77,5938066	0
0	132,728815	0	0	0
138,867592	0	0	0	81,7543211
0	0	0	0	0
129,279642	0	0	64,4590741	98,3223027
0	146,705626	0	0	0
0	0	0	62,8914072	0
125,656912	0	52,641003	112,925711	0
0	0	0	75,7798682	0
0	0	0	225,93274	0
0	135,436196	39,3449253	86,4244443	0
0	0	0	35,3823202	0
0	161,915301	0	87,6755077	0
0	86,9547456	0	47,8647513	0
0	0	0	52,7214041	0
81,3269183	0	0	78,6911792	0
0	151,356392	0	106,858312	0
75,4690956	89,0741249	28,5855303	55,8814163	62,0542942
75,8044429	188,488929	0	62,0504716	0
227,292768	183,324981	96,6603569	182,167923	0
0	117,113216	0	82,8475855	0
86,0883734	228,562762	0	36,7008123	0
108,14227	180,04866	0	65,9109276	0
0	0	0	52,3277129	0
0	126,690986	0	90,0131537	0
0	0	0	59,0448613	0
117,236232	137,941624	0	80,7871431	0
0	0	0	42,6629871	46,8639301
0	0	0	45,1272866	46,7343417
77,2476406	124,898227	29,6846337	66,5389257	59,4919689

92,9113389	112,585948	0	75,3675306	0
107,990829	0	0	60,9202472	0
0	0	53,956412	27,17303	0
0	0	0	72,4243493	0
0	140,852253	0	85,7576125	0
194,462094	153,598694	65,496734	171,020427	0
132,574497	0	47,1325392	137,070714	0
100,685459	149,186187	0	94,3355541	0
124,478016	165,745761	0	61,0334196	0
0	110,774947	0	65,5489568	0
121,604377	0	0	60,290029	0
111,730417	0	0	0	0
110,267203	172,537147	0	41,5229337	0
96,2687133	165,328212	0	51,561272	0
118,640014	0	0	55,854768	0

Supplementary T

De novo extracted
SBS_A
SBS_B
SBS_C
SBS_D
SBS_E
SBS_F
SBS_G
SBS_H
SBS_I
SBS_J
SBS_K
SBS_L
SBS_M
DBS_A
DBS_B
DBS_C
DBS_D
ID_A
ID_B
ID_C
ID_D
ID_E
ID_F
ID_G

Table 7: Decomposition of de novo signatures to COSMIC reference signatures

Global NMF Signatures
Signature SBS_A (SBS40b)
Signature SBS_B (SBS40a)
Signature SBS1 (1.72%) & Signature SBS4 (28.90%) & Signature SBS40 (69.38%)
Signature SBS1 (0.18%) & Signature SBS5 (4.98%) & Signature SBS22 (94.84%)
Signature SBS1 (2.54%) & Signature SBS5 (46.74%) & Signature SBS40 (50.72%)
Signature SBS_F (SBS40c)
Signature SBS1 (2.40%) & Signature SBS2 (4.44%) & Signature SBS5 (10.00%) & Signature SBS13
Signature SBS_H
Signature SBS_I (SBS22b)
Signature SBS1 (0.86%) & Signature SBS18 (59.04%) & Signature SBS40 (40.10%)
Signature SBS1 (42.34%) & Signature SBS5 (0.62%) & Signature SBS40 (57.04%)
Signature SBS1 (18.64%) & Signature SBS5 (44.34%) & Signature SBS21 (14.30%) & Signature SBS13
Signature SBS1 (1.26%) & Signature SBS4 (18.92%) & Signature SBS5 (39.50%) & Signature SBS13
Signature DBS4 (24.06%) & Signature DBS9 (75.94%)
Signature DBS2 (73.18%) & Signature DBS4 (26.82%)
Signature DBS_C
Signature DBS_D (DBS20)
Signature ID5 (72.66%) & Signature ID8 (27.34%)
Signature ID5 (84.58%) & Signature ID11 (15.42%)
Signature ID_C (ID23)
Signature ID3 (36.30%) & Signature ID8 (21.06%) & Signature ID9 (42.64%)
Signature ID1 (25.86%) & Signature ID2 (74.14%)
Signature ID1 (100.00%)
Signature ID1 (22.76%) & Signature ID12 (77.24%)

L1 Error %	L2 Error %	KL Divergence	Cosine Similarity	Correlation
0	0	0	1	1
0	0	0	1	1
29.28	30.38	0.064	0.95	0.90
13.86	8.82	0.051	1.00	1.00
22.61	25.76	0.042	0.97	0.89
0	0	0	1	1
27.68	26.35	0.063	0.96	0.93
0	0	0	1	1
0	0	0	1	1
18.40	17.19	0.033	0.99	0.98
12.07	8.47	0.017	1.00	1.00
23.56	22.87	0.057	0.97	0.96
21.96	22.05	0.040	0.98	0.95
65.08	54.95	3.742	0.84	0.77
40.11	14.27	1.182	0.99	0.99
0	0	0	1	1
0	0	0	1	1
23.53	21.31	0.077	0.98	0.97
37.53	33.38	0.141	0.94	0.92
0	0	0	1	1
56.22	39.80	0.478	0.92	0.90
26.07	6.59	0.415	1.00	1.00
42.42	6.05	2.420	1.00	1.00
75.94	40.99	2.246	0.91	0.90

Supplementary Table 8: Associations of COSMIC mutational signatures and mutatic

Signature	Effect size (95% CI)	Regression type	p-value
SBS1	-1.28 (-7.57-5.00)	linear	6.9e-01
SBS2	1.15 (0.87-1.52)	logistic	3.2e-01
SBS4	1.06 (1.01-1.10)	logistic	8.3e-03
SBS5	1.01 (0.94-1.09)	logistic	7.5e-01
SBS12	0.82 (0.75-0.90)	logistic	6.4e-05
SBS13	1.06 (1.00-1.12)	logistic	5.4e-02
SBS18	1.03 (0.95-1.11)	logistic	4.7e-01
SBS22a	0.72 (0.66-0.78)	logistic	7.4e-14
SBS22b	0.73 (0.68-0.79)	logistic	1.5e-15
SBS40a	28.60 (10.29-46.92)	linear	2.2e-03
SBS40b	62.24 (48.40-76.08)	linear	5.1e-18
SBS40c	0.99 (0.93-1.05)	logistic	7.7e-01
SBS44	0.83 (0.64-1.07)	logistic	1.5e-01
DBS2	1.03 (0.99-1.07)	logistic	1.8e-01
DBS4	1.11 (1.03-1.19)	logistic	4.4e-03
DBS9	1.06 (0.95-1.18)	logistic	3.3e-01
DBS20	0.85 (0.78-0.92)	logistic	7.9e-05
DBS_C	1.02 (0.96-1.09)	logistic	5.1e-01
ID1	-1.29 (-5.09-2.52)	linear	5.1e-01
ID2	1.07 (0.91-1.26)	logistic	4.4e-01
ID3	0.93 (0.84-1.02)	logistic	1.2e-01
ID5	14.61 (10.20-19.03)	linear	1.3e-10
ID8	1.10 (1.05-1.16)	logistic	7.1e-05
ID11	1.17 (0.92-1.50)	logistic	2.0e-01
ID12	0.81 (0.63-1.04)	logistic	1.0e-01
ID23	0.77 (0.66-0.90)	logistic	1.1e-03
SBS burden	-102.07 (-173.09--31.06)	linear	4.9e-03
DBS burden	0.65 (0.05-1.24)	linear	3.3e-02
ID burden	9.32 (-5.81-24.45)	linear	2.3e-01

Linear regressions were run with signature attribution or mutational burden as a dependent variable. If a signature was present in <75% of samples, the logistic regressions were used with sign p-values are shown for the ASR variable in linear or logistic regressions. Raw values are shown. Covariates in all regressions include sex and age of diagnosis.

The results for SBS12, as well as highly correlated AA-linked signatures SBS22a/b, DBS20 and ID23. Results passing multiple comparisons are highlighted in bold.

onal burden with age-standardised incidence rates (ASR) of ccRCC

variable and ASR as an independent variable.

ature presence as a dependent variable.

own, i.e. without adjustment for multiple comparisons.

and ID23 are not representative due to the outlier effect in specific countries.

Supplementary Table 9: Associations of COSMIC mutational signatures and m

Signature	Effect size (95% CI)	Regression typ	p-value
SBS1	0.96 (0.85-1.10)	logistic	5.8e-01
SBS4	0.96 (0.84-1.09)	logistic	5.4e-01
SBS5	0.91 (0.75-1.11)	logistic	3.6e-01
SBS13	1.12 (0.95-1.31)	logistic	1.7e-01
SBS18	0.96 (0.77-1.19)	logistic	7.1e-01
SBS40a	15.85 (-36.87-68.57)	linear	5.5e-01
SBS40b	57.39 (13.43-101.35)	linear	1.1e-02
SBS40c	1.02 (0.82-1.26)	logistic	8.7e-01
DBS2	0.98 (0.86-1.12)	logistic	7.6e-01
DBS4	0.94 (0.78-1.12)	logistic	4.7e-01
DBS9	1.05 (0.79-1.41)	logistic	7.2e-01
DBS_C	0.95 (0.78-1.17)	logistic	6.4e-01
ID1	-0.72 (-5.71-4.26)	linear	7.7e-01
ID3	0.65 (0.42-1.00)	logistic	5.1e-02
ID5	10.16 (-4.71-25.03)	linear	1.8e-01
ID8	4.58 (1.05-8.10)	linear	1.1e-02
SBS burden	82.32 (-19.32-183.97)	linear	1.1e-01
DBS burden	1.02 (-0.81-2.84)	linear	2.7e-01
ID burden	12.31 (-9.82-34.44)	linear	2.7e-01

Linear regressions are run with signature attribution as a dependent variable and ASR as ar
For mutation burdens, linear regressions are run in a similar fashion.
p-values are shown for the ASR variable in linear or logistic regressions. Raw values are sh
Covariates in all regressions include sex and age of diagnosis.

utational burden with age-standardised incidence rates (ASR) of ccRCC within Czech

1 independent variable if signature is present in $\geq 75\%$ of samples, otherwise the logistic regressions
own, i.e. without adjustment for multiple comparisons.

Republic

are used with signature presence as a dependent variable.

Supplementary Table 10: Iden

Signature	Metabolomics feature*
SBS4	192.0896@0.8945959†
SBS4	162.1129@0.8940036
SBS4	176.095@1.5373601†
SBS18	268.219@7.1944504
SBS40b	144.0586@4.657475
SBS40b	240.1468@0.8929933
SBS40b	239.0943@1.9145181
SBS40b	357.1941@3.3849125
SBS40b	519.2104@2.5749063
SBS40b	429.2151@3.2288802
SBS40b	247.1576@3.5390012
SBS40b	278.1133@5.421082
SBS22a	319.2475@6.732202
SBS22b	319.2475@6.732202
SBS22b	589.4153@7.17079
SBS22b	315.2163@6.347018
DBS2	192.0896@0.8945959†
ID5	165.0791@2.042512
ID5	240.1468@0.8929933
ID5	78.0094@0.859491
ID5	284.071@5.7265477
ID5	429.2151@3.2288802
ID5	270.0561@5.5605097
ID8	144.0586@4.657475

Identified metabolites in the metabolome screening

Correlated metabolomics features
176.0948@1.5287789† ; 176.0943@0.9254018†
286.229@7.1959248 ; 285.2222@7.1959248
228.1464@0.85400295† ; 228.1466@0.85400516† ; 228.1463@0.8544947†
205.1108@3.3837113 ; 352.2229@5.8221874 ; 279.1145@2.7879996
266.1627@1.9694997
259.9978@1.9243668 ; 352.2126@2.7764354 ; 291.254@7.197001 ; 269.2713@7.195463 ;
319.2473@6.731206 ; 318.2163@6.731206 ; 320.2482@6.7295294
319.2473@6.731206 ; 318.2163@6.731206 ; 320.2482@6.7295294
414.1826@5.3945203
315.2155@6.426975 ; 268.9915@3.3586998 ; 537.9828@3.359289
119.0742@2.043 ; 102.0475@2.0420153 ; 130.0424@2.0425036 ;
106.0411@2.0420187 ; 94.0425@2.0415072 ; 90.047@2.0420198 ;
187.0608@2.0420187 ; 76.0321@2.0420163 ; 165.0796@1.9764 ;
119.0748@1.973
228.1464@0.85400295† ; 228.1466@0.85400516† ; 228.1463@0.8544947†
78.0144@0.8585023 ; 78.0118@0.85872173
259.9978@1.9243668 ; 352.2126@2.7764354 ; 291.254@7.197001 ;
269.2713@7.195463 ; 353.065@4.546607 ; 330.086@3.8020017
458.0262@3.3590302

*The feature used for the estimate, p-values, and relative importance. Label consists of a monoisotop

**According to Metabolomics Standards Initiative; *Metabolomics* 3 (2007) 211-221

† Features used to confirm the identity of the metabolite. Correlated features were only used in tentat

††Isobaric metabolites with no chromatographic separation

p-values are shown for the metabolomic features in univariate or multivariate models. Raw values are

Identity	Identification confidence**	Estimate (Univariate)	p-value (Univariate)	p-value (Multivariate)
Hydroxycotinine	2	3.77e-01	2.87e-09	9.99e-04
		3.58e-01	5.19e-06	9.99e-04
Cotinine + Serotonin††	1	3.12e-01	1.93e-05	9.99e-04
		-1.19e+00	2.49e-05	5.99e-03
N,N,N-trimethyl-L-alanyl-L-proline (TMAP)	2	2.70e-01	1.25e-10	1.20e-02
		1.71e-01	6.65e-06	9.99e-04
		1.31e-01	1.19e-05	3.00e-03
		7.79e-02	2.89e-06	1.50e-02
		8.95e-02	8.15e-08	5.99e-03
		8.87e-02	2.43e-07	1.50e-02
		9.10e-02	2.26e-08	8.99e-03
9.55e-02	4.44e-08	9.99e-04		
		-6.46e-01	2.25e-05	2.00e-03
		-7.78e-01	5.84e-06	3.00e-03
		-7.93e-01	4.21e-05	1.70e-02
		-6.83e-01	5.21e-05	1.10e-02
Hydroxycotinine	2	3.2e-01	5.9e-07	9.99e-04
N,N,N-trimethyl-L-alanyl-L-proline (TMAP)	2	2.27e-01	3.39e-05	7.99e-03
		1.65e-01	8.23e-07	9.99e-04
		9.63e-02	3.16e-05	8.99e-03
		6.20e-02	4.31e-05	3.00e-03
		6.52e-02	2.70e-05	1.90e-02
		6.79e-02	5.13e-06	2.00e-03
		2.63e-01	1.72e-07	3.30e-02

ic mass@retention time (minutes)

ive annotation of the metabolites

: shown, i.e. without adjustment for multiple comparisons. More information in Methods.

Relative importance (Multivariate)
1
2
4
3
12
1
6
32
11
28
30
3
11
15
116
34
1
13
1
6
7
49
3
29

Supplementary Table 12: Likely driver mutations identified in ccRCC

Gene	Sample	Normal	Chrom	Pos	Ref	Alt	Transcript
ACVR1	PD46845a	PD46845b	chr2	157766005	C	A	CCDS2206.
ACVR1B	PD51223a	PD51223b	chr12	51975312	GAGAC	G	CCDS44894
ACVR2A	PD50441a	PD50441b2	chr2	147926116	TA	T	CCDS33301
ACVR2A	PD51573a	PD51573b	chr2	147926116	TA	T	CCDS33301
AKT1	PD51536a	PD51536b	chr14	104780108	A	C	CCDS9994.
AKT1	PD42673a	PD42673b	chr14	104780214	C	T	CCDS9994.
APC	PD51695a	PD51695b	chr5	112707873	CGTCTGGC	C	ENST00000
APC	PD46732a	PD46732b	chr5	112821985	G	T	CCDS4107.
APC	PD51821a	PD51821b	chr5	112838196	G	T	CCDS4107.
ARHGAP35	PD46709a	PD46709b	chr19	46919208	TC	T	CCDS46127
ARHGAP35	PD51775a	PD51775b	chr19	46921002	A	AT	CCDS46127
ARHGAP35	PD51600a	PD51600b	chr19	46921195	C	A	CCDS46127
ARHGAP35	PD51529a	PD51529b	chr19	46921969	GA	G	CCDS46127
ARHGAP35	PD50190a	PD50190b	chr19	47000391	G	A	CCDS46127
ARHGAP35	PD51301a	PD51301b	chr19	47000517	GC	G	CCDS46127
ARID1A	PD50214a	PD50214b	chr1	26696421	CCCCGCC	C	CCDS285.1
ARID1A	PD50431a	PD50431b	chr1	26696421	CCCCGCC	C	CCDS285.1
ARID1A	PD51387a	PD51387b	chr1	26696809	CCTCA	C	CCDS285.1
ARID1A	PD51670a	PD51670b	chr1	26696957	A	AGAGC	CCDS285.1
ARID1A	PD50637a	PD50637b	chr1	26697068	A	AC	CCDS285.1
ARID1A	PD46884a	PD46884b	chr1	26697203	CTCAG	C	CCDS285.1
ARID1A	PD51803a	PD51803b	chr1	26697232	GGC	G	CCDS285.1
ARID1A	PD51645a	PD51645b	chr1	26697265	C	T	CCDS285.1
ARID1A	PD55540a	PD55540b	chr1	26731218	C	T	CCDS285.1
ARID1A	PD55534a	PD55534b	chr1	26760895	GAA	G	CCDS285.1
ARID1A	PD51640a	PD51640b	chr1	26761067	C	G	CCDS285.1
ARID1A	PD51551a	PD51551b	chr1	26762236	G	GACAGATA	CCDS285.1
ARID1A	PD51734a	PD51734b	chr1	26763097	ACC	A	CCDS285.1
ARID1A	PD50422a	PD50422b2	chr1	26763200	ATG	A	CCDS285.1
ARID1A	PD51237a	PD51237b	chr1	26766248	A	AG	CCDS285.1
ARID1A	PD51781a	PD51781b	chr1	26771130	CA	C	CCDS285.1
ARID1A	PD50105a	PD50105b	chr1	26771210	TC	T	CCDS285.1
ARID1A	PD50131a	PD50131b	chr1	26772607	CAGATCCC	C	CCDS285.1
ARID1A	PD51784a	PD51784b	chr1	26772857	TG	T	CCDS285.1
ARID1A	PD47605a	PD47605b	chr1	26772906	C	T	CCDS285.1
ARID1A	PD51780a	PD51780b	chr1	26773636	ATC	A	CCDS285.1
ARID1A	PD51570a	PD51570b	chr1	26773661	GGGGATG	G	CCDS285.1
ARID1A	PD50433a	PD50433b	chr1	26773896	C	T	CCDS285.1
ARID1A	PD42585a	PD42585b	chr1	26774669	TG	T	CCDS285.1
ARID1A	PD51209a	PD51209b	chr1	26779390	TTGGGCG	T	CCDS285.1
ARID1A	PD50151a	PD50151b	chr1	26779548	ACAGCAG	A	CCDS285.1
ARID1A	PD37483a	PD37483b	chr1	26779674	G	GGA	CCDS285.1
ARID1A	PD51225a	PD51225b	chr1	26779797	C	CTG	CCDS285.1
ARID1A	PD42893a	PD42893b	chr1	26780312	A	AC	CCDS285.1
ARID1B	PD46936a	PD46936b	chr6	156778958	CGCGGCG	C	CCDS55072
ARID1B	PD50135a	PD50135b	chr6	157167186	G	A	CCDS55072
ARID1B	PD51696a	PD51696b	chr6	157181116	A	T	CCDS55072
ARID2	PD51682a	PD51682b	chr12	45731217	GTT	G	CCDS31783
ARID2	PD46909a	PD46909b	chr12	45817689	TG	T	CCDS31783

ARID2	PD55523a	PD55523b	chr12	45850648	C	A	CCDS31783
ARID2	PD37464a	PD37464b	chr12	45851250	C	T	CCDS31783
ARID2	PD51682a	PD51682b	chr12	45851384	T	TA	CCDS31783
ARID2	PD46739a	PD46739b	chr12	45851493	C	T	CCDS31783
ARID2	PD46775a	PD46775b	chr12	45852191	GC	G	CCDS31783
ARID2	PD51820a	PD51820b	chr12	45852396	GGTTCATC	G	CCDS31783
ARID2	PD51297a	PD51297b	chr12	45891923	A	G	CCDS31783
ARID5B	PD48851a	PD48851b	chr10	62057266	G	GA	CCDS31208
ARID5B	PD37458a	PD37458b	chr10	62085771	GA	G	CCDS31208
ARID5B	PD46727a	PD46727b	chr10	62085868	G	T	CCDS31208
ARID5B	PD46963a	PD46963b	chr10	62091586	AC	A	CCDS31208
ASXL1	PD51812a	PD51812b	chr20	32436783	T	TC	CCDS13201
ATM	PD51576a	PD51576b	chr11	108227795	AGCGCCTC	A	CCDS31669
ATM	PD46860a	PD46860b	chr11	108235816	TC	T	CCDS31669
ATM	PD51270a	PD51270b	chr11	108243992	C	A	CCDS31669
ATM	PD51545a	PD51545b	chr11	108244823	T	A	CCDS31669
ATM	PD50614a	PD50614b	chr11	108247072	G	A	CCDS31669
ATM	PD51178a	PD51178b	chr11	108252865	GA	G	CCDS31669
ATM	PD46801a	PD46801b	chr11	108254038	AG	A	CCDS31669
ATM	PD46874a	PD46874b	chr11	108256274	C	A	CCDS31669
ATM	PD50115a	PD50115b	chr11	108267294	AGTAGT	A	CCDS31669
ATM	PD42595a	PD42595b	chr11	108272740	TG	T	CCDS31669
ATM	PD48899a	PD48899b	chr11	108284269	TCATTTTG	T	CCDS31669
ATM	PD51723a	PD51723b	chr11	108284370	AT	A	CCDS31669
ATM	PD51573a	PD51573b	chr11	108293382	CT	C	CCDS31669
ATM	PD51786a	PD51786b	chr11	108297347	TG	T	CCDS31669
ATM	PD51540a	PD51540b	chr11	108302914	T	TG	CCDS31669
ATM	PD51322a	PD51322b	chr11	108302925	CT	C	CCDS31669
ATM	PD51539a	PD51539b	chr11	108329020	G	T	CCDS31669
ATM	PD51736a	PD51736b	chr11	108332798	ATCAGAACA	A	CCDS31669
ATM	PD50406a	PD50406b2	chr11	108345797	CA	C	CCDS31669
ATM	PD51219a	PD51219b	chr11	108353765	G	C	CCDS31669
ATRX	PD51305a	PD51305b	chrX	77523276	C	A	CCDS14434
ATRX	PD51305a	PD51305b	chrX	77523277	C	T	CCDS14434
ATRX	PD46922a	PD46922b	chrX	77663548	AT	A	CCDS14434
ATRX	PD46833a	PD46833b	chrX	77681531	CA	C	CCDS14434
BAP1	PD55514a	PD55514b	chr3	52402367	AC	A	CCDS2853.
BAP1	PD51279a	PD51279b	chr3	52402373	TGGCGCC	T	CCDS2853.
BAP1	PD46925a	PD46925b	chr3	52402388	GA	G	CCDS2853.
BAP1	PD51817a	PD51817b	chr3	52402600	AC	A	CCDS2853.
BAP1	PD50455a	PD50455b	chr3	52402601	C	A	CCDS2853.
BAP1	PD46749a	PD46749b	chr3	52402602	CT	C	CCDS2853.
BAP1	PD51399a	PD51399b	chr3	52402602	CT	C	CCDS2853.
BAP1	PD46845a	PD46845b	chr3	52402608	G	A	CCDS2853.
BAP1	PD51736a	PD51736b	chr3	52402608	G	A	CCDS2853.
BAP1	PD51793a	PD51793b	chr3	52402608	G	A	CCDS2853.
BAP1	PD42592a	PD42592b	chr3	52402646	T	C	CCDS2853.
BAP1	PD50420a	PD50420b2	chr3	52402658	CT	C	CCDS2853.
BAP1	PD51589a	PD51589b	chr3	52402675	C	A	CCDS2853.
BAP1	PD55532a	PD55532b	chr3	52402675	C	A	CCDS2853.
BAP1	PD50461a	PD50461b	chr3	52402781	T	A	CCDS2853.
BAP1	PD46855a	PD46855b	chr3	52402844	C	CCACA	CCDS2853.
BAP1	PD46865a	PD46865b	chr3	52402856	GCAGTGC	G	CCDS2853.

BAP1	PD51737a	PD51737b	chr3	52403147	G	C	CCDS2853.
BAP1	PD51303a	PD51303b	chr3	52403202	CTG	C	CCDS2853.
BAP1	PD42573a	PD42573b	chr3	52403260	G	A	CCDS2853.
BAP1	PD51527a	PD51527b	chr3	52403261	GA	G	CCDS2853.
BAP1	PD51425a	PD51425b	chr3	52403272	T	TG	CCDS2853.
BAP1	PD51747a	PD51747b	chr3	52403290	TC	T	CCDS2853.
BAP1	PD51275a	PD51275b	chr3	52403299	C	A	CCDS2853.
BAP1	PD51659a	PD51659b	chr3	52403454	AG	A	CCDS2853.
BAP1	PD51597a	PD51597b	chr3	52403463	AG	A	CCDS2853.
BAP1	PD51409a	PD51409b	chr3	52403477	GA	G	CCDS2853.
BAP1	PD51683a	PD51683b	chr3	52403567	GT	G	CCDS2853.
BAP1	PD42673a	PD42673b	chr3	52403579	AG	A	CCDS2853.
BAP1	PD46736a	PD46736b	chr3	52403615	AG	A	CCDS2853.
BAP1	PD46909a	PD46909b	chr3	52403631	G	T	CCDS2853.
BAP1	PD55533a	PD55533b	chr3	52403653	C	A	CCDS2853.
BAP1	PD51238a	PD51238b	chr3	52403674	C	A	CCDS2853.
BAP1	PD48914a	PD48914b	chr3	52403680	TG	T	CCDS2853.
BAP1	PD51769a	PD51769b	chr3	52403766	G	T	CCDS2853.
BAP1	PD51227a	PD51227b	chr3	52403783	CT	C	CCDS2853.
BAP1	PD51725a	PD51725b	chr3	52403788	T	TA	CCDS2853.
BAP1	PD51580a	PD51580b	chr3	52403797	CAGCCAAC	C	CCDS2853.
BAP1	PD50190a	PD50190b	chr3	52403831	T	TGACA	CCDS2853.
BAP1	PD46888a	PD46888b	chr3	52403850	G	GA	CCDS2853.
BAP1	PD46869a	PD46869b	chr3	52403879	T	TC	CCDS2853.
BAP1	PD51382a	PD51382b	chr3	52404456	AG	A	CCDS2853.
BAP1	PD51675a	PD51675b	chr3	52404518	TGA	T	CCDS2853.
BAP1	PD51540a	PD51540b	chr3	52404579	TC	T	CCDS2853.
BAP1	PD50350a	PD50350b	chr3	52405115	TG	T	CCDS2853.
BAP1	PD48875a	PD48875b	chr3	52405130	AATTGTGA	A	CCDS2853.
BAP1	PD42572a	PD42572b	chr3	52405148	AG	A	CCDS2853.
BAP1	PD46699a	PD46699b	chr3	52405159	CGCTG	C	CCDS2853.
BAP1	PD51389a	PD51389b	chr3	52405286	C	A	CCDS2853.
BAP1	PD37462a	PD37462b	chr3	52405296	T	C	CCDS2853.
BAP1	PD46783a	PD46783b	chr3	52405781	AGAGGC	A	CCDS2853.
BAP1	PD50097a	PD50097b	chr3	52405902	AC	A	CCDS2853.
BAP1	PD37486a	PD37486b	chr3	52405909	TC	T	CCDS2853.
BAP1	PD48898a	PD48898b	chr3	52406255	G	A	CCDS2853.
BAP1	PD51207a	PD51207b	chr3	52406258	G	A	CCDS2853.
BAP1	PD48932a	PD48932b	chr3	52406347	A	C	CCDS2853.
BAP1	PD51740a	PD51740b	chr3	52406856	AT	A	CCDS2853.
BAP1	PD48869a	PD48869b	chr3	52406895	TC	T	CCDS2853.
BAP1	PD46790a	PD46790b	chr3	52406896	CCCCCA	C	CCDS2853.
BAP1	PD51702a	PD51702b	chr3	52406899	CCCAGGG	C	CCDS2853.
BAP1	PD55540a	PD55540b	chr3	52406902	A	T	CCDS2853.
BAP1	PD50347a	PD50347b	chr3	52407173	C	A	CCDS2853.
BAP1	PD51295a	PD51295b	chr3	52407203	T	C	CCDS2853.
BAP1	PD50438a	PD50438b2	chr3	52407210	C	T	CCDS2853.
BAP1	PD51777a	PD51777b	chr3	52407210	C	T	CCDS2853.
BAP1	PD46831a	PD46831b	chr3	52407212	A	G	CCDS2853.
BAP1	PD46862a	PD46862b	chr3	52407216	GC	G	CCDS2853.
BAP1	PD55504a	PD55504b	chr3	52407218	CGGCCTG	C	CCDS2853.
BAP1	PD46728a	PD46728b	chr3	52407219	G	A	CCDS2853.
BAP1	PD50135a	PD50135b	chr3	52407219	G	C	CCDS2853.

BAP1	PD51534a	PD51534b	chr3	52407233	A	T	CCDS2853.
BAP1	PD50217a	PD50217b	chr3	52407236	T	C	CCDS2853.
BAP1	PD48881a	PD48881b	chr3	52407242	AC	A	CCDS2853.
BAP1	PD50432a	PD50432b	chr3	52407245	A	C	CCDS2853.
BAP1	PD46835a	PD46835b	chr3	52407247	G	C	CCDS2853.
BAP1	PD51209a	PD51209b	chr3	52407249	G	T	CCDS2853.
BAP1	PD37480a	PD37480b	chr3	52407280	GC	G	CCDS2853.
BAP1	PD51318a	PD51318b	chr3	52407307	TGGCTCG(T		CCDS2853.
BAP1	PD46785a	PD46785b	chr3	52407317	C	A	CCDS2853.
BAP1	PD51730a	PD51730b	chr3	52407405	TGGCTATT	T	CCDS2853.
BAP1	PD51695a	PD51695b	chr3	52407415	G	C	CCDS2853.
BAP1	PD46861a	PD46861b	chr3	52407423	GC	G	CCDS2853.
BAP1	PD51196a	PD51196b	chr3	52407430	C	A	CCDS2853.
BAP1	PD37479a	PD37479b	chr3	52407448	CATATCCT	C	CCDS2853.
BAP1	PD46850a	PD46850b	chr3	52407956	A	G	CCDS2853.
BAP1	PD37476a	PD37476b	chr3	52407957	C	T	CCDS2853.
BAP1	PD50603a	PD50603b	chr3	52407962	GGGC	G	CCDS2853.
BAP1	PD46716a	PD46716b	chr3	52408000	G	GGTGGGT(C	CCDS2853.
BAP1	PD46866a	PD46866b	chr3	52408034	A	C	CCDS2853.
BAP1	PD50456a	PD50456b	chr3	52408037	A	T	CCDS2853.
BAP1	PD51234a	PD51234b	chr3	52408050	CAT	C	CCDS2853.
BAP1	PD51552a	PD51552b	chr3	52408050	C	G	CCDS2853.
BAP1	PD50167a	PD50167b	chr3	52408061	C	T	CCDS2853.
BAP1	PD46725a	PD46725b	chr3	52408062	AAGAGT	A	CCDS2853.
BAP1	PD51656a	PD51656b	chr3	52408062	A	G	CCDS2853.
BAP1	PD46791a	PD46791b	chr3	52408072	TATC	T	CCDS2853.
BAP1	PD46721a	PD46721b	chr3	52408074	TCA	T	CCDS2853.
BAP1	PD51404a	PD51404b	chr3	52408078	C	A	CCDS2853.
BAP1	PD51745a	PD51745b	chr3	52408473	C	T	CCDS2853.
BAP1	PD37475a	PD37475b	chr3	52408482	CA	C	CCDS2853.
BAP1	PD37467a	PD37467b	chr3	52408496	T	C	CCDS2853.
BAP1	PD50604a	PD50604b	chr3	52408518	CGGACGT/C		CCDS2853.
BAP1	PD50203a	PD50203b	chr3	52408533	CCAAGGT/C		CCDS2853.
BAP1	PD50459a	PD50459b	chr3	52408542	AGACCTTT	A	CCDS2853.
BAP1	PD51386a	PD51386b	chr3	52408546	CT	C	CCDS2853.
BAP1	PD50084a	PD50084b	chr3	52408551	G	A	CCDS2853.
BAP1	PD50172a	PD50172b	chr3	52408566	CTTCGATC	C	CCDS2853.
BAP1	PD51638a	PD51638b	chr3	52408584	G	C	CCDS2853.
BAP1	PD51667a	PD51667b	chr3	52408590	T	A	CCDS2853.
BAP1	PD46950a	PD46950b	chr3	52409552	A	G	CCDS2853.
BAP1	PD51679a	PD51679b	chr3	52409561	AT	A	CCDS2853.
BAP1	PD46930a	PD46930b	chr3	52409570	G	A	CCDS2853.
BAP1	PD46963a	PD46963b	chr3	52409576	C	A	CCDS2853.
BAP1	PD46841a	PD46841b	chr3	52409584	T	C	CCDS2853.
BAP1	PD50403a	PD50403b2	chr3	52409596	AC	A	CCDS2853.
BAP1	PD42891a	PD42891b	chr3	52409608	CCT	C	CCDS2853.
BAP1	PD46903a	PD46903b	chr3	52409609	C	T	CCDS2853.
BAP1	PD42886a	PD42886b	chr3	52409848	CGCTCTCC	C	CCDS2853.
BAP1	PD51305a	PD51305b	chr3	52409867	GC	G	CCDS2853.
BAP1	PD50124a	PD50124b	chr3	52409877	A	G	CCDS2853.
BCOR	PD46770a	PD46770b	chrX	40074608	G	T	CCDS48093
BIRC3	PD51295a	PD51295b	chr11	102337007	C	T	CCDS8315.
BMPR2	PD51689a	PD51689b	chr2	202520165	G	GA	CCDS33361

BMPR2	PD50085a	PD50085b	chr2	202559862	CA	C	CCDS33361
BRCA1	PD48913a	PD48913b	chr17	43091434	C	A	CCDS11456
BRCA1	PD50441a	PD50441b2	chr17	43092947	TG	T	CCDS11456
BRCA1	PD42890a	PD42890b	chr17	43094522	C	A	CCDS11456
CASP8	PD46912a	PD46912b	chr2	201271525	C	CT	CCDS42798
CASP8	PD50457a	PD50457b	chr2	201276863	C	T	CCDS42798
CBL	PD51304a	PD51304b	chr11	119278540	C	G	CCDS8418.
CDC27	PD50339a	PD50339b	chr17	47151930	GAAAA	G	CCDS45720
CDC73	PD51540a	PD51540b	chr1	193142068	T	C	CCDS1382.
CDC73	PD46776a	PD46776b	chr1	193212388	A	T	CCDS1382.
CDH1	PD46936a	PD46936b	chr16	68738296	G	C	CCDS10869
CDH1	PD51288a	PD51288b	chr16	68833332	GA	G	CCDS10869
CDH10	PD51573a	PD51573b	chr5	24492863	G	GA	CCDS3892.
CDH10	PD55511a	PD55511b	chr5	24505139	TA	T	CCDS3892.
CDK12	PD46757a	PD46757b	chr17	39471636	C	T	CCDS11337
CDK12	PD51704a	PD51704b	chr17	39526022	TC	T	CCDS11337
CDKN1A	PD46891a	PD46891b	chr6	36684347	CCGGCGA	C	CCDS4824.
CDKN1B	PD51279a	PD51279b	chr12	12717897	C	T	CCDS8653.
CDKN1B	PD51781a	PD51781b	chr12	12718118	G	GC	CCDS8653.
CDKN2C	PD51730a	PD51730b	chr1	50973982	CA	C	CCDS555.1
CHD8	PD51665a	PD51665b	chr14	21409961	AC	A	CCDS53885
CHD8	PD46779a	PD46779b	chr14	21431284	CA	C	CCDS53885
CREBBP	PD55514a	PD55514b	chr16	3731204	G	T	CCDS10509
CREBBP	PD55536a	PD55536b	chr16	3736816	C	A	CCDS10509
CREBBP	PD51271a	PD51271b	chr16	3739612	C	A	CCDS10509
CREBBP	PD46699a	PD46699b	chr16	3751718	GTACT	G	CCDS10509
CSDE1	PD51699a	PD51699b	chr1	114718176	AT	A	CCDS55626
CSDE1	PD51736a	PD51736b	chr1	114725295	TC	T	CCDS55626
CSDE1	PD50350a	PD50350b	chr1	114727091	C	A	CCDS55626
CTCF	PD50412a	PD50412b2	chr16	67621596	G	A	CCDS10841
CUL3	PD51728a	PD51728b	chr2	224474361	T	A	CCDS2462.
CUL3	PD51559a	PD51559b	chr2	224478346	C	T	CCDS2462.
CUL3	PD42899a	PD42899b	chr2	224481970	T	A	CCDS2462.
CUL3	PD46717a	PD46717b	chr2	224495856	AT	A	CCDS2462.
CUL3	PD51672a	PD51672b	chr2	224495897	G	A	CCDS2462.
CUL3	PD46774a	PD46774b	chr2	224503007	G	GT	CCDS2462.
CUL3	PD48935a	PD48935b	chr2	224503736	A	T	CCDS2462.
CUL3	PD51699a	PD51699b	chr2	224511453	T	A	CCDS2462.
CUL3	PD51320a	PD51320b	chr2	224511553	A	AT	CCDS2462.
CUL3	PD48902a	PD48902b	chr2	224514733	AG	A	CCDS2462.
CUL3	PD51683a	PD51683b	chr2	224557800	AAT	A	CCDS2462.
CUL3	PD51398a	PD51398b	chr2	224585008	A	G	CCDS2462.
CUX1	PD51742a	PD51742b	chr7	102204533	TC	T	CCDS56498
CYLD	PD42894a	PD42894b	chr16	50787820	TA	T	CCDS45482
DAXX	PD51316a	PD51316b	chr6	33320065	G	GCATCTGT	CCDS4776.
DICER1	PD46703a	PD46703b	chr14	95113226	T	G	CCDS9931.
DIS3	PD51242a	PD51242b	chr13	72762127	AT	A	CCDS9447.
DIS3	PD50340a	PD50340b	chr13	72763476	AT	A	CCDS9447.
DNM2	PD55526a	PD55526b	chr19	10772629	G	T	CCDS45969
DNM2	PD51699a	PD51699b	chr19	10786686	C	CA	CCDS45969
DNM2	PD46870a	PD46870b	chr19	10797430	A	AGATT	CCDS45969
DNM2	PD51806a	PD51806b	chr19	10830162	AC	A	CCDS45969
DNMT3A	PD51727a	PD51727b	chr2	25234343	G	T	CCDS33157

DNMT3A	PD46872a	PD46872b	chr2	25244211	C	A	CCDS33157
DNMT3A	PD51307a	PD51307b	chr2	25247060	CTCGTAGA	C	CCDS33157
DNMT3A	PD46766a	PD46766b	chr2	25282555	CCTTCTGCC	C	CCDS33157
EEF1A1	PD51688a	PD51688b	chr6	73518239	T	TG	CCDS4980.
EEF1A1	PD46907a	PD46907b	chr6	73518427	TCC	T	CCDS4980.
EGFR	PD42895a	PD42895b	chr7	55181320	A	AACC	CCDS5514.
ELOC	PD51669a	PD51669b	chr8	73946691	A	G	CCDS34910
ELOC	PD51177a	PD51177b	chr8	73946694	T	C	CCDS34910
ELOC	PD55506a	PD55506b	chr8	73946695	C	T	CCDS34910
ELOC	PD51393a	PD51393b	chr8	73946733	T	C	CCDS34910
ELOC	PD51530a	PD51530b	chr8	73946733	T	C	CCDS34910
ELOC	PD55510a	PD55510b	chr8	73946733	T	C	CCDS34910
ELOC	PD46914a	PD46914b	chr8	73946734	A	T	CCDS34910
EP300	PD51597a	PD51597b	chr22	41117187	A	AT	CCDS14010
EP300	PD51817a	PD51817b	chr22	41117475	AG	A	CCDS14010
EP300	PD55505a	PD55505b	chr22	41135885	A	AT	CCDS14010
EPHA2	PD46849a	PD46849b	chr1	16138306	TG	T	CCDS169.1
ESR1	PD50147a	PD50147b	chr6	151944434	C	A	CCDS5234.
ESR1	PD51228a	PD51228b	chr6	152094569	G	A	CCDS5234.
ETNK1	PD51775a	PD51775b	chr12	22643883	G	T	CCDS8698.
ETNK1	PD50096a	PD50096b	chr12	22671305	G	T	CCDS8698.
EZH2	PD51578a	PD51578b	chr7	148809156	C	T	CCDS5891.
FAT1	PD50181a	PD50181b	chr4	186589067	ATG	A	CCDS47177
FAT1	PD46708a	PD46708b	chr4	186600266	TGCCACTC	T	CCDS47177
FAT1	PD51714a	PD51714b	chr4	186600312	C	A	CCDS47177
FAT1	PD51733a	PD51733b	chr4	186603825	GA	G	CCDS47177
FAT1	PD51649a	PD51649b	chr4	186617120	TC	T	CCDS47177
FAT1	PD51510a	PD51510b	chr4	186619211	GC	G	CCDS47177
FAT1	PD51273a	PD51273b	chr4	186619722	A	AT	CCDS47177
FAT1	PD51646a	PD51646b	chr4	186620144	TATTTAAG	T	CCDS47177
FAT1	PD50460a	PD50460b	chr4	186621777	T	G	CCDS47177
FAT1	PD37470a	PD37470b	chr4	186706586	AC	A	CCDS47177
FAT1	PD46832a	PD46832b	chr4	186708213	G	GA	CCDS47177
FBXO11	PD48922a	PD48922b	chr2	47834696	C	A	CCDS54357
FBXO11	PD50403a	PD50403b2	chr2	47835919	C	A	CCDS54357
FBXW7	PD46820a	PD46820b	chr4	152329754	G	A	CCDS3777.
FBXW7	PD51287a	PD51287b	chr4	152347048	G	T	CCDS3777.
FBXW7	PD51746a	PD51746b	chr4	152411689	C	A	CCDS3777.
FOXA1	PD51750a	PD51750b	chr14	37591855	TGGAGGG	T	CCDS9665.
FUBP1	PD51680a	PD51680b	chr1	77948776	T	C	CCDS683.1
FUBP1	PD55534a	PD55534b	chr1	77964163	C	T	CCDS683.1
HNF1A	PD50103a	PD50103b	chr12	120994381	GC	G	CCDS76611
IKZF1	PD46913a	PD46913b	chr7	50376683	TGTCGGG	T	CCDS75596
IKZF1	PD37476a	PD37476b	chr7	50400401	C	A	CCDS75596
JAK1	PD46859a	PD46859b	chr1	64841244	C	G	CCDS41346
JAK1	PD51773a	PD51773b	chr1	64841524	G	T	CCDS41346
JAK1	PD48851a	PD48851b	chr1	64860264	T	C	CCDS41346
JAK1	PD51199a	PD51199b	chr1	64869317	TC	T	CCDS41346
JAK2	PD48913a	PD48913b	chr9	5069939	C	G	CCDS6457.
JAK2	PD37484a	PD37484b	chr9	5073770	G	T	CCDS6457.
KANSL1	PD46771a	PD46771b	chr17	46039076	TG	T	CCDS11503
KANSL1	PD42675a	PD42675b	chr17	46039117	C	CT	CCDS11503
KANSL1	PD51777a	PD51777b	chr17	46039837	GC	G	CCDS11503

KANSL1	PD46753a	PD46753b	chr17	46066557	TGC	T	CCDS11503
KDM5C	PD51229a	PD51229b	chrX	53193493	G	A	CCDS14351
KDM5C	PD48950a	PD48950b	chrX	53193541	C	A	CCDS14351
KDM5C	PD51183a	PD51183b	chrX	53193814	CT	C	CCDS14351
KDM5C	PD50107a	PD50107b	chrX	53194292	AGCCT	A	CCDS14351
KDM5C	PD46713a	PD46713b	chrX	53194576	G	A	CCDS14351
KDM5C	PD37470a	PD37470b	chrX	53194607	AC	A	CCDS14351
KDM5C	PD50170a	PD50170b	chrX	53194655	TG	T	CCDS14351
KDM5C	PD51178a	PD51178b	chrX	53194678	T	TGCGACG	CCDS14351
KDM5C	PD51785a	PD51785b	chrX	53194702	C	A	CCDS14351
KDM5C	PD50637a	PD50637b	chrX	53195016	C	T	CCDS14351
KDM5C	PD51289a	PD51289b	chrX	53195332	C	A	CCDS14351
KDM5C	PD50085a	PD50085b	chrX	53195408	AT	A	CCDS14351
KDM5C	PD46891a	PD46891b	chrX	53196838	TCGGGC	T	CCDS14351
KDM5C	PD51541a	PD51541b	chrX	53196912	G	A	CCDS14351
KDM5C	PD50100a	PD50100b	chrX	53196927	C	A	CCDS14351
KDM5C	PD50462a	PD50462b	chrX	53196940	CCGCCCC	C	CCDS14351
KDM5C	PD42906a	PD42906b	chrX	53197776	CA	C	CCDS14351
KDM5C	PD46729a	PD46729b	chrX	53198489	C	A	CCDS14351
KDM5C	PD46924a	PD46924b	chrX	53198594	CCGCT	C	CCDS14351
KDM5C	PD46822a	PD46822b	chrX	53198599	C	A	CCDS14351
KDM5C	PD51242a	PD51242b	chrX	53198608	C	A	CCDS14351
KDM5C	PD46834a	PD46834b	chrX	53198614	C	A	CCDS14351
KDM5C	PD47593a	PD47593b	chrX	53198759	C	T	CCDS14351
KDM5C	PD55516a	PD55516b	chrX	53198800	G	A	CCDS14351
KDM5C	PD51666a	PD51666b	chrX	53198829	TCAGC	T	CCDS14351
KDM5C	PD46909a	PD46909b	chrX	53198830	C	A	CCDS14351
KDM5C	PD50344a	PD50344b	chrX	53198843	CA	C	CCDS14351
KDM5C	PD46956a	PD46956b	chrX	53199084	AG	A	CCDS14351
KDM5C	PD42903a	PD42903b	chrX	53199103	TG	T	CCDS14351
KDM5C	PD46705a	PD46705b	chrX	53201563	GC	G	CCDS14351
KDM5C	PD51210a	PD51210b	chrX	53201588	G	A	CCDS14351
KDM5C	PD51267a	PD51267b	chrX	53201675	C	A	CCDS14351
KDM5C	PD51189a	PD51189b	chrX	53201686	AAGACGC	A	CCDS14351
KDM5C	PD51823a	PD51823b	chrX	53201849	CTCACCC	C	CCDS14351
KDM5C	PD51782a	PD51782b	chrX	53201854	C	T	CCDS14351
KDM5C	PD46708a	PD46708b	chrX	53201917	G	C	CCDS14351
KDM5C	PD48882a	PD48882b	chrX	53210512	T	TC	CCDS14351
KDM5C	PD51544a	PD51544b	chrX	53210773	CAG	C	CCDS14351
KDM5C	PD50389a	PD50389b	chrX	53211520	GTTTA	G	CCDS14351
KDM5C	PD50201a	PD50201b	chrX	53211642	TCTGTGG	C	CCDS14351
KDM5C	PD50460a	PD50460b	chrX	53211762	ACTACCTCA		CCDS14351
KDM5C	PD51234a	PD51234b	chrX	53211900	T	TA	CCDS14351
KDM5C	PD50153a	PD50153b	chrX	53214797	CT	C	CCDS14351
KDM5C	PD51556a	PD51556b	chrX	53215800	G	A	CCDS14351
KDM5C	PD51538a	PD51538b	chrX	53217189	GA	G	CCDS14351
KDM5C	PD51205a	PD51205b	chrX	53217196	G	A	CCDS14351
KDM5C	PD46926a	PD46926b	chrX	53217226	GT	G	CCDS14351
KDM5C	PD46963a	PD46963b	chrX	53217247	C	A	CCDS14351
KDM5C	PD46798a	PD46798b	chrX	53217846	C	A	CCDS14351
KDM5C	PD51418a	PD51418b	chrX	53217892	GT	G	CCDS14351
KDM5C	PD46923a	PD46923b	chrX	53218353	A	AT	CCDS14351
KDM5C	PD55505a	PD55505b	chrX	53218380	GT	G	CCDS14351

KDM5C	PD46832a	PD46832b	chrX	53224739	C	T	CCDS14351
KDM5C	PD51782a	PD51782b	chrX	53224768	GA	G	CCDS14351
KDM5C	PD51681a	PD51681b	chrX	53224781	TG	T	CCDS14351
KDM6A	PD42572a	PD42572b	chrX	45051793	C	T	CCDS14265
KDM6A	PD51653a	PD51653b	chrX	45070091	TA	T	CCDS14265
KEAP1	PD50449a	PD50449b	chr19	10489748	G	GC	CCDS12239
KLF4	PD51213a	PD51213b	chr9	107487320	C	CG	CCDS6770.
KMT2A	PD51402a	PD51402b	chr11	118495801	T	A	CCDS55791
KMT2A	PD50127a	PD50127b	chr11	118506615	C	T	CCDS55791
KMT2B	PD55510a	PD55510b	chr19	35733477	AC	A	CCDS46055
KMT2C	PD46961a	PD46961b	chr7	152148089	A	AT	CCDS5931.
KMT2C	PD50412a	PD50412b2	chr7	152148694	T	TC	CCDS5931.
KMT2C	PD42890a	PD42890b	chr7	152162765	CT	C	CCDS5931.
KMT2C	PD51209a	PD51209b	chr7	152162958	GA	G	CCDS5931.
KMT2C	PD46955a	PD46955b	chr7	152174145	TG	T	CCDS5931.
KMT2C	PD51702a	PD51702b	chr7	152176342	T	TA	CCDS5931.
KMT2C	PD51318a	PD51318b	chr7	152176810	TC	T	CCDS5931.
KMT2C	PD51213a	PD51213b	chr7	152177491	AC	A	CCDS5931.
KMT2C	PD51293a	PD51293b	chr7	152182104	G	GTATTTC	CCDS5931.
KMT2C	PD51567a	PD51567b	chr7	152182326	TC	T	CCDS5931.
KMT2C	PD42890a	PD42890b	chr7	152187792	GA	G	CCDS5931.
KMT2C	PD42590a	PD42590b	chr7	152187831	CA	C	CCDS5931.
KMT2C	PD46884a	PD46884b	chr7	152199451	G	GAA	CCDS5931.
KMT2C	PD42590a	PD42590b	chr7	152222612	CA	C	CCDS5931.
KMT2C	PD42677a	PD42677b	chr7	152248268	TCCTTGTA	T	CCDS5931.
KMT2C	PD50097a	PD50097b	chr7	152273765	G	A	CCDS5931.
KMT2C	PD46725a	PD46725b	chr7	152273782	GC	G	CCDS5931.
KMT2C	PD46790a	PD46790b	chr7	152311906	C	CA	CCDS5931.
KMT2C	PD51578a	PD51578b	chr7	152358587	C	A	CCDS5931.
KMT2D	PD51655a	PD51655b	chr12	49038855	G	C	CCDS44873
KMT2D	PD50351a	PD50351b	chr12	49038868	G	A	CCDS44873
KMT2D	PD37472a	PD37472b	chr12	49042860	GAT	G	CCDS44873
KMT2D	PD37459a	PD37459b	chr12	49046647	T	TG	CCDS44873
KMT2D	PD51186a	PD51186b	chr12	49052989	ACAGAGACA	A	CCDS44873
LATS2	PD46947a	PD46947b	chr13	20974946	GA	G	CCDS9294.
LATS2	PD51537a	PD51537b	chr13	20983231	G	T	CCDS9294.
LATS2	PD51727a	PD51727b	chr13	20983515	GT	G	CCDS9294.
LATS2	PD51791a	PD51791b	chr13	20988089	TC	T	CCDS9294.
LATS2	PD51806a	PD51806b	chr13	20988972	GC	G	CCDS9294.
MAP2K2	PD42887a	PD42887b	chr19	4110564	C	T	CCDS12120
MAP2K4	PD46860a	PD46860b	chr17	12020887	A	C	CCDS62095
MAP2K4	PD46963a	PD46963b	chr17	12095695	G	T	CCDS62095
MAP3K1	PD47597a	PD47597b	chr5	56815965	CG	C	CCDS43318
MAP3K1	PD50101a	PD50101b	chr5	56859886	G	GA	CCDS43318
MAP3K1	PD37479a	PD37479b	chr5	56865923	C	G	CCDS43318
MAP3K1	PD50462a	PD50462b2	chr5	56865975	CAGGTTACC	C	CCDS43318
MAP3K1	PD46793a	PD46793b	chr5	56871974	C	CTT	CCDS43318
MAP3K1	PD51683a	PD51683b	chr5	56893573	TC	T	CCDS43318
MAX	PD51216a	PD51216b	chr14	65093770	CCCTACGTC	C	CCDS9771.
MAX	PD51407a	PD51407b	chr14	65102318	C	A	CCDS9771.
MED12	PD46781a	PD46781b	chrX	71129678	A	T	CCDS43970
MED23	PD46717a	PD46717b	chr6	131598554	A	T	CCDS5147.
MEN1	PD50084a	PD50084b	chr11	64807178	C	G	CCDS8083.

MGA	PD50405a	PD50405b2	chr15	41708146	AT	A	CCDS55959
MGA	PD42591a	PD42591b	chr15	41710993	C	T	CCDS55959
MGA	PD51207a	PD51207b	chr15	41711194	C	T	CCDS55959
MGA	PD51285a	PD51285b	chr15	41736482	TG	T	CCDS55959
MGA	PD51219a	PD51219b	chr15	41742832	AG	A	CCDS55959
MGA	PD46733a	PD46733b	chr15	41748648	C	T	CCDS55959
MGA	PD51777a	PD51777b	chr15	41749176	TC	T	CCDS55959
MGA	PD46703a	PD46703b	chr15	41749384	C	A	CCDS55959
MGA	PD50415a	PD50415b2	chr15	41749793	TA	T	CCDS55959
MGA	PD55531a	PD55531b	chr15	41750450	AC	A	CCDS55959
MGA	PD50619a	PD50619b	chr15	41760534	G	T	CCDS55959
MGA	PD51672a	PD51672b	chr15	41761738	G	C	CCDS55959
MLH1	PD51781a	PD51781b	chr3	37004399	A	T	CCDS2663.
MLH1	PD51573a	PD51573b	chr3	37011825	C	A	CCDS2663.
MLH1	PD51736a	PD51736b	chr3	37025974	C	A	CCDS2663.
MSH2	PD46783a	PD46783b	chr2	47445547	G	A	CCDS1834.
MSH2	PD48929a	PD48929b	chr2	47471032	A	AT	CCDS1834.
MSH6	PD48944a	PD48944b	chr2	47803689	AC	A	CCDS1836.
MTOR	PD51705a	PD51705b	chr1	11108244	T	A	CCDS127.1
MTOR	PD51189a	PD51189b	chr1	11108283	C	A	CCDS127.1
MTOR	PD51298a	PD51298b	chr1	11109317	T	A	CCDS127.1
MTOR	PD51574a	PD51574b	chr1	11109317	T	A	CCDS127.1
MTOR	PD51264a	PD51264b	chr1	11109318	A	C	CCDS127.1
MTOR	PD48899a	PD48899b	chr1	11109319	A	T	CCDS127.1
MTOR	PD51253a	PD51253b	chr1	11109319	A	T	CCDS127.1
MTOR	PD51273a	PD51273b	chr1	11114326	A	T	CCDS127.1
MTOR	PD46888a	PD46888b	chr1	11114338	A	T	CCDS127.1
MTOR	PD50433a	PD50433b	chr1	11114338	A	T	CCDS127.1
MTOR	PD46733a	PD46733b	chr1	11114359	G	A	CCDS127.1
MTOR	PD46863a	PD46863b	chr1	11114359	G	A	CCDS127.1
MTOR	PD51323a	PD51323b	chr1	11114359	G	A	CCDS127.1
MTOR	PD46882a	PD46882b	chr1	11114360	C	G	CCDS127.1
MTOR	PD42886a	PD42886b	chr1	11114363	C	T	CCDS127.1
MTOR	PD51688a	PD51688b	chr1	11114363	C	T	CCDS127.1
MTOR	PD50618a	PD50618b	chr1	11115463	G	A	CCDS127.1
MTOR	PD51252a	PD51252b	chr1	11117039	C	A	CCDS127.1
MTOR	PD51534a	PD51534b	chr1	11117039	C	T	CCDS127.1
MTOR	PD51783a	PD51783b	chr1	11117039	C	A	CCDS127.1
MTOR	PD46874a	PD46874b	chr1	11122076	C	A	CCDS127.1
MTOR	PD55526a	PD55526b	chr1	11122101	A	C	CCDS127.1
MTOR	PD51527a	PD51527b	chr1	11122121	T	A	CCDS127.1
MTOR	PD51654a	PD51654b	chr1	11124501	A	C	CCDS127.1
MTOR	PD42676a	PD42676b	chr1	11124516	G	T	CCDS127.1
MTOR	PD48881a	PD48881b	chr1	11124516	G	T	CCDS127.1
MTOR	PD50360a	PD50360b	chr1	11124516	G	A	CCDS127.1
MTOR	PD51417a	PD51417b	chr1	11124516	G	A	CCDS127.1
MTOR	PD51422a	PD51422b	chr1	11124516	G	A	CCDS127.1
MTOR	PD51529a	PD51529b	chr1	11124532	C	G	CCDS127.1
MTOR	PD50619a	PD50619b	chr1	11124534	A	T	CCDS127.1
MTOR	PD46826a	PD46826b	chr1	11124535	G	C	CCDS127.1
MTOR	PD51246a	PD51246b	chr1	11127790	A	G	CCDS127.1
MTOR	PD51210a	PD51210b	chr1	11128015	G	T	CCDS127.1
MTOR	PD46809a	PD46809b	chr1	11128021	C	A	CCDS127.1

MTOR	PD46836a	PD46836b	chr1	11128021	C	G	CCDS127.1
MTOR	PD50161a	PD50161b	chr1	11128021	C	A	CCDS127.1
MTOR	PD51524a	PD51524b	chr1	11128021	C	A	CCDS127.1
MTOR	PD51600a	PD51600b	chr1	11128021	C	A	CCDS127.1
MTOR	PD48875a	PD48875b	chr1	11128040	A	C	CCDS127.1
MTOR	PD46935a	PD46935b	chr1	11128107	G	T	CCDS127.1
MTOR	PD51255a	PD51255b	chr1	11128107	G	T	CCDS127.1
MTOR	PD51513a	PD51513b	chr1	11128107	G	T	CCDS127.1
MTOR	PD51670a	PD51670b	chr1	11128117	A	G	CCDS127.1
MTOR	PD51261a	PD51261b	chr1	11146785	C	A	CCDS127.1
MTOR	PD50215a	PD50215b	chr1	11150141	C	T	CCDS127.1
MTOR	PD51301a	PD51301b	chr1	11150197	T	A	CCDS127.1
MTOR	PD42895a	PD42895b	chr1	11157174	A	G	CCDS127.1
MTOR	PD47587a	PD47587b	chr1	11157242	A	G	CCDS127.1
MTOR	PD51386a	PD51386b	chr1	11157242	A	G	CCDS127.1
MTOR	PD46889a	PD46889b	chr1	11157245	G	T	CCDS127.1
MTOR	PD51750a	PD51750b	chr1	11157245	G	T	CCDS127.1
MTOR	PD46748a	PD46748b	chr1	11167473	A	G	CCDS127.1
MTOR	PD46743a	PD46743b	chr1	11199261	A	G	CCDS127.1
MTOR	PD50456a	PD50456b	chr1	11199584	T	A	CCDS127.1
MTOR	PD46791a	PD46791b	chr1	11204687	C	A	CCDS127.1
MTOR	PD48933a	PD48933b	chr1	11204694	C	T	CCDS127.1
MTOR	PD48887a	PD48887b	chr1	11210837	C	T	CCDS127.1
MTOR	PD51221a	PD51221b	chr1	11256999	T	G	CCDS127.1
MTOR	PD51727a	PD51727b	chr1	11258562	T	C	CCDS127.1
NCOR1	PD46832a	PD46832b	chr17	16070448	AG	A	CCDS11175
NCOR1	PD51303a	PD51303b	chr17	16070492	GA	G	CCDS11175
NCOR1	PD50151a	PD50151b	chr17	16138210	A	AACCT	CCDS11175
NF1	PD51710a	PD51710b	chr17	31200479	C	CT	CCDS42292
NF1	PD51566a	PD51566b	chr17	31229061	C	T	CCDS42292
NF1	PD55526a	PD55526b	chr17	31236022	G	A	CCDS42292
NF2	PD51248a	PD51248b	chr22	29604033	GCT	G	CCDS13861
NF2	PD42677a	PD42677b	chr22	29654662	TG	T	CCDS13861
NF2	PD46699a	PD46699b	chr22	29658223	C	T	CCDS13861
NF2	PD51303a	PD51303b	chr22	29668394	TGGAAGTTT		CCDS13861
NFE2L2	PD51281a	PD51281b	chr2	177231137	T	C	CCDS42782
NFE2L2	PD51640a	PD51640b	chr2	177231154	T	G	CCDS42782
NFE2L2	PD48922a	PD48922b	chr2	177231506	T	C	CCDS42782
NFE2L2	PD50625a	PD50625b	chr2	177231549	G	A	CCDS42782
NFE2L2	PD51642a	PD51642b	chr2	177231917	TA	T	CCDS42782
NFE2L2	PD50403a	PD50403b2	chr2	177232460	C	T	CCDS42782
NFE2L2	PD46830a	PD46830b	chr2	177234059	A	C	CCDS42782
NFE2L2	PD46713a	PD46713b	chr2	177234076	C	A	CCDS42782
NFE2L2	PD46905a	PD46905b	chr2	177234080	CTCT	C	CCDS42782
NFE2L2	PD51525a	PD51525b	chr2	177234087	T	C	CCDS42782
NFE2L2	PD51781a	PD51781b	chr2	177234143	TCTTTC	T	CCDS42782
NFE2L2	PD48916a	PD48916b	chr2	177234217	G	C	CCDS42782
NFE2L2	PD51649a	PD51649b	chr2	177234226	C	G	CCDS42782
NFE2L2	PD51242a	PD51242b	chr2	177234228	A	G	CCDS42782
NFE2L2	PD51322a	PD51322b	chr2	177234231	T	G	CCDS42782
NFE2L2	PD50442a	PD50442b2	chr2	177234241	G	T	CCDS42782
NFE2L2	PD51791a	PD51791b	chr2	177234261	A	C	CCDS42782
NOTCH1	PD48934a	PD48934b	chr9	136496562	G	A	CCDS43905

NOTCH2	PD51178a	PD51178b	chr1	119915812	T	TG	CCDS908.1
NRAS	PD46822a	PD46822b	chr1	114709583	C	A	CCDS877.1
PAX5	PD51737a	PD51737b	chr9	37015111	A	AT	CCDS6607.
PBRM1	PD51540a	PD51540b	chr3	52548069	ATT	A	CCDS87087
PBRM1	PD50132a	PD50132b	chr3	52548110	GGAGCAT	G	CCDS43099
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PBRM1	PD51816a	PD51816b	chr3	52554852	AG	A	CCDS43099
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PBRM1	PD46727a	PD46727b	chr3	52609925	G	C	CCDS43099
PBRM1	PD47589a	PD47589b	chr3	52609926	ATTTTTTA	A	CCDS43099
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PBRM1	PD51700a	PD51700b	chr3	52609942	GC	G	CCDS43099
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PBRM1	PD51744a	PD51744b	chr3	52615350	C	G	CCDS43099
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PBRM1	PD46920a	PD46920b	chr3	52615360	GT	G	CCDS43099
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PBRM1	PD46886a	PD46886b	chr3	52617431	G	A	CCDS43099
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PBRM1	PD48909a	PD48909b	chr3	52617480	G	A	CCDS43099
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PBRM1	PD51175a	PD51175b	chr3	52617482	G	A	CCDS43099
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PBRM1	PD51381a	PD51381b	chr3	52634574	ATACTGAA	A	CCDS43099
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PBRM1	PD51653a	PD51653b	chr3	52634725	A	G	CCDS43099
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PBRM1	PD47601a	PD47601b	chr3	52634741	G	A	CCDS43099
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PBRM1	PD51544a	PD51544b	chr3	52644711	G	A	CCDS87087
PBRM1	PD51410a	PD51410b	chr3	52644712	AAGACTTGA	A	CCDS43099
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PBRM1	PD51271a	PD51271b	chr3	52644747	C	A	CCDS43099
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PBRM1	PD55530a	PD55530b	chr3	52644765	A	C	CCDS43099
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PBRM1	PD51181a	PD51181b	chr3	52644767	AT	A	CCDS43099
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PBRM1	PD51660a	PD51660b	chr3	52648369	T	TTA	CCDS43099
PBRM1	PD55541a	PD55541b	chr3	52648371	A	T	CCDS43099
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PBRM1	PD46755a	PD46755b	chr3	52648375	GT	G	CCDS43099
PBRM1	PD46953a	PD46953b	chr3	52648383	A	AT	CCDS43099
PBRM1	PD50441a	PD50441b2	chr3	52648383	A	AT	CCDS43099
PBRM1	PD51407a	PD51407b	chr3	52648383	A	AT	CCDS43099
PBRM1	PD51559a	PD51559b	chr3	52648383	A	AT	CCDS87087
PBRM1	PD51781a	PD51781b	chr3	52648383	A	AT	CCDS43099
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PBRM1	PD37463a	PD37463b	chr3	52648397	GATCTAT	G	CCDS43099
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PBRM1	PD55513a	PD55513b	chr3	52651792	C	CA	CCDS43099
PBRM1	PD50629a	PD50629b	chr3	52651796	A	C	CCDS43099
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PBRM1	PD46922a	PD46922b	chr3	52658197	AC	A	CCDS43099
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PBRM1	PD50146a	PD50146b	chr3	52658273	C	CAA	CCDS43099
PBRM1	PD50169a	PD50169b	chr3	52658294	C	A	CCDS43099
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PBRM1	PD37472a	PD37472b	chr3	52662133	TC	T	CCDS43099
PBRM1	PD46960a	PD46960b	chr3	52662153	G	A	CCDS43099
PBRM1	PD50175a	PD50175b	chr3	52662153	G	A	CCDS43099
PBRM1	PD55516a	PD55516b	chr3	52662183	C	A	CCDS43099
PBRM1	PD46956a	PD46956b	chr3	52662190	TG	T	CCDS43099
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PBRM1	PD51296a	PD51296b	chr3	52662219	T	A	CCDS43099
PBRM1	PD51529a	PD51529b	chr3	52662226	AAGGTACA	A	CCDS87087
PBRM1	PD51274a	PD51274b	chr3	52662229	G	C	CCDS43099
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PBRM1	PD46726a	PD46726b	chr3	52668497	C	T	CCDS43099
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PBRM1	PD46702a	PD46702b	chr3	52668499	TTA	T	CCDS43099
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PBRM1	PD50219a	PD50219b	chr3	52668515	CA	C	CCDS43099
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PBRM1	PD50397a	PD50397b2	chr3	52668538	T	G	CCDS43099
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PBRM1	PD51637a	PD51637b	chr3	52668581	GT	G	CCDS43099
PBRM1	PD48850a	PD48850b	chr3	52668582	TTTCTGTT	T	CCDS43099

PBRM1	PD46926a	PD46926b	chr3	52668584	T	C	CCDS43099
PBRM1	PD46771a	PD46771b	chr3	52668587	G	A	CCDS43099
PBRM1	PD51743a	PD51743b	chr3	52668590	G	A	CCDS43099
PBRM1	PD48936a	PD48936b	chr3	52668592	AT	A	CCDS43099
PBRM1	PD46767a	PD46767b	chr3	52668592	A	C	CCDS43099
PBRM1	PD47587a	PD47587b	chr3	52668612	CT	C	CCDS43099
PBRM1	PD50632a	PD50632b	chr3	52668623	C	CT	CCDS43099
PBRM1	PD46904a	PD46904b	chr3	52668626	CATAATAG	C	CCDS43099
PBRM1	PD50429a	PD50429b	chr3	52668641	G	A	CCDS43099
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PBRM1	PD46885a	PD46885b	chr3	52678516	T	TA	CCDS43099
PBRM1	PD37482a	PD37482b	chr3	52678525	G	GCT	CCDS43099
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PBRM1	PD51572a	PD51572b	chr3	52678546	G	A	CCDS87087
PBRM1	PD51270a	PD51270b	chr3	52678553	CTTATAGT	C	CCDS43099
PBRM1	PD51542a	PD51542b	chr3	52678555	T	A	CCDS87087
PBRM1	PD51772a	PD51772b	chr3	52678556	A	T	CCDS43099
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PBRM1	PD46868a	PD46868b	chr3	52679594	TG	T	CCDS43099
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PBRM1	PD46936a	PD46936b	chr3	52679667	GAC	G	CCDS43099
PHF6	PD51513a	PD51513b	chrX	134413957	T	G	CCDS14639
PIK3CA	PD55505a	PD55505b	chr3	179199690	G	A	CCDS43171
PIK3CA	PD50638a	PD50638b	chr3	179199737	C	A	CCDS43171
PIK3CA	PD46863a	PD46863b	chr3	179201452	G	A	CCDS43171
PIK3CA	PD42591a	PD42591b	chr3	179203765	T	A	CCDS43171
PIK3CA	PD46924a	PD46924b	chr3	179210192	T	C	CCDS43171
PIK3CA	PD46717a	PD46717b	chr3	179210279	C	T	CCDS43171
PIK3CA	PD47596a	PD47596b	chr3	179218286	C	G	CCDS43171
PIK3CA	PD51314a	PD51314b	chr3	179218294	G	A	CCDS43171
PIK3CA	PD51693a	PD51693b	chr3	179218294	G	A	CCDS43171
PIK3CA	PD46846a	PD46846b	chr3	179218303	G	A	CCDS43171
PIK3CA	PD50351a	PD50351b	chr3	179218303	G	A	CCDS43171
PIK3CA	PD51416a	PD51416b	chr3	179218303	G	A	CCDS43171
PIK3CA	PD55514a	PD55514b	chr3	179218304	A	G	CCDS43171
PIK3CA	PD51691a	PD51691b	chr3	179221146	G	A	CCDS43171
PIK3CA	PD51527a	PD51527b	chr3	179230348	G	A	CCDS43171
PIK3CA	PD46708a	PD46708b	chr3	179234288	A	G	CCDS43171
PIK3CA	PD51222a	PD51222b	chr3	179234289	T	A	CCDS43171
PIK3CA	PD51280a	PD51280b	chr3	179234297	A	G	CCDS43171
PIK3CA	PD51302a	PD51302b	chr3	179234297	A	G	CCDS43171
PIK3CA	PD51748a	PD51748b	chr3	179234358	G	GA	CCDS43171
PIK3R1	PD50339a	PD50339b	chr5	68292319	TGTCCTTA	T	CCDS3993.
PIK3R1	PD51519a	PD51519b	chr5	68293311	GA	G	CCDS3993.
PIK3R1	PD51543a	PD51543b	chr5	68293769	ACT	A	CCDS3993.
PIK3R1	PD50418a	PD50418b	chr5	68293791	GAGAATAT	G	CCDS3993.
PIK3R1	PD51729a	PD51729b	chr5	68295266	ATGAACAG	A	CCDS3993.

POLE	PD51566a	PD51566b	chr12	132634214	GC	G	CCDS9278.
POLE	PD46874a	PD46874b	chr12	132635980	GAGAAAG/	G	CCDS9278.
POT1	PD50627a	PD50627b	chr7	124863350	CT	C	CCDS5793.
POT1	PD47601a	PD47601b	chr7	124897160	C	G	CCDS5793.
PPM1D	PD46752a	PD46752b	chr17	60663262	CA	C	CCDS11625
PPM1D	PD50173a	PD50173b	chr17	60663269	AT	A	CCDS11625
PPP2R1A	PD51529a	PD51529b	chr19	52205961	A	T	CCDS12849
PPP2R1A	PD51748a	PD51748b	chr19	52219765	CCAGT	C	CCDS12849
PRKAR1A	PD51806a	PD51806b	chr17	68515461	A	ACGTCCAC	CCDS11678
PTCH1	PD51551a	PD51551b	chr9	95449836	C	A	CCDS6714.
PTCH1	PD50207a	PD50207b	chr9	95485803	G	A	CCDS6714.
PTEN	PD51652a	PD51652b	chr10	87864472	G	A	CCDS31238
PTEN	PD46718a	PD46718b	chr10	87864485	AAAGAGATA		CCDS31238
PTEN	PD51285a	PD51285b	chr10	87864498	G	A	CCDS31238
PTEN	PD51513a	PD51513b	chr10	87864526	T	A	CCDS31238
PTEN	PD50441a	PD50441b2	chr10	87894038	CATT	C	CCDS31238
PTEN	PD50325a	PD50325b	chr10	87894073	AAGGCGT/	A	CCDS31238
PTEN	PD51287a	PD51287b	chr10	87894083	C	G	CCDS31238
PTEN	PD51710a	PD51710b	chr10	87894085	GGAACAAT	G	CCDS31238
PTEN	PD51285a	PD51285b	chr10	87894088	A	G	CCDS31238
PTEN	PD46789a	PD46789b	chr10	87894089	C	CAATATT	CCDS31238
PTEN	PD51381a	PD51381b	chr10	87925531	T	TA	CCDS31238
PTEN	PD50441a	PD50441b2	chr10	87925557	TGTAA	T	CCDS31238
PTEN	PD46789a	PD46789b	chr10	87931053	G	T	CCDS31238
PTEN	PD50610a	PD50610b	chr10	87931090	G	C	CCDS31238
PTEN	PD42903a	PD42903b	chr10	87933025	CT	C	CCDS31238
PTEN	PD50329a	PD50329b	chr10	87933037	A	G	CCDS31238
PTEN	PD50102a	PD50102b	chr10	87933127	A	T	CCDS31238
PTEN	PD46727a	PD46727b	chr10	87933145	G	A	CCDS31238
PTEN	PD51734a	PD51734b	chr10	87933147	CGAA	C	CCDS31238
PTEN	PD51773a	PD51773b	chr10	87933154	G	T	CCDS31238
PTEN	PD37459a	PD37459b	chr10	87933222	TA	T	CCDS31238
PTEN	PD46790a	PD46790b	chr10	87952117	G	A	CCDS31238
PTEN	PD48866a	PD48866b	chr10	87952118	G	T	CCDS31238
PTEN	PD50341a	PD50341b	chr10	87952149	T	G	CCDS31238
PTEN	PD51219a	PD51219b	chr10	87952154	T	G	CCDS31238
PTEN	PD42891a	PD42891b	chr10	87952189	TAGACCAC	T	CCDS31238
PTEN	PD46853a	PD46853b	chr10	87952189	T	TA	CCDS31238
PTEN	PD51524a	PD51524b	chr10	87952236	C	A	CCDS31238
PTEN	PD50394a	PD50394b	chr10	87952260	G	A	CCDS31238
PTEN	PD51786a	PD51786b	chr10	87957926	CA	C	CCDS31238
PTEN	PD51406a	PD51406b	chr10	87957938	C	CT	CCDS31238
PTEN	PD51509a	PD51509b	chr10	87957956	GT	G	CCDS31238
PTEN	PD46718a	PD46718b	chr10	87957972	G	T	CCDS31238
PTEN	PD47583a	PD47583b	chr10	87960893	G	C	CCDS31238
PTEN	PD48864a	PD48864b	chr10	87960944	GGAAACC	G	CCDS31238
PTEN	PD46909a	PD46909b	chr10	87961022	TAATGACA	T	CCDS31238
PTEN	PD46923a	PD46923b	chr10	87961046	T	TA	CCDS31238
PTEN	PD51563a	PD51563b	chr10	87965285	A	G	CCDS31238
PTEN	PD50401a	PD50401b2	chr10	87965296	T	C	CCDS31238
PTPRB	PD42876a	PD42876b	chr12	70539957	A	T	CCDS44943
PTPRB	PD47590a	PD47590b	chr12	70566441	G	A	CCDS44943
PTPRB	PD55526a	PD55526b	chr12	70569856	TC	T	CCDS44943

PTPRB	PD46743a	PD46743b	chr12	70581240	TAGTA	T	CCDS44943
RAD21	PD46913a	PD46913b	chr8	116854371	TGAATA	T	CCDS6321.
RAD21	PD51772a	PD51772b	chr8	116866585	C	A	CCDS6321.
RASA1	PD51590a	PD51590b	chr5	87390841	AC	A	CCDS34200
RB1	PD50140a	PD50140b	chr13	48456231	GA	G	CCDS31973
RB1	PD51525a	PD51525b	chr13	48459822	CA	C	CCDS31973
RBM10	PD50629a	PD50629b	chrX	47179959	CTCCTCCAC	C	CCDS75969
RHEB	PD42899a	PD42899b	chr7	151490963	T	A	CCDS5927.
RHEB	PD51271a	PD51271b	chr7	151490964	A	T	CCDS5927.
RHEB	PD51770a	PD51770b	chr7	151490964	A	T	CCDS5927.
RIT1	PD46922a	PD46922b	chr1	155904495	A	C	CCDS58037
RPL22	PD51785a	PD51785b	chr1	6193015	CT	C	CCDS58.1
RPL22	PD51254a	PD51254b	chr1	6197633	CAATAAGGC	C	CCDS58.1
RPL22	PD42900a	PD42900b	chr1	6197724	CT	C	CCDS58.1
RPL22	PD50115a	PD50115b	chr1	6197724	C	CT	CCDS58.1
RPL22	PD50441a	PD50441b2	chr1	6197724	CT	C	CCDS58.1
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RPL22	PD51781a	PD51781b	chr1	6197724	CT	C	CCDS58.1
RPL5	PD46865a	PD46865b	chr1	92833662	TA	T	CCDS741.1
RPL5	PD46763a	PD46763b	chr1	92834880	AG	A	CCDS741.1
RUNX1	PD46716a	PD46716b	chr21	34834495	TG	T	CCDS13639
SAMHD1	PD51221a	PD51221b	chr20	36897863	A	T	CCDS13288
SAMHD1	PD51185a	PD51185b	chr20	36905416	A	C	CCDS13288
SAMHD1	PD46841a	PD46841b	chr20	36911329	T	G	CCDS13288
SAMHD1	PD50194a	PD50194b	chr20	36916787	G	T	CCDS13288
SAMHD1	PD47592a	PD47592b	chr20	36917042	T	C	CCDS13288
SAMHD1	PD50191a	PD50191b	chr20	36917049	A	T	CCDS13288
SAMHD1	PD51716a	PD51716b	chr20	36919426	C	G	CCDS13288
SAMHD1	PD42585a	PD42585b	chr20	36927184	T	C	CCDS13288
SAMHD1	PD51540a	PD51540b	chr20	36927241	A	T	CCDS13288
SAMHD1	PD51291a	PD51291b	chr20	36930816	T	G	CCDS13288
SAMHD1	PD51233a	PD51233b	chr20	36930832	T	C	CCDS13288
SAMHD1	PD50403a	PD50403b2	chr20	36935036	T	A	CCDS13288
SAMHD1	PD51182a	PD51182b	chr20	36935036	T	C	CCDS13288
SAMHD1	PD50119a	PD50119b	chr20	36941095	T	C	CCDS13288
SAMHD1	PD46930a	PD46930b	chr20	36946789	C	T	CCDS13288
SAMHD1	PD51573a	PD51573b	chr20	36946789	C	T	CCDS13288
SETD2	PD51737a	PD51737b	chr3	47017197	C	A	CCDS2749.
SETD2	PD42673a	PD42673b	chr3	47017206	C	A	CCDS2749.
SETD2	PD51292a	PD51292b	chr3	47017655	TAA	T	CCDS2749.
SETD2	PD51576a	PD51576b	chr3	47017671	GGTAATTCG	G	CCDS2749.
SETD2	PD50393a	PD50393b2	chr3	47017704	G	T	CCDS2749.
SETD2	PD51542a	PD51542b	chr3	47019825	TG	T	CCDS2749.
SETD2	PD46849a	PD46849b	chr3	47037670	AT	A	CCDS2749.
SETD2	PD51575a	PD51575b	chr3	47037680	C	A	CCDS2749.
SETD2	PD51694a	PD51694b	chr3	47037682	TCA	T	CCDS2749.
SETD2	PD50129a	PD50129b	chr3	47037750	C	T	CCDS2749.
SETD2	PD51588a	PD51588b	chr3	47037752	AAGTAGG/A	A	CCDS2749.
SETD2	PD51295a	PD51295b	chr3	47042538	AACGCC/C/A	A	CCDS2749.
SETD2	PD46777a	PD46777b	chr3	47046537	CGGCTGG/C	C	CCDS2749.
SETD2	PD51314a	PD51314b	chr3	47046546	G	GT	CCDS2749.
SETD2	PD51558a	PD51558b	chr3	47046558	C	A	CCDS2749.
SETD2	PD50146a	PD50146b	chr3	47046592	GA	G	CCDS2749.

SETD2	PD51668a	PD51668b	chr3	47046612	G	A	CCDS2749.
SETD2	PD51781a	PD51781b	chr3	47056820	C	T	CCDS2749.
SETD2	PD51240a	PD51240b	chr3	47056853	GT	G	CCDS2749.
SETD2	PD46884a	PD46884b	chr3	47056856	ATG	A	CCDS2749.
SETD2	PD51277a	PD51277b	chr3	47056934	G	A	CCDS2749.
SETD2	PD51723a	PD51723b	chr3	47056958	TTGAATCC	T	CCDS2749.
SETD2	PD51264a	PD51264b	chr3	47057165	G	A	CCDS2749.
SETD2	PD46951a	PD46951b	chr3	47057270	G	GATAACCT	CCDS2749.
SETD2	PD51549a	PD51549b	chr3	47057393	G	A	CCDS2749.
SETD2	PD51528a	PD51528b	chr3	47057402	C	A	CCDS2749.
SETD2	PD51561a	PD51561b	chr3	47057448	GTCTTTAA	G	CCDS2749.
SETD2	PD50441a	PD50441b2	chr3	47062264	GTC	G	CCDS2749.
SETD2	PD50097a	PD50097b	chr3	47062272	CTCTT	C	CCDS2749.
SETD2	PD48852a	PD48852b	chr3	47062287	GA	G	CCDS2749.
SETD2	PD37464a	PD37464b	chr3	47067103	G	GA	CCDS2749.
SETD2	PD50325a	PD50325b	chr3	47067109	G	A	CCDS2749.
SETD2	PD37463a	PD37463b	chr3	47083819	CA	C	CCDS2749.
SETD2	PD50408a	PD50408b2	chr3	47083847	GT	G	CCDS2749.
SETD2	PD46902a	PD46902b	chr3	47083961	C	CT	CCDS2749.
SETD2	PD51533a	PD51533b	chr3	47084295	G	A	CCDS2749.
SETD2	PD46960a	PD46960b	chr3	47084332	CTCCAACA	C	CCDS2749.
SETD2	PD46943a	PD46943b	chr3	47084334	C	A	CCDS2749.
SETD2	PD46874a	PD46874b	chr3	47084383	C	G	CCDS2749.
SETD2	PD46954a	PD46954b	chr3	47084383	C	A	CCDS2749.
SETD2	PD50401a	PD50401b2	chr3	47086221	C	A	CCDS2749.
SETD2	PD48939a	PD48939b	chr3	47086302	G	A	CCDS2749.
SETD2	PD48899a	PD48899b	chr3	47086305	AGT	A	CCDS2749.
SETD2	PD50418a	PD50418b	chr3	47088114	TGTATGACT	T	CCDS2749.
SETD2	PD51414a	PD51414b	chr3	47088136	G	GT	CCDS2749.
SETD2	PD51579a	PD51579b	chr3	47088142	G	A	CCDS2749.
SETD2	PD46713a	PD46713b	chr3	47088238	CTCCA	C	CCDS2749.
SETD2	PD51242a	PD51242b	chr3	47097950	C	G	CCDS2749.
SETD2	PD46943a	PD46943b	chr3	47097975	G	A	CCDS2749.
SETD2	PD46853a	PD46853b	chr3	47098018	GT	G	CCDS2749.
SETD2	PD50634a	PD50634b	chr3	47098075	TTCTTTTC	T	CCDS2749.
SETD2	PD51782a	PD51782b	chr3	47101453	C	G	CCDS2749.
SETD2	PD51309a	PD51309b	chr3	47101455	T	TA	CCDS2749.
SETD2	PD51511a	PD51511b	chr3	47101456	A	C	CCDS2749.
SETD2	PD42677a	PD42677b	chr3	47101476	T	A	CCDS2749.
SETD2	PD50397a	PD50397b2	chr3	47101476	T	G	CCDS2749.
SETD2	PD51599a	PD51599b	chr3	47101519	T	TA	CCDS2749.
SETD2	PD51521a	PD51521b	chr3	47101525	AC	A	CCDS2749.
SETD2	PD51773a	PD51773b	chr3	47101543	C	A	CCDS2749.
SETD2	PD50168a	PD50168b	chr3	47103372	AG	A	CCDS2749.
SETD2	PD42574a	PD42574b	chr3	47103389	C	T	CCDS2749.
SETD2	PD46733a	PD46733b	chr3	47103390	G	A	CCDS2749.
SETD2	PD51316a	PD51316b	chr3	47106074	C	A	CCDS2749.
SETD2	PD50610a	PD50610b	chr3	47113867	AGAACTTA	A	CCDS2749.
SETD2	PD48919a	PD48919b	chr3	47113886	CT	C	CCDS2749.
SETD2	PD46744a	PD46744b	chr3	47113889	T	A	CCDS2749.
SETD2	PD50083a	PD50083b	chr3	47116723	G	A	CCDS2749.
SETD2	PD51587a	PD51587b	chr3	47116751	CT	C	CCDS2749.
SETD2	PD51774a	PD51774b	chr3	47120194	T	TA	CCDS2749.

SETD2	PD51684a	PD51684b	chr3	47120204	C	A	CCDS2749.
SETD2	PD50148a	PD50148b	chr3	47120289	ACAGGAG	A	CCDS2749.
SETD2	PD48861a	PD48861b	chr3	47120352	TCTAA	T	CCDS2749.
SETD2	PD50167a	PD50167b	chr3	47120383	TC	T	CCDS2749.
SETD2	PD46885a	PD46885b	chr3	47120448	AT	A	CCDS2749.
SETD2	PD51729a	PD51729b	chr3	47120467	G	C	CCDS2749.
SETD2	PD55517a	PD55517b	chr3	47120587	G	C	CCDS2749.
SETD2	PD46924a	PD46924b	chr3	47120609	G	A	CCDS2749.
SETD2	PD51801a	PD51801b	chr3	47120699	GTCTACCT	G	CCDS2749.
SETD2	PD51287a	PD51287b	chr3	47120819	G	A	CCDS2749.
SETD2	PD50434a	PD50434b	chr3	47120863	A	C	CCDS2749.
SETD2	PD51181a	PD51181b	chr3	47120985	C	T	CCDS2749.
SETD2	PD50389a	PD50389b	chr3	47121313	G	T	CCDS2749.
SETD2	PD46848a	PD46848b	chr3	47121398	T	TG	CCDS2749.
SETD2	PD51285a	PD51285b	chr3	47121479	C	CT	CCDS2749.
SETD2	PD46830a	PD46830b	chr3	47121580	A	T	CCDS2749.
SETD2	PD51411a	PD51411b	chr3	47121615	TA	T	CCDS2749.
SETD2	PD51381a	PD51381b	chr3	47121722	C	A	CCDS2749.
SETD2	PD50420a	PD50420b2	chr3	47121758	G	A	CCDS2749.
SETD2	PD51788a	PD51788b	chr3	47122046	CA	C	CCDS2749.
SETD2	PD46920a	PD46920b	chr3	47122116	A	AT	CCDS2749.
SETD2	PD51725a	PD51725b	chr3	47122144	G	C	CCDS2749.
SETD2	PD50406a	PD50406b2	chr3	47122148	C	A	CCDS2749.
SETD2	PD37481a	PD37481b	chr3	47122445	CT	C	CCDS2749.
SETD2	PD50616a	PD50616b	chr3	47122445	CT	C	CCDS2749.
SETD2	PD47599a	PD47599b	chr3	47122520	C	A	CCDS2749.
SETD2	PD50620a	PD50620b	chr3	47122564	GTT	G	CCDS2749.
SETD2	PD51778a	PD51778b	chr3	47122614	AT	A	CCDS2749.
SETD2	PD46755a	PD46755b	chr3	47122774	A	T	CCDS2749.
SETD2	PD46739a	PD46739b	chr3	47122806	TTC	T	CCDS2749.
SETD2	PD46871a	PD46871b	chr3	47122866	TAA	T	CCDS2749.
SETD2	PD48942a	PD48942b	chr3	47122886	G	A	CCDS2749.
SETD2	PD51814a	PD51814b	chr3	47122886	G	A	CCDS2749.
SETD2	PD42896a	PD42896b	chr3	47123018	G	A	CCDS2749.
SETD2	PD48866a	PD48866b	chr3	47123069	CTGAAG	C	CCDS2749.
SETD2	PD48911a	PD48911b	chr3	47123140	GTC	G	CCDS2749.
SETD2	PD47593a	PD47593b	chr3	47123254	G	C	CCDS2749.
SETD2	PD48929a	PD48929b	chr3	47123270	G	A	CCDS2749.
SETD2	PD51406a	PD51406b	chr3	47123270	G	A	CCDS2749.
SETD2	PD55521a	PD55521b	chr3	47123315	G	A	CCDS2749.
SETD2	PD51194a	PD51194b	chr3	47123459	G	A	CCDS2749.
SETD2	PD46801a	PD46801b	chr3	47123505	A	C	CCDS2749.
SETD2	PD46847a	PD46847b	chr3	47123534	G	A	CCDS2749.
SETD2	PD50434a	PD50434b	chr3	47123534	G	A	CCDS2749.
SETD2	PD51413a	PD51413b	chr3	47123534	G	A	CCDS2749.
SETD2	PD51746a	PD51746b	chr3	47123536	G	T	CCDS2749.
SETD2	PD46909a	PD46909b	chr3	47123591	T	A	CCDS2749.
SETD2	PD50196a	PD50196b	chr3	47123636	G	A	CCDS2749.
SETD2	PD51400a	PD51400b	chr3	47123672	C	A	CCDS2749.
SETD2	PD46723a	PD46723b	chr3	47123792	C	CT	CCDS2749.
SETD2	PD51734a	PD51734b	chr3	47123792	CT	C	CCDS2749.
SETD2	PD50612a	PD50612b	chr3	47123800	G	T	CCDS2749.
SETD2	PD51803a	PD51803b	chr3	47123861	TA	T	CCDS2749.

SETD2	PD51732a	PD51732b	chr3	47123908	AT	A	CCDS2749.
SETD2	PD42595a	PD42595b	chr3	47124082	G	C	CCDS2749.
SETD2	PD48887a	PD48887b	chr3	47124462	GC	G	CCDS2749.
SETD2	PD42898a	PD42898b	chr3	47124543	CTTTGCCT	C	CCDS2749.
SETD2	PD46926a	PD46926b	chr3	47124550	T	C	CCDS2749.
SETD2	PD46851a	PD46851b	chr3	47126643	CT	C	CCDS2749.
SETD2	PD46731a	PD46731b	chr3	47163853	C	G	CCDS2749.
SF3B1	PD48861a	PD48861b	chr2	197400753	C	A	CCDS33356
SMAD2	PD51188a	PD51188b	chr18	47848635	A	C	CCDS11934
SMARCA4	PD51567a	PD51567b	chr19	10987925	G	A	CCDS12253
SMARCA4	PD46941a	PD46941b	chr19	10991254	CCG	C	CCDS12253
SMARCA4	PD51704a	PD51704b	chr19	10995005	TG	T	CCDS12253
SMARCA4	PD46834a	PD46834b	chr19	11021817	A	AC	CCDS12253
SMARCA4	PD46743a	PD46743b	chr19	11030855	A	AC	CCDS12253
SMARCA4	PD46729a	PD46729b	chr19	11033289	G	T	CCDS12253
SMARCA4	PD42590a	PD42590b	chr19	11033309	G	A	CCDS12253
SMARCA4	PD46917a	PD46917b	chr19	11033318	G	A	CCDS12253
SMARCA4	PD46834a	PD46834b	chr19	11033437	G	T	CCDS12253
SMARCA4	PD51767a	PD51767b	chr19	11035040	G	T	CCDS12253
SMARCB1	PD46714a	PD46714b	chr22	23833675	A	T	CCDS82699
SMC1A	PD51551a	PD51551b	chrX	53405149	C	A	CCDS14352
SOCS1	PD37469a	PD37469b	chr16	11255349	C	CG	CCDS10546
SOX17	PD46790a	PD46790b	chr8	54459965	G	GGTATATT	CCDS6159.
SOX9	PD51777a	PD51777b	chr17	72121431	C	T	CCDS11689
SPEN	PD46711a	PD46711b	chr1	15876449	GATAT	G	CCDS164.1
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SPEN	PD51229a	PD51229b	chr1	15929382	G	T	CCDS164.1
SPEN	PD50441a	PD50441b2	chr1	15929548	CA	C	CCDS164.1
SPEN	PD46753a	PD46753b	chr1	15929619	G	T	CCDS164.1
SPEN	PD42905a	PD42905b	chr1	15931346	G	GC	CCDS164.1
SPEN	PD55539a	PD55539b	chr1	15935493	AC	A	CCDS164.1
SPEN	PD37469a	PD37469b	chr1	15937328	G	T	CCDS164.1
SPEN	PD51733a	PD51733b	chr1	15937968	G	T	CCDS164.1
SPTAN1	PD50620a	PD50620b	chr9	128598448	G	T	CCDS48036
STAG2	PD51812a	PD51812b	chrX	124030960	G	C	CCDS43990
STAG2	PD48869a	PD48869b	chrX	124030966	T	TA	CCDS43990
STAG2	PD48940a	PD48940b	chrX	124056219	G	GA	CCDS43990
STAG2	PD51197a	PD51197b	chrX	124063932	T	TA	CCDS43990
STAG2	PD50097a	PD50097b	chrX	124064034	G	GA	CCDS43990
STAG2	PD46964a	PD46964b	chrX	124066226	G	GA	CCDS43990
STAG2	PD51422a	PD51422b	chrX	124071196	T	TA	CCDS43990
STAG2	PD46807a	PD46807b	chrX	124071252	T	A	CCDS43990
STAG2	PD46903a	PD46903b	chrX	124081465	GT	G	CCDS43990
STAG2	PD50618a	PD50618b	chrX	124090572	CA	C	CCDS43990
STAT5B	PD51821a	PD51821b	chr17	42212188	GC	G	CCDS11423
STAT5B	PD51511a	PD51511b	chr17	42217193	AC	A	CCDS11423
STAT5B	PD51806a	PD51806b	chr17	42227573	AC	A	CCDS11423
TBL1XR1	PD46951a	PD46951b	chr3	177032966	C	A	CCDS46961
TBX3	PD55523a	PD55523b	chr12	114674262	GA	G	CCDS9176.
TBX3	PD47592a	PD47592b	chr12	114682830	AC	A	CCDS9176.
TCF7L2	PD50083a	PD50083b	chr10	113160617	AGATGCAAA	A	CCDS53577
TET2	PD51685a	PD51685b	chr4	105235207	G	GA	CCDS47120
TET2	PD51814a	PD51814b	chr4	105235411	TA	T	CCDS47120

TET2	PD51569a	PD51569b	chr4	105235483	ATAACCCAA		CCDS47120
TET2	PD51801a	PD51801b	chr4	105235611	C	T	CCDS47120
TET2	PD51697a	PD51697b	chr4	105235872	C	T	CCDS47120
TET2	PD50329a	PD50329b	chr4	105236304	GA	G	CCDS47120
TET2	PD48915a	PD48915b	chr4	105236355	G	T	CCDS47120
TET2	PD51314a	PD51314b	chr4	105236426	C	A	CCDS47120
TET2	PD46887a	PD46887b	chr4	105237003	CAA	C	CCDS47120
TET2	PD50453a	PD50453b	chr4	105243610	T	A	CCDS47120
TET2	PD50127a	PD50127b	chr4	105275080	C	T	CCDS47120
TET2	PD47589a	PD47589b	chr4	105275258	C	A	CCDS47120
TET2	PD46754a	PD46754b	chr4	105276008	TC	T	CCDS47120
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TP53	PD51398a	PD51398b	chr17	7670685	G	A	CCDS11118
TP53	PD51563a	PD51563b	chr17	7673534	C	T	CCDS11118
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TP53	PD46770a	PD46770b	chr17	7673737	G	T	CCDS11118
TP53	PD51754a	PD51754b	chr17	7673767	C	A	CCDS11118
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TP53	PD51206a	PD51206b	chr17	7673779	C	G	CCDS11118
TP53	PD51729a	PD51729b	chr17	7673802	C	T	CCDS11118
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TP53	PD51732a	PD51732b	chr17	7673838	C	T	CCDS11118
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TP53	PD51594a	PD51594b	chr17	7674241	G	T	CCDS11118
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TP53	PD46871a	PD46871b	chr17	7674887	C	G	CCDS11118
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TP53	PD51655a	PD51655b	chr17	7675100	T	TC	CCDS11118
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TP53	PD46864a	PD46864b	chr17	7675218	T	C	CCDS11118
TP53	PD50190a	PD50190b	chr17	7676088	G	T	CCDS11118
TP53	PD51701a	PD51701b	chr17	7676110	G	T	CCDS11118
TRAF3	PD51219a	PD51219b	chr14	102891389	A	AGGAGT	CCDS9975.
TRAF3	PD50357a	PD50357b	chr14	102897288	GA	G	CCDS9975.
TRAF7	PD50124a	PD50124b	chr16	2173480	G	A	CCDS10461
TSC1	PD51407a	PD51407b	chr9	132897293	G	A	CCDS6956.
TSC1	PD42671a	PD42671b	chr9	132897481	T	A	CCDS6956.
TSC1	PD51207a	PD51207b	chr9	132902713	G	T	CCDS6956.
TSC1	PD48879a	PD48879b	chr9	132905727	ATGGGC	A	CCDS6956.
TSC1	PD46737a	PD46737b	chr9	132905806	G	GCCGT	CCDS6956.
TSC1	PD51772a	PD51772b	chr9	132905815	AT	A	CCDS6956.

TSC1	PD50122a	PD50122b	chr9	132905975	GCT	G	CCDS6956.
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TSC1	PD50440a	PD50440b2	chr9	132907331	G	A	CCDS6956.
TSC1	PD46854a	PD46854b	chr9	132921812	AATTTACC	A	CCDS6956.
TSC1	PD51385a	PD51385b	chr9	132923493	C	T	CCDS6956.
TSC1	PD46725a	PD46725b	chr9	132925651	T	TG	CCDS6956.
TSC2	PD46799a	PD46799b	chr16	2062010	T	A	CCDS10458
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VHL	PD50443a	PD50443b2	chr3	10142008	T	TG	CCDS2597.
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VHL	PD51226a	PD51226b	chr3	10142010	G	T	CCDS2597.
VHL	PD50354a	PD50354b	chr3	10142011	A	AG	CCDS2597.
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VHL	PD48851a	PD48851b	chr3	10142013	GC	G	CCDS2597.
VHL	PD51551a	PD51551b	chr3	10142015	CG	C	CCDS2597.
VHL	PD51694a	PD51694b	chr3	10142015	CG	C	CCDS2597.
VHL	PD48855a	PD48855b	chr3	10142019	CG	C	CCDS2597.
VHL	PD48950a	PD48950b	chr3	10142022	CCGCGGC	C	CCDS2597.
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VHL	PD51179a	PD51179b	chr3	10142024	GCGGCC	G	CCDS2597.
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VHL	PD46964a	PD46964b	chr3	10142025	C	CG	CCDS2597.
VHL	PD51322a	PD51322b	chr3	10142027	GC	G	CCDS2597.
VHL	PD46912a	PD46912b	chr3	10142031	G	GT	CCDS2597.
VHL	PD51182a	PD51182b	chr3	10142036	GCGCT	G	CCDS2597.
VHL	PD46865a	PD46865b	chr3	10142039	CTCGG	C	CCDS2597.
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VHL	PD42572a	PD42572b	chr3	10142041	C	T	CCDS2597.
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VHL	PD46826a	PD46826b	chr3	10142041	C	G	CCDS2597.
VHL	PD46830a	PD46830b	chr3	10142041	C	G	CCDS2597.
VHL	PD50083a	PD50083b	chr3	10142041	C	T	CCDS2597.
VHL	PD50162a	PD50162b	chr3	10142041	C	T	CCDS2597.
VHL	PD50453a	PD50453b	chr3	10142041	C	T	CCDS2597.
VHL	PD50638a	PD50638b	chr3	10142041	C	T	CCDS2597.
VHL	PD51251a	PD51251b	chr3	10142041	C	G	CCDS2597.
VHL	PD51598a	PD51598b	chr3	10142041	C	T	CCDS2597.
VHL	PD51649a	PD51649b	chr3	10142041	C	T	CCDS2597.
VHL	PD51659a	PD51659b	chr3	10142041	C	T	CCDS2597.
VHL	PD51700a	PD51700b	chr3	10142041	C	T	CCDS2597.
VHL	PD51727a	PD51727b	chr3	10142041	C	T	CCDS2597.
VHL	PD37468a	PD37468b	chr3	10142041	C	A	CCDS2597.
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VHL	PD48850a	PD48850b	chr3	10142041	C	A	CCDS2597.
VHL	PD48886a	PD48886b	chr3	10142041	C	A	CCDS2597.
VHL	PD50084a	PD50084b	chr3	10142041	C	A	CCDS2597.

VHL	PD50327a	PD50327b	chr3	10142041	C	A	CCDS2597.
VHL	PD50401a	PD50401b2	chr3	10142041	C	A	CCDS2597.
VHL	PD50612a	PD50612b	chr3	10142041	C	A	CCDS2597.
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VHL	PD55511a	PD55511b	chr3	10142041	C	A	CCDS2597.
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VHL	PD50214a	PD50214b	chr3	10142055	G	T	CCDS2597.
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VHL	PD51576a	PD51576b	chr3	10142057	GC	G	CCDS2597.
VHL	PD51231a	PD51231b	chr3	10142060	CTCCCAG	C	CCDS2597.
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VHL	PD37466a	PD37466b	chr3	10142067	GT	G	CCDS2597.
VHL	PD47592a	PD47592b	chr3	10142068	T	G	CCDS2597.
VHL	PD50135a	PD50135b	chr3	10142068	T	G	CCDS2597.
VHL	PD51278a	PD51278b	chr3	10142068	T	A	CCDS2597.
VHL	PD51699a	PD51699b	chr3	10142068	T	A	CCDS2597.
VHL	PD51679a	PD51679b	chr3	10142069	CAT	C	CCDS2597.
VHL	PD51302a	PD51302b	chr3	10142070	A	ATCTTCTG	CCDS2597.
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VHL	PD46737a	PD46737b	chr3	10142072	CTTCTGCAC	CCDS2597.
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VHL	PD51771a	PD51771b	chr3	10142081	T G	CCDS2597.
VHL	PD51793a	PD51793b	chr3	10142081	T A	CCDS2597.
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VHL	PD51320a	PD51320b	chr3	10142084	C CA	CCDS2597.
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VHL	PD46874a	PD46874b	chr3	10142087	TCCG T	CCDS2597.
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VHL	PD51253a	PD51253b	chr3	10142089	CGCGCGT(C	CCDS2597.
VHL	PD51270a	PD51270b	chr3	10142089	CG C	CCDS2597.
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VHL	PD46728a	PD46728b	chr3	10142101	T C	CCDS2597.
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VHL	PD46764a	PD46764b	chr3	10142103	C	T	CCDS2597.
VHL	PD46857a	PD46857b	chr3	10142103	C	T	CCDS2597.
VHL	PD51654a	PD51654b	chr3	10142103	C	T	CCDS2597.
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VHL	PD46957a	PD46957b	chr3	10142104	C	G	CCDS2597.
VHL	PD48890a	PD48890b	chr3	10142104	C	T	CCDS2597.
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VHL	PD51293a	PD51293b	chr3	10142109	T	A	CCDS2597.
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VHL	PD48933a	PD48933b	chr3	10142110	G	T	CCDS2597.
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VHL	PD37478a	PD37478b	chr3	10142113	T	A	CCDS2597.
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VHL	PD50161a	PD50161b	chr3	10142114	CA	C	CCDS2597.
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VHL	PD46933a	PD46933b	chr3	10142116	AC	A	CCDS2597.
VHL	PD46773a	PD46773b	chr3	10142116	A	T	CCDS2597.
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VHL	PD50456a	PD50456b	chr3	10142117	CT	C	CCDS2597.
VHL	PD42673a	PD42673b	chr3	10142119	TCGA	T	CCDS2597.
VHL	PD51707a	PD51707b	chr3	10142119	TCGACGG	(T	CCDS2597.
VHL	PD46800a	PD46800b	chr3	10142122	AC	A	CCDS2597.
VHL	PD50200a	PD50200b	chr3	10142123	CG	C	CCDS2597.

VHL	PD51199a	PD51199b	chr3	10142125	G	T	CCDS2597.
VHL	PD51209a	PD51209b	chr3	10142127	G	T	CCDS2597.
VHL	PD51532a	PD51532b	chr3	10142127	G	T	CCDS2597.
VHL	PD55519a	PD55519b	chr3	10142127	G	T	CCDS2597.
VHL	PD55530a	PD55530b	chr3	10142127	G	T	CCDS2597.
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VHL	PD42905a	PD42905b	chr3	10146625	TCA	T	CCDS2597.
VHL	PD50184a	PD50184b	chr3	10146625	TCA	T	CCDS2597.

VHL	PD47584a	PD47584b	chr3	10146625	T	C	CCDS2597.
VHL	PD50430a	PD50430b	chr3	10146625	T	A	CCDS2597.
VHL	PD51224a	PD51224b	chr3	10146625	T	C	CCDS2597.
VHL	PD51287a	PD51287b	chr3	10146625	T	C	CCDS2597.
VHL	PD51324a	PD51324b	chr3	10146625	T	C	CCDS2597.
VHL	PD51543a	PD51543b	chr3	10146625	T	G	CCDS2597.
VHL	PD55507a	PD55507b	chr3	10146625	T	C	CCDS2597.
VHL	PD51210a	PD51210b	chr3	10146631	TGC	T	CCDS2597.
VHL	PD37480a	PD37480b	chr3	10146631	T	C	CCDS2597.
VHL	PD51677a	PD51677b	chr3	10146631	T	C	CCDS2597.
VHL	PD50217a	PD50217b	chr3	10146632	GCC	G	CCDS2597.
VHL	PD51814a	PD51814b	chr3	10146634	CAG	C	CCDS2597.
VHL	PD46916a	PD46916b	chr3	10146634	C	T	CCDS2597.
VHL	PD50440a	PD50440b2	chr3	10146634	C	T	CCDS2597.
VHL	PD51277a	PD51277b	chr3	10146634	C	T	CCDS2597.
VHL	PD46913a	PD46913b	chr3	10146636	G	A	CCDS2597.
VHL	PD51650a	PD51650b	chr3	10146636	G	C	CCDS2597.
VHL	PD51704a	PD51704b	chr3	10146636	G	A	CCDS2597.
VHL	PD55516a	PD55516b	chr3	10146636	G	A	CCDS2597.
VHL	PD37461a	PD37461b	chr3	10146637	GT	G	CCDS2597.
VHL	PD51323a	PD51323b	chr3	10146637	G	GA	CCDS2597.
VHL	PD51582a	PD51582b	chr3	10146637	G	A	CCDS2597.
VHL	PD51805a	PD51805b	chr3	10146637	G	A	CCDS2597.
VHL	PD46721a	PD46721b	chr3	10146638	T	C	CCDS2597.
VHL	PD50629a	PD50629b	chr3	10146638	T	G	CCDS2597.
VHL	PD51666a	PD51666b	chr3	10149779	CCTTCCAGC		CCDS2597.
VHL	PD42674a	PD42674b	chr3	10149785	AGTGTATAA		CCDS2597.
VHL	PD46781a	PD46781b	chr3	10149785	A	G	CCDS2597.
VHL	PD50408a	PD50408b2	chr3	10149785	AG	A	CCDS2597.
VHL	PD50462a	PD50462b2	chr3	10149785	A	G	CCDS2597.
VHL	PD51665a	PD51665b	chr3	10149785	AG	A	CCDS2597.
VHL	PD51806a	PD51806b	chr3	10149785	A	G	CCDS2597.
VHL	PD46854a	PD46854b	chr3	10149786	G	A	CCDS2597.
VHL	PD46936a	PD46936b	chr3	10149786	G	C	CCDS2597.
VHL	PD50171a	PD50171b	chr3	10149786	G	C	CCDS2597.
VHL	PD50175a	PD50175b	chr3	10149786	G	A	CCDS2597.
VHL	PD51254a	PD51254b	chr3	10149786	G	A	CCDS2597.
VHL	PD51426a	PD51426b	chr3	10149786	G	A	CCDS2597.
VHL	PD51577a	PD51577b	chr3	10149786	G	C	CCDS2597.
VHL	PD37482a	PD37482b	chr3	10149788	G	GTA	CCDS2597.
VHL	PD51289a	PD51289b	chr3	10149788	GTA	G	CCDS2597.
VHL	PD50183a	PD50183b	chr3	10149789	TA	T	CCDS2597.
VHL	PD51794a	PD51794b	chr3	10149791	TACTCTG	T	CCDS2597.
VHL	PD51219a	PD51219b	chr3	10149791	T	A	CCDS2597.
VHL	PD51536a	PD51536b	chr3	10149792	ACT	A	CCDS2597.
VHL	PD51748a	PD51748b	chr3	10149793	CT	C	CCDS2597.
VHL	PD51693a	PD51693b	chr3	10149794	TC	T	CCDS2597.
VHL	PD48859a	PD48859b	chr3	10149795	C	CT	CCDS2597.
VHL	PD48924a	PD48924b	chr3	10149795	C	CT	CCDS2597.
VHL	PD46924a	PD46924b	chr3	10149795	C	G	CCDS2597.
VHL	PD51721a	PD51721b	chr3	10149795	C	G	CCDS2597.
VHL	PD46812a	PD46812b	chr3	10149796	T	C	CCDS2597.
VHL	PD46891a	PD46891b	chr3	10149796	T	A	CCDS2597.

VHL	PD46909a	PD46909b	chr3	10149796	T	G	CCDS2597.
VHL	PD51400a	PD51400b	chr3	10149796	T	A	CCDS2597.
VHL	PD51664a	PD51664b	chr3	10149796	T	A	CCDS2597.
VHL	PD48942a	PD48942b	chr3	10149797	GA	G	CCDS2597.
VHL	PD50411a	PD50411b2	chr3	10149797	G	GA	CCDS2597.
VHL	PD51718a	PD51718b	chr3	10149799	AAG	A	CCDS2597.
VHL	PD50127a	PD50127b	chr3	10149800	AGAG	A	CCDS2597.
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VHL	PD51658a	PD51658b	chr3	10149801	GA	G	CCDS2597.
VHL	PD50625a	PD50625b	chr3	10149801	G	T	CCDS2597.
VHL	PD46710a	PD46710b	chr3	10149804	C	T	CCDS2597.
VHL	PD46849a	PD46849b	chr3	10149804	C	T	CCDS2597.
VHL	PD50107a	PD50107b	chr3	10149804	C	T	CCDS2597.
VHL	PD50191a	PD50191b	chr3	10149804	C	T	CCDS2597.
VHL	PD51206a	PD51206b	chr3	10149804	C	T	CCDS2597.
VHL	PD51264a	PD51264b	chr3	10149804	C	T	CCDS2597.
VHL	PD51595a	PD51595b	chr3	10149804	C	T	CCDS2597.
VHL	PD51396a	PD51396b	chr3	10149805	GA	G	CCDS2597.
VHL	PD48919a	PD48919b	chr3	10149805	G	C	CCDS2597.
VHL	PD51788a	PD51788b	chr3	10149806	ATGCCTCCA		CCDS2597.
VHL	PD51766a	PD51766b	chr3	10149807	T	TGCCTCCA	CCDS2597.
VHL	PD51823a	PD51823b	chr3	10149807	T	C	CCDS2597.
VHL	PD46727a	PD46727b	chr3	10149808	G	A	CCDS2597.
VHL	PD46807a	PD46807b	chr3	10149808	G	A	CCDS2597.
VHL	PD50461a	PD50461b	chr3	10149808	G	A	CCDS2597.
VHL	PD51514a	PD51514b	chr3	10149808	G	A	CCDS2597.
VHL	PD51279a	PD51279b	chr3	10149809	CCT	C	CCDS2597.
VHL	PD48948a	PD48948b	chr3	10149809	C	G	CCDS2597.
VHL	PD46832a	PD46832b	chr3	10149811	TC	T	CCDS2597.
VHL	PD46708a	PD46708b	chr3	10149811	T	C	CCDS2597.
VHL	PD37459a	PD37459b	chr3	10149813	C	T	CCDS2597.
VHL	PD46777a	PD46777b	chr3	10149813	C	T	CCDS2597.
VHL	PD48867a	PD48867b	chr3	10149813	C	T	CCDS2597.
VHL	PD51682a	PD51682b	chr3	10149813	C	T	CCDS2597.
VHL	PD46836a	PD46836b	chr3	10149814	A	C	CCDS2597.
VHL	PD51728a	PD51728b	chr3	10149816	G	GT	CCDS2597.
VHL	PD46860a	PD46860b	chr3	10149820	TC	T	CCDS2597.
VHL	PD50634a	PD50634b	chr3	10149820	TC	T	CCDS2597.
VHL	PD51734a	PD51734b	chr3	10149820	TC	T	CCDS2597.
VHL	PD46749a	PD46749b	chr3	10149821	CCGG	C	CCDS2597.
VHL	PD51557a	PD51557b	chr3	10149822	CG	C	CCDS2597.
VHL	PD37472a	PD37472b	chr3	10149823	GGAGCCT	G	CCDS2597.
VHL	PD50190a	PD50190b	chr3	10149823	G	T	CCDS2597.
VHL	PD51678a	PD51678b	chr3	10149823	G	A	CCDS2597.
VHL	PD46775a	PD46775b	chr3	10149826	GC	G	CCDS2597.
VHL	PD51737a	PD51737b	chr3	10149826	GC	G	CCDS2597.
VHL	PD50122a	PD50122b	chr3	10149827	CCTAGT	C	CCDS2597.
VHL	PD51524a	PD51524b	chr3	10149828	CTAGTCAA	C	CCDS2597.
VHL	PD55528a	PD55528b	chr3	10149828	CT	C	CCDS2597.
VHL	PD51528a	PD51528b	chr3	10149829	TAGTCAAG	T	CCDS2597.
VHL	PD42902a	PD42902b	chr3	10149829	T	C	CCDS2597.
VHL	PD46886a	PD46886b	chr3	10149829	T	C	CCDS2597.
VHL	PD48869a	PD48869b	chr3	10149829	T	C	CCDS2597.

VHL	PD50389a	PD50389b	chr3	10149829	T	C	CCDS2597.
VHL	PD51241a	PD51241b	chr3	10149829	T	C	CCDS2597.
VHL	PD51663a	PD51663b	chr3	10149829	T	C	CCDS2597.
VHL	PD51733a	PD51733b	chr3	10149830	AGTCAAGCA		CCDS2597.
VHL	PD51578a	PD51578b	chr3	10149832	TCAAGCCTT		CCDS2597.
VHL	PD50454a	PD50454b	chr3	10149832	T	A	CCDS2597.
VHL	PD42882a	PD42882b	chr3	10149836	GC	G	CCDS2597.
VHL	PD51427a	PD51427b	chr3	10149837	CCT	C	CCDS2597.
VHL	PD50425a	PD50425b2	chr3	10149838	CTGAGAA	C	CCDS2597.
VHL	PD42585a	PD42585b	chr3	10149838	CTGAGA	C	CCDS2597.
VHL	PD50219a	PD50219b	chr3	10149838	CTGAGAATC		CCDS2597.
VHL	PD46732a	PD46732b	chr3	10149839	TGAGAATT T		CCDS2597.
VHL	PD51573a	PD51573b	chr3	10149840	GA	G	CCDS2597.
VHL	PD46863a	PD46863b	chr3	10149840	G	T	CCDS2597.
VHL	PD51255a	PD51255b	chr3	10149842	GA	G	CCDS2597.
VHL	PD51290a	PD51290b	chr3	10149842	GA	G	CCDS2597.
VHL	PD51720a	PD51720b	chr3	10149842	GA	G	CCDS2597.
VHL	PD55523a	PD55523b	chr3	10149842	G	GA	CCDS2597.
VHL	PD46859a	PD46859b	chr3	10149844	A	AT	CCDS2597.
VHL	PD51260a	PD51260b	chr3	10149844	A	AT	CCDS2597.
VHL	PD51273a	PD51273b	chr3	10149844	AT	A	CCDS2597.
VHL	PD51587a	PD51587b	chr3	10149844	A	AT	CCDS2597.
VHL	PD51556a	PD51556b	chr3	10149845	TTA	T	CCDS2597.
VHL	PD51207a	PD51207b	chr3	10149846	T	TACA	CCDS2597.
VHL	PD47596a	PD47596b	chr3	10149847	AC	A	CCDS2597.
VHL	PD46850a	PD46850b	chr3	10149848	C	A	CCDS2597.
VHL	PD51188a	PD51188b	chr3	10149848	C	A	CCDS2597.
VHL	PD51714a	PD51714b	chr3	10149848	C	G	CCDS2597.
VHL	PD51812a	PD51812b	chr3	10149850	GGA	G	CCDS2597.
VHL	PD50160a	PD50160b	chr3	10149852	AGACT	A	CCDS2597.
VHL	PD51732a	PD51732b	chr3	10149852	AG	A	CCDS2597.
VHL	PD37485a	PD37485b	chr3	10149852	A	T	CCDS2597.
VHL	PD51519a	PD51519b	chr3	10149852	A	T	CCDS2597.
VHL	PD46856a	PD46856b	chr3	10149855	CTGGACATC		CCDS2597.
VHL	PD46726a	PD46726b	chr3	10149855	C	CTT	CCDS2597.
VHL	PD46937a	PD46937b	chr3	10149855	CTG	C	CCDS2597.
VHL	PD48939a	PD48939b	chr3	10149855	CTG	C	CCDS2597.
VHL	PD46861a	PD46861b	chr3	10149856	T	G	CCDS2597.
VHL	PD51572a	PD51572b	chr3	10149856	T	C	CCDS2597.
VHL	PD55532a	PD55532b	chr3	10149856	T	C	CCDS2597.
VHL	PD46748a	PD46748b	chr3	10149862	TC	T	CCDS2597.
VHL	PD46753a	PD46753b	chr3	10149866	C	CAA	CCDS2597.
VHL	PD48914a	PD48914b	chr3	10149871	C	A	CCDS2597.
VHL	PD50432a	PD50432b	chr3	10149871	C	A	CCDS2597.
VHL	PD51239a	PD51239b	chr3	10149871	C	A	CCDS2597.
VHL	PD46956a	PD46956b	chr3	10149874	TC	T	CCDS2597.
VHL	PD51538a	PD51538b	chr3	10149874	TC	T	CCDS2597.
VHL	PD46887a	PD46887b	chr3	10149874	T	G	CCDS2597.
VHL	PD47601a	PD47601b	chr3	10149874	T	G	CCDS2597.
VHL	PD51586a	PD51586b	chr3	10149878	CG	C	CCDS2597.
VHL	PD48866a	PD48866b	chr3	10149879	GA	G	CCDS2597.
VHL	PD50103a	PD50103b	chr3	10149879	G	T	CCDS2597.
VHL	PD51405a	PD51405b	chr3	10149879	G	T	CCDS2597.

VHL	PD42676a	PD42676b	chr3	10149881	AGAT	A	CCDS2597.
VHL	PD50216a	PD50216b	chr3	10149883	ATC	A	CCDS2597.
VHL	PD51406a	PD51406b	chr3	10149884	TC	T	CCDS2597.
VHL	PD51778a	PD51778b	chr3	10149884	TC	T	CCDS2597.
VHL	PD50403a	PD50403b2	chr3	10149886	TG	T	CCDS2597.
VHL	PD51175a	PD51175b	chr3	10149886	T	C	CCDS2597.
VHL	PD51747a	PD51747b	chr3	10149886	T	A	CCDS2597.
VHL	PD50605a	PD50605b	chr3	10149888	G	T	CCDS2597.
VHL	PD46702a	PD46702b	chr3	10149892	ACCAC	A	CCDS2597.
VHL	PD42576a	PD42576b	chr3	10149893	CCACCCA	A	CCDS2597.
VHL	PD50203a	PD50203b	chr3	10149895	AC	A	CCDS2597.
VHL	PD46724a	PD46724b	chr3	10149898	C	CA	CCDS2597.
VHL	PD50132a	PD50132b	chr3	10149898	C	CA	CCDS2597.
VHL	PD51563a	PD51563b	chr3	10149898	C	CA	CCDS2597.
VHL	PD42891a	PD42891b	chr3	10149902	T	TG	CCDS2597.
VHL	PD51725a	PD51725b	chr3	10149902	TGTGCAG	A	CCDS2597.
VHL	PD46846a	PD46846b	chr3	10149906	CAG	C	CCDS2597.
VHL	PD48881a	PD48881b	chr3	10149906	C	T	CCDS2597.
VHL	PD51228a	PD51228b	chr3	10149906	C	T	CCDS2597.
VHL	PD42675a	PD42675b	chr3	10149908	GAA	G	CCDS2597.
VHL	PD51675a	PD51675b	chr3	10149908	GA	G	CCDS2597.
VHL	PD50394a	PD50394b	chr3	10149910	AAG	A	CCDS2597.
VHL	PD51775a	PD51775b	chr3	10149921	C	CG	CCDS2597.
VHL	PD55533a	PD55533b	chr3	10149926	GAC	G	CCDS2597.
VHL	PD42590a	PD42590b	chr3	10149927	ACACAG	A	CCDS2597.
VHL	PD37458a	PD37458b	chr3	10149936	CGCATT	C	CCDS2597.
VHL	PD42903a	PD42903b	chr3	10149938	C	CA	CCDS2597.
VHL	PD48858a	PD48858b	chr3	10149939	A	AT	CCDS2597.
VHL	PD51574a	PD51574b	chr3	10149947	T	TC	CCDS2597.
VHL	PD51526a	PD51526b	chr3	10149951	C	CG	CCDS2597.
VHL	PD46755a	PD46755b	chr3	10149953	GAT	G	CCDS2597.
VHL	PD50343a	PD50343b	chr3	10149954	A	AT	CCDS2597.
VHL	PD51815a	PD51815b	chr3	10149957	GGA	G	CCDS2597.
VHL	PD51316a	PD51316b	chr3	10149960	G	GA	CCDS2597.
VHL	PD51281a	PD51281b	chr3	10149961	A	AT	CCDS2597.
VHL	PD51304a	PD51304b	chr3	10149961	A	AT	CCDS2597.
VHL	PD51545a	PD51545b	chr3	10149965	A	G	CCDS2597.
WT1	PD42898a	PD42898b	chr11	32435218	A	T	CCDS7878.
YLPM1	PD51177a	PD51177b	chr14	74763491	T	A	CCDS45135
YLPM1	PD51177a	PD51177b	chr14	74763492	G	T	CCDS45135
YLPM1	PD51312a	PD51312b	chr14	74763498	GA	G	CCDS45135
YLPM1	PD51573a	PD51573b	chr14	74763767	CG	C	CCDS45135
YLPM1	PD50127a	PD50127b	chr14	74764243	G	GC	CCDS45135
YLPM1	PD51526a	PD51526b	chr14	74780438	C	T	CCDS45135
YLPM1	PD50201a	PD50201b	chr14	74780444	C	T	CCDS45135
YLPM1	PD37479a	PD37479b	chr14	74780501	C	T	CCDS45135
YLPM1	PD51560a	PD51560b	chr14	74781400	C	T	CCDS45135
YLPM1	PD55540a	PD55540b	chr14	74781470	AGGAGTA	A	CCDS45135
YLPM1	PD46784a	PD46784b	chr14	74781488	G	A	CCDS45135
YLPM1	PD37475a	PD37475b	chr14	74797935	C	T	CCDS45135
YLPM1	PD48920a	PD48920b	chr14	74809580	G	A	CCDS45135
YLPM1	PD51289a	PD51289b	chr14	74809930	G	T	CCDS45135
YLPM1	PD55533a	PD55533b	chr14	74812630	G	T	CCDS45135

YLPM1	PD51399a	PD51399b	chr14	74824279	G	A	CCDS45135
ZFHX3	PD51823a	PD51823b	chr16	72788162	G	A	CCDS10908
ZFHX3	PD46886a	PD46886b	chr16	72959376	GA	G	CCDS10908
ZFP36L2	PD51256a	PD51256b	chr2	43224756	ACGGGGC	A	CCDS1811.
ZMYM3	PD51551a	PD51551b	chrX	71242285	CATGTGTT	C	CCDS14409

RNA	CDS	Protein	Type	Effect
r.1412g>u	c.982G>T	p.G328W	Sub	missense
r.183_186del	c.140_143del	p.T48fs*37	Del	frameshift
r.1939delA	c.1303delA	p.K437fs*5	Del	frameshift
r.1427delA	c.1303delA	p.K437fs*5	Del	frameshift
r.1636u>g	c.155T>G	p.L52R	Sub	missense
r.1530g>a	c.49G>A	p.E17K	Sub	missense
r.353_360del	c.157_164del	p.V53fs*4	Del	frameshift
r.1458g>u	c.1402G>T	p.E468*	Sub	nonsense
r.2658g>u	c.2602G>T	p.E868*	Sub	nonsense
r.534delC	c.534delC	p.K179fs*17	Del	frameshift
r.2327_2328ins	c.2327_2328ins	p.L777fs*3	Ins	frameshift
r.2921c>a	c.2520C>A	p.Y840*	Sub	nonsense
r.3696delA	c.3295delA	p.N1099fs*4	Del	frameshift
r.4203g>a	c.4203G>A	p.W1401*	Sub	nonsense
r.4330delC	c.4330delC	p.G1446fs*3	Del	frameshift
r.390_415del	c.19_44del2	p.S11fs*91	Del	frameshift
r.390_415del	c.19_44del2	p.S11fs*91	Del	frameshift
r.778_781del	c.407_410del	p.H137fs*94	Del	frameshift
r.925_926ins	c.554_555ins	p.G187fs*21	Ins	frameshift
r.1036_1037ins	c.665_666ins	p.P225fs*17	Ins	frameshift
r.1172_1173del	c.801_804del	p.Q268fs*94	Del	frameshift
r.1201_1202del	c.830_831del	p.G278fs*12	Del	frameshift
r.1233c>u	c.862C>T	p.Q288*	Sub	nonsense
r.1788c>u	c.1417C>T	p.Q473*	Sub	nonsense
r.2332_2333del	c.1961_1961del	p.E654fs*21	Del	frameshift
r.2503c>g	c.2132C>G	p.S711*	Sub	nonsense
r.2725_2726ins	c.2336_2337ins	p.M785fs*37	Ins	frameshift
r.2916_2917del	c.2545_2546del	p.P849fs*22	Del	frameshift
r.3019_3020del	c.2648_2649del	p.C884fs*51	Del	frameshift
r.3131_3132ins	c.2760_2761ins	p.M923fs*13	Ins	frameshift
r.3582delA	c.3211delA	p.K1072fs*2	Del	frameshift
r.3662delC	c.3291delC	p.Q1098fs*3	Del	frameshift
r.3886_3908del	c.3515_3533del	p.I1173fs*12	Del	frameshift
r.3957delG	c.3586delG	p.D1196fs*1	Del	frameshift
r.4005c>u	c.3634C>T	p.Q1212*	Sub	nonsense
r.4295_4296del	c.3924_3925del	p.L1309fs*1	Del	frameshift
r.4338_4347del	c.3949_3958del	p.G1317fs*1	Del	frameshift
r.4470c>u	c.4099C>T	p.Q1367*	Sub	nonsense
r.4814delG	c.4443delG	p.G1482fs*2	Del	frameshift
r.5864_5892del	c.5493_5521del	p.G1832fs*1	Del	frameshift
r.6022_6032del	c.5651_5661del	p.T1884fs*1	Del	frameshift
r.6147_6148ins	c.5776_5777ins	p.A1927fs*3	Ins	frameshift
r.6270_6271ins	c.5899_5900ins	p.T1969fs*4	Ins	frameshift
r.6785_6786ins	c.6414_6415ins	p.F2141fs*9	Ins	frameshift
r.1586_1615del	c.1030_1059del	p.A349fs*11	Del	frameshift
r.3581+1g>a	c.3025+1G>p.?	p.?	Sub	ess_splice
r.3839a>u	c.3283A>T	p.K1095*	Sub	nonsense
r.360_361del	c.188_189del	p.S64fs*1	Del	frameshift
r.611delG	c.439delG	p.L148fs*67	Del	frameshift

r.2697c>a	c.2525C>A	p.S842*	Sub	nonsense
r.3299c>u	c.3127C>T	p.Q1043*	Sub	nonsense
r.3433_3434	c.3261_3261	p.N1088fs*2	Ins	frameshift
r.3542c>u	c.3370C>T	p.Q1124*	Sub	nonsense
r.4241delC	c.4069delC	p.L1357fs*1	Del	frameshift
r.4446_4450	c.4274_428	p.S1426fs*1	Del	frameshift
r.5233+5a>c	c.5061+5A>	p.?	Sub	ess_splice
r.1406_1407	c.996_997in	p.E334fs*15	Ins	frameshift
r.1680delA	c.1270delA	p.K424fs*55	Del	frameshift
r.1776g>u	c.1366G>T	p.E456*	Sub	nonsense
r.2534delC	c.2124delC	p.P709fs*8	Del	frameshift
r.4495_4496	c.4071_407	p.P1360fs*1	Ins	frameshift
r.478_488del	c.93_103del	p.L33fs*2	Del	frameshift
r.864delC	c.479delC	p.S160fs*6	Del	frameshift
r.921c>a	c.536C>A	p.S179*	Sub	nonsense
r.1083u>a	c.698T>A	p.L233*	Sub	nonsense
r.1395g>a	c.1010G>A	p.R337H	Sub	missense
r.2237delA	c.1852delA	p.N619fs*6	Del	frameshift
r.2509delG	c.2124delG	p.I709fs*26	Del	frameshift
r.2569c>a	c.2184C>A	p.C728*	Sub	nonsense
r.2976_2980	c.2591_259	p.S865fs*1	Del	frameshift
r.3558delG	c.3173delG	p.A1059fs*5	Del	frameshift
r.4175_4182	c.3790_379	p.H1264fs*1	Del	frameshift
r.4276delU	c.3891delT	p.F1298fs*5	Del	frameshift
r.5067delU	c.4682delT	p.L1562fs*1	Del	frameshift
r.5356delG	c.4971delG	p.A1658fs*2	Del	frameshift
r.5766_5767	c.5381_538	p.W1795fs*1	Ins	frameshift
r.5778delU	c.5393delT	p.L1798fs*9	Del	frameshift
r.7475-1g>u	c.7090-1G>	p.?	Sub	ess_splice
r.8211_8220	c.7826_783	p.I2609fs*1	Del	frameshift
r.8859delA	c.8474delA	p.N2826fs*3	Del	frameshift
r.9057-1g>c	c.8672-1G>	p.?	Sub	ess_splice
r.7093g>u	c.6825G>T	p.W2275C	Sub	missense
r.7092g>a	c.6824G>A	p.W2275*	Sub	nonsense
r.4221delA	c.3953delA	p.N1318fs*2	Del	frameshift
r.3992delU	c.3724delT	p.C1242fs*3	Del	frameshift
r.2582delG	c.2110delG	p.V704fs*32	Del	frameshift
r.2570_2571	c.2098_210	p.R700fs*34	Del	frameshift
r.2561delU	c.2089delT	p.S697fs*39	Del	frameshift
r.2528+1del	c.2056+1del	p.?	Del	ess_splice
r.2528+1g>c	c.2056+1G>	p.?	Sub	ess_splice
r.2527delA	c.2055delA	p.G686fs*6	Del	frameshift
r.2527delA	c.2055delA	p.G686fs*6	Del	frameshift
r.2522c>u	c.2050C>T	p.Q684*	Sub	nonsense
r.2522c>u	c.2050C>T	p.Q684*	Sub	nonsense
r.2522c>u	c.2050C>T	p.Q684*	Sub	nonsense
r.2484a>g	c.2012A>G	p.Y671C	Sub	missense
r.2471delA	c.1999delA	p.R667fs*2	Del	frameshift
r.2114-1g>u	c.1984-1G>	p.?	Sub	ess_splice
r.2456-1g>u	c.1984-1G>	p.?	Sub	ess_splice
r.2453a>u	c.1981A>T	p.K661*	Sub	nonsense
r.2389_2390	c.1917_191	p.E640fs*4	Ins	frameshift
r.2363-4_23	c.1891-4_1	p.?	Del	ess_splice

r.2353c>g	c.1881C>G	p.Y627*	Sub	nonsense
r.2296_2297	c.1824_1825	p.D608fs*34	Del	frameshift
r.2240c>u	c.1768C>T	p.Q590*	Sub	nonsense
r.1896delU	c.1766delT	p.I589fs*28	Del	frameshift
r.2227_2228	c.1755_1756	p.I586fs*57	Ins	frameshift
r.2209delG	c.1737delG	p.K580fs*37	Del	frameshift
r.2202-1g>u	c.1730-1G>	p.?	Sub	ess_splice
r.2162delC	c.1690delC	p.L564fs*7	Del	frameshift
r.1811delC	c.1681delC	p.L561fs*10	Del	frameshift
r.2139delU	c.1667delT	p.V556fs*15	Del	frameshift
r.2049delA	c.1577delA	p.H526fs*45	Del	frameshift
r.2037delC	c.1565delC	p.P522fs*49	Del	frameshift
r.2001delC	c.1529delC	p.P510fs*61	Del	frameshift
r.1986c>a	c.1514C>A	p.S505*	Sub	nonsense
r.1964g>u	c.1492G>T	p.E498*	Sub	nonsense
r.1943g>u	c.1471G>T	p.E491*	Sub	nonsense
r.1936delC	c.1464delC	p.S489fs*82	Del	frameshift
r.1851c>a	c.1379C>A	p.S460*	Sub	nonsense
r.1833delA	c.1361delA	p.E454fs*11	Del	frameshift
r.1828_1829	c.1356_1357	p.K453fs*1	Ins	frameshift
r.1468_1477	c.1338_1347	p.N446fs*12	Del	frameshift
r.1785_1786	c.1313_1314	p.L440fs*12	Ins	frameshift
r.1766_1767	c.1294_1295	p.S432fs*3	Ins	frameshift
r.1737_1738	c.1265_1266	p.T423fs*12	Ins	frameshift
r.1718delC	c.1246delC	p.R417fs*13	Del	frameshift
r.1655_1656	c.1183_1184	p.S395fs*2	Del	frameshift
r.1253delG	c.1123delG	p.E375fs*55	Del	frameshift
r.1582delC	c.1110delC	p.M371fs*59	Del	frameshift
r.1555_1556	c.1083_1084	p.D362fs*64	Del	frameshift
r.1549delC	c.1077delC	p.L361fs*1	Del	frameshift
r.1535_1536	c.1063_1064	p.Q355fs*6	Del	frameshift
r.1412g>u	c.940G>T	p.E314*	Sub	nonsense
r.1404-2a>g	c.932-2A>G	p.?	Sub	ess_splice
r.1382_1383	c.910_914d	p.A304fs*1	Del	frameshift
r.1265delG	c.793delG	p.V265fs*1	Del	frameshift
r.1258delG	c.786delG	p.I263fs*1	Del	frameshift
r.1253c>u	c.781C>T	p.Q261*	Sub	nonsense
r.1250c>u	c.778C>T	p.Q260*	Sub	nonsense
r.1161u>g	c.689T>G	p.L230R	Sub	missense
r.1103delA	c.631delA	p.M211fs*2	Del	frameshift
r.1064delG	c.592delG	p.E198fs*33	Del	frameshift
r.1055_1063	c.583_591d	p.P195_G19	Del	inframe
r.1053-10_1	c.581-10_58	p.?	Del	ess_splice
r.1058u>a	c.586T>A	p.W196R	Sub	missense
r.1052+1g>u	c.580+1G>	p.?	Sub	ess_splice
r.1023a>g	c.551A>G	p.D184G	Sub	missense
r.1016g>a	c.544G>A	p.E182K	Sub	missense
r.1016g>a	c.544G>A	p.E182K	Sub	missense
r.1014u>c	c.542T>C	p.F181S	Sub	missense
r.1009delG	c.537delG	p.L180fs*7	Del	frameshift
r.997_1007	c.525_535d	p.I176fs*3	Del	frameshift
r.1007c>u	c.535C>T	p.R179W	Sub	missense
r.1007c>g	c.535C>G	p.R179G	Sub	missense

r.651u>a	c.521T>A	p.V174E	Sub	missense
r.990a>g	c.518A>G	p.Y173C	Sub	missense
r.983delG	c.511delG	p.V171fs*16	Del	frameshift
r.981u>g	c.509T>G	p.F170C	Sub	missense
r.979c>g	c.507C>G	p.H169Q	Sub	missense
r.977c>a	c.505C>A	p.H169N	Sub	missense
r.945delG	c.473delG	p.G158fs*2	Del	frameshift
r.910-3_918	c.438-3_44	p.?	Del	ess_splice
r.910-1g>u	c.438-1G>T	p.?	Sub	ess_splice
r.876_902del	c.404_430del	p.P135_S14	Del	inframe
r.893c>g	c.421C>G	p.H141D	Sub	missense
r.884delG	c.412delG	p.A138fs*49	Del	frameshift
r.878g>u	c.406G>T	p.E136*	Sub	nonsense
r.848-2_859	c.376-2_387	p.?	Del	ess_splice
r.847+2u>c	c.375+2T>C	p.?	Sub	ess_splice
r.847+1g>a	c.375+1G>A	p.?	Sub	ess_splice
r.840_842del	c.368_370del	p.S123_P12	Del	inframe
r.804_805in	c.332_333in	p.L112fs*9	Ins	frameshift
r.771u>g	c.299T>G	p.L100R	Sub	missense
r.768u>a	c.296T>A	p.V99E	Sub	missense
r.753_754del	c.281_282del	p.H94fs*31	Del	frameshift
r.413g>c	c.283G>C	p.A95P	Sub	missense
r.744g>a	c.272G>A	p.C91Y	Sub	missense
r.738_742del	c.266_270del	p.N89fs*35	Del	frameshift
r.743u>c	c.271T>C	p.C91R	Sub	missense
r.730_732del	c.258_260del	p.I87del	Del	inframe
r.729_730del	c.257_258del	p.L86fs*39	Del	frameshift
r.728-1g>u	c.256-1G>T	p.?	Sub	ess_splice
r.727+1g>a	c.255+1G>A	p.?	Sub	ess_splice
r.718delU	c.246delT	p.F82fs*5	Del	frameshift
r.705a>g	c.233A>G	p.N78S	Sub	missense
r.673_682del	c.201_210del	p.D67fs*2	Del	frameshift
r.658_667del	c.186_195del	p.S63fs*6	Del	frameshift
r.651_658del	c.179_186del	p.R60fs*6	Del	frameshift
r.654delA	c.182delA	p.K61fs*11	Del	frameshift
r.650c>u	c.178C>T	p.R60*	Sub	nonsense
r.626_634del	c.154_162del	p.W52_E54	Del	inframe
r.617c>g	c.145C>G	p.L49V	Sub	missense
r.611a>u	c.139A>T	p.I47F	Sub	missense
r.594+2u>c	c.122+2T>C	p.?	Sub	ess_splice
r.586delA	c.114delA	p.K38fs*34	Del	frameshift
r.578c>u	c.106C>T	p.Q36*	Sub	nonsense
r.572g>u	c.100G>T	p.D34Y	Sub	missense
r.564a>g	c.92A>G	p.E31G	Sub	missense
r.551delG	c.79delG	p.V27fs*45	Del	frameshift
r.540-2_540	c.68-2_68-1	p.?	Del	ess_splice
r.540-1g>a	c.68-1G>A	p.?	Sub	ess_splice
r.462_502del	c.1_30del	p.?	Del	start_lost
r.483delG	c.11delG	p.G4fs*68	Del	frameshift
r.474u>c	c.2T>C	p.M1T	Sub	start_lost
r.967c>a	c.738C>A	p.Y246*	Sub	nonsense
r.4470c>u	c.1720C>T	p.H574Y	Sub	missense
r.1470_1471	c.931_932in	p.G311fs*1	Ins	frameshift

r.3573delA c.3034delA p.K1012fs*2 Del	frameshift
r.4328+1g>c.4096+1G>p.? Sub	ess_splice
r.2815delC c.2583delC p.F861fs*32 Del	frameshift
r.1241g>u c.1009G>T p.E337* Sub	nonsense
r.688_689in:c.492_493in:p.Y165fs*16 Ins	frameshift
r.1070c>u c.874C>T p.R292W Sub	missense
r.1400c>g c.1258C>G p.R420G Sub	missense
r.964_967delc.960_963del:p.F321fs*27 Del	frameshift
r.972+2u>c c.729+2T>C p.? Sub	ess_splice
r.1251-2a>u.c.1067-2A> p.? Sub	ess_splice
r.240-1g>c c.49-1G>C p.? Sub	ess_splice
r.2674delA c.2483delA p.D828fs*18 Del	frameshift
r.2085_2086c.1577_1578p.S527fs*14 Ins	frameshift
r.1873delU c.1365delT p.H455fs*23 Del	frameshift
r.1837c>u c.1804C>T p.Q602* Sub	nonsense
r.3500delC c.3467delC p.I1157fs*4 Del	frameshift
r.482_492delc.247_257del:p.R83fs*2 Del	frameshift
r.774c>u c.58C>T p.Q20* Sub	nonsense
r.995_996in:c.279_280in:p.K96fs*29 Ins	frameshift
r.2254delA c.220delA p.I74fs*50 Del	frameshift
r.2318delG c.2253delG p.W751fs*11 Del	frameshift
r.424delU c.359delT p.L120fs*10 Del	frameshift
r.5970c>a c.5160C>A p.C1720* Sub	nonsense
r.5205-1g>u.c.4395-1G> p.? Sub	ess_splice
r.5056g>u c.4246G>T p.E1416* Sub	nonsense
r.4589+4_4delc.3779+4_3 p.? Del	ess_splice
r.3049delA c.2527delA p.I843fs*11 Del	frameshift
r.2338delG c.1816delG p.D606fs*20 Del	frameshift
r.2017-1g>u.c.1495-1G> p.? Sub	ess_splice
r.1801+5g>c.c.1357+5G> p.? Sub	ess_splice
r.2530a>u c.2191A>T p.K731* Sub	nonsense
r.2384-1g>a.c.2030-1G> p.? Sub	ess_splice
r.2290a>u c.1951A>T p.K651* Sub	nonsense
r.2156delA c.1817delA p.N606fs*48 Del	frameshift
r.2116c>u c.1777C>T p.Q593* Sub	nonsense
r.1781_1782c.1442_1443p.N481fs*6 Ins	frameshift
r.1632u>a c.1293T>A p.Y431* Sub	nonsense
r.1123a>u c.784A>T p.K262* Sub	nonsense
r.1022_1023c.683_684in:p.N228fs*2 Ins	frameshift
r.756delC c.417delC p.Y140fs*5 Del	frameshift
r.460_461delc.121_122del:p.I41fs*6 Del	frameshift
r.341u>c c.2T>C p.M1T Sub	start_lost
r.3104delC c.3084delC p.Q1029fs*1 Del	frameshift
r.2282delA c.2077delA p.I693fs*2 Del	frameshift
r.1615_1616c.1410_1411p.Q471fs*6 Ins	frameshift
r.2200-2a>c.c.1908-2A> p.? Sub	ess_splice
r.2238delA c.2137delA p.I713fs*24 Del	frameshift
r.2202delA c.2101delA p.I701fs*36 Del	frameshift
r.497+1g>u c.385+1G>T p.? Sub	ess_splice
r.1084_1085c.972_973in:p.T326fs*16 Ins	frameshift
r.1359_1360c.1247_1248p.V418fs*13 Ins	frameshift
r.2440delC c.2328delC p.P778fs*7 Del	frameshift
r.3013c>a c.2675C>A p.S892* Sub	nonsense

r.2133g>u	c.1795G>T	p.E599*	Sub	nonsense
r.1433_145	(c.1095_111;	p.Y365_E37	Del	nonsense
r.653_671	dεc.315_333d;	p.S105fs*51	Del	frameshift
r.2046_2047	c.1054_105;	p.Q352fs*2	Ins	frameshift
r.1946_1947	c.954_955d;	p.D319fs*9	Del	frameshift
r.2488_2489	c.2311_231;	p.N771_P77	Ins	inframe
r.423u>c	c.278T>C	p.F93S	Sub	missense
r.420a>g	c.275A>G	p.E92G	Sub	missense
r.419g>a	c.274G>A	p.E92K	Sub	missense
r.381a>g	c.236A>G	p.Y79C	Sub	missense
r.381a>g	c.236A>G	p.Y79C	Sub	missense
r.381a>g	c.236A>G	p.Y79C	Sub	missense
r.380u>a	c.235T>A	p.Y79N	Sub	missense
r.508_509in;	c.95_96insT	p.G34fs*5	Ins	frameshift
r.1603delG	c.384delG	p.A129fs*3	Del	frameshift
r.2820_2821	c.1601_160;	p.S535fs*12	Ins	frameshift
r.1102delC	c.947delC	p.A316fs*77	Del	frameshift
r.1392c>a	c.1022C>A	p.S341*	Sub	nonsense
r.1923+1g>ε	c.1553+1G>	p.?	Sub	ess_splice
r.633g>u	c.544G>T	p.E182*	Sub	nonsense
r.1090g>u	c.1001G>T	p.G334V	Sub	missense
r.2233-1g>a	c.2111-1G>	p.?	Sub	ess_splice
r.13500_135	c.13290_13;	p.I4431fs*3	Del	frameshift
r.11935_119	c.11725_11;	p.G3909fs*7	Del	frameshift
r.11899g>u	c.11689G>T	p.G3897*	Sub	nonsense
r.10910delU	c.10700delT	p.I3567fs*12	Del	frameshift
r.9169delG	c.8959delG	p.E2987fs*2	Del	frameshift
r.7585delG	c.7374delG	p.K2458fs*2	Del	frameshift
r.7073_7074	c.6863_686;	p.Y2288fs*1	Ins	frameshift
r.6644_6651	c.6434_644	p.T2145fs*3	Del	frameshift
r.5021-2a>c	c.4811-2A>	(p.?	Sub	ess_splice
r.3451delG	c.3241delG	p.V1081fs*4	Del	frameshift
r.1824_1825	c.1614_161;	p.R539fs*23	Ins	frameshift
r.890g>u	c.817G>T	p.E273*	Sub	nonsense
r.743g>u	c.670G>T	p.E224*	Sub	nonsense
r.2384c>u	c.1154C>T	p.T385I	Sub	missense
r.1838c>a	c.608C>A	p.S203*	Sub	nonsense
r.1345g>u	c.115G>T	p.E39*	Sub	nonsense
r.983_990dε	c.921_928d;	p.P308fs*10	Del	frameshift
r.2009-2a>g	c.1927-2A>	(p.?	Sub	ess_splice
r.1023-1g>a	c.941-1G>A	p.?	Sub	ess_splice
r.952delC	c.932delC	p.L312fs*30	Del	frameshift
r.467_473dε	c.312_318d;	p.S105fs*11	Del	frameshift
r.1489c>a	c.1334C>A	p.S445*	Sub	nonsense
r.2898+1g>ε	c.2649+1G>	p.?	Sub	ess_splice
r.2730c>a	c.2481C>A	p.C827*	Sub	nonsense
r.1426-2a>g	c.1177-2A>	(p.?	Sub	ess_splice
r.889delG	c.640delG	p.D214fs*12	Del	frameshift
r.2022c>g	c.1528C>G	p.L510V	Sub	missense
r.2343g>u	c.1849G>T	p.V617F	Sub	missense
r.2807delC	c.2342delC	p.P781fs*6	Del	frameshift
r.2766_2767	c.2301_230;	p.A768fs*13	Ins	frameshift
r.2532delG	c.2067delG	p.W689fs*4;	Del	frameshift

r.2291_2292c.1826_1827p.S609fs*19 Del	frameshift
r.4794c>u c.4261C>T p.Q1421* Sub	nonsense
r.4746g>u c.4213G>T p.E1405* Sub	nonsense
r.4608delA c.4075delA p.S1359fs*5 Del	frameshift
r.4414_4417c.3881_3888p.Q1294fs*7 Del	frameshift
r.4134c>u c.3601C>T p.Q1201* Sub	nonsense
r.4102delG c.3569delG p.C1190fs*7 Del	frameshift
r.4054delC c.3521delC p.P1174fs*9 Del	frameshift
r.4031_4032c.3498_3499p.T1167fs*4 Ins	frameshift
r.4008g>u c.3475G>T p.E1159* Sub	nonsense
r.3886g>a c.3353G>A p.W1118* Sub	nonsense
r.3732g>u c.3199G>T p.E1067* Sub	nonsense
r.3655delA c.3122delA p.N1041fs*1 Del	frameshift
r.3357_3361c.2824_2829p.A942fs*20 Del	frameshift
r.3288c>u c.2755C>T p.Q919* Sub	nonsense
r.3273g>u c.2740G>T p.E914* Sub	nonsense
r.3246_3250c.2713_2720p.L905fs*8 Del	frameshift
r.3149delU c.2616delT p.D872fs*6 Del	frameshift
r.3049+1g>u c.2516+1G>p.? Sub	ess_splice
r.2941_2944c.2408_2411p.E803fs*12 Del	frameshift
r.2940g>u c.2407G>T p.E803* Sub	nonsense
r.2931g>u c.2398G>T p.E800* Sub	nonsense
r.2925g>u c.2392G>T p.E798* Sub	nonsense
r.2901+5g>u c.2368+5G>p.? Sub	ess_splice
r.2865c>u c.2332C>T p.R778* Sub	nonsense
r.2832_2835c.2299_2300p.A767fs*27 Del	frameshift
r.2835g>u c.2302G>T p.E768* Sub	nonsense
r.2821delU c.2288delT p.L763fs*32 Del	frameshift
r.2668delC c.2135delC p.T712fs*52 Del	frameshift
r.2649delC c.2116delC p.Q706fs*5 Del	frameshift
r.2580delG c.2047delG p.A683fs*81 Del	frameshift
r.2556c>u c.2023C>T p.Q675* Sub	nonsense
r.2469g>u c.1936G>T p.E646* Sub	nonsense
r.2435_2457c.1902_1920p.R635fs*3 Del	frameshift
r.2396_2399c.1863_1866p.? Del	ess_splice
r.2399g>a c.1866G>A p.W622* Sub	nonsense
r.2336c>g c.1803C>G p.Y601* Sub	nonsense
r.2180_2181c.1647_1648p.K550fs*6 Ins	frameshift
r.2017_2018c.1484_1485p.S495fs*21 Del	frameshift
r.1907_1910c.1374_1377p.K459fs*3 Del	frameshift
r.1779_1781c.1246_1250p.V416fs*11 Del	frameshift
r.1775+5_1776c.1242+5_1243p.? Del	ess_splice
r.1661_1662c.1128_1129p.K377fs*1 Ins	frameshift
r.1546delA c.1013delA p.K338fs*92 Del	frameshift
r.1491c>u c.958C>T p.Q320* Sub	nonsense
r.1143delU c.610delT p.S204fs*30 Del	frameshift
r.1137c>u c.604C>T p.Q202* Sub	nonsense
r.1106delA c.573delA p.K191fs*43 Del	frameshift
r.1086g>u c.553G>T p.E185* Sub	nonsense
r.1005g>u c.472G>T p.E158* Sub	nonsense
r.958delA c.425delA p.N142fs*92 Del	frameshift
r.806_807inc.273_274inp.F92fs*35 Ins	frameshift
r.779delA c.246delA p.K82fs*2 Del	frameshift

r.683+1g>a	c.150+1G>A	p.?	Sub	ess_splice
r.654delU	c.121delT	p.S41fs*32	Del	frameshift
r.641delC	c.108delC	p.I37fs*36	Del	frameshift
r.780c>u	c.739C>T	p.Q247*	Sub	nonsense
r.2478delA	c.2437delA	p.N813fs*54	Del	frameshift
r.1978_1979	c.1430_143	p.F478fs*2	Ins	frameshift
r.1547_1548	c.1073_107	p.Q359fs*41	Ins	frameshift
r.5488u>a	c.5465T>A	p.L1822*	Sub	nonsense
r.10746c>u	c.10723C>T	p.Q3575*	Sub	nonsense
r.6929delC	c.6929delC	p.P2311fs*1	Del	frameshift
r.14056_14057	c.13837_13	p.I4613fs*9	Ins	frameshift
r.13451_13452	c.13232_13	p.L4412fs*1	Ins	frameshift
r.11030delA	c.10811delA	p.K3604fs*2	Del	frameshift
r.10837delU	c.10618delT	p.S3540fs*1	Del	frameshift
r.9578delC	c.9359delC	p.P3120fs*3	Del	frameshift
r.9329_9330	c.9110_911	p.L3037fs*6	Ins	frameshift
r.8861delG	c.8642delG	p.R2881fs*2	Del	frameshift
r.8180delG	c.7961delG	p.G2654fs*2	Del	frameshift
r.5974_5975	c.5755_575	p.S1919delI	Ins	nonsense
r.5750delG	c.5533delG	p.D1845fs*4	Del	frameshift
r.4934delU	c.4715delT	p.L1572fs*9	Del	frameshift
r.4895delU	c.4676delT	p.M1559fs*4	Del	frameshift
r.4319_4320	c.4100_410	p.F1368fs*7	Ins	frameshift
r.3612delU	c.3393delT	p.F1131fs*2	Del	frameshift
r.2377_2378	c.2158_216	p.L720fs*9	Del	frameshift
r.1171c>u	c.952C>T	p.Q318*	Sub	nonsense
r.1153delG	c.934delG	p.A312fs*43	Del	frameshift
r.849_850in	c.630_631in	p.V211fs*9	Ins	frameshift
r.467g>u	c.250G>T	p.E84*	Sub	nonsense
r.8501c>g	c.8501C>G	p.S2834*	Sub	nonsense
r.8488c>u	c.8488C>T	p.R2830*	Sub	nonsense
r.5661_5662	c.5661_566	p.E1887fs*1	Del	frameshift
r.4379_4380	c.4379_438	p.L1461fs*3	Ins	frameshift
r.1010_1037	c.1010_103	p.S337fs*56	Del	frameshift
r.3596delU	c.3190delT	p.S1064fs*8	Del	frameshift
r.2920c>a	c.2475C>A	p.Y825*	Sub	nonsense
r.2596delA	c.2190delA	p.K730fs*15	Del	frameshift
r.2096delG	c.1690delG	p.D564fs*95	Del	frameshift
r.1213delG	c.807delG	p.Q270fs*16	Del	frameshift
r.649g>a	c.395G>A	p.G132D	Sub	missense
r.54a>c	c.1A>C	p.M1L	Sub	start_lost
r.599+1g>u	c.546+1G>T	p.?	Sub	ess_splice
r.393delG	c.393delG	p.D132fs*53	Del	frameshift
r.805_806in	c.805_806in	p.V269fs*32	Ins	frameshift
r.1247c>g	c.1247C>G	p.S416*	Sub	nonsense
r.1300_1301	c.1300_130	p.?	Del	ess_splice
r.1366_1367	c.1366_136	p.T457fs*31	Ins	frameshift
r.4433delC	c.4433delC	p.S1478fs*1	Del	frameshift
r.226_239del	c.95_108del	p.E32fs*50	Del	frameshift
r.153g>u	c.22G>T	p.E8*	Sub	nonsense
r.3724-2a>u	c.3692-2A>	p.?	Sub	ess_splice
r.2606+2u>c	c.2426+2T>	p.?	Sub	ess_splice
r.1343+1g>c	c.839+1G>C	p.?	Sub	ess_splice

r.2545delU	c.2364delT	p.F789fs*28	Del	frameshift
r.2909c>u	c.2728C>T	p.R910*	Sub	nonsense
r.3110c>u	c.2929C>T	p.Q977*	Sub	nonsense
r.4400delG	c.4219delG	p.D1407fs*3	Del	frameshift
r.5054delG	c.4873delG	p.E1625fs*2	Del	frameshift
r.5405c>u	c.5224C>T	p.Q1742*	Sub	nonsense
r.5751delC	c.5570delC	p.S1857fs*8	Del	frameshift
r.5958c>a	c.5777C>A	p.S1926*	Sub	nonsense
r.6368delA	c.6187delA	p.D2064fs*3	Del	frameshift
r.7025delC	c.6844delC	p.Q2282fs*5	Del	frameshift
r.7579+5g>u	c.7398+5G>p.?		Sub	ess_splice
r.7580-1g>c	c.7399-1G>p.?		Sub	ess_splice
r.523-2a>u	c.307-2A>T	p.?	Sub	ess_splice
r.767c>a	c.551C>A	p.S184*	Sub	nonsense
r.1592c>a	c.1376C>A	p.S459*	Sub	nonsense
r.1500-1g>a	c.1277-1G>p.?		Sub	ess_splice
r.1952_1953del	c.1729_1731del	p.V578fs*2	Ins	frameshift
r.3590+5del	c.3438+5del	p.?	Del	ess_splice
r.7648a>u	c.7571A>T	p.Q2524L	Sub	missense
r.7609g>u	c.7532G>T	p.R2511L	Sub	missense
r.7578a>u	c.7501A>T	p.I2501F	Sub	missense
r.7622a>u	c.7501A>T	p.I2501F	Sub	missense
r.7577u>g	c.7500T>G	p.I2500M	Sub	missense
r.7576u>a	c.7499T>A	p.I2500N	Sub	missense
r.7576u>a	c.7499T>A	p.I2500N	Sub	missense
r.7369u>a	c.7292T>A	p.L2431Q	Sub	missense
r.7357u>a	c.7280T>A	p.L2427Q	Sub	missense
r.7357u>a	c.7280T>A	p.L2427Q	Sub	missense
r.7336c>u	c.7259C>T	p.A2420V	Sub	missense
r.7336c>u	c.7259C>T	p.A2420V	Sub	missense
r.7336c>u	c.7259C>T	p.A2420V	Sub	missense
r.7335g>c	c.7258G>C	p.A2420P	Sub	missense
r.7332g>a	c.7255G>A	p.E2419K	Sub	missense
r.7332g>a	c.7255G>A	p.E2419K	Sub	missense
r.7099c>u	c.7022C>T	p.P2341L	Sub	missense
r.7058g>u	c.6981G>T	p.M2327I	Sub	missense
r.7102g>a	c.6981G>A	p.M2327I	Sub	missense
r.7058g>u	c.6981G>T	p.M2327I	Sub	missense
r.6790g>u	c.6713G>T	p.G2238V	Sub	missense
r.6765u>g	c.6688T>G	p.L2230V	Sub	missense
r.6789a>u	c.6668A>T	p.Q2223L	Sub	missense
r.6736u>g	c.6659T>G	p.L2220R	Sub	missense
r.6721c>a	c.6644C>A	p.S2215Y	Sub	missense
r.6721c>a	c.6644C>A	p.S2215Y	Sub	missense
r.6721c>u	c.6644C>T	p.S2215F	Sub	missense
r.6721c>u	c.6644C>T	p.S2215F	Sub	missense
r.6721c>u	c.6644C>T	p.S2215F	Sub	missense
r.6749g>c	c.6628G>C	p.A2210P	Sub	missense
r.6703u>a	c.6626T>A	p.L2209Q	Sub	missense
r.6702c>g	c.6625C>G	p.L2209V	Sub	missense
r.6127u>c	c.6050T>C	p.I2017T	Sub	missense
r.6099c>a	c.6022C>A	p.Q2008K	Sub	missense
r.6093g>u	c.6016G>T	p.V2006F	Sub	missense

r.6093g>c	c.6016G>C	p.V2006L	Sub	missense
r.6093g>u	c.6016G>T	p.V2006F	Sub	missense
r.6137g>u	c.6016G>T	p.V2006F	Sub	missense
r.6137g>u	c.6016G>T	p.V2006F	Sub	missense
r.6074u>g	c.5997T>G	p.C1999W	Sub	missense
r.6007c>a	c.5930C>A	p.T1977K	Sub	missense
r.6007c>a	c.5930C>A	p.T1977K	Sub	missense
r.6051c>a	c.5930C>A	p.T1977K	Sub	missense
r.5997u>c	c.5920T>C	p.Y1974H	Sub	missense
r.4654g>u	c.4577G>T	p.W1526L	Sub	missense
r.4632g>a	c.4555G>A	p.A1519T	Sub	missense
r.4576a>u	c.4499A>T	p.K1500M	Sub	missense
r.4524u>c	c.4447T>C	p.C1483R	Sub	missense
r.4456u>c	c.4379T>C	p.L1460P	Sub	missense
r.4456u>c	c.4379T>C	p.L1460P	Sub	missense
r.4453c>a	c.4376C>A	p.A1459D	Sub	missense
r.4453c>a	c.4376C>A	p.A1459D	Sub	missense
r.4375u>c	c.4298T>C	p.L1433S	Sub	missense
r.4327u>c	c.4250T>C	p.I1417T	Sub	missense
r.4141a>u	c.4064A>T	p.Q1355L	Sub	missense
r.3895g>u	c.3818G>T	p.R1273M	Sub	missense
r.3888g>a	c.3811G>A	p.A1271T	Sub	missense
r.3708g>a	c.3631G>A	p.V1211M	Sub	missense
r.515a>c	c.438A>C	p.E146D	Sub	missense
r.271a>g	c.194A>G	p.D65G	Sub	missense
r.4487delC	c.4229delC	p.P1410fs*1	Del	frameshift
r.4443delU	c.4185delT	p.Q1396fs*1	Del	frameshift
r.1612_1613del	c.1354_1355del	p.F452fs*1	Ins	frameshift
r.1329_1330ins	c.946_947ins	p.T317fs*13	Ins	frameshift
r.2829c>u	c.2446C>T	p.R816*	Sub	nonsense
r.4357+1g>c	c.3974+1G>p.?		Sub	ess_splice
r.477_478delC	c.36_37delC	p.L14fs*34	Del	frameshift
r.895delG	c.454delG	p.D152fs*22	Del	frameshift
r.1075c>u	c.634C>T	p.Q212*	Sub	nonsense
r.1389_1428del	c.948_987del	p.E317fs*16	Del	frameshift
r.2021a>g	c.1466A>G	p.Q489R	Sub	missense
r.2004a>c	c.1449A>C	p.E483D	Sub	missense
r.1652a>g	c.1097A>G	p.Y366C	Sub	missense
r.1609c>u	c.1054C>T	p.P352S	Sub	missense
r.1240delU	c.685delT	p.Y229fs*11	Del	frameshift
r.1081g>a	c.526G>A	p.D176N	Sub	missense
r.813u>g	c.258T>G	p.I86M	Sub	missense
r.796g>u	c.241G>T	p.G81C	Sub	missense
r.789_791del	c.234_236del	p.E79delE	Del	inframe
r.381a>g	c.230A>G	p.D77G	Sub	missense
r.724_728del	c.169_173del	p.E57fs*20	Del	frameshift
r.655c>g	c.100C>G	p.R34G	Sub	missense
r.646g>c	c.91G>C	p.G31R	Sub	missense
r.644u>c	c.89T>C	p.L30P	Sub	missense
r.641a>c	c.86A>C	p.D29A	Sub	missense
r.631c>a	c.76C>A	p.Q26K	Sub	missense
r.611u>g	c.56T>G	p.L19W	Sub	missense
r.7253c>u	c.7177C>T	p.Q2393*	Sub	nonsense

r.7129_7130c.6909_6910p.I2304fs*9 Ins	frameshift
r.690g>u c.436G>T p.A146S Sub	missense
r.449_450in:c.295_296in:p.I99fs*3 Ins	frameshift
r.4900_4901c.4897_4898p.N1633fs*1 Del	frameshift
r.4786_4801c.4686_470 p.R1563fs*1 Del	frameshift
r.4791delA c.4691delA p.D1564fs*2 Del	frameshift
r.4774_4775c.4674_4675p.L1559fs*3 Del	frameshift
r.4747_4748c.4647_4648p.G1550fs*6 Ins	frameshift
r.4721_4730c.4621_4630p.L1541fs*1 Del	frameshift
r.4703_4712c.4603_4612p.K1535fs*5 Del	frameshift
r.4677-1g>c.4577-1G> p.? Sub	ess_splice
r.4616delU c.4516delT p.Y1506fs*4 Del	frameshift
r.4613a>u c.4513A>T p.K1505* Sub	nonsense
r.4598_4607c.4498_4507p.S1500fs*6 Del	frameshift
r.4599c>u c.4499C>T p.S1500L Sub	missense
r.4538c>u c.4438C>T p.Q1480* Sub	nonsense
r.4509_4518c.4409_4418p.G1470fs*1 Del	frameshift
r.4484c>u c.4384C>T p.Q1462* Sub	nonsense
r.4479delC c.4379delC p.P1460fs*2 Del	frameshift
r.4474delG c.4374delG p.P1459fs*3 Del	frameshift
r.4470delU c.4370delT p.L1457fs*3 Del	frameshift
r.4470delU c.4370delT p.L1457fs*3 Del	frameshift
r.4460-2_44 c.4360-2_43p.? Del	ess_splice
r.4459+1g>c.4359+1G> p.? Sub	ess_splice
r.4403_4412c.4303_4312p.G1435fs*1 Del	frameshift
r.4468delG c.4465delG p.A1489fs*4 Del	frameshift
r.4403g>u c.4303G>T p.G1435* Sub	nonsense
r.4400c>u c.4300C>T p.Q1434* Sub	nonsense
r.4389-1g>c.4289-1G> p.? Sub	ess_splice
r.4330_4331c.4230_4231p.P1411fs*9 Ins	frameshift
r.4307_4308c.4207_4208p.M1403fs*1 Ins	frameshift
r.4302delG c.4202delG p.G1401fs*3 Del	frameshift
r.4275delG c.4175delG p.G1392fs*4 Del	frameshift
r.4259delC c.4159delC p.L1387fs*4 Del	frameshift
r.4219delA c.4119delA p.A1374fs*6 Del	frameshift
r.4205g>u c.4105G>T p.E1369* Sub	nonsense
r.4200delA c.4100delA p.N1367fs*1 Del	frameshift
r.4118g>u c.4018G>T p.E1340* Sub	nonsense
r.4118g>u c.4018G>T p.E1340* Sub	nonsense
r.4105_4106c.4005_4006p.L1336fs*3 Del	frameshift
r.4128delA c.4125delA p.G1376fs*8 Del	frameshift
r.4123a>u c.4120A>T p.K1374* Sub	nonsense
r.4057_4058c.3957_3958p.A1320fs*2 Del	frameshift
r.4050a>g c.3950A>G p.K1317R Sub	missense
r.4049a>u c.3949A>T p.K1317* Sub	nonsense
r.4029delA c.3929delA p.E1310fs*2 Del	frameshift
r.3999delA c.3996delA p.D1333fs*5 Del	frameshift
r.4011delU c.3911delT p.M1304fs*2 Del	frameshift
r.3937_3946c.3837_3846p.L1280fs*7 Del	frameshift
r.3941g>u c.3841G>T p.E1281* Sub	nonsense
r.3936_3937c.3836_3837p.L1279fs*1 Ins	frameshift
r.3917c>u c.3817C>T p.Q1273* Sub	nonsense
r.3917c>u c.3817C>T p.Q1273* Sub	nonsense

r.3900+1g> c.3800+1G>p.?	Sub	ess_splice
r.3878+1g> c.3875+1G>p.?	Sub	ess_splice
r.3886a>c c.3786A>C p.E1262D	Sub	missense
r.3885a>c c.3785A>C p.E1262A	Sub	missense
r.3869a>u c.3769A>T p.K1257*	Sub	nonsense
r.3858c>a c.3758C>A p.S1253*	Sub	nonsense
r.3832delG c.3732delG p.K1245fs*5	Del	frameshift
r.3747delU c.3647delT p.F1216fs*2	Del	frameshift
r.3737_374(c.3637_364 p.F1213fs*3	Del	frameshift
r.3730_373 c.3630_363 p.L1211fs*1	Del	frameshift
r.3729_373(c.3629_363 p.L1211fs*1	Ins	frameshift
r.3722_372 c.3622_362 p.C1208fs*3	Del	frameshift
r.3723g>u c.3623G>T p.C1208F	Sub	missense
r.3713delC c.3613delC p.L1205fs*3	Del	frameshift
r.3670delA c.3570delA p.L1192fs*1	Del	frameshift
r.3670_367 c.3570_357 p.F1191fs*4	Ins	frameshift
r.3664_366 c.3564_356 p.E1189fs*6	Ins	frameshift
r.3664_366 c.3564_356 p.E1189fs*6	Ins	frameshift
r.3642_364 c.3639_364 p.E1214fs*6	Ins	frameshift
r.3664_366 c.3564_356 p.E1189fs*6	Ins	frameshift
r.3653_365 c.3553_355 p.F1185_Y1	Del	inframe
r.3628delA c.3625delA p.M1209fs*ξ	Del	frameshift
r.3634_363 c.3534_353 p.H1179fs*1	Ins	frameshift
r.3626g>u c.3526G>T p.E1176*	Sub	nonsense
r.3599delU c.3499delT p.Y1167fs*2	Del	frameshift
r.3578c>u c.3478C>T p.R1160*	Sub	nonsense
r.3578c>u c.3478C>T p.R1160*	Sub	nonsense
r.3578c>u c.3478C>T p.R1160*	Sub	nonsense
r.3578c>u c.3478C>T p.R1160*	Sub	nonsense
r.3578c>u c.3478C>T p.R1160*	Sub	nonsense
r.3568delA c.3468delA p.V1157fs*3	Del	frameshift
r.3538delA c.3535delA p.I1179fs*3ξ	Del	frameshift
r.3526delG c.3426delG p.K1142fs*5	Del	frameshift
r.3503delG c.3403delG p.V1135fs*5	Del	frameshift
r.3466_349 c.3366_339 p.Y1122fs*1	Del	frameshift
r.3484_348 c.3384_338 p.Y1128fs*1	Del	frameshift
r.3473c>u c.3373C>T p.Q1125*	Sub	nonsense
r.3468_347(c.3368_337 p.F1123_E1	Del	nonsense
r.3470g>u c.3370G>T p.E1124*	Sub	nonsense
r.3466c>g c.3366C>G p.Y1122*	Sub	nonsense
r.3445delU c.3345delT p.N1115fs*1	Del	frameshift
r.3413-1g>u c.3313-1G> p.?	Sub	ess_splice
r.3412+2u>(c.3312+2T> p.?	Sub	ess_splice
r.3412+2u>(c.3312+2T> p.?	Sub	ess_splice
r.3387_341 c.3287_331 p.A1096fs*1	Del	frameshift
r.3360delU c.3357delT p.R1120fs*3	Del	frameshift
r.3383c>u c.3283C>T p.R1095*	Sub	nonsense
r.3375_338 c.3275_328 p.E1092fs*4	Del	frameshift
r.3291delA c.3191delA p.D1064fs*7	Del	frameshift
r.3280_328 c.3180_318 p.V1061fs*2	Ins	frameshift
r.3258delU c.3255delT p.F1085fs*7	Del	frameshift
r.3242delA c.3142delA p.I1048fs*8ξ	Del	frameshift
r.3202_321 c.3102_311 p.E1035fs*6	Del	frameshift

r.3206u>c	c.3106T>C	p.S1036P	Sub	missense
r.3203g>u	c.3103G>T	p.E1035*	Sub	nonsense
r.3174delU	c.3171delT	p.F1057fs*1	Del	frameshift
r.3189a>u	c.3089A>T	p.D1030V	Sub	missense
r.3179c>u	c.3079C>T	p.R1027*	Sub	nonsense
r.3174delA	c.3074delA	p.N1025fs*1	Del	frameshift
r.3174delA	c.3074delA	p.N1025fs*1	Del	frameshift
r.3168c>u	c.3068C>T	p.P1023L	Sub	missense
r.3157_315	c.3057_305	p.K1020fs*1	Ins	frameshift
r.3148+5g>c	c.3048+5G>p.?		Sub	ess_splice
r.3148+2u>c	c.3048+2T>p.?		Sub	ess_splice
r.3133_313	c.3033_303	p.V1012fs*1	Ins	frameshift
r.3129g>u	c.3029G>T	p.C1010F	Sub	missense
r.3123g>u	c.3023G>T	p.G1008V	Sub	missense
r.3093_309	c.2993_299	p.Y998fs*1	Ins	frameshift
r.3081_308	c.2981_298	p.K994fs*13	Del	frameshift
r.3050_305	c.3047_304	p.E1016delE	Del	inframe
r.3070delA	c.2970delA	p.E991fs*17	Del	frameshift
r.3068a>u	c.2968A>T	p.K990*	Sub	nonsense
r.2996u>c	c.2993T>C	p.F998S	Sub	missense
r.3065+1g>c	c.2965+1G>p.?		Sub	ess_splice
r.3053delG	c.2953delG	p.E985fs*23	Del	frameshift
r.3050_305	c.2950_295	p.W984fs*5	Del	frameshift
r.3036delG	c.2936delG	p.C979fs*2	Del	frameshift
r.2993_299	c.2893_289	p.Y965fs*17	Ins	frameshift
r.2990g>u	c.2890G>T	p.V964F	Sub	missense
r.2929_293	c.2829_283	p.H944fs*9	Ins	frameshift
r.2899_290	c.2799_280	p.S934fs*18	Del	frameshift
r.2790_279	c.2787_279	p.K930fs*1	Del	frameshift
r.2889delA	c.2789delA	p.K930fs*78	Del	frameshift
r.2879+1g>c	c.2779+1G>p.?		Sub	ess_splice
r.2876delA	c.2776delA	p.R926fs*82	Del	frameshift
r.2779delA	c.2776delA	p.R926fs*8	Del	frameshift
r.2873a>u	c.2773A>T	p.K925*	Sub	nonsense
r.2860delA	c.2760delA	p.K920fs*88	Del	frameshift
r.2861c>u	c.2761C>T	p.R921*	Sub	nonsense
r.2837g>u	c.2737G>T	p.E913*	Sub	nonsense
r.2822g>u	c.2722G>T	p.E908*	Sub	nonsense
r.2820delA	c.2720delA	p.K907fs*8	Del	frameshift
r.2817_281	c.2717_271	p.R906fs*12	Del	frameshift
r.2715delA	c.2712delA	p.E905fs*10	Del	frameshift
r.2792_279	c.2692_269	p.L898delL	Del	inframe
r.2768delG	c.2668delG	p.A890fs*25	Del	frameshift
r.2769c>a	c.2669C>A	p.A890E	Sub	missense
r.2757u>c	c.2657T>C	p.L886P	Sub	missense
r.2738_275	c.2638_265	p.C880fs*31	Del	frameshift
r.2716delU	c.2616delT	p.F872fs*43	Del	frameshift
r.2715u>g	c.2615T>G	p.F872C	Sub	missense
r.2701_270	c.2601_260	p.E867fs*47	Del	frameshift
r.2703u>c	c.2603T>C	p.L868P	Sub	missense
r.2694delC	c.2594delC	p.A865fs*2	Del	frameshift
r.2684_268	c.2584_258	p.Y862fs*11	Del	frameshift
r.2686_268	c.2586_258	p.E863fs*5	Ins	frameshift

r.2685_2686c.2585_2586p.Y862fs*1	Del	frameshift
r.2685delA c.2585delA p.Y862fs*5	Del	frameshift
r.2681delA c.2581delA p.I861fs*6	Del	frameshift
r.2676_2677c.2576_2577p.E860fs*13	Ins	frameshift
r.2675delU c.2575delT p.S859fs*8	Del	frameshift
r.2668-2a>u c.2568-2A> p.?	Sub	ess_splice
r.2654a>u c.2554A>T p.R852*	Sub	nonsense
r.2624g>u c.2524G>T p.E842*	Sub	nonsense
r.2509_2510c.2506_2507p.R836fs*4	Ins	frameshift
r.2509c>u c.2506C>T p.R836W	Sub	missense
r.2592_2593c.2492_2493p.N831fs*2	Ins	frameshift
r.2558delC c.2458delC p.T821fs*4	Del	frameshift
r.2547delA c.2447delA p.N816fs*9	Del	frameshift
r.2542delU c.2442delT p.P815fs*10	Del	frameshift
r.2519delA c.2419delA p.I807fs*18	Del	frameshift
r.2509_2510c.2409_2410p.A805fs*12	Ins	frameshift
r.2407delG c.2404delG p.D802fs*3	Del	frameshift
r.2492_2493c.2392_2393p.R798fs*6	Del	frameshift
r.2431_2441c.2331_2341p.I778fs*14	Del	frameshift
r.2323delG c.2320delG p.V774fs*1	Del	frameshift
r.2418_2419c.2318_2319p.N773fs*23	Ins	frameshift
r.2418delA c.2318delA p.N773fs*2	Del	frameshift
r.2390g>u c.2290G>T p.E764*	Sub	nonsense
r.2380_2381c.2280_2281p.R761fs*9	Ins	frameshift
r.2329_2330c.2229_2230p.L744_Y74	Del	inframe
r.2331_2332c.2231_2232p.L744fs*15	Ins	frameshift
r.2328c>u c.2228C>T p.S743F	Sub	missense
r.2274u>a c.2174T>A p.V725D	Sub	missense
r.2232delG c.2132delG p.S711fs*3	Del	frameshift
r.2231delA c.2131delA p.S711fs*3	Del	frameshift
r.2228c>u c.2128C>T p.R710*	Sub	nonsense
r.2225delA c.2125delA p.I709fs*5	Del	frameshift
r.2202_2203c.2102_2103p.K701fs*11	Del	frameshift
r.2044_2075c.2041_2072p.S681fs*1	Del	frameshift
r.2133g>u c.2033G>T p.R678L	Sub	missense
r.2109_2120c.2009_2020p.K670_K67	Del	inframe
r.2110delG c.2010delG p.N671fs*15	Del	frameshift
r.2094u>c c.1994T>C p.V665A	Sub	missense
r.2085u>g c.1985T>G p.L662R	Sub	missense
r.1986delA c.1983delA p.K661fs*2	Del	frameshift
r.2077delG c.1977delG p.Q659fs*4	Del	frameshift
r.2075c>u c.1975C>T p.Q659*	Sub	nonsense
r.2061_2062c.1961_1962p.Y654fs*1	Ins	frameshift
r.2055c>g c.1955C>G p.S652*	Sub	nonsense
r.2028_2059c.1928_1959p.R643fs*13	Del	frameshift
r.2045_2046c.1945_1946p.P649fs*8	Ins	frameshift
r.2037delG c.1937delG p.G646fs*10	Del	frameshift
r.2029delG c.1929delG p.K644fs*12	Del	frameshift
r.2024+1g>c c.1924+1G>p.?	Sub	ess_splice
r.2013_2014c.1913_1914p.K638fs*5	Del	frameshift
r.2014delA c.1914delA p.K638fs*4	Del	frameshift
r.2009c>g c.1909C>G p.P637A	Sub	missense
r.1962_1963c.1862_1863p.K621delK	Del	inframe

r.1866a>u	c.1863A>T	p.K621N	Sub	missense
r.1919-2_19	c.1819-2_1	p.?	Del	ess_splice
r.1919-1g>a	c.1819-1G>	p.?	Sub	ess_splice
r.1822-2a>u	c.1819-2A>	p.?	Sub	ess_splice
r.1919-2a>c	c.1819-2A>	p.?	Sub	ess_splice
r.1918+1g>	c.1818+1G>	p.?	Sub	ess_splice
r.1880u>a	c.1780T>A	p.F594I	Sub	missense
r.1831_184	c.1731_174	p.D578fs*2	Del	frameshift
r.1839a>g	c.1739A>G	p.Y580C	Sub	missense
r.1839a>c	c.1739A>C	p.Y580S	Sub	missense
r.1811_182	c.1711_172	p.I571fs*4	Del	frameshift
r.1814g>u	c.1714G>T	p.E572*	Sub	nonsense
r.1814g>u	c.1714G>T	p.E572*	Sub	nonsense
r.1780_178	c.1680_168	p.K560fs*12	Del	frameshift
r.1747_174	c.1647_164	p.K549fs*8	Del	frameshift
r.1749c>u	c.1649C>T	p.P550L	Sub	missense
r.1749c>u	c.1649C>T	p.P550L	Sub	missense
r.1744_174	c.1644_164	p.K549fs*1	Ins	frameshift
r.1727delU	c.1627delT	p.C543fs*2	Del	frameshift
r.1700c>u	c.1600C>T	p.R534*	Sub	nonsense
r.1700c>g	c.1600C>G	p.R534G	Sub	missense
r.1698c>u	c.1598C>T	p.A533V	Sub	missense
r.1695a>c	c.1595A>C	p.E532A	Sub	missense
r.1687delU	c.1587delT	p.V530fs*39	Del	frameshift
r.1683delA	c.1583delA	p.N528fs*41	Del	frameshift
r.1683a>u	c.1583A>T	p.N528I	Sub	missense
r.1683a>u	c.1583A>T	p.N528I	Sub	missense
r.1673_167	c.1573_157	p.I525fs*8	Ins	frameshift
r.1669g>u	c.1569G>T	p.M523I	Sub	missense
r.1664c>u	c.1564C>T	p.R522*	Sub	nonsense
r.1661c>u	c.1561C>T	p.Q521*	Sub	nonsense
r.1555delA	c.1552delA	p.I518fs*1	Del	frameshift
r.1642-1g>a	c.1542-1G>	p.?	Sub	ess_splice
r.1641+1_1	c.1541+1_1	p.?	Ins	ess_splice
r.1634a>u	c.1534A>T	p.R512*	Sub	nonsense
r.1613_161	c.1513_151	p.S505fs*13	Del	frameshift
r.1608_160	c.1508_150	p.S505fs*8	Ins	frameshift
r.1553a>u	c.1453A>T	p.K485*	Sub	nonsense
r.1543+1g>	c.1443+1G>	p.?	Sub	ess_splice
r.1543g>u	c.1443G>T	p.Q481H	Sub	missense
r.1532c>u	c.1432C>T	p.Q478*	Sub	nonsense
r.1529c>u	c.1429C>T	p.Q477*	Sub	nonsense
r.1527_152	c.1427_142	p.L476fs*31	Ins	frameshift
r.1495_149	c.1395_139	p.N466fs*4	Del	frameshift
r.1478a>u	c.1378A>T	p.K460*	Sub	nonsense
r.1455delU	c.1355delT	p.L452fs*3	Del	frameshift
r.1443_144	c.1343_134	p.L448fs*4	Ins	frameshift
r.1443delU	c.1343delT	p.L448fs*5	Del	frameshift
r.1434delU	c.1334delT	p.L445fs*1	Del	frameshift
r.1433_143	c.1333_133	p.L445fs*6	Del	frameshift
r.1433_143	c.1333_133	p.L445fs*6	Del	frameshift
r.1433_143	c.1333_133	p.L445fs*6	Del	frameshift
r.1416delA	c.1316delA	p.N439fs*7	Del	frameshift

r.1406a>u	c.1306A>T	p.K436*	Sub	nonsense
r.1403delA	c.1303delA	p.T435fs*3	Del	frameshift
r.1401+4_14c.	c.1301+4_1p.?		Del	ess_splice
r.1400delC	c.1300delC	p.R434fs*4	Del	frameshift
r.1400c>u	c.1300C>T	p.R434*	Sub	nonsense
r.1284delC	c.1281delC	p.I428fs*10	Del	frameshift
r.1365delA	c.1265delA	p.Q422fs*16	Del	frameshift
r.1364c>u	c.1264C>T	p.Q422*	Sub	nonsense
r.1335delC	c.1235delC	p.P412fs*26	Del	frameshift
r.1316g>u	c.1216G>T	p.E406*	Sub	nonsense
r.1298_1299c.	c.1198_1199p.	p.Q400fs*7	Ins	frameshift
r.1278_1281c.	c.1178_118p.	p.V393fs*10	Del	frameshift
r.1278u>c	c.1178T>C	p.V393A	Sub	missense
r.1276_1277c.	c.1176_117p.	p.V393fs*12	Ins	frameshift
r.1262c>u	c.1162C>T	p.Q388*	Sub	nonsense
r.1261u>a	c.1161T>A	p.Y387*	Sub	nonsense
r.1241_1242c.	c.1141_114p.	p.D381fs*11	Ins	frameshift
r.1234delC	c.1134delC	p.F379fs*25	Del	frameshift
r.1226delA	c.1126delA	p.I376fs*28	Del	frameshift
r.1220delG	c.1120delG	p.E374fs*30	Del	frameshift
r.1212c>a	c.1112C>A	p.S371*	Sub	nonsense
r.1208g>u	c.1108G>T	p.E370*	Sub	nonsense
r.1199g>u	c.1099G>T	p.E367*	Sub	nonsense
r.1189_1190c.	c.1089_109p.	p.A364fs*2	Del	frameshift
r.1142_1143c.	c.1042_104p.	p.A348fs*9	Ins	frameshift
r.1135delU	c.1035delT	p.T346fs*16	Del	frameshift
r.1128c>u	c.1028C>T	p.S343L	Sub	missense
r.1125delU	c.1025delT	p.L342fs*20	Del	frameshift
r.1125u>g	c.1025T>G	p.L342*	Sub	nonsense
r.1096-1g>a	c.996-1G>A	p.?	Sub	ess_splice
r.1096-1g>c	c.996-1G>C	p.?	Sub	ess_splice
r.1066_1067c.	c.966_967in	p.E323fs*6	Ins	frameshift
r.1045_1046c.	c.945_949d.	p.H315fs*6	Del	frameshift
r.999g>c	c.899G>C	p.R300T	Sub	missense
r.999g>a	c.899G>A	p.R300K	Sub	missense
r.895c>u	c.892C>T	p.R298*	Sub	nonsense
r.980_990del	c.880_890d.	p.K294fs*20	Del	frameshift
r.986delA	c.886delA	p.S296fs*4	Del	frameshift
r.956g>u	c.856G>T	p.E286*	Sub	nonsense
r.943delU	c.843delT	p.Y281fs*1	Del	frameshift
r.942_943in	c.842_843in	p.Y281fs*1	Ins	frameshift
r.938u>g	c.838T>G	p.F280V	Sub	missense
r.935_936in	c.835_836in	p.I279fs*8	Ins	frameshift
r.935delA	c.835delA	p.I279fs*4	Del	frameshift
r.935delA	c.835delA	p.I279fs*4	Del	frameshift
r.838_839in	c.835_836in	p.I279fs*8	Ins	frameshift
r.838delA	c.835delA	p.I279fs*4	Del	frameshift
r.838_839in	c.835_836in	p.I279fs*8	Ins	frameshift
r.935_936in	c.835_836in	p.I279fs*8	Ins	frameshift
r.902c>u	c.802C>T	p.Q268*	Sub	nonsense
r.887_888in	c.787_788in	p.N263fs*21	Ins	frameshift
r.886u>a	c.786T>A	p.Y262*	Sub	nonsense
r.884_885in	c.784_785in	p.Y262fs*2	Ins	frameshift

r.881delA	c.781delA	p.T261fs*22	Del	frameshift
r.873_874in	c.773_774in	p.N258fs*6	Ins	frameshift
r.873_874in	c.773_774in	p.N258fs*6	Ins	frameshift
r.873_874in	c.773_774in	p.N258fs*6	Ins	frameshift
r.776_777in	c.773_774in	p.N258fs*6	Ins	frameshift
r.873_874in	c.773_774in	p.N258fs*6	Ins	frameshift
r.873delA	c.773delA	p.N258fs*25	Del	frameshift
r.864u>a	c.764T>A	p.L255H	Sub	missense
r.861_862del	c.761_762del	p.L254fs*9	Del	frameshift
r.854_859del	c.754_759del	p.I252_D255	Del	inframe
r.758u>c	c.755T>C	p.I252T	Sub	missense
r.851g>u	c.751G>T	p.D251Y	Sub	missense
r.815-2a>c	c.715-2A>C	p.?	Sub	ess_splice
r.813a>c	c.713A>C	p.Q238P	Sub	missense
r.715c>u	c.712C>T	p.Q238*	Sub	nonsense
r.803c>u	c.703C>T	p.Q235*	Sub	nonsense
r.803c>u	c.703C>T	p.Q235*	Sub	nonsense
r.763_764in	c.663_664in	p.A222fs*4	Ins	frameshift
r.760u>g	c.660T>G	p.Y220*	Sub	nonsense
r.751u>a	c.651T>A	p.Y217*	Sub	nonsense
r.746-2a>c	c.646-2A>C	p.?	Sub	ess_splice
r.746-2a>u	c.646-2A>T	p.?	Sub	ess_splice
r.745+1delg	c.645+1delg	p.?	Del	ess_splice
r.745+1g>u	c.645+1G>U	p.?	Sub	ess_splice
r.643a>u	c.640A>T	p.K214*	Sub	nonsense
r.702_727del	c.602_627del	p.G201fs*5	Del	frameshift
r.728a>u	c.628A>T	p.K210*	Sub	nonsense
r.724delU	c.624delT	p.Q209fs*15	Del	frameshift
r.670_671in	c.570_571in	p.E191fs*4	Ins	frameshift
r.650g>u	c.550G>T	p.E184*	Sub	nonsense
r.644_645del	c.544_545del	p.L182fs*9	Del	frameshift
r.627delG	c.527delG	p.G176fs*7	Del	frameshift
r.608c>u	c.508C>T	p.Q170*	Sub	nonsense
r.608c>u	c.508C>T	p.Q170*	Sub	nonsense
r.578g>u	c.478G>T	p.E160*	Sub	nonsense
r.570delC	c.470delC	p.A157fs*17	Del	frameshift
r.562delA	c.462delA	p.G155fs*15	Del	frameshift
r.542a>u	c.442A>T	p.R148*	Sub	nonsense
r.425_437del	c.422_434del	p.W141fs*21	Del	frameshift
r.532c>g	c.432C>G	p.Y144*	Sub	nonsense
r.502u>g	c.402T>G	p.Y134*	Sub	nonsense
r.485-1g>u	c.385-1G>T	p.?	Sub	ess_splice
r.484+4_484	c.384+4_384	p.?	Del	ess_splice
r.484+1g>a	c.384+1G>A	p.?	Sub	ess_splice
r.484+1g>c	c.384+1G>C	p.?	Sub	ess_splice
r.481_482del	c.381_382del	p.Y127fs*1	Del	frameshift
r.479_480in	c.379_380in	p.Y127fs*2	Ins	frameshift
r.466delU	c.366delT	p.N122fs*52	Del	frameshift
r.462delA	c.362delA	p.N121fs*53	Del	frameshift
r.444a>c	c.344A>C	p.D115A	Sub	missense
r.419delG	c.319delG	p.D107fs*6	Del	frameshift
r.400delA	c.300delA	p.K100fs*2	Del	frameshift
r.392_399del	c.292_299del	p.Q98fs*7	Del	frameshift

r.398a>g	c.298A>G	p.K100E	Sub	missense
r.395c>u	c.295C>T	p.Q99*	Sub	nonsense
r.392c>u	c.292C>T	p.Q98*	Sub	nonsense
r.389delA	c.289delA	p.I97fs*5	Del	frameshift
r.390u>g	c.290T>G	p.I97S	Sub	missense
r.369delA	c.269delA	p.Q90fs*5	Del	frameshift
r.358_359in	c.258_259in	p.V87fs*7	Ins	frameshift
r.349_355del	c.249_255del	p.D83fs*10	Del	frameshift
r.341c>u	c.241C>T	p.Q81*	Sub	nonsense
r.341c>u	c.241C>T	p.Q81*	Sub	nonsense
r.335_336+2	c.235_236+	p.?	Del	ess_splice
r.336+1g>u	c.236+1G>1p.?		Sub	ess_splice
r.319_320in	c.219_220in	p.R74fs*1	Ins	frameshift
r.310_311in	c.210_211in	p.L71fs*25	Ins	frameshift
r.304_305del	c.204_205del	p.C69fs*1	Del	frameshift
r.193c>u	c.190C>T	p.Q64*	Sub	nonsense
r.269_282del	c.169_182del	p.I57fs*2	Del	frameshift
r.184a>u	c.181A>T	p.K61*	Sub	nonsense
r.280u>a	c.180T>A	p.Y60*	Sub	nonsense
r.278u>g	c.178T>G	p.Y60D	Sub	missense
r.238+1g>c	c.138+1G>C	p.?	Sub	ess_splice
r.238+1g>a	c.138+1G>A	p.?	Sub	ess_splice
r.121_125del	c.118_122del	p.N40fs*11	Del	frameshift
r.217delC	c.117delC	p.N40fs*5	Del	frameshift
r.199delG	c.99delG	p.R35fs*10	Del	frameshift
r.182delA	c.82delA	p.T28fs*17	Del	frameshift
r.143_144del	c.43_44del	p.V15fs*5	Del	frameshift
r.922u>g	c.720T>G	p.Y240*	Sub	nonsense
r.510g>a	c.353G>A	p.G118D	Sub	missense
r.557c>a	c.400C>A	p.P134T	Sub	missense
r.882g>a	c.725G>A	p.C242Y	Sub	missense
r.1192u>a	c.1035T>A	p.N345K	Sub	missense
r.1415u>c	c.1258T>C	p.C420R	Sub	missense
r.1502c>u	c.1345C>T	p.P449S	Sub	missense
r.1773c>g	c.1616C>G	p.P539R	Sub	missense
r.1781g>a	c.1624G>A	p.E542K	Sub	missense
r.1781g>a	c.1624G>A	p.E542K	Sub	missense
r.1790g>a	c.1633G>A	p.E545K	Sub	missense
r.1790g>a	c.1633G>A	p.E545K	Sub	missense
r.1790g>a	c.1633G>A	p.E545K	Sub	missense
r.1791a>g	c.1634A>G	p.E545G	Sub	missense
r.2333g>a	c.2176G>A	p.E726K	Sub	missense
r.3231g>a	c.2908G>A	p.E970K	Sub	missense
r.3288a>g	c.3131A>G	p.N1044S	Sub	missense
r.3289u>a	c.3132T>A	p.N1044K	Sub	missense
r.3297a>g	c.3140A>G	p.H1047R	Sub	missense
r.3297a>g	c.3140A>G	p.H1047R	Sub	missense
r.3358_3359del	c.3201_3201del	p.N1068fs*5	Del	frameshift
r.1594_1614del	c.978_998del	p.S327_W3	Del	inframe
r.1708delA	c.1128delA	p.N377fs*4	Del	frameshift
r.1941_1942del	c.1361_1361del	p.Q455fs*9	Del	frameshift
r.1999_2019del	c.1383_1403del	p.D464_Y47	Del	inframe
r.2304_2324del	c.1688_1708del	p.M563_L57	Del	inframe

r.6019delG c.5975delG p.C1992fs*7 Del	frameshift
r.5753_5766c.5709_5721p.T1904fs*1 Del	frameshift
r.1144delA c.545delA p.K182fs*16 Del	frameshift
r.608+5g>c c.9+5G>C p.? Sub	ess_splice
r.1761delA c.1529delA p.N512fs*2 Del	frameshift
r.1768delU c.1536delT p.L513fs*1 Del	frameshift
r.215-2a>u c.170-2A>T p.? Sub	ess_splice
r.1262_1265c.1204_1207p.Q402fs*6 Del	frameshift
r.269_270in:c.62_63insC p.L30fs*107 Ins	frameshift
r.3849+5g>c c.3549+5G>p.? Sub	ess_splice
r.766c>u c.466C>T p.Q156* Sub	nonsense
r.1360g>a c.3G>A p.M1I Sub	start_lost
r.1374_1380c.17_23delA p.K6fs*16 Del	frameshift
r.1386g>a c.29G>A p.S10N Sub	missense
r.902u>a c.57T>A p.D19E Sub	missense
r.1451_1453c.94_96delA p.I33delI Del	inframe
r.1486_1491c.129_138del p.V45fs*6 Del	frameshift
r.1495c>g c.138C>G p.Y46* Sub	nonsense
r.1498_1510c.141_153del p.N48fs*2 Del	frameshift
r.1500a>g c.143A>G p.N48S Sub	missense
r.1501_1502c.144_145in p.I50_D51in Ins	inframe
r.1540_1541c.183_184in p.N63fs*11 Ins	frameshift
r.1566+1_1567c.209+1_210p.? Del	ess_splice
r.1574g>u c.217G>T p.E73* Sub	nonsense
r.1610+1g>c c.253+1G>C p.? Sub	ess_splice
r.1624delU c.267delT p.F90fs*9 Del	frameshift
r.1635a>g c.278A>G p.H93R Sub	missense
r.1725a>u c.368A>T p.H123L Sub	missense
r.1743g>a c.386G>A p.G129E Sub	missense
r.1746_1748c.389_391del p.R130_T133 Del	inframe
r.1752g>u c.395G>T p.G132V Sub	missense
r.1821delA c.464delA p.Y155fs*4 Del	frameshift
r.1850-1g>a c.493-1G>A p.? Sub	ess_splice
r.1850g>u c.493G>T p.G165* Sub	nonsense
r.1881u>g c.524T>G p.V175G Sub	missense
r.1886u>g c.529T>G p.Y177D Sub	missense
r.1922_1930c.565_576del p.R189_A191 Del	inframe
r.1921_1922c.564_565in p.R189fs*13 Ins	frameshift
r.1456c>a c.611C>A p.P204Q Sub	missense
r.1991+1g>c c.634+1G>C p.? Sub	ess_splice
r.2066delA c.709delA p.K237fs*19 Del	frameshift
r.2077_2078c.720_721in p.E242fs*1 Ins	frameshift
r.1584delU c.739delT p.L247fs*9 Del	frameshift
r.2111g>u c.754G>T p.D252Y Sub	missense
r.2159-1g>c c.802-1G>C p.? Sub	ess_splice
r.2210_2220c.853_863del p.E285fs*9 Del	frameshift
r.2288_2297c.931_940del p.D312fs*2 Del	frameshift
r.2311_2312c.954_955in p.T319fs*6 Ins	frameshift
r.1872-2a>g c.1027-2A>G p.? Sub	ess_splice
r.2393u>c c.1036T>C p.Y346H Sub	missense
r.5705u>a c.5660T>A p.L1887* Sub	nonsense
r.3943c>u c.3898C>T p.R1300* Sub	nonsense
r.3497delG c.3452delG p.G1151fs*4 Del	frameshift

r.2415_2418del	c.2370_2372del	p.F790fs*10	Del	frameshift
r.1318_1322del	c.1030_1033del	p.Y344fs*38	Del	frameshift
r.432+1g>u	c.144+1G>T	p.?	Sub	ess_splice
r.3672delC	c.3103delC	p.Q1035fs*6	Del	frameshift
r.1981delA	c.1843delA	p.G617fs*6	Del	frameshift
r.2283delA	c.2096delA	p.H699fs*6	Del	frameshift
r.1177_1191del	c.1177_1191del	p.S393fs*1	Del	frameshift
r.517a>u	c.104A>T	p.Y35F	Sub	missense
r.516u>a	c.103T>A	p.Y35N	Sub	missense
r.516u>a	c.103T>A	p.Y35N	Sub	missense
r.326u>g	c.296T>G	p.F99C	Sub	missense
r.195delA	c.156delA	p.A53fs*9	Del	frameshift
r.155_156+1del	c.116_117+1del	p.?	Del	ess_splice
r.83delA	c.44delA	p.K15fs*5	Del	frameshift
r.83_84insa	c.44_45insa	p.K16fs*9	Ins	frameshift
r.83delA	c.44delA	p.K15fs*5	Del	frameshift
r.83delA	c.44delA	p.K15fs*5	Del	frameshift
r.83delA	c.44delA	p.K15fs*5	Del	frameshift
r.279+3delA	c.189+3delA	p.?	Del	ess_splice
r.382delG	c.292delG	p.A98fs*28	Del	frameshift
r.1164delC	c.719delC	p.P240fs*14	Del	frameshift
r.1905u>a	c.1705T>A	p.F569I	Sub	missense
r.1558u>g	c.1358T>G	p.L453R	Sub	missense
r.1359a>c	c.1159A>C	p.T387P	Sub	missense
r.1197c>a	c.997C>A	p.R333S	Sub	missense
r.1060a>g	c.860A>G	p.Y287C	Sub	missense
r.1053u>a	c.853T>A	p.W285R	Sub	missense
r.990g>c	c.790G>C	p.D264H	Sub	missense
r.894a>g	c.694A>G	p.T232A	Sub	missense
r.895u>a	c.637T>A	p.F213I	Sub	missense
r.769a>c	c.569A>C	p.Q190P	Sub	missense
r.753a>g	c.553A>G	p.K185E	Sub	missense
r.702a>u	c.502A>T	p.S168C	Sub	missense
r.702a>g	c.502A>G	p.S168G	Sub	missense
r.492a>g	c.292A>G	p.K98E	Sub	missense
r.424g>a	c.224G>A	p.G75D	Sub	missense
r.482g>a	c.224G>A	p.G75D	Sub	missense
r.7634g>u	c.7591G>T	p.E2531*	Sub	nonsense
r.7625g>u	c.7582G>T	p.E2528*	Sub	nonsense
r.7557_7558del	c.7514_7515del	p.F2505fs*1	Del	frameshift
r.7500_7542del	c.7457_7499del	p.L2486fs*1	Del	frameshift
r.7510c>a	c.7467C>A	p.Y2489*	Sub	nonsense
r.7408delC	c.7365delC	p.K2456fs*1	Del	frameshift
r.7388delA	c.7345delA	p.M2449fs*1	Del	frameshift
r.7379g>u	c.7336G>T	p.E2446*	Sub	nonsense
r.7375_7376del	c.7332_7333del	p.Y2444fs*1	Del	frameshift
r.7309g>a	c.7266G>A	p.W2422*	Sub	nonsense
r.7293_7306del	c.7250_7263del	p.W2417fs*1	Del	frameshift
r.7281+3_7282del	c.7238+3_7239del	p.?	Del	ess_splice
r.7062_7090del	c.7019_7047del	p.H2340fs*1	Del	frameshift
r.7081_7082del	c.7038_7039del	p.Q2347fs*2	Ins	frameshift
r.7070g>u	c.7027G>T	p.G2343*	Sub	nonsense
r.7035delU	c.6992delT	p.I2331fs*2	Del	frameshift

r.7016c>u	c.6973C>T	p.Q2325*	Sub	nonsense
r.7006+1g>c	c.6963+1G>p.?		Sub	ess_splice
r.6973delA	c.6930delA	p.P2311fs*4	Del	frameshift
r.6969_697(c	c.6926_692	p.T2309fs*5	Del	frameshift
r.6893c>u	c.6850C>T	p.Q2284*	Sub	nonsense
r.6853_686(c	c.6810_682	p.Y2270fs*1	Del	frameshift
r.6662c>u	c.6619C>T	p.Q2207*	Sub	nonsense
r.6556_655(c	c.6513_651	p.P2172fs*8	Ins	frameshift
r.6434c>u	c.6391C>T	p.Q2131*	Sub	nonsense
r.6425g>u	c.6382G>T	p.E2128*	Sub	nonsense
r.6359_637(c	c.6316_633	p.K2106fs*3	Del	frameshift
r.6233_623(c	c.6190_619	p.D2064fs*8	Del	frameshift
r.6223_622(c	c.6180_618	p.R2063fs*8	Del	frameshift
r.6211delU	c.6168delT	p.P2057fs*9	Del	frameshift
r.6118_611(c	c.6075_607	p.P2026fs*7	Ins	frameshift
r.6113c>u	c.6070C>T	p.R2024*	Sub	nonsense
r.6003delU	c.5960delT	p.V1987fs*1	Del	frameshift
r.5975delA	c.5932delA	p.T1978fs*2	Del	frameshift
r.5861_586(c	c.5818_581	p.S1940fs*2	Ins	frameshift
r.5528c>u	c.5485C>T	p.Q1829*	Sub	nonsense
r.5483_549(c	c.5440_544	p.M1814fs*1	Del	frameshift
r.5489g>u	c.5446G>T	p.E1816*	Sub	nonsense
r.5441-1g>c	c.5398-1G>p.?		Sub	ess_splice
r.5441-1g>u	c.5398-1G>p.?		Sub	ess_splice
r.5414g>u	c.5371G>T	p.E1791*	Sub	nonsense
r.5333c>u	c.5290C>T	p.Q1764*	Sub	nonsense
r.5328_532(c	c.5285_528	p.H1762fs*2	Del	frameshift
r.5302_531(c	c.5259_527	p.C1754fs*2	Del	frameshift
r.5296_529(c	c.5253_525	p.L1752fs*3	Ins	frameshift
r.5291c>u	c.5248C>T	p.Q1750*	Sub	nonsense
r.5191_519(c	c.5148_515	p.D1716fs*3	Del	frameshift
r.5185+5g>(c.5142+5G>p.?		Sub	ess_splice
r.5165c>u	c.5122C>T	p.R1708*	Sub	nonsense
r.5121delA	c.5078delA	p.N1693fs*1	Del	frameshift
r.5059-25_5	c.5016-25_5	p.?	Del	ess_splice
r.5058+5g>(c.5015+5G>p.?		Sub	ess_splice
r.5058+2_5(c	c.5015+2_5	p.?	Ins	ess_splice
r.5058+2u>(c.5015+2T>p.?		Sub	ess_splice
r.5040a>u	c.4997A>T	p.Y1666F	Sub	missense
r.5040a>c	c.4997A>C	p.Y1666S	Sub	missense
r.4996_499(c	c.4953_495	p.T1652fs*1	Ins	frameshift
r.4990delG	c.4947delG	p.F1651fs*1	Del	frameshift
r.4973g>u	c.4930G>T	p.G1644*	Sub	nonsense
r.4933delC	c.4890delC	p.C1631fs*1	Del	frameshift
r.4917g>a	c.4874G>A	p.R1625H	Sub	missense
r.4916c>u	c.4873C>T	p.R1625C	Sub	missense
r.4805g>u	c.4762G>T	p.E1588*	Sub	nonsense
r.4743_475(c	c.4700_471	p.?	Del	ess_splice
r.4747delA	c.4704delA	p.D1569fs*9	Del	frameshift
r.4745a>u	c.4702A>T	p.K1568*	Sub	nonsense
r.4529c>u	c.4486C>T	p.R1496*	Sub	nonsense
r.4500delA	c.4457delA	p.K1486fs*2	Del	frameshift
r.4484_448(c	c.4441_444	p.Y1481fs*9	Ins	frameshift

r.4475g>u	c.4432G>T	p.E1478*	Sub	nonsense
r.4380_4380del	c.4337_4341del	p.G1446fs*2	Del	frameshift
r.4323_4323del	c.4280_4283del	p.V1427fs*4	Del	frameshift
r.4295delG	c.4252delG	p.D1418fs*1	Del	frameshift
r.4230delA	c.4187delA	p.N1396fs*1	Del	frameshift
r.4212c>g	c.4169C>G	p.S1390*	Sub	nonsense
r.4092c>g	c.4049C>G	p.S1350*	Sub	nonsense
r.4070c>u	c.4027C>T	p.Q1343*	Sub	nonsense
r.3973_3973del	c.3930_3933del	p.G1311fs*1	Del	frameshift
r.3860c>u	c.3817C>T	p.Q1273*	Sub	nonsense
r.3816u>g	c.3773T>G	p.L1258*	Sub	nonsense
r.3694g>a	c.3651G>A	p.W1217*	Sub	nonsense
r.3366c>a	c.3323C>A	p.S1108*	Sub	nonsense
r.3280_3280ins	c.3237_3237ins	p.M1080fs*1	Ins	frameshift
r.3199_3200del	c.3156_3156del	p.D1053fs*6	Ins	frameshift
r.3099u>a	c.3056T>A	p.L1019*	Sub	nonsense
r.3063delU	c.3020delT	p.L1007fs*1	Del	frameshift
r.2957g>u	c.2914G>T	p.E972*	Sub	nonsense
r.2921c>u	c.2878C>T	p.Q960*	Sub	nonsense
r.2632delU	c.2589delT	p.V864fs*27	Del	frameshift
r.2562_2562ins	c.2519_2521ins	p.N840fs*11	Ins	frameshift
r.2535c>g	c.2492C>G	p.S831*	Sub	nonsense
r.2531g>u	c.2488G>T	p.E830*	Sub	nonsense
r.2233delA	c.2190delA	p.D731fs*36	Del	frameshift
r.2233delA	c.2190delA	p.D731fs*36	Del	frameshift
r.2159g>u	c.2116G>T	p.E706*	Sub	nonsense
r.2113_2113del	c.2070_2070del	p.K690fs*2	Del	frameshift
r.2064delA	c.2021delA	p.N674fs*22	Del	frameshift
r.1905u>a	c.1862T>A	p.L621*	Sub	nonsense
r.1871_1871del	c.1828_1828del	p.E610fs*13	Del	frameshift
r.1811_1811del	c.1768_1768del	p.L590fs*8	Del	frameshift
r.1793c>u	c.1750C>T	p.Q584*	Sub	nonsense
r.1793c>u	c.1750C>T	p.Q584*	Sub	nonsense
r.1661c>u	c.1618C>T	p.R540*	Sub	nonsense
r.1605_1605del	c.1562_1561del	p.T521fs*3	Del	frameshift
r.1537_1537del	c.1494_1494del	p.E498fs*21	Del	frameshift
r.1425c>g	c.1382C>G	p.S461*	Sub	nonsense
r.1409c>u	c.1366C>T	p.R456*	Sub	nonsense
r.1409c>u	c.1366C>T	p.R456*	Sub	nonsense
r.1364c>u	c.1321C>T	p.R441*	Sub	nonsense
r.1220c>u	c.1177C>T	p.R393*	Sub	nonsense
r.1174u>g	c.1131T>G	p.Y377*	Sub	nonsense
r.1145c>u	c.1102C>T	p.R368*	Sub	nonsense
r.1145c>u	c.1102C>T	p.R368*	Sub	nonsense
r.1145c>u	c.1102C>T	p.R368*	Sub	nonsense
r.1143c>a	c.1100C>A	p.S367*	Sub	nonsense
r.1088a>u	c.1045A>T	p.R349*	Sub	nonsense
r.1043c>u	c.1000C>T	p.Q334*	Sub	nonsense
r.1007g>u	c.964G>T	p.E322*	Sub	nonsense
r.886_887ins	c.843_844ins	p.E282fs*9	Ins	frameshift
r.886delA	c.843delA	p.E282fs*19	Del	frameshift
r.879c>a	c.836C>A	p.S279*	Sub	nonsense
r.817delU	c.774delT	p.I259fs*5	Del	frameshift

r.770delA	c.727delA	p.I243fs*2	Del	frameshift
r.597c>g	c.554C>G	p.S185*	Sub	nonsense
r.216delG	c.173delG	p.G58fs*53	Del	frameshift
r.131-15_13	c.88-15_92	c.p.?	Del	ess_splice
r.131-2a>g	c.88-2A>G	p.?	Sub	ess_splice
r.130+4dela	c.87+4dela	p.?	Del	ess_splice
r.114+1g>c	c.71+1G>C	p.?	Sub	ess_splice
r.2772g>u	c.2680G>T	p.D894Y	Sub	missense
r.1089u>g	c.837T>G	p.Y279*	Sub	nonsense
r.1499+1g>c	c.1118+1G>p.?	p.?	Sub	ess_splice
r.1632_1633	c.1351_135	p.R451fs*3	Del	frameshift
r.1874+5del	c.1593+5del	p.?	Del	ess_splice
r.2990_2991	c.2709_271	p.R905fs*4	Ins	frameshift
r.3789_3790	c.3508_350	p.V1171fs*5	Ins	frameshift
r.3828-1g>u	c.3547-1G>	p.?	Sub	ess_splice
r.3847g>a	c.3566G>A	p.R1189Q	Sub	missense
r.3856g>a	c.3575G>A	p.R1192H	Sub	missense
r.3975g>u	c.3694G>T	p.G1232C	Sub	missense
r.4359g>u	c.4078G>T	p.E1360*	Sub	nonsense
r.1324a>u	c.1117A>T	p.K373*	Sub	nonsense
r.2187g>u	c.2059G>T	p.E687*	Sub	nonsense
r.280_281in	c.129_130in	p.A44fs*73	Ins	frameshift
r.1419_1420	c.1215_121	p.N410fs*8	Ins	frameshift
r.412c>u	c.40C>T	p.Q14*	Sub	nonsense
r.857_860de	c.653_656d	p.D218fs*14	Del	frameshift
r.1946_1950	c.1742_174	p.I582fs*28	Del	frameshift
r.3346g>u	c.3142G>T	p.E1048*	Sub	nonsense
r.3513delA	c.3309delA	p.K1105fs*1	Del	frameshift
r.3583g>u	c.3379G>T	p.E1127*	Sub	nonsense
r.5310_5311	c.5106_510	p.G1705fs*6	Ins	frameshift
r.9458delC	c.9254delC	p.Q3086fs*5	Del	frameshift
r.10396g>u	c.10192G>T	p.G3398*	Sub	nonsense
r.10870g>u	c.10666G>T	p.E3556*	Sub	nonsense
r.3573g>u	c.3463G>T	p.E1155*	Sub	nonsense
r.634-1g>c	c.124-1G>C	p.?	Sub	ess_splice
r.639_640in	c.129_130in	p.G46fs*41	Ins	frameshift
r.1798_1799	c.1288_128	p.F431fs*10	Ins	frameshift
r.2416_2417	c.1906_190	p.Y636fs*1	Ins	frameshift
r.2518_2519	c.2008_200	p.D671fs*7	Ins	frameshift
r.2658_2659	c.2148_214	p.T718fs*10	Ins	frameshift
r.2916_2917	c.2406_240	p.M803fs*6	Ins	frameshift
r.2972u>a	c.2462T>A	p.L821*	Sub	nonsense
r.3372delU	c.2862delT	p.F955fs*3	Del	frameshift
r.3788-2del	c.3278-2del	p.?	Del	ess_splice
r.1644delG	c.1475delG	p.G492fs*22	Del	frameshift
r.1515delG	c.1346delG	p.S449fs*20	Del	frameshift
r.409delG	c.240delG	p.L82fs*2	Del	frameshift
r.1676+5g>c	c.1416+5G>	p.?	Sub	ess_splice
r.2062delU	c.1672delT	p.S558fs*74	Del	frameshift
r.760delG	c.370delG	p.V124fs*15	Del	frameshift
r.1669-1_16	c.1319-1_13	p.?	Del	ess_splice
r.2125_2126	c.1265_126	p.S424fs*19	Ins	frameshift
r.2330delA	c.1470delA	p.Q491fs*6	Del	frameshift

r.2402_2414c.1542_155.p.N515fs*14	Del	frameshift
r.2529c>u c.1669C>T p.Q557*	Sub	nonsense
r.2790c>u c.1930C>T p.Q644*	Sub	nonsense
r.3223delA c.2363delA p.N789fs*24	Del	frameshift
r.3273g>u c.2413G>T p.G805*	Sub	nonsense
r.3344c>a c.2484C>A p.C828*	Sub	nonsense
r.3922_3925c.3062_3065p.K1022fs*4	Del	frameshift
r.4495u>a c.3635T>A p.L1212*	Sub	nonsense
r.5430c>u c.4570C>T p.Q1524*	Sub	nonsense
r.5608c>a c.4748C>A p.S1583*	Sub	nonsense
r.6359delC c.5499delC p.Q1834fs*5	Del	frameshift
r.1221u>c c.1031T>C p.L344P	Sub	missense
r.1214c>u c.1024C>T p.R342*	Sub	nonsense
r.1183+1g>c c.993+1G>A p.?	Sub	ess_splice
r.1181c>u c.991C>T p.Q331*	Sub	nonsense
r.1073c>a c.883C>A p.P295T	Sub	missense
r.1043g>u c.853G>T p.E285*	Sub	nonsense
r.1031g>c c.841G>C p.D281H	Sub	missense
r.1031g>c c.841G>C p.D281H	Sub	missense
r.1008g>a c.818G>A p.R273H	Sub	missense
r.1008g>u c.818G>T p.R273L	Sub	missense
r.973-1g>a c.783-1G>A p.?	Sub	ess_splice
r.921g>a c.731G>A p.G244D	Sub	missense
r.912c>a c.722C>A p.S241Y	Sub	missense
r.862+1g>u c.672+1G>T p.?	Sub	ess_splice
r.851g>a c.661G>A p.E221K	Sub	missense
r.849a>g c.659A>G p.Y220C	Sub	missense
r.834g>c c.644G>C p.S215T	Sub	missense
r.834g>u c.644G>T p.S215I	Sub	missense
r.827c>u c.637C>T p.R213*	Sub	nonsense
r.767c>u c.577C>T p.H193Y	Sub	missense
r.717g>u c.527G>T p.C176F	Sub	missense
r.714g>u c.524G>T p.R175L	Sub	missense
r.712g>c c.522G>C p.R174S	Sub	missense
r.701_702in.c.511_512in.p.E171fs*10	Ins	frameshift
r.679c>g c.489C>G p.Y163*	Sub	nonsense
r.637delC c.447delC p.T150fs*20	Del	frameshift
r.596c>u c.406C>T p.Q136*	Sub	nonsense
r.594g>u c.404G>T p.C135F	Sub	missense
r.586g>c c.396G>C p.K132N	Sub	missense
r.586g>u c.396G>T p.K132N	Sub	missense
r.584a>g c.394A>G p.K132E	Sub	missense
r.471c>a c.281C>A p.S94*	Sub	nonsense
r.449c>a c.259C>A p.P87T	Sub	missense
r.1008_1009c.791_792in.p.N268fs*17	Ins	frameshift
r.1065delA c.848delA p.N285fs*38	Del	frameshift
r.1145-1g>a c.1013-1G>A p.?	Sub	ess_splice
r.3088c>u c.2866C>T p.Q956*	Sub	nonsense
r.2977a>u c.2755A>T p.K919*	Sub	nonsense
r.2505c>a c.2283C>A p.Y761*	Sub	nonsense
r.2068_2072c.1846_1850p.A616fs*8	Del	frameshift
r.1993_1994c.1771_1772p.P591fs*16	Ins	frameshift
r.1984delA c.1762delA p.I588fs*41	Del	frameshift

r.1034c>a	c.194C>A	p.S65*	Sub	nonsense
r.1034c>a	c.194C>A	p.S65*	Sub	nonsense
r.1034c>a	c.194C>A	p.S65*	Sub	nonsense
r.1034c>a	c.194C>A	p.S65*	Sub	nonsense
r.1034c>a	c.194C>A	p.S65*	Sub	nonsense
r.1034c>a	c.194C>A	p.S65*	Sub	nonsense
r.1034c>a	c.194C>A	p.S65*	Sub	nonsense
r.1036_104	c.196_205d	p.V66fs*90	Del	frameshift
r.1036_103	c.196_197d	p.V66fs*65	Del	frameshift
r.1038_103	c.198_199in	p.N67fs*65	Ins	frameshift
r.1041_104	c.201_202in	p.E70fs*64	Ins	frameshift
r.1042u>a	c.202T>A	p.S68T	Sub	missense
r.1044delG	c.204delG	p.R69fs*90	Del	frameshift
r.1043_104	c.203_204in	p.R69fs*63	Ins	frameshift
r.1043c>a	c.203C>A	p.S68*	Sub	nonsense
r.1043c>a	c.203C>A	p.S68*	Sub	nonsense
r.1043c>a	c.203C>A	p.S68*	Sub	nonsense
r.1043c>a	c.203C>A	p.S68*	Sub	nonsense
r.1045_104	c.205_206in	p.E70fs*90	Ins	frameshift
r.1048g>u	c.208G>T	p.E70*	Sub	nonsense
r.1048g>u	c.208G>T	p.E70*	Sub	nonsense
r.1048g>u	c.208G>T	p.E70*	Sub	nonsense
r.1048g>u	c.208G>T	p.E70*	Sub	nonsense
r.1048g>u	c.208G>T	p.E70*	Sub	nonsense
r.1050_106	c.210_229d	p.P71fs*54	Del	frameshift
r.1051delC	c.211delC	p.S72fs*87	Del	frameshift
r.1051delC	c.211delC	p.S72fs*87	Del	frameshift
r.1054_107	c.214_239d	p.Q73fs*50	Del	frameshift
r.1055delC	c.215delC	p.Q73fs*86	Del	frameshift
r.1055delC	c.215delC	p.Q73fs*86	Del	frameshift
r.1055_105	c.215_216d	p.Q73fs*58	Del	frameshift
r.1054u>c	c.214T>C	p.S72P	Sub	missense
r.1054u>c	c.214T>C	p.S72P	Sub	missense
r.1054u>c	c.214T>C	p.S72P	Sub	missense
r.1057c>u	c.217C>T	p.Q73*	Sub	nonsense
r.1057c>u	c.217C>T	p.Q73*	Sub	nonsense
r.1057c>u	c.217C>T	p.Q73*	Sub	nonsense
r.1057c>u	c.217C>T	p.Q73*	Sub	nonsense
r.1059delG	c.219delG	p.V74fs*85	Del	frameshift
r.1059delG	c.219delG	p.V74fs*85	Del	frameshift
r.1059delG	c.219delG	p.V74fs*85	Del	frameshift
r.1061delU	c.221delT	p.V74fs*85	Del	frameshift
r.1061u>g	c.221T>G	p.V74G	Sub	missense
r.1061u>g	c.221T>G	p.V74G	Sub	missense
r.1061u>a	c.221T>A	p.V74D	Sub	missense
r.1061u>a	c.221T>A	p.V74D	Sub	missense
r.1063_106	c.223_224d	p.I75fs*56	Del	frameshift
r.1063_106	c.223_224in	p.N78fs*84	Ins	frameshift
r.1063_106	c.223_224in	p.V83_V84in	Ins	inframe
r.1064_106	c.224_226d	p.F76delF	Del	inframe
r.1064_106	c.224_226d	p.F76delF	Del	inframe
r.1064_106	c.224_226d	p.F76delF	Del	inframe
r.1064_106	c.224_226d	p.F76delF	Del	inframe

r.1066_1073c.226_233dip.F76fs*53	Del	frameshift
r.1067u>c c.227T>C p.F76S	Sub	missense
r.1069delU c.229delT p.C77fs*82	Del	frameshift
r.1068_1069c.228_229inp.C77fs*55	Ins	frameshift
r.1069_1074c.229_234dip.C77_N78c	Del	inframe
r.1071_1072c.231_232inp.N78fs*54	Ins	frameshift
r.1071_1072c.231_232inp.N78fs*54	Ins	frameshift
r.1071_1072c.231_232inp.N78fs*54	Ins	frameshift
r.1072a>u c.232A>T p.N78Y	Sub	missense
r.1072a>u c.232A>T p.N78Y	Sub	missense
r.1072a>u c.232A>T p.N78Y	Sub	missense
r.1073a>u c.233A>T p.N78I	Sub	missense
r.1073a>g c.233A>G p.N78S	Sub	missense
r.1073a>g c.233A>G p.N78S	Sub	missense
r.1073a>g c.233A>G p.N78S	Sub	missense
r.1073a>g c.233A>G p.N78S	Sub	missense
r.1075_1076c.235_236dip.R79fs*52	Del	frameshift
r.1075_1081c.235_241dip.S80fs*77	Del	frameshift
r.1074u>g c.234T>G p.N78K	Sub	missense
r.1074u>g c.234T>G p.N78K	Sub	missense
r.1074u>g c.234T>G p.N78K	Sub	missense
r.1074u>g c.234T>G p.N78K	Sub	missense
r.1074u>a c.234T>A p.N78K	Sub	missense
r.1076g>c c.236G>C p.R79P	Sub	missense
r.1076g>c c.236G>C p.R79P	Sub	missense
r.1077_1078c.237_238inp.S80fs*52	Ins	frameshift
r.1079g>a c.239G>A p.S80N	Sub	missense
r.1079g>a c.239G>A p.S80N	Sub	missense
r.1079g>a c.239G>A p.S80N	Sub	missense
r.1079g>a c.239G>A p.S80N	Sub	missense
r.1081_1083c.241_243dip.P81delP	Del	inframe
r.1080_1081c.240_241inp.R82fs*50	Ins	frameshift
r.1081delC c.241delC p.P81fs*78	Del	frameshift
r.1080u>a c.240T>A p.S80R	Sub	missense
r.1080u>a c.240T>A p.S80R	Sub	missense
r.1080u>g c.240T>G p.S80R	Sub	missense
r.1080u>a c.240T>A p.S80R	Sub	missense
r.1080u>a c.240T>A p.S80R	Sub	missense
r.1080u>g c.240T>G p.S80R	Sub	missense
r.1080u>a c.240T>A p.S80R	Sub	missense
r.1082_1083c.242_248dip.R82fs*75	Del	frameshift
r.1083_1091c.243_251dip.R82_V84c	Del	inframe
r.1083delG c.243delG p.R82fs*77	Del	frameshift
r.1086delC c.246delC p.V83fs*76	Del	frameshift
r.1085g>c c.245G>C p.R82P	Sub	missense
r.1085g>c c.245G>C p.R82P	Sub	missense
r.1088_1091c.248_258dip.V83fs*45	Del	frameshift
r.1088delU c.248delT p.V83fs*76	Del	frameshift
r.1091delU c.251delT p.V84fs*75	Del	frameshift
r.1091u>a c.251T>A p.V84E	Sub	missense
r.1094u>c c.254T>C p.L85P	Sub	missense
r.1094u>c c.254T>C p.L85P	Sub	missense
r.1096delC c.256delC p.V87fs*72	Del	frameshift

r.1096c>u	c.256C>T	p.P86S	Sub	missense
r.1096c>u	c.256C>T	p.P86S	Sub	missense
r.1096c>u	c.256C>T	p.P86S	Sub	missense
r.1096c>u	c.256C>T	p.P86S	Sub	missense
r.1096c>a	c.256C>A	p.P86T	Sub	missense
r.1097c>g	c.257C>G	p.P86R	Sub	missense
r.1097c>u	c.257C>T	p.P86L	Sub	missense
r.1097c>g	c.257C>G	p.P86R	Sub	missense
r.1097c>g	c.257C>G	p.P86R	Sub	missense
r.1097c>g	c.257C>G	p.P86R	Sub	missense
r.1097c>a	c.257C>A	p.P86H	Sub	missense
r.1097c>u	c.257C>T	p.P86L	Sub	missense
r.1099_1100	c.259_260in	p.W88fs*44	Ins	frameshift
r.1100_1112	c.260_272d	p.V87fs*68	Del	frameshift
r.1102_1103	c.262_263in	p.F91_D92in	Ins	inframe
r.1102_1103	c.262_263in	p.L89fs*43	Ins	frameshift
r.1102_1103	c.262_263in	p.L89fs*43	Ins	frameshift
r.1103delG	c.263delG	p.W88fs*71	Del	frameshift
r.1102u>a	c.262T>A	p.W88R	Sub	missense
r.1102u>a	c.262T>A	p.W88R	Sub	missense
r.1102u>a	c.262T>A	p.W88R	Sub	missense
r.1103g>u	c.263G>T	p.W88L	Sub	missense
r.1103g>u	c.263G>T	p.W88L	Sub	missense
r.1103g>c	c.263G>C	p.W88S	Sub	missense
r.1103g>a	c.263G>A	p.W88*	Sub	nonsense
r.1103g>a	c.263G>A	p.W88*	Sub	nonsense
r.1103g>a	c.263G>A	p.W88*	Sub	nonsense
r.1103g>a	c.263G>A	p.W88*	Sub	nonsense
r.1103g>a	c.263G>A	p.W88*	Sub	nonsense
r.1104g>u	c.264G>T	p.W88C	Sub	missense
r.1104g>a	c.264G>A	p.W88*	Sub	nonsense
r.1106u>a	c.266T>A	p.L89H	Sub	missense
r.1106u>g	c.266T>G	p.L89R	Sub	missense
r.1106u>a	c.266T>A	p.L89H	Sub	missense
r.1106u>a	c.266T>A	p.L89H	Sub	missense
r.1106u>a	c.266T>A	p.L89H	Sub	missense
r.1106u>a	c.266T>A	p.L89H	Sub	missense
r.1106u>a	c.266T>A	p.L89H	Sub	missense
r.1106u>a	c.266T>A	p.L89H	Sub	missense
r.1106u>a	c.266T>A	p.L89H	Sub	missense
r.1106u>a	c.266T>A	p.L89H	Sub	missense
r.1108delA	c.268delA	p.N90fs*69	Del	frameshift
r.1108delA	c.268delA	p.N90fs*69	Del	frameshift
r.1109_1122	c.269_282d	p.N90fs*37	Del	frameshift
r.1108a>u	c.268A>T	p.N90Y	Sub	missense
r.1110delC	c.270delC	p.F91fs*68	Del	frameshift
r.1109a>u	c.269A>T	p.N90I	Sub	missense
r.1109a>u	c.269A>T	p.N90I	Sub	missense
r.1109a>u	c.269A>T	p.N90I	Sub	missense
r.1111delU	c.271delT	p.F91fs*68	Del	frameshift
r.1113_1115	c.273_275d	p.D92delD	Del	inframe
r.1113_1137	c.273_297d	p.F91fs*60	Del	frameshift
r.1116delC	c.276delC	p.D92fs*67	Del	frameshift
r.1117delG	c.277delG	p.G93fs*66	Del	frameshift

r.1118g>u	c.278G>T	p.G93V	Sub	missense
r.1120g>u	c.280G>T	p.E94*	Sub	nonsense
r.1120g>u	c.280G>T	p.E94*	Sub	nonsense
r.1120g>u	c.280G>T	p.E94*	Sub	nonsense
r.1120g>u	c.280G>T	p.E94*	Sub	nonsense
r.1123delC	c.283delC	p.P95fs*64	Del	frameshift
r.1126c>u	c.286C>T	p.Q96*	Sub	nonsense
r.1126c>u	c.286C>T	p.Q96*	Sub	nonsense
r.1126c>u	c.286C>T	p.Q96*	Sub	nonsense
r.1126c>u	c.286C>T	p.Q96*	Sub	nonsense
r.1126c>u	c.286C>T	p.Q96*	Sub	nonsense
r.1126c>u	c.286C>T	p.Q96*	Sub	nonsense
r.1129delC	c.289delC	p.Y98fs*61	Del	frameshift
r.1129delC	c.289delC	p.Y98fs*61	Del	frameshift
r.1129delC	c.289delC	p.Y98fs*61	Del	frameshift
r.1129_1133	c.289_293del	p.Y98fs*32	Del	frameshift
r.1130_1137	c.290_291ins	p.Y98fs*34	Ins	frameshift
r.1133_1137	c.293_297del	p.P99fs*31	Del	frameshift
r.1133delA	c.293delA	p.Y98fs*61	Del	frameshift
r.1132_1137	c.292_293ins	p.Y98fs*1	Ins	frameshift
r.1132u>g	c.292T>G	p.Y98D	Sub	missense
r.1132u>a	c.292T>A	p.Y98N	Sub	missense
r.1133_1137	c.293_294ins	p.P103fs*32	Ins	frameshift
r.1134delC	c.294delC	p.P99fs*60	Del	frameshift
r.1134c>a	c.294C>A	p.Y98*	Sub	nonsense
r.1134c>a	c.294C>A	p.Y98*	Sub	nonsense
r.1134c>a	c.294C>A	p.Y98*	Sub	nonsense
r.1134c>a	c.294C>A	p.Y98*	Sub	nonsense
r.1136_1137	c.296_297ins	p.T100fs*32	Ins	frameshift
r.1136_1137	c.296_297ins	p.T100fs*60	Ins	frameshift
r.1136_1137	c.296_297ins	p.T100fs*32	Ins	frameshift
r.1138_1149	c.298_309del	p.T100_P10	Del	inframe
r.1139_1158	c.299_318del	p.L101fs*24	Del	frameshift
r.1142delU	c.302delT	p.L101fs*58	Del	frameshift
r.1142_1149	c.302_303ins	p.L109fs*56	Ins	frameshift
r.1143_1158	c.303_316del	p.G104fs*23	Del	frameshift
r.1143_1158	c.303_315del	p.P102fs*53	Del	frameshift
r.1142u>c	c.302T>C	p.L101P	Sub	missense
r.1142u>c	c.302T>C	p.L101P	Sub	missense
r.1142u>c	c.302T>C	p.L101P	Sub	missense
r.1142u>c	c.302T>C	p.L101P	Sub	missense
r.1149_1158	c.309_310del	p.G104fs*27	Del	frameshift
r.1150_1158	c.310_315del	p.T105_G10	Del	inframe
r.1150_1179	c.310_339del	p.T105_G11	Del	inframe
r.1150delG	c.310delG	p.G104fs*58	Del	frameshift
r.1152delC	c.312delC	p.T105fs*54	Del	frameshift
r.1152_1158	c.312_313ins	p.T105fs*27	Ins	frameshift
r.1155delG	c.315delG	p.G106fs*53	Del	frameshift
r.1154_1158	c.314_315ins	p.R107fs*25	Ins	frameshift
r.1157_1158	c.317_319del	p.R108delR	Del	inframe
r.1157_1158	c.317_318ins	p.R107fs*53	Ins	frameshift
r.1159_1168	c.319_325del	p.R107fs*50	Del	frameshift
r.1162_1168	c.322_323ins	p.S111_Y11	Ins	inframe
r.1166u>a	c.326T>A	p.I109N	Sub	missense
r.1166u>a	c.326T>A	p.I109N	Sub	missense

r.1166u>a	c.326T>A	p.I109N	Sub	missense
r.1166u>a	c.326T>A	p.I109N	Sub	missense
r.1172_118(c.332_340+	p.?		Del	ess_splice
r.1171a>g	c.331A>G	p.S111G	Sub	missense
r.1171a>g	c.331A>G	p.S111G	Sub	missense
r.1173delC	c.333delC	p.Y112fs*47	Del	frameshift
r.1173delC	c.333delC	p.Y112fs*47	Del	frameshift
r.1172g>u	c.332G>T	p.S111I	Sub	missense
r.1172g>u	c.332G>T	p.S111I	Sub	missense
r.1172g>a	c.332G>A	p.S111N	Sub	missense
r.1172g>a	c.332G>A	p.S111N	Sub	missense
r.1172g>a	c.332G>A	p.S111N	Sub	missense
r.1172g>u	c.332G>T	p.S111I	Sub	missense
r.1174_118(c.334_340d	p.Y112fs*45		Del	frameshift
r.1173c>a	c.333C>A	p.S111R	Sub	missense
r.1175_117(c.335_338d	p.Y112fs*1		Del	frameshift
r.1174u>g	c.334T>G	p.Y112D	Sub	missense
r.1174u>a	c.334T>A	p.Y112N	Sub	missense
r.1176_118(c.336_340+	p.?		Del	ess_splice
r.1176c>a	c.336C>A	p.Y112*	Sub	nonsense
r.1178_117(c.338_339d	p.G114fs*17		Del	frameshift
r.1177c>u	c.337C>T	p.R113*	Sub	nonsense
r.1177c>u	c.337C>T	p.R113*	Sub	nonsense
r.1177c>u	c.337C>T	p.R113*	Sub	nonsense
r.1180delG	c.340delG	p.G114fs*4	Del	frameshift
r.1180delG	c.340delG	p.G114fs*4	Del	frameshift
r.1180delG	c.340delG	p.G114fs*4	Del	frameshift
r.1180g>c	c.340G>C	p.G114R	Sub	missense
r.1180g>c	c.340G>C	p.G114R	Sub	missense
r.1180g>u	c.340G>T	p.G114C	Sub	missense
r.1180g>u	c.340G>T	p.G114C	Sub	missense
r.1180g>u	c.340G>T	p.G114C	Sub	missense
r.1180+1g>(c.340+1G>(p.?			Sub	ess_splice
r.1180+1g>(c.340+1G>/p.?			Sub	ess_splice
r.1180+1g>(c.340+1G>/p.?			Sub	ess_splice
r.1180+1g>(c.340+1G>/p.?			Sub	ess_splice
r.1180+1g>(c.340+1G>(p.?			Sub	ess_splice
r.1180+1g>(c.340+1G>/p.?			Sub	ess_splice
r.1180+1g>(c.340+1G> p.?			Sub	ess_splice
r.1180+1g>(c.340+1G> p.?			Sub	ess_splice
r.1180+1g>(c.340+1G>(p.?			Sub	ess_splice
r.1180+2u>(c.340+2T>Ap.?			Sub	ess_splice
r.1180+2u>(c.340+2T>Ap.?			Sub	ess_splice
r.1180+2u>(c.340+2T>Cp.?			Sub	ess_splice
r.1180+2u>(c.340+2T>Ap.?			Sub	ess_splice
r.1180+2u>(c.340+2T>Ap.?			Sub	ess_splice
r.1181-12_1c.341-12_34	p.?		Del	ess_splice
r.1181-10_1c.341-10_3	p.?		Del	ess_splice
r.1181-3_11c.341-3_34	p.?		Del	ess_splice
r.1181-2del(c.341-2del	p.?		Del	ess_splice
r.1181-2_11c.341-2_34	p.?		Del	ess_splice
r.1181-2_11c.341-2_34	p.?		Ins	ess_splice
r.1181-2a>gc.341-2A>G	p.?		Sub	ess_splice

r.1181-2a>c.c.341-2A>C p.?	Sub	ess_splice
r.1181-2a>u.c.341-2A>T p.?	Sub	ess_splice
r.1181-1_11c.341-1_35 ⁵ p.?	Del	ess_splice
r.1181-2a>g.c.341-2A>G p.?	Sub	ess_splice
r.1181-2a>g.c.341-2A>G p.?	Sub	ess_splice
r.1181-1g>u.c.341-1G>T p.?	Sub	ess_splice
r.1181-1g>u.c.341-1G>T p.?	Sub	ess_splice
r.1181-1g>a.c.341-1G>A p.?	Sub	ess_splice
r.1181-1g>u.c.341-1G>T p.?	Sub	ess_splice
r.1181-1g>a.c.341-1G>A p.?	Sub	ess_splice
r.1182_119 ⁵ c.342_355 ⁵ d.p.H115fs*12	Del	frameshift
r.1181g>c c.341G>C p.G114A	Sub	missense
r.1184_118 ⁵ c.344_349 ⁵ d.p.H115_W1	Del	inframe
r.1183c>u c.343C>T p.H115Y	Sub	missense
r.1183c>u c.343C>T p.H115Y	Sub	missense
r.1183c>u c.343C>T p.H115Y	Sub	missense
r.1183c>a c.343C>A p.H115N	Sub	missense
r.1183c>u c.343C>T p.H115Y	Sub	missense
r.1183c>u c.343C>T p.H115Y	Sub	missense
r.1183c>u c.343C>T p.H115Y	Sub	missense
r.1183c>a c.343C>A p.H115N	Sub	missense
r.1183c>u c.343C>T p.H115Y	Sub	missense
r.1183c>u c.343C>T p.H115Y	Sub	missense
r.1183c>u c.343C>T p.H115Y	Sub	missense
r.1183c>a c.343C>A p.H115N	Sub	missense
r.1185delC c.345delC p.L116fs*43	Del	frameshift
r.1184a>g c.344A>G p.H115R	Sub	missense
r.1184a>g c.344A>G p.H115R	Sub	missense
r.1184a>g c.344A>G p.H115R	Sub	missense
r.1185c>g c.345C>G p.H115Q	Sub	missense
r.1185c>g c.345C>G p.H115Q	Sub	missense
r.1185c>g c.345C>G p.H115Q	Sub	missense
r.1185c>g c.345C>G p.H115Q	Sub	missense
r.1187delU c.347delT p.W117fs*4;	Del	frameshift
r.1187delU c.347delT p.W117fs*4;	Del	frameshift
r.1186_118 ⁷ c.346_347 ⁷ in.p.W117fs*1;	Ins	frameshift
r.1187delU c.347delT p.W117fs*4;	Del	frameshift
r.1187delU c.347delT p.W117fs*4;	Del	frameshift
r.1190delG c.350delG p.W117fs*4;	Del	frameshift
r.1189u>g c.349T>G p.W117G	Sub	missense
r.1189u>g c.349T>G p.W117G	Sub	missense
r.1190g>u c.350G>T p.W117L	Sub	missense
r.1190g>a c.350G>A p.W117*	Sub	nonsense
r.1191g>u c.351G>T p.W117C	Sub	missense
r.1191g>u c.351G>T p.W117C	Sub	missense
r.1191g>u c.351G>T p.W117C	Sub	missense
r.1191g>a c.351G>A p.W117*	Sub	nonsense
r.1191g>a c.351G>A p.W117*	Sub	nonsense
r.1193u>c c.353T>C p.L118P	Sub	missense
r.1193u>c c.353T>C p.L118P	Sub	missense
r.1195delU c.355delT p.F119fs*40	Del	frameshift
r.1196_120 ² c.356_362 ² d.p.F119fs*38	Del	frameshift
r.1195u>c c.355T>C p.F119L	Sub	missense

r.1197c>g	c.357C>G	p.F119L	Sub	missense
r.1199delG	c.359delG	p.R120fs*3	Del	frameshift
r.1198a>g	c.358A>G	p.R120G	Sub	missense
r.1198a>g	c.358A>G	p.R120G	Sub	missense
r.1200delA	c.360delA	p.D121fs*3	Del	frameshift
r.1201_120	c.361_363d	p.D121delD	Del	inframe
r.1206_122	c.366_387d	p.G123fs*2	Del	frameshift
r.1206_121	c.366_370d	p.G123fs*7	Del	frameshift
r.1207delG	c.367delG	p.T124fs*35	Del	frameshift
r.1207delG	c.367delG	p.T124fs*35	Del	frameshift
r.1207delG	c.367delG	p.T124fs*35	Del	frameshift
r.1207delG	c.367delG	p.T124fs*35	Del	frameshift
r.1208_120	c.368_369in	p.G127fs*7	Ins	frameshift
r.1210_121	c.370_371d	p.H125fs*6	Del	frameshift
r.1210delA	c.370delA	p.T124fs*35	Del	frameshift
r.1213_122	c.373_381d	p.H125_G12	Del	inframe
r.1214_122	c.374_383d	p.H125fs*31	Del	frameshift
r.1215_121	c.375_376d	p.H125fs*6	Del	frameshift
r.1216delG	c.376delG	p.D126fs*3	Del	frameshift
r.1223delU	c.383delT	p.L129fs*30	Del	frameshift
r.1223delU	c.383delT	p.L129fs*30	Del	frameshift
r.1223u>a	c.383T>A	p.L128H	Sub	missense
r.1223u>c	c.383T>C	p.L128P	Sub	missense
r.1227delG	c.387delG	p.V130fs*29	Del	frameshift
r.1228g>c	c.388G>C	p.V130L	Sub	missense
r.1228g>u	c.388G>T	p.V130F	Sub	missense
r.1228g>u	c.388G>T	p.V130F	Sub	missense
r.1228g>u	c.388G>T	p.V130F	Sub	missense
r.1228g>c	c.388G>C	p.V130L	Sub	missense
r.1229u>a	c.389T>A	p.V130D	Sub	missense
r.1229u>a	c.389T>A	p.V130D	Sub	missense
r.1229u>a	c.389T>A	p.V130D	Sub	missense
r.1231delA	c.391delA	p.N131fs*2	Del	frameshift
r.1232_123	c.392_394d	p.N131_Q1	Del	inframe
r.1231a>u	c.391A>T	p.N131Y	Sub	missense
r.1234_125	c.394_415d	p.Q132fs*2	Del	frameshift
r.1233c>a	c.393C>A	p.N131K	Sub	missense
r.1235delA	c.395delA	p.T133fs*26	Del	frameshift
r.1235delA	c.395delA	p.T133fs*26	Del	frameshift
r.1234c>u	c.394C>T	p.Q132*	Sub	nonsense
r.1236_124	c.396_404d	p.T133_L13	Del	inframe
r.1235a>c	c.395A>C	p.Q132P	Sub	missense
r.1237a>c	c.397A>C	p.T133P	Sub	missense
r.1238_123	c.398_399in	p.E134fs*1	Ins	frameshift
r.1238_123	c.398_399in	p.E134fs*1	Ins	frameshift
r.1241_124	c.401_404d	p.E134fs*24	Del	frameshift
r.1240_124	c.400_401in	p.L135fs*9	Ins	frameshift
r.1241delA	c.401delA	p.E134fs*25	Del	frameshift
r.1240_124	c.400_401in	p.F136fs*9	Ins	frameshift
r.1240g>u	c.400G>T	p.E134*	Sub	nonsense
r.1240g>u	c.400G>T	p.E134*	Sub	nonsense
r.1240g>u	c.400G>T	p.E134*	Sub	nonsense
r.1242_124	c.402_404d	p.L135delL	Del	inframe

r.1242_124	c.402_404d	p.L135del	Del	inframe
r.1244_124	c.404_405in	p.F136fs*8	Ins	frameshift
r.1244u>a	c.404T>A	p.L135*	Sub	nonsense
r.1245_124	c.405_406in	p.V137fs*7	Ins	frameshift
r.1246delU	c.406delT	p.F136fs*23	Del	frameshift
r.1245_124	c.405_406in	p.V137fs*9	Ins	frameshift
r.1246delU	c.406delT	p.F136fs*23	Del	frameshift
r.1245_124	c.405_406in	p.V137fs*7	Ins	frameshift
r.1246u>g	c.406T>G	p.F136V	Sub	missense
r.1246u>g	c.406T>G	p.F136V	Sub	missense
r.1246u>g	c.406T>G	p.F136V	Sub	missense
r.1247u>c	c.407T>C	p.F136S	Sub	missense
r.1247u>c	c.407T>C	p.F136S	Sub	missense
r.1249_125	c.409_412d	p.V137fs*21	Del	frameshift
r.1249_125	c.409_410in	p.S139fs*22	Ins	frameshift
r.1253_125	c.413_414d	p.P138fs*5	Del	frameshift
r.1254_125	c.414_415in	p.N141fs*1	Ins	frameshift
r.1257delU	c.417delT	p.L140fs*19	Del	frameshift
r.1261delA	c.421delA	p.N141fs*18	Del	frameshift
r.1261delA	c.421delA	p.N141fs*18	Del	frameshift
r.1262_126	c.422_426d	p.N141fs*31	Del	frameshift
r.1267delG	c.427delG	p.D143fs*1	Del	frameshift
r.1270delG	c.430delG	p.G144fs*1	Del	frameshift
r.1273_127	c.433_434in	p.P146fs*28	Ins	frameshift
r.1273c>u	c.433C>T	p.Q145*	Sub	nonsense
r.1273c>u	c.433C>T	p.Q145*	Sub	nonsense
r.1273c>u	c.433C>T	p.Q145*	Sub	nonsense
r.1275_129	c.435_458d	p.I147_P15	Del	inframe
r.1276delC	c.436delC	p.P146fs*13	Del	frameshift
r.1278delU	c.438delT	p.I147fs*12	Del	frameshift
r.1278_129	c.438_451d	p.I147fs*22	Del	frameshift
r.1279delA	c.439delA	p.I147fs*12	Del	frameshift
r.1279delA	c.439delA	p.I147fs*12	Del	frameshift
r.1279delA	c.439delA	p.I147fs*12	Del	frameshift
r.1279delA	c.439delA	p.I147fs*12	Del	frameshift
r.1279delA	c.439delA	p.I147fs*12	Del	frameshift
r.1279delA	c.439delA	p.I147fs*12	Del	frameshift
r.1280delU	c.440delT	p.F148fs*11	Del	frameshift
r.1279_128	c.439_440in	p.A149fs*25	Ins	frameshift
r.1280delU	c.440delT	p.F148fs*11	Del	frameshift
r.1280delU	c.440delT	p.F148fs*11	Del	frameshift
r.1280delU	c.440delT	p.F148fs*11	Del	frameshift
r.1280delU	c.440delT	p.F148fs*11	Del	frameshift
r.1280_128	c.440_441d	p.F148fs*25	Del	frameshift
r.1279_128	c.439_440in	p.A149fs*25	Ins	frameshift
r.1280delU	c.440delT	p.F148fs*11	Del	frameshift
r.1280delU	c.440delT	p.F148fs*11	Del	frameshift
r.1286c>a	c.446C>A	p.A149D	Sub	missense
r.1289_129	c.449_453d	p.I151fs*21	Del	frameshift
r.1288_128	c.448_449in	p.N150fs*24	Ins	frameshift
r.1290_129	c.450_453d	p.N150fs*8	Del	frameshift
r.1291a>u	c.451A>T	p.I151F	Sub	missense
r.1293_129	c.453_454d	p.L153fs*20	Del	frameshift
r.1293_129	c.453_454d	p.L153fs*20	Del	frameshift

r.1292u>c	c.452T>C	p.I151T	Sub	missense
r.1292u>a	c.452T>A	p.I151N	Sub	missense
r.1292u>c	c.452T>C	p.I151T	Sub	missense
r.1292u>c	c.452T>C	p.I151T	Sub	missense
r.1292u>c	c.452T>C	p.I151T	Sub	missense
r.1292u>g	c.452T>G	p.I151S	Sub	missense
r.1292u>c	c.452T>C	p.I151T	Sub	missense
r.1299_1300	c.459_460del	p.P154fs*19	Del	frameshift
r.1298u>c	c.458T>C	p.L153P	Sub	missense
r.1298u>c	c.458T>C	p.L153P	Sub	missense
r.1300_1301	c.460_461del	p.P154fs*19	Del	frameshift
r.1302_1303	c.462_463del	p.T157fs*16	Del	frameshift
r.1301c>u	c.461C>T	p.P154L	Sub	missense
r.1301c>u	c.461C>T	p.P154L	Sub	missense
r.1301c>u	c.461C>T	p.P154L	Sub	missense
r.1303g>a	c.463G>A	p.V155M	Sub	missense
r.1303g>c	c.463G>C	p.V155L	Sub	missense
r.1303g>a	c.463G>A	p.V155M	Sub	missense
r.1303g>a	c.463G>A	p.V155M	Sub	missense
r.1303+2del	c.463+2del	p.?	Del	ess_splice
r.1303+1_11	c.463+1_46	p.?	Ins	ess_splice
r.1303+1g>c	c.463+1G>A	p.?	Sub	ess_splice
r.1303+1g>c	c.463+1G>A	p.?	Sub	ess_splice
r.1303+2u>c	c.463+2T>C	p.?	Sub	ess_splice
r.1303+2u>c	c.463+2T>C	p.?	Sub	ess_splice
r.1304-7_13	c.464-7_465	p.?	Del	ess_splice
r.1304-1_13	c.464-1_471	p.?	Del	ess_splice
r.1304-2a>g	c.464-2A>G	p.?	Sub	ess_splice
r.1304-1del	c.464-1del	p.?	Del	ess_splice
r.1304-2a>g	c.464-2A>G	p.?	Sub	ess_splice
r.1304-1del	c.464-1del	p.?	Del	ess_splice
r.1304-2a>g	c.464-2A>G	p.?	Sub	ess_splice
r.1304-1g>a	c.464-1G>A	p.?	Sub	ess_splice
r.1304-1g>c	c.464-1G>C	p.?	Sub	ess_splice
r.1304-1g>c	c.464-1G>C	p.?	Sub	ess_splice
r.1304-1g>a	c.464-1G>A	p.?	Sub	ess_splice
r.1304-1g>a	c.464-1G>A	p.?	Sub	ess_splice
r.1304-1g>a	c.464-1G>A	p.?	Sub	ess_splice
r.1304-1g>c	c.464-1G>C	p.?	Sub	ess_splice
r.1305_1306	c.465_466in	p.T157fs*3	Ins	frameshift
r.1306_1307	c.466_467del	p.T157fs*16	Del	frameshift
r.1307delA	c.467delA	p.Y156fs*3	Del	frameshift
r.1309_1310	c.469_474del	p.T157_L15	Del	inframe
r.1308u>a	c.468T>A	p.Y156*	Sub	nonsense
r.1310_1311	c.470_471del	p.L158fs*15	Del	frameshift
r.1311delU	c.471delT	p.L158fs*1	Del	frameshift
r.1312delC	c.472delC	p.L158fs*1	Del	frameshift
r.1312_1313	c.472_473in	p.K159fs*15	Ins	frameshift
r.1312_1313	c.472_473in	p.K159fs*15	Ins	frameshift
r.1312c>g	c.472C>G	p.L158V	Sub	missense
r.1312c>g	c.472C>G	p.L158V	Sub	missense
r.1313u>c	c.473T>C	p.L158P	Sub	missense
r.1313u>a	c.473T>A	p.L158Q	Sub	missense

r.1313u>g	c.473T>G	p.L158R	Sub	missense
r.1313u>a	c.473T>A	p.L158Q	Sub	missense
r.1313u>a	c.473T>A	p.L158Q	Sub	missense
r.1315delA	c.475delA	p.E160fs*10	Del	frameshift
r.1314_1315c.474_475in	p.E160fs*14	Ins	frameshift	frameshift
r.1317_1318c.477_478del	p.E160fs*13	Del	frameshift	frameshift
r.1318_1320c.478_480del	p.E160delE	Del	inframe	inframe
r.1317a>u	c.477A>T	p.K159N	Sub	missense
r.1319delA	c.479delA	p.E160fs*10	Del	frameshift
r.1318g>u	c.478G>T	p.E160*	Sub	nonsense
r.1321c>u	c.481C>T	p.R161*	Sub	nonsense
r.1321c>u	c.481C>T	p.R161*	Sub	nonsense
r.1321c>u	c.481C>T	p.R161*	Sub	nonsense
r.1321c>u	c.481C>T	p.R161*	Sub	nonsense
r.1321c>u	c.481C>T	p.R161*	Sub	nonsense
r.1321c>u	c.481C>T	p.R161*	Sub	nonsense
r.1321c>u	c.481C>T	p.R161*	Sub	nonsense
r.1321c>u	c.481C>T	p.R161*	Sub	nonsense
r.1323delA	c.483delA	p.C162fs*8	Del	frameshift
r.1322g>c	c.482G>C	p.R161P	Sub	missense
r.1324_1333c.484_493del	p.C162fs*5	Del	frameshift	frameshift
r.1324_1325c.484_485in	p.V165fs*8	Ins	frameshift	frameshift
r.1324u>c	c.484T>C	p.C162R	Sub	missense
r.1325g>a	c.485G>A	p.C162Y	Sub	missense
r.1325g>a	c.485G>A	p.C162Y	Sub	missense
r.1325g>a	c.485G>A	p.C162Y	Sub	missense
r.1325g>a	c.485G>A	p.C162Y	Sub	missense
r.1327_1328c.487_488del	p.L163fs*10	Del	frameshift	frameshift
r.1326c>g	c.486C>G	p.C162W	Sub	missense
r.1329delC	c.489delC	p.Q164fs*6	Del	frameshift
r.1328u>c	c.488T>C	p.L163P	Sub	missense
r.1330c>u	c.490C>T	p.Q164*	Sub	nonsense
r.1330c>u	c.490C>T	p.Q164*	Sub	nonsense
r.1330c>u	c.490C>T	p.Q164*	Sub	nonsense
r.1330c>u	c.490C>T	p.Q164*	Sub	nonsense
r.1331a>c	c.491A>C	p.Q164P	Sub	missense
r.1333_1334c.493_494in	p.V166fs*8	Ins	frameshift	frameshift
r.1338delC	c.498delC	p.R167fs*3	Del	frameshift
r.1338delC	c.498delC	p.R167fs*3	Del	frameshift
r.1338delC	c.498delC	p.R167fs*3	Del	frameshift
r.1339_1340c.499_501del	p.R167delR	Del	inframe	inframe
r.1340delG	c.500delG	p.S168fs*2	Del	frameshift
r.1341_1342c.501_506del	p.S168_L16	Del	inframe	inframe
r.1340g>u	c.500G>T	p.R167L	Sub	missense
r.1340g>a	c.500G>A	p.R167Q	Sub	missense
r.1344delC	c.504delC	p.L169fs*1	Del	frameshift
r.1344delC	c.504delC	p.L169fs*1	Del	frameshift
r.1345_1346c.505_509del	p.L169fs*3	Del	frameshift	frameshift
r.1346_1355c.506_516del	p.L169fs*83	Del	frameshift	frameshift
r.1346delU	c.506delT	p.L169fs*33	Del	frameshift
r.1347_1365c.507_525del	p.V170fs*26	Del	frameshift	frameshift
r.1346u>c	c.506T>C	p.L169P	Sub	missense
r.1346u>c	c.506T>C	p.L169P	Sub	missense
r.1346u>c	c.506T>C	p.L169P	Sub	missense

r.1346u>c	c.506T>C	p.L169P	Sub	missense
r.1346u>c	c.506T>C	p.L169P	Sub	missense
r.1346u>c	c.506T>C	p.L169P	Sub	missense
r.1348_1356	c.508_516d	p.V170_P17	Del	inframe
r.1350_1368	c.510_529d	p.K171fs*78	Del	frameshift
r.1349u>a	c.509T>A	p.V170D	Sub	missense
r.1354delC	c.514delC	p.P172fs*30	Del	frameshift
r.1355_1356	c.515_516d	p.P172fs*83	Del	frameshift
r.1356_1361	c.516_521d	p.E173_N17	Del	inframe
r.1356_1360	c.516_520d	p.E173fs*81	Del	frameshift
r.1356_1362	c.516_522d	p.E173fs*27	Del	frameshift
r.1357_1372	c.517_532d	p.E173fs*24	Del	frameshift
r.1358delA	c.518delA	p.E173fs*29	Del	frameshift
r.1357g>u	c.517G>T	p.E173*	Sub	nonsense
r.1360delA	c.520delA	p.N174fs*28	Del	frameshift
r.1360delA	c.520delA	p.N174fs*28	Del	frameshift
r.1360delA	c.520delA	p.N174fs*28	Del	frameshift
r.1359_1360	c.519_520in	p.N174fs*82	Ins	frameshift
r.1361_1362	c.521_522in	p.Y175fs*81	Ins	frameshift
r.1361_1362	c.521_522in	p.Y175fs*81	Ins	frameshift
r.1362delU	c.522delT	p.Y175fs*27	Del	frameshift
r.1361_1362	c.521_522in	p.Y175fs*81	Ins	frameshift
r.1363_1364	c.523_524d	p.Y175fs*80	Del	frameshift
r.1363_1364	c.523_524in	p.Y175_R17	Ins	inframe
r.1365delC	c.525delC	p.Y175fs*1	Del	frameshift
r.1365c>a	c.525C>A	p.Y175*	Sub	nonsense
r.1365c>a	c.525C>A	p.Y175*	Sub	nonsense
r.1365c>g	c.525C>G	p.Y175*	Sub	nonsense
r.1368_1369	c.528_529d	p.R177fs*78	Del	frameshift
r.1370_1371	c.530_533d	p.L178fs*23	Del	frameshift
r.1370delG	c.530delG	p.R177fs*25	Del	frameshift
r.1369a>u	c.529A>T	p.R177*	Sub	nonsense
r.1369a>u	c.529A>T	p.R177*	Sub	nonsense
r.1373_1396	c.533_556d	p.L178_E18	Del	inframe
r.1372_1373	c.532_533in	p.D179fs*24	Ins	frameshift
r.1373_1374	c.533_534d	p.L178fs*77	Del	frameshift
r.1373_1374	c.533_534d	p.L178fs*77	Del	frameshift
r.1373u>g	c.533T>G	p.L178R	Sub	missense
r.1373u>c	c.533T>C	p.L178P	Sub	missense
r.1373u>c	c.533T>C	p.L178P	Sub	missense
r.1380delC	c.540delC	p.I180fs*22	Del	frameshift
r.1383_1384	c.543_544in	p.R182fs*21	Ins	frameshift
r.1388c>a	c.548C>A	p.S183*	Sub	nonsense
r.1388c>a	c.548C>A	p.S183*	Sub	nonsense
r.1388c>a	c.548C>A	p.S183*	Sub	nonsense
r.1392delC	c.552delC	p.Y185fs*17	Del	frameshift
r.1392delC	c.552delC	p.Y185fs*17	Del	frameshift
r.1391u>g	c.551T>G	p.L184R	Sub	missense
r.1391u>g	c.551T>G	p.L184R	Sub	missense
r.1396delG	c.556delG	p.E186fs*16	Del	frameshift
r.1397delA	c.557delA	p.D187fs*15	Del	frameshift
r.1396g>u	c.556G>T	p.E186*	Sub	nonsense
r.1396g>u	c.556G>T	p.E186*	Sub	nonsense

r.1399_1401c.559_561d	p.D187delD	Del	inframe	
r.1401_1402c.561_562d	p.L188fs*67	Del	frameshift	
r.1402delC	c.562delC	p.L188fs*14	Del	frameshift
r.1402delC	c.562delC	p.L188fs*14	Del	frameshift
r.1404delG	c.564delG	p.E189fs*13	Del	frameshift
r.1403u>c	c.563T>C	p.L188P	Sub	missense
r.1403u>a	c.563T>A	p.L188Q	Sub	missense
r.1405g>u	c.565G>T	p.E189*	Sub	nonsense
r.1410_1411c.570_573d	p.H191fs*10	Del	frameshift	
r.1411_1430c.571_590d	p.H191fs*58	Del	frameshift	
r.1413delC	c.573delC	p.P192fs*10	Del	frameshift
r.1415_1416c.575_576in	p.N193fs*63	Ins	frameshift	
r.1415_1416c.575_576in	p.N193fs*63	Ins	frameshift	
r.1415_1416c.575_576in	p.N193fs*63	Ins	frameshift	
r.1419_1420c.579_580in	p.V194fs*62	Ins	frameshift	
r.1420_1421c.580_586d	p.V194fs*6	Del	frameshift	
r.1424_1425c.584_585d	p.K196fs*59	Del	frameshift	
r.1423c>u	c.583C>T	p.Q195*	Sub	nonsense
r.1423c>u	c.583C>T	p.Q195*	Sub	nonsense
r.1426_1427c.586_587d	p.K196fs*59	Del	frameshift	
r.1426delA	c.586delA	p.D197fs*5	Del	frameshift
r.1428_1429c.588_589d	p.D197fs*58	Del	frameshift	
r.1438_1439c.598_599in	p.L201fs*55	Ins	frameshift	
r.1444_1445c.604_605d	p.Q203fs*52	Del	frameshift	
r.1445_1446c.605_609d	p.T202fs*52	Del	frameshift	
r.1454_1455c.614_618d	p.I206fs*48	Del	frameshift	
r.1455_1456c.615_616in	p.I206fs*50	Ins	frameshift	
r.1456_1457c.616_617in	p.A207fs*49	Ins	frameshift	
r.1464_1465c.624_625in	p.Q209fs*47	Ins	frameshift	
r.1468_1469c.628_629in	p.M211fs*48	Ins	frameshift	
r.1471_1472c.631_632d	p.M211fs*44	Del	frameshift	
r.1471_1472c.631_632in	p.M211fs*48	Ins	frameshift	
r.1475_1476c.635_636d	p.D213fs*42	Del	frameshift	
r.1477_1478c.637_638in	p.D213fs*43	Ins	frameshift	
r.1478_1479c.638_639in	p.*214fs*42	Ins	frameshift	
r.1478_1479c.638_639in	p.*214fs*42	Ins	frameshift	
r.1482a>g	c.642A>G	p.*214W	Sub	stop_lost
r.413u>a	c.128T>A	p.L43*	Sub	nonsense
r.126u>a	c.2T>A	p.M1K	Sub	start_lost
r.127g>u	c.3G>T	p.M1I	Sub	start_lost
r.134delA	c.10delA	p.N4fs*48	Del	frameshift
r.453delG	c.279delG	p.G95fs*124	Del	frameshift
r.878_879in	c.754_755in	p.G255fs*3	Ins	frameshift
r.1318c>u	c.1144C>T	p.Q382*	Sub	nonsense
r.1274c>u	c.1150C>T	p.Q384*	Sub	nonsense
r.1331c>u	c.1207C>T	p.Q403*	Sub	nonsense
r.1531c>u	c.1357C>T	p.Q453*	Sub	nonsense
r.1552_1564c.1428_1441	p.Q476fs*10	Del	frameshift	
r.1569g>a	c.1445G>A	p.W482*	Sub	nonsense
r.2762c>u	c.2638C>T	p.Q880*	Sub	nonsense
r.4846g>a	c.4722G>A	p.W1574*	Sub	nonsense
r.5084g>u	c.4960G>T	p.E1654*	Sub	nonsense
r.5474g>u	c.5350G>T	p.E1784*	Sub	nonsense

r.6259g>a	c.6135G>A	p.W2045*	Sub	nonsense
r.11137c>u	c.10114C>T	p.Q3372*	Sub	nonsense
r.1792delU	c.769delT	p.S257fs*26	Del	frameshift
r.1316_1341	c.1022_1041	p.E341fs*12	Del	frameshift
r.3801_3817	c.3670_3681	p.T1224fs*5	Del	frameshift

Supplementary Table 13: Associations of ccRCC risk factors with COSMIC mutator

Risk factor	Signatures/TMB	OR (95% CI)	p-value
Age of diagnosis	SBS1	1.6 (1.4-1.8)	3.4e-12
	SBS2	1.0 (0.5-2.1)	5.6e-01
	SBS4	1.4 (1.2-1.6)	5.3e-08
	SBS5	1.9 (1.5-2.4)	7.1e-07
	SBS12	1.2 (0.9-1.7)	2.0e-01
	SBS13	1.1 (0.9-1.3)	4.0e-01
	SBS18	0.8 (0.7-1.0)	8.5e-02
	SBS21	0.7 (0.3-1.5)	2.7e-01
	SBS22a	2.0 (1.4-2.8)	2.4e-05
	SBS22b	2.1 (1.6-3.0)	3.0e-07
	SBS40a	1.7 (1.5-1.9)	1.0e-15
	SBS40b	2.0 (1.8-2.3)	7.8e-27
	SBS40c	1.0 (0.8-1.2)	7.9e-01
	SBS44	0.7 (0.4-1.5)	3.1e-01
	DBS2	1.3 (1.1-1.4)	7.8e-05
	DBS4	1.3 (1.1-1.6)	8.8e-03
	DBS9	1.1 (0.8-1.5)	5.0e-01
	DBS20	1.5 (1.2-2.1)	1.7e-03
	DBS_C	1.2 (1.0-1.4)	8.7e-02
	ID1	1.3 (1.2-1.5)	1.2e-05
	ID2	0.9 (0.6-1.3)	3.6e-01
	ID3	1.1 (0.8-1.5)	4.0e-01
	ID5	2.3 (1.9-2.6)	2.1e-28
	ID8	1.7 (1.5-2.0)	8.2e-15
	ID9	1.3 (0.6-3.3)	4.9e-01
	ID11	1.2 (0.7-2.4)	4.1e-01
	ID12	0.5 (0.2-0.9)	2.0e-02
	ID23	1.5 (0.9-2.5)	9.6e-02
	SBS burden	2.8 (2.4-3.3)	7.3e-49
	DBS burden	2.1 (1.8-2.4)	3.3e-26
ID burden	2.5 (2.1-2.9)	1.7e-32	
Sex	SBS1	1.0 (0.7-1.3)	7.8e-01
	SBS2	1.2 (0.3-7.2)	5.6e-01
	SBS4	0.8 (0.6-1.1)	1.7e-01
	SBS5	0.9 (0.5-1.5)	7.0e-01
	SBS12	1.1 (0.5-2.5)	7.9e-01
	SBS13	1.7 (1.1-2.5)	9.8e-03
	SBS18	1.8 (1.0-3.1)	3.7e-02
	SBS21	0.9 (0.2-5.2)	5.9e-01
	SBS22a	0.6 (0.3-1.3)	1.7e-01
	SBS22b	0.9 (0.5-1.8)	5.2e-01
	SBS40a	0.9 (0.7-1.2)	6.1e-01
	SBS40b	1.8 (1.3-2.5)	9.3e-05
	SBS40c	1.0 (0.7-1.5)	9.0e-01
	SBS44	1.1 (0.2-6.2)	5.9e-01
	DBS2	1.4 (1.0-1.8)	2.9e-02
DBS4	1.0 (0.6-1.7)	8.3e-01	

	DBS9	1.5 (0.7-3.4)	2.3e-01
	DBS20	0.8 (0.4-1.5)	4.5e-01
	DBS_C	1.5 (0.9-2.5)	8.5e-02
	ID1	1.2 (0.9-1.6)	2.3e-01
	ID2	1.0 (0.4-3.0)	5.8e-01
	ID3	0.9 (0.5-1.8)	6.6e-01
	ID5	1.7 (1.2-2.3)	1.1e-03
	ID8	1.5 (1.1-2.1)	9.9e-03
	ID9	1.2 (0.2-12.3)	6.6e-01
	ID11	0.6 (0.1-2.4)	4.0e-01
	ID12	0.6 (0.1-2.4)	3.5e-01
	ID23	1.1 (0.4-3.6)	6.5e-01
	SBS burden	2.0 (1.4-2.7)	3.1e-05
	DBS burden	1.6 (1.2-2.2)	3.7e-03
	ID burden	1.8 (1.4-2.5)	1.3e-04
Stage	SBS1	1.6 (1.4-1.9)	1.3e-12
	SBS2	4.8 (1.6-39.4)	1.5e-03
	SBS4	0.8 (0.7-0.9)	3.1e-05
	SBS5	0.9 (0.7-1.1)	4.2e-01
	SBS12	0.9 (0.6-1.4)	6.6e-01
	SBS13	1.8 (1.5-2.1)	2.6e-12
	SBS18	1.9 (1.5-2.4)	2.0e-07
	SBS21	1.4 (0.7-3.2)	2.8e-01
	SBS22a	0.8 (0.5-1.2)	2.2e-01
	SBS22b	1.1 (0.8-1.5)	3.7e-01
	SBS40a	1.3 (1.1-1.4)	3.3e-04
	SBS40b	0.9 (0.8-1.1)	4.6e-01
	SBS40c	0.8 (0.6-0.9)	7.3e-03
	SBS44	1.4 (0.7-3.2)	2.8e-01
	DBS2	1.1 (1.0-1.2)	1.6e-01
	DBS4	1.1 (0.9-1.4)	2.2e-01
	DBS9	0.6 (0.4-0.9)	1.1e-02
	DBS20	1.2 (0.9-1.6)	2.7e-01
	DBS_C	0.8 (0.6-1.0)	3.0e-02
	ID1	1.5 (1.4-1.8)	5.0e-11
	ID2	1.7 (1.1-2.6)	1.4e-02
	ID3	0.8 (0.5-1.1)	9.4e-02
	ID5	0.8 (0.7-0.9)	1.0e-04
	ID8	0.9 (0.7-1.0)	4.1e-02
	ID9	1.3 (0.6-3.3)	3.9e-01
	ID11	1.1 (0.5-2.1)	4.8e-01
	ID12	1.2 (0.5-2.4)	4.9e-01
	ID23	1.5 (0.9-2.6)	1.3e-01
	SBS burden	1.3 (1.1-1.5)	1.3e-04
	DBS burden	0.9 (0.8-1.0)	1.3e-01
	ID burden	1.0 (0.8-1.1)	5.7e-01
Tobacco smoking	SBS1	1.0 (0.7-1.3)	9.3e-01
	SBS2	0.9 (0.2-4.8)	5.9e-01
	SBS4	1.9 (1.5-2.6)	5.3e-06
	SBS5	1.5 (0.9-2.6)	1.2e-01

SBS12	0.7 (0.3-1.7)	4.3e-01
SBS13	1.2 (0.8-1.7)	3.1e-01
SBS18	0.8 (0.5-1.2)	2.5e-01
SBS21	1.4 (0.3-8.3)	5.2e-01
SBS22a	1.0 (0.5-2.1)	7.5e-01
SBS22b	1.1 (0.6-2.3)	5.0e-01
SBS40b	1.4 (1.1-1.9)	1.7e-02
SBS40a	1.1 (0.8-1.5)	5.5e-01
SBS40c	0.7 (0.5-1.1)	1.5e-01
SBS44	1.8 (0.4-10.2)	3.6e-01
DBS2	2.1 (1.6-2.8)	2.4e-07
DBS4	1.0 (0.6-1.6)	8.4e-01
DBS9	0.9 (0.5-1.9)	7.8e-01
DBS20	0.8 (0.4-1.6)	4.8e-01
DBS_C	1.2 (0.7-1.8)	5.0e-01
ID1	0.7 (0.5-0.9)	1.9e-02
ID2	0.7 (0.3-2.0)	4.1e-01
ID3	1.6 (0.8-3.3)	1.4e-01
ID5	0.9 (0.7-1.2)	6.1e-01
ID8	1.0 (0.7-1.4)	9.9e-01
ID9	2.1 (0.3-23.1)	4.1e-01
ID11	0.2 (0.0-1.2)	7.9e-02
ID12	0.7 (0.1-2.8)	4.3e-01
ID23	0.8 (0.2-2.3)	5.3e-01
SBS burden	1.2 (0.8-1.6)	3.7e-01
DBS burden	1.1 (0.8-1.5)	5.7e-01
ID burden	0.8 (0.6-1.2)	2.9e-01
BMI		
SBS1	1.0 (0.9-1.1)	6.5e-01
SBS2	0.8 (0.4-1.6)	3.4e-01
SBS4	1.0 (0.9-1.1)	8.9e-01
SBS5	1.2 (0.9-1.5)	2.4e-01
SBS12	0.9 (0.6-1.3)	5.2e-01
SBS13	0.9 (0.7-1.0)	1.4e-01
SBS18	0.9 (0.7-1.1)	3.8e-01
SBS21	0.8 (0.4-1.8)	4.1e-01
SBS22a	1.0 (0.7-1.4)	7.8e-01
SBS22b	0.9 (0.7-1.2)	3.5e-01
SBS40a	0.9 (0.8-1.0)	1.8e-01
SBS40b	1.1 (0.9-1.2)	2.8e-01
SBS40c	1.1 (0.9-1.3)	2.9e-01
SBS44	0.8 (0.4-1.7)	4.0e-01
DBS2	1.0 (0.8-1.1)	5.4e-01
DBS4	1.1 (0.9-1.3)	5.0e-01
DBS9	1.0 (0.7-1.4)	8.0e-01
DBS20	0.8 (0.6-1.1)	2.1e-01
DBS_C	0.9 (0.7-1.1)	2.2e-01
ID1	0.9 (0.8-1.0)	1.6e-02
ID2	1.0 (0.6-1.6)	5.6e-01
ID3	0.9 (0.7-1.2)	3.6e-01
ID5	1.0 (0.9-1.2)	5.1e-01

	ID8	1.0 (0.9-1.2)	7.0e-01
	ID9	0.9 (0.4-2.3)	6.3e-01
	ID11	1.2 (0.6-2.4)	4.5e-01
	ID12	0.8 (0.4-1.5)	3.0e-01
	ID23	1.1 (0.6-1.8)	6.5e-01
	SBS burden	0.9 (0.8-1.0)	1.8e-01
	DBS burden	1.0 (0.9-1.1)	9.3e-01
	ID burden	1.1 (0.9-1.2)	4.0e-01
Hypertension	SBS1	1.0 (0.8-1.4)	8.1e-01
	SBS2	1.1 (0.2-5.5)	5.8e-01
	SBS4	1.3 (0.9-1.7)	1.2e-01
	SBS5	1.4 (0.9-2.4)	1.7e-01
	SBS12	0.9 (0.4-1.9)	6.7e-01
	SBS13	0.8 (0.6-1.2)	3.3e-01
	SBS18	0.6 (0.4-1.1)	8.5e-02
	SBS21	0.9 (0.2-5.1)	6.0e-01
	SBS22a	1.0 (0.5-2.1)	7.6e-01
	SBS22b	1.1 (0.5-2.1)	5.5e-01
	SBS40a	1.0 (0.8-1.4)	8.5e-01
	SBS40b	1.3 (1.0-1.8)	6.0e-02
	SBS40c	0.8 (0.5-1.2)	2.1e-01
	SBS44	0.7 (0.1-3.1)	4.6e-01
	DBS2	1.0 (0.8-1.3)	8.9e-01
	DBS4	0.7 (0.5-1.1)	1.6e-01
	DBS9	0.7 (0.3-1.4)	2.9e-01
	DBS20	1.0 (0.5-1.9)	7.6e-01
	DBS_C	0.8 (0.5-1.3)	4.2e-01
	ID1	0.8 (0.6-1.1)	2.0e-01
	ID2	1.0 (0.3-2.7)	5.8e-01
	ID3	0.6 (0.3-1.2)	1.7e-01
	ID5	1.3 (1.0-1.8)	6.3e-02
	ID8	1.7 (1.2-2.3)	1.1e-03
	ID9	1.6 (0.3-16.3)	5.3e-01
	ID11	2.7 (0.7-15.1)	1.5e-01
	ID12	0.4 (0.0-2.0)	2.2e-01
	ID23	1.5 (0.5-4.6)	3.8e-01
	SBS burden	1.0 (0.8-1.4)	8.7e-01
	DBS burden	1.2 (0.9-1.7)	1.6e-01
	ID burden	1.4 (1.0-1.8)	5.1e-02
Diabetes	SBS1	0.8 (0.6-1.3)	3.8e-01
	SBS2	0.4 (0.0-3.7)	3.6e-01
	SBS4	1.1 (0.7-1.7)	6.7e-01
	SBS5	1.4 (0.7-2.6)	3.1e-01
	SBS12	2.5 (0.9-6.4)	6.2e-02
	SBS13	0.8 (0.4-1.3)	3.0e-01
	SBS18	0.9 (0.4-2.0)	8.0e-01
	SBS21	0.8 (0.0-7.5)	5.9e-01
	SBS22a	1.5 (0.5-4.0)	4.4e-01
	SBS22b	1.1 (0.4-2.8)	5.7e-01
	SBS40a	0.8 (0.5-1.1)	1.8e-01

	SBS40b	1.0 (0.7-1.6)	9.0e-01
	SBS40c	1.2 (0.7-2.1)	5.7e-01
	SBS44	0.5 (0.0-4.8)	4.9e-01
	DBS2	1.0 (0.6-1.4)	8.4e-01
	DBS4	0.9 (0.5-1.8)	8.2e-01
	DBS9	1.0 (0.3-2.5)	8.3e-01
	DBS20	1.8 (0.7-4.4)	1.8e-01
	DBS_C	1.0 (0.5-1.9)	8.8e-01
	ID1	0.9 (0.6-1.3)	5.5e-01
	ID2	0.7 (0.1-2.9)	4.7e-01
	ID3	0.7 (0.2-1.7)	4.1e-01
	ID5	1.3 (0.9-2.1)	2.1e-01
	ID8	1.3 (0.8-2.2)	2.8e-01
	ID9	3.4 (0.5-22.6)	1.7e-01
	ID11	2.9 (0.5-13.5)	1.9e-01
	ID12	0.7 (0.0-7.1)	5.8e-01
	ID23	3.4 (0.7-15.9)	1.1e-01
	SBS burden	1.4 (0.9-2.1)	1.7e-01
	DBS burden	1.2 (0.7-1.8)	5.1e-01
	ID burden	1.2 (0.8-1.9)	4.5e-01
PFOA	SBS1	0.9 (0.8-1.1)	2.5e-01
	SBS2	0.8 (0.3-2.1)	4.3e-01
	SBS4	1.1 (0.9-1.3)	3.7e-01
	SBS5	1.2 (0.9-1.7)	2.3e-01
	SBS12	1.5 (0.8-2.7)	1.7e-01
	SBS13	0.8 (0.7-1.0)	1.2e-01
	SBS18	0.7 (0.5-1.0)	4.7e-02
	SBS21	1.7 (0.6-5.5)	2.5e-01
	SBS22a	1.0 (0.6-1.7)	7.7e-01
	SBS22b	1.0 (0.6-1.5)	5.9e-01
	SBS40a	0.9 (0.7-1.0)	1.2e-01
	SBS40b	0.9 (0.8-1.1)	2.8e-01
	SBS40c	0.9 (0.7-1.1)	3.8e-01
	SBS44	2.1 (0.8-6.0)	1.3e-01
	DBS2	0.9 (0.8-1.1)	2.1e-01
	DBS4	1.2 (0.9-1.7)	1.4e-01
	DBS9	0.8 (0.5-1.3)	3.5e-01
	DBS20	1.0 (0.6-1.5)	7.7e-01
	DBS_C	0.9 (0.7-1.3)	7.1e-01
	ID1	0.8 (0.7-0.9)	7.9e-03
	ID2	1.0 (0.5-1.9)	5.8e-01
	ID3	1.1 (0.7-1.7)	6.2e-01
	ID5	1.0 (0.9-1.2)	7.8e-01
	ID8	0.9 (0.7-1.1)	3.2e-01
	ID9	1.1 (0.4-3.7)	7.2e-01
	ID11	1.1 (0.5-2.5)	6.3e-01
	ID12	0.7 (0.2-2.0)	3.7e-01
	ID23	0.9 (0.4-2.0)	7.2e-01
	SBS burden	0.8 (0.6-0.9)	1.3e-02
	DBS burden	1.0 (0.9-1.2)	7.3e-01

	ID burden	0.9 (0.8-1.1)	5.3e-01
Family history of RCC	SBS1	1.1 (0.6-2.0)	8.6e-01
	SBS2	1.6 (0.0-15.7)	5.4e-01
	SBS4	1.1 (0.6-2.1)	7.7e-01
	SBS5	0.2 (0.0-1.6)	1.3e-01
	SBS12	0.1 (0.0-1.7)	1.3e-01
	SBS13	0.8 (0.3-1.8)	6.4e-01
	SBS18	1.3 (0.3-3.6)	6.6e-01
	SBS21	2.4 (0.0-25.4)	4.8e-01
	SBS22a	1.9 (0.3-10.4)	4.3e-01
	SBS22b	0.8 (0.1-4.6)	5.4e-01
	SBS40a	1.3 (0.7-2.5)	4.6e-01
	SBS40b	1.1 (0.6-2.2)	7.8e-01
	SBS40c	2.3 (1.0-5.1)	4.2e-02
	SBS44	1.9 (0.0-18.0)	5.4e-01
	DBS2	1.4 (0.8-2.7)	2.8e-01
	DBS4	1.0 (0.3-2.6)	8.6e-01
	DBS9	2.5 (0.7-6.7)	1.2e-01
	DBS20	0.9 (0.1-3.8)	7.3e-01
	DBS_C	1.6 (0.6-3.7)	3.0e-01
	ID1	1.8 (0.9-3.4)	8.1e-02
	ID2	2.0 (0.2-9.1)	3.8e-01
	ID3	2.9 (0.8-7.8)	8.2e-02
	ID5	1.2 (0.6-2.4)	6.6e-01
	ID8	1.0 (0.5-2.1)	9.7e-01
	ID9	1.0 (0.0-9.8)	7.1e-01
	ID11	1.2 (0.0-11.2)	6.5e-01
	ID12	1.7 (0.0-16.4)	5.6e-01
	ID23	1.4 (0.0-14.8)	6.7e-01
	SBS burden	1.6 (0.8-3.3)	2.2e-01
	DBS burden	1.3 (0.7-2.7)	4.1e-01
	ID burden	1.1 (0.5-2.2)	8.0e-01

Logistic regressions with signature presence as a dependent variable, unless signature is present in >75% c
p-values are shown for the corresponding variables in logistic regressions. Raw values are shown, i.e. with
Covariates include sex, age of diagnosis, country of residence and tobacco smoking status.

Results passing multiple comparisons are highlighted in bold.

al signatures and mutational burden

of samples in which case the above/below median approach is used.
out adjustment for multiple comparisons.

Supplementary Table 14: Associations of ccRCC risk factors with de novo muta

Risk factor	Signatures/TMB	OR (95% CI)	p-value
Age of diagnosis	SBS_A	1.4 (1.2-1.6)	1.2e-06
	SBS_B	1.0 (0.9-1.1)	9.5e-01
	SBS_C	1.3 (1.1-1.4)	1.2e-04
	SBS_D	1.4 (1.1-1.7)	3.6e-03
	SBS_E	1.5 (1.3-1.7)	2.8e-09
	SBS_F	1.0 (0.9-1.2)	6.3e-01
	SBS_G	1.2 (1.1-1.3)	5.4e-03
	SBS_I	1.7 (1.3-2.3)	1.1e-04
	SBS_J	1.0 (0.9-1.1)	9.5e-01
	SBS_K	1.0 (0.9-1.1)	6.7e-01
	SBS_L	0.9 (0.7-1.2)	5.5e-01
	SBS_M	1.4 (1.1-1.7)	5.7e-03
	DBS_A	1.3 (1.1-1.5)	2.0e-04
	DBS_B	1.3 (1.2-1.5)	1.1e-06
	DBS_C	1.1 (0.9-1.4)	2.3e-01
	DBS_D	1.6 (1.2-2.0)	2.1e-04
	ID_A	2.1 (1.8-2.4)	3.2e-25
	ID_B	1.3 (1.2-1.5)	3.3e-06
	ID_C	1.7 (1.5-1.9)	1.4e-14
	ID_D	1.3 (1.1-1.6)	6.0e-04
ID_E	1.0 (0.9-1.2)	8.7e-01	
ID_F	1.3 (1.2-1.5)	8.9e-07	
ID_G	0.6 (0.5-0.7)	2.4e-09	
SBS burden	2.8 (2.4-3.3)	7.3e-49	
DBS burden	2.1 (1.8-2.4)	3.3e-26	
ID burden	2.5 (2.1-2.9)	1.7e-32	
Sex	SBS_A	1.5 (1.1-2.0)	1.6e-02
	SBS_B	0.8 (0.6-1.0)	5.6e-02
	SBS_C	1.0 (0.7-1.3)	8.9e-01
	SBS_D	0.7 (0.4-1.2)	2.5e-01
	SBS_E	0.8 (0.6-1.0)	9.7e-02
	SBS_F	1.3 (0.9-1.7)	1.1e-01
	SBS_G	1.9 (1.4-2.5)	1.8e-05
	SBS_I	1.1 (0.6-2.1)	6.6e-01
	SBS_J	1.0 (0.8-1.3)	8.9e-01
	SBS_K	1.1 (0.8-1.4)	5.9e-01
	SBS_L	0.9 (0.5-1.7)	7.8e-01
	SBS_M	1.2 (0.7-1.9)	5.8e-01
	DBS_A	1.2 (0.9-1.6)	3.1e-01
	DBS_B	1.3 (1.0-1.8)	4.1e-02
	DBS_C	1.2 (0.8-1.9)	3.9e-01
	DBS_D	0.8 (0.5-1.4)	4.2e-01
	ID_A	2.0 (1.5-2.7)	8.9e-06
	ID_B	1.4 (1.0-1.8)	2.2e-02
	ID_C	1.1 (0.8-1.4)	7.4e-01
	ID_D	1.2 (0.8-1.8)	3.8e-01
ID_E	1.0 (0.7-1.4)	9.4e-01	

	ID_F	1.2 (0.9-1.6)	2.0e-01
	ID_G	0.7 (0.5-0.9)	1.9e-02
	SBS burden	2.0 (1.4-2.7)	3.1e-05
	DBS burden	1.6 (1.2-2.2)	3.7e-03
	ID burden	1.8 (1.4-2.5)	1.3e-04
Stage	SBS_A	0.8 (0.7-0.9)	1.3e-03
	SBS_B	1.1 (1.0-1.3)	3.4e-02
	SBS_C	0.9 (0.8-1.0)	3.7e-02
	SBS_D	1.0 (0.8-1.3)	6.6e-01
	SBS_E	1.0 (0.9-1.1)	8.3e-01
	SBS_F	0.7 (0.7-0.9)	1.2e-05
	SBS_G	1.6 (1.4-1.9)	6.5e-13
	SBS_I	1.3 (1.0-1.8)	4.9e-02
	SBS_J	1.2 (1.1-1.4)	1.5e-03
	SBS_K	1.5 (1.3-1.7)	1.0e-08
	SBS_L	1.2 (0.9-1.6)	1.4e-01
	SBS_M	0.8 (0.6-1.0)	8.3e-02
	DBS_A	0.9 (0.7-1.0)	2.6e-02
	DBS_B	1.0 (0.9-1.2)	5.3e-01
	DBS_C	0.8 (0.7-1.0)	4.7e-02
	DBS_D	1.1 (0.8-1.4)	3.7e-01
	ID_A	0.8 (0.7-0.9)	5.5e-03
	ID_B	0.8 (0.7-0.9)	7.0e-05
	ID_C	0.9 (0.8-1.0)	5.7e-02
	ID_D	1.1 (0.9-1.3)	4.4e-01
	ID_E	1.3 (1.1-1.5)	1.5e-03
	ID_F	1.6 (1.4-1.8)	1.0e-11
	ID_G	0.9 (0.7-1.0)	1.6e-01
	SBS burden	1.3 (1.1-1.5)	1.3e-04
	DBS burden	0.9 (0.8-1.0)	1.3e-01
	ID burden	1.0 (0.8-1.1)	5.7e-01
Tobacco smoking	SBS_A	0.7 (0.5-1.0)	6.1e-02
	SBS_B	0.8 (0.6-1.0)	9.4e-02
	SBS_C	1.9 (1.5-2.6)	3.8e-06
	SBS_D	1.4 (0.8-2.3)	2.5e-01
	SBS_E	1.3 (0.9-1.7)	1.1e-01
	SBS_F	0.8 (0.6-1.1)	1.3e-01
	SBS_G	1.0 (0.7-1.3)	9.5e-01
	SBS_I	0.8 (0.4-1.6)	5.4e-01
	SBS_J	1.3 (1.0-1.7)	7.7e-02
	SBS_K	0.7 (0.6-1.0)	4.2e-02
	SBS_L	1.3 (0.7-2.4)	3.2e-01
	SBS_M	0.7 (0.4-1.2)	1.9e-01
	DBS_A	0.7 (0.5-1.0)	3.8e-02
	DBS_B	2.0 (1.5-2.6)	1.8e-06
	DBS_C	1.6 (1.0-2.5)	4.2e-02
	DBS_D	0.7 (0.4-1.3)	2.9e-01
	ID_A	0.9 (0.7-1.3)	6.4e-01
	ID_B	0.9 (0.7-1.2)	3.6e-01
	ID_C	1.3 (0.9-1.7)	1.3e-01

	ID_D	1.8 (1.2-2.7)	2.7e-03
	ID_E	1.2 (0.9-1.7)	2.2e-01
	ID_F	0.8 (0.6-1.1)	2.4e-01
	ID_G	0.8 (0.6-1.2)	3.2e-01
	SBS burden	1.2 (0.8-1.6)	3.7e-01
	DBS burden	1.1 (0.8-1.5)	5.7e-01
	ID burden	0.8 (0.6-1.2)	2.9e-01
BMI	SBS_A	1.3 (1.1-1.5)	5.8e-04
	SBS_B	0.9 (0.8-1.1)	2.3e-01
	SBS_C	1.0 (0.9-1.2)	7.5e-01
	SBS_D	1.1 (0.9-1.4)	3.2e-01
	SBS_E	1.1 (0.9-1.2)	2.6e-01
	SBS_F	1.1 (1.0-1.2)	1.9e-01
	SBS_G	0.9 (0.8-1.0)	1.5e-01
	SBS_I	0.9 (0.7-1.2)	5.8e-01
	SBS_J	0.9 (0.8-1.0)	8.6e-02
	SBS_K	1.0 (0.9-1.1)	8.0e-01
	SBS_L	0.8 (0.6-1.1)	1.9e-01
	SBS_M	1.0 (0.8-1.2)	8.0e-01
	DBS_A	1.1 (1.0-1.3)	6.3e-02
	DBS_B	1.0 (0.9-1.1)	7.7e-01
	DBS_C	0.9 (0.7-1.1)	1.7e-01
	DBS_D	0.7 (0.6-0.9)	1.6e-02
	ID_A	1.1 (1.0-1.3)	1.7e-01
	ID_B	1.1 (1.0-1.3)	7.1e-02
	ID_C	1.0 (0.9-1.1)	8.5e-01
	ID_D	1.0 (0.9-1.2)	6.1e-01
	ID_E	0.9 (0.7-1.0)	6.4e-02
	ID_F	0.9 (0.8-1.0)	2.7e-02
	ID_G	0.8 (0.7-1.0)	3.1e-02
	SBS burden	0.9 (0.8-1.0)	1.8e-01
	DBS burden	1.0 (0.9-1.1)	9.3e-01
	ID burden	1.1 (0.9-1.2)	4.0e-01
Hypertension	SBS_A	1.3 (0.9-1.7)	1.1e-01
	SBS_B	1.0 (0.8-1.3)	9.9e-01
	SBS_C	1.1 (0.9-1.5)	3.5e-01
	SBS_D	1.0 (0.6-1.6)	7.7e-01
	SBS_E	1.2 (0.9-1.6)	2.3e-01
	SBS_F	0.9 (0.7-1.2)	6.9e-01
	SBS_G	1.0 (0.7-1.3)	8.1e-01
	SBS_I	1.0 (0.5-1.9)	7.6e-01
	SBS_J	0.9 (0.7-1.2)	3.7e-01
	SBS_K	1.1 (0.8-1.4)	7.1e-01
	SBS_L	0.6 (0.3-1.1)	1.2e-01
	SBS_M	1.4 (0.9-2.4)	1.5e-01
	DBS_A	1.2 (0.9-1.7)	1.7e-01
	DBS_B	1.1 (0.8-1.5)	4.5e-01
	DBS_C	0.7 (0.4-1.0)	6.6e-02
	DBS_D	1.0 (0.5-1.7)	7.3e-01
	ID_A	1.4 (1.0-1.8)	4.5e-02

	ID_B	1.0 (0.8-1.4)	8.0e-01
	ID_C	1.0 (0.8-1.4)	8.3e-01
	ID_D	1.1 (0.8-1.6)	5.2e-01
	ID_E	0.8 (0.6-1.1)	2.5e-01
	ID_F	0.8 (0.6-1.0)	5.3e-02
	ID_G	0.8 (0.6-1.2)	3.5e-01
	SBS burden	1.0 (0.8-1.4)	8.7e-01
	DBS burden	1.2 (0.9-1.7)	1.6e-01
	ID burden	1.4 (1.0-1.8)	5.1e-02
Diabetes	SBS_A	1.5 (0.9-2.3)	1.1e-01
	SBS_B	1.0 (0.7-1.5)	9.8e-01
	SBS_C	0.9 (0.6-1.3)	6.1e-01
	SBS_D	1.2 (0.6-2.5)	5.9e-01
	SBS_E	1.1 (0.7-1.6)	7.9e-01
	SBS_F	1.2 (0.8-1.8)	3.6e-01
	SBS_G	1.0 (0.7-1.5)	8.7e-01
	SBS_I	0.8 (0.3-2.0)	6.0e-01
	SBS_J	0.8 (0.5-1.1)	1.7e-01
	SBS_K	0.8 (0.5-1.2)	2.7e-01
	SBS_L	0.7 (0.3-1.7)	4.7e-01
	SBS_M	1.6 (0.8-2.9)	1.7e-01
	DBS_A	1.1 (0.7-1.7)	6.0e-01
	DBS_B	0.8 (0.5-1.1)	1.9e-01
	DBS_C	0.9 (0.5-1.6)	7.5e-01
	DBS_D	1.2 (0.5-2.7)	5.6e-01
	ID_A	1.4 (0.8-2.3)	2.4e-01
	ID_B	1.5 (1.0-2.3)	4.2e-02
	ID_C	1.0 (0.6-1.4)	8.1e-01
	ID_D	1.0 (0.6-1.7)	9.6e-01
	ID_E	0.5 (0.3-0.8)	8.5e-03
	ID_F	0.9 (0.6-1.3)	5.1e-01
	ID_G	0.6 (0.3-1.0)	7.0e-02
	SBS burden	1.4 (0.9-2.1)	1.7e-01
	DBS burden	1.2 (0.7-1.8)	5.1e-01
	ID burden	1.2 (0.8-1.9)	4.5e-01
PFOA	SBS_A	1.0 (0.9-1.3)	6.1e-01
	SBS_B	1.2 (1.0-1.4)	1.1e-01
	SBS_C	1.0 (0.9-1.2)	9.4e-01
	SBS_D	1.2 (0.9-1.7)	2.6e-01
	SBS_E	1.1 (0.9-1.3)	2.7e-01
	SBS_F	0.9 (0.8-1.1)	3.6e-01
	SBS_G	0.8 (0.7-1.0)	1.3e-02
	SBS_I	0.9 (0.6-1.3)	5.2e-01
	SBS_J	0.9 (0.8-1.1)	4.7e-01
	SBS_K	0.9 (0.7-1.0)	1.2e-01
	SBS_L	1.0 (0.7-1.4)	8.0e-01
	SBS_M	1.0 (0.7-1.4)	8.8e-01
	DBS_A	1.0 (0.8-1.2)	6.6e-01
	DBS_B	0.9 (0.8-1.1)	4.4e-01
	DBS_C	0.9 (0.7-1.2)	4.6e-01

	DBS_D	1.0 (0.7-1.4)	7.8e-01
	ID_A	1.1 (0.9-1.3)	3.5e-01
	ID_B	1.1 (0.9-1.2)	5.4e-01
	ID_C	1.1 (0.9-1.3)	4.5e-01
	ID_D	1.0 (0.8-1.3)	9.6e-01
	ID_E	0.8 (0.6-0.9)	1.4e-02
	ID_F	0.8 (0.7-1.0)	4.8e-02
	ID_G	1.1 (0.9-1.3)	4.6e-01
	SBS burden	0.8 (0.6-0.9)	1.3e-02
	DBS burden	1.0 (0.9-1.2)	7.3e-01
	ID burden	0.9 (0.8-1.1)	5.3e-01
Family history of RCC	SBS_A	0.7 (0.3-1.4)	3.4e-01
	SBS_B	1.2 (0.6-2.2)	6.0e-01
	SBS_C	1.4 (0.7-2.8)	2.7e-01
	SBS_D	2.5 (0.9-6.8)	7.7e-02
	SBS_E	1.0 (0.5-2.0)	9.1e-01
	SBS_F	0.8 (0.4-1.6)	5.2e-01
	SBS_G	0.8 (0.4-1.5)	5.3e-01
	SBS_I	0.7 (0.1-3.3)	5.8e-01
	SBS_J	1.0 (0.5-1.9)	9.3e-01
	SBS_K	1.1 (0.6-2.1)	7.6e-01
	SBS_L	1.1 (0.3-3.2)	7.7e-01
	SBS_M	1.3 (0.4-3.3)	6.4e-01
	DBS_A	1.4 (0.7-2.8)	2.9e-01
	DBS_B	1.6 (0.8-3.1)	1.8e-01
	DBS_C	0.7 (0.2-1.9)	4.8e-01
	DBS_D	1.3 (0.2-4.5)	6.6e-01
	ID_A	0.7 (0.3-1.5)	3.2e-01
	ID_B	0.9 (0.5-1.7)	6.9e-01
	ID_C	1.0 (0.5-1.9)	9.9e-01
	ID_D	1.2 (0.5-2.7)	6.5e-01
	ID_E	1.0 (0.5-2.0)	9.4e-01
	ID_F	1.4 (0.8-2.7)	2.7e-01
	ID_G	2.6 (1.3-5.1)	9.2e-03
	SBS burden	1.6 (0.8-3.3)	2.2e-01
	DBS burden	1.3 (0.7-2.7)	4.1e-01
	ID burden	1.1 (0.5-2.2)	8.0e-01

Logistic regressions with signature presence as a dependent variable, unless signature is pre p-values are shown for the corresponding variables in logistic regressions. Raw values are shown. Covariates include sex, age of diagnosis, country of residence and tobacco smoking status. Results passing multiple comparisons are highlighted in bold.

ditional signatures and mutational burden

present in >75% of samples in which case the above/below median approach is used.
known, i.e. without adjustment for multiple comparisons.

Supplementary Table 15: Associations of Polygenic Risk Scores (PRS) with mutations

PRS instrument	Signatures/TMB	OR (95% CI)	p-value
BMI	SBS1	0.96 (0.82-1.13)	6.7e-01
	SBS4	0.93 (0.81-1.08)	3.5e-01
	SBS5	0.95 (0.73-1.24)	7.3e-01
	SBS12	1.03 (0.63-1.70)	9.0e-01
	SBS13	1.07 (0.89-1.29)	4.9e-01
	SBS18	1.16 (0.89-1.52)	2.7e-01
	SBS22a	0.81 (0.58-1.13)	2.1e-01
	SBS22b	0.95 (0.70-1.28)	7.3e-01
	SBS40a	1.14 (0.90-1.44)	2.8e-01
	SBS40b	1.09 (0.88-1.34)	4.5e-01
	SBS40c	0.91 (0.74-1.13)	4.0e-01
	DBS2	0.96 (0.83-1.12)	6.2e-01
	DBS4	1.16 (0.91-1.48)	2.2e-01
	DBS9	0.75 (0.53-1.06)	1.0e-01
	DBS20	1.01 (0.73-1.39)	9.7e-01
	DBS_C	0.97 (0.77-1.23)	8.2e-01
	ID1	0.93 (0.77-1.12)	4.4e-01
	ID2	1.30 (0.75-2.28)	3.5e-01
	ID3	0.92 (0.65-1.28)	6.1e-01
	ID5	1.24 (0.93-1.64)	1.4e-01
	ID8	1.11 (0.95-1.31)	1.9e-01
	ID23	0.81 (0.46-1.44)	4.8e-01
	SBS burden	1.04 (0.89-1.22)	6.3e-01
DBS burden	0.92 (0.79-1.08)	3.2e-01	
ID burden	0.90 (0.77-1.05)	1.6e-01	
Systolic blood pressure	SBS1	0.98 (0.84-1.15)	8.3e-01
	SBS4	1.03 (0.89-1.18)	6.8e-01
	SBS5	0.98 (0.76-1.28)	9.1e-01
	SBS12	1.18 (0.72-1.92)	5.2e-01
	SBS13	1.09 (0.91-1.32)	3.5e-01
	SBS18	1.36 (1.04-1.77)	2.5e-02
	SBS22a	0.94 (0.69-1.29)	7.1e-01
	SBS22b	1.11 (0.83-1.48)	4.9e-01
	SBS40a	1.07 (0.85-1.35)	5.5e-01
	SBS40b	1.08 (0.87-1.33)	4.8e-01
	SBS40c	0.88 (0.72-1.09)	2.5e-01
	DBS2	1.06 (0.92-1.23)	4.0e-01
	DBS4	0.79 (0.62-1.00)	5.3e-02
	DBS9	0.88 (0.62-1.25)	4.7e-01
	DBS20	0.92 (0.68-1.25)	6.1e-01
	DBS_C	0.91 (0.73-1.15)	4.4e-01
	ID1	1.14 (0.95-1.37)	1.6e-01
	ID2	1.14 (0.68-1.92)	6.2e-01
	ID3	0.96 (0.69-1.35)	8.3e-01
	ID5	0.95 (0.71-1.27)	7.2e-01
	ID8	1.19 (1.01-1.40)	3.9e-02
	ID23	0.99 (0.58-1.67)	9.7e-01
	SBS burden	1.02 (0.87-1.20)	8.0e-01
DBS burden	0.96 (0.82-1.13)	6.5e-01	

	ID burden	1.07 (0.92-1.25)	3.9e-01
Diastolic blood pressure	SBS1	1.02 (0.86-1.19)	8.5e-01
	SBS4	1.00 (0.87-1.15)	9.9e-01
	SBS5	1.18 (0.90-1.54)	2.3e-01
	SBS12	1.03 (0.64-1.67)	8.9e-01
	SBS13	1.05 (0.87-1.26)	6.3e-01
	SBS18	1.24 (0.95-1.61)	1.2e-01
	SBS22a	0.79 (0.57-1.08)	1.4e-01
	SBS22b	1.01 (0.76-1.35)	9.3e-01
	SBS40a	1.22 (0.97-1.54)	9.6e-02
	SBS40b	1.00 (0.81-1.24)	9.8e-01
	SBS40c	0.92 (0.74-1.13)	4.1e-01
	DBS2	1.06 (0.91-1.22)	4.7e-01
	DBS4	0.94 (0.74-1.19)	5.9e-01
	DBS9	0.75 (0.53-1.07)	1.1e-01
	DBS20	0.94 (0.70-1.28)	7.1e-01
	DBS_C	0.92 (0.73-1.16)	4.7e-01
	ID1	0.99 (0.82-1.19)	8.8e-01
	ID2	1.63 (0.95-2.78)	7.5e-02
	ID3	1.13 (0.80-1.59)	4.8e-01
	ID5	1.06 (0.79-1.41)	7.0e-01
	ID8	1.00 (0.85-1.18)	9.9e-01
	ID23	0.81 (0.46-1.42)	4.6e-01
	SBS burden	0.99 (0.85-1.16)	8.9e-01
DBS burden	0.92 (0.79-1.08)	3.1e-01	
ID burden	0.99 (0.85-1.16)	9.2e-01	
Fasting Glucose	SBS1	1.04 (0.89-1.22)	6.2e-01
	SBS4	0.97 (0.84-1.12)	6.8e-01
	SBS5	0.99 (0.76-1.30)	9.6e-01
	SBS12	0.92 (0.56-1.52)	7.5e-01
	SBS13	1.20 (0.99-1.45)	6.5e-02
	SBS18	1.01 (0.78-1.32)	9.3e-01
	SBS22a	1.28 (0.94-1.76)	1.2e-01
	SBS22b	1.20 (0.90-1.60)	2.2e-01
	SBS40a	0.99 (0.79-1.26)	9.6e-01
	SBS40b	1.01 (0.82-1.25)	9.0e-01
	SBS40c	1.17 (0.95-1.45)	1.4e-01
	DBS2	0.99 (0.85-1.14)	8.5e-01
	DBS4	0.94 (0.74-1.20)	6.3e-01
	DBS9	1.31 (0.91-1.91)	1.5e-01
	DBS20	1.05 (0.78-1.43)	7.3e-01
	DBS_C	1.16 (0.91-1.47)	2.4e-01
	ID1	0.89 (0.74-1.08)	2.4e-01
	ID2	1.47 (0.85-2.56)	1.7e-01
	ID3	1.04 (0.74-1.46)	8.2e-01
	ID5	1.02 (0.77-1.35)	9.0e-01
	ID8	1.09 (0.93-1.27)	3.1e-01
	ID23	1.44 (0.81-2.56)	2.1e-01
	SBS burden	1.06 (0.91-1.24)	4.6e-01
DBS burden	1.04 (0.88-1.22)	6.6e-01	
ID burden	1.00 (0.85-1.16)	9.5e-01	
Fasting Insulin	SBS1	0.98 (0.84-1.15)	8.2e-01

	SBS4	1.03 (0.89-1.18)	7.0e-01
	SBS5	0.84 (0.65-1.09)	1.9e-01
	SBS12	1.04 (0.64-1.69)	8.7e-01
	SBS13	0.99 (0.83-1.19)	9.3e-01
	SBS18	1.06 (0.81-1.37)	6.8e-01
	SBS22a	1.09 (0.79-1.50)	5.9e-01
	SBS22b	1.03 (0.77-1.37)	8.6e-01
	SBS40a	1.03 (0.82-1.31)	7.8e-01
	SBS40b	1.11 (0.89-1.38)	3.4e-01
	SBS40c	1.03 (0.83-1.26)	8.1e-01
	DBS2	0.98 (0.85-1.14)	8.1e-01
	DBS4	1.09 (0.86-1.37)	4.9e-01
	DBS9	1.03 (0.72-1.46)	8.9e-01
	DBS20	0.99 (0.73-1.34)	9.4e-01
	DBS_C	1.17 (0.93-1.48)	1.9e-01
	ID1	1.03 (0.85-1.23)	7.9e-01
	ID2	1.38 (0.82-2.33)	2.2e-01
	ID3	0.95 (0.68-1.32)	7.4e-01
	ID5	1.12 (0.83-1.50)	4.5e-01
	ID8	1.16 (0.98-1.37)	7.5e-02
	ID23	1.59 (0.87-2.88)	1.3e-01
	SBS burden	1.17 (1.01-1.37)	4.3e-02
	DBS burden	1.07 (0.91-1.25)	4.1e-01
	ID burden	1.19 (1.02-1.39)	2.6e-02
Tobacco smoking	SBS1	0.87 (0.74-1.02)	9.1e-02
	SBS4	1.00 (0.87-1.16)	9.6e-01
	SBS5	0.96 (0.74-1.26)	7.7e-01
	SBS12	0.87 (0.53-1.44)	5.9e-01
	SBS13	0.99 (0.82-1.19)	9.0e-01
	SBS18	0.93 (0.71-1.20)	5.7e-01
	SBS22a	0.97 (0.70-1.37)	8.8e-01
	SBS22b	1.23 (0.91-1.68)	1.8e-01
	SBS40a	1.08 (0.85-1.37)	5.1e-01
	SBS40b	0.96 (0.78-1.19)	7.0e-01
	SBS40c	0.94 (0.76-1.16)	5.8e-01
	DBS2	1.22 (1.05-1.42)	8.1e-03
	DBS4	1.13 (0.89-1.43)	3.1e-01
	DBS9	1.16 (0.81-1.66)	4.2e-01
	DBS20	1.35 (0.98-1.86)	6.7e-02
	DBS_C	0.90 (0.71-1.14)	3.7e-01
	ID1	1.06 (0.88-1.28)	5.6e-01
	ID2	0.93 (0.54-1.58)	7.9e-01
	ID3	1.13 (0.80-1.59)	5.0e-01
	ID5	0.85 (0.64-1.13)	2.7e-01
	ID8	0.96 (0.81-1.13)	6.0e-01
	ID23	1.26 (0.71-2.25)	4.3e-01
	SBS burden	0.99 (0.84-1.16)	8.6e-01
	DBS burden	1.06 (0.90-1.24)	4.7e-01
	ID burden	1.00 (0.86-1.17)	9.9e-01

Logistic regressions with signature presence as a dependent variable, unless signature is present in p-values are shown for the corresponding variables in logistic regressions. Raw values are shown, i.e. Covariates include sex, age of diagnosis, and first five principal components of the genetic ancestry

No results pass the multiple comparisons, yet the strongest association (DBS2 and tobacco smoking

il signatures

>75% of samples in which case the above/below median approach is used.
a. without adjustment for multiple comparisons.
PCA.

| status) is highlighted in bold.

Supplementary Table 16: Details of individual case collections

Collection/Study	Country	Region Covered	Type of Collection	Years of Collection
Mutographs	Brazil	National	Prospective	2018-2020
	Lithuania	Regional: Vilnius		
	Thailand	Regional: Hat Yai		
K1	Czech Republic	National	Retrospective	1999-2002
	Poland	Regional: Lodz		
	Romania	Regional: Bucharest		
	Russia	National		
K2	Czech Republic	National	Retrospective	2007-2016
	Romania	Regional: Bucharest		
	Russia	Regional: Moscow		
	Serbia	Regional: Belgrade		
Ontario Institute for Cancer Research	Canada	Regional: Toronto	Retrospective	2015-2017
Tumor Biobank National Cancer Center Research Institute	Japan	National	Retrospective	2013-2017
University of Leeds MultiRTB and Leeds NIHRBioRTB	United Kingdom	Regional: Leeds	Prospective and Retrospective	2008-2020

Supplementary Table 17: Genetic variants and proxies

GWAS Trait	N SNPs in 1000G EUR dataset
BMI	1456
Systolic blood pressure	273
Diastolic blood pressure	347
Fasting glucose	78
Fasting insulin	13
Tobacco smoking initiation	129

used to calculate the polygenic risk scores (PRS) of each genetic trait used in the

Proxies found/needed in ccRCC dataset	Final SNP List for PRS generation	VE(%)
35/41	1450	11.06
9/14	268	3.53
16/18	345	4.57
4/6	76	5.73
1/1	13	0.563
6/8	127	0.824

study

VE (%) of missing SNPs (n)
0.06 (6)
0.07 (5)
0.06 (2)
0.07 (2)
0.018 (-)
0.015 (2)