

# Metabolomic Data Analysis with MetaboAnalyst 3.0

User ID: guest1120692794357002823

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## 1 Background

MESA or Metabolite Set Enrichment Analysis is a way to identify biologically meaningful patterns that are significantly enriched in quantitative metabolomic data. In conventional approaches, metabolites are evaluated individually for their significance under conditions of study. Those compounds that have passed certain significance level are then combined to see if any meaningful patterns can be discerned. In contrast, MSEA directly investigates if a set of functionally related metabolites without the need to preselect compounds based on some arbitrary cut-off threshold. It has the potential to identify subtle but consistent changes among a group of related compounds, which may go undetected with the conventional approaches.

Essentially, MSEA is a metabolomic version of the popular GSEA (Gene Set Enrichment Analysis) software with its own collection of metabolite set libraries as well as an implementation of user-friendly web-interfaces. GSEA is widely used in genomics data analysis and has proven to be a powerful alternative to conventional approaches. For more information, please refer to the original paper by Subramanian A, and a nice review paper by Nam D, Kim SY.

## 2 MSEA Overview

Metabolite set enrichment analysis consists of four steps - data input, data processing, data analysis, and results download. Different analysis procedures are performed based on different input types. In addition, users can also browse and search the metabolite set libraries as well as upload their self-defined metabolite sets for enrichment analysis. Users can also perform metabolite name mapping between a variety of compound names, synonyms, and major database identifiers.

## 3 Data Input

There are three enrichment analysis algorithms offered by MSEA. Accordingly, three different types of data inputs are required by these three approaches:

- A list of important compound names - entered as a one column data (*Over Representation Analysis (ORA)*);
- A single measured biofluid (urine, blood, CSF) sample- entered as tab separated two-column data with the first column for compound name, and the second for concentration values (*Single Sample Profiling (SSP)*);
- A compound concentration table - entered as a comma separated (.csv) file with the each sample per row and each metabolite concentration per column. The first column is sample names and the second column for sample phenotype labels (*Quantitative Enrichment Analysis (QEA)*)

You selected Quantitative Enrichment Analysis (QEA) which requires a concentration table. This is the most common data format generated from quantitative metabolomics studies. The phenotype label can be discrete (binary or multi-class) or continuous.

## 4 Data Process

The first step is to standardize the compound labels. It is an essential step since the compound labels will be subsequently compared with compounds contained in the metabolite set library. MSEA has a built-in tool to convert between compound common names, synonyms, identifiers used in HMDB ID, PubChem, ChEBI, BiGG, METLIN, KEGG, or Reactome. **Table 1** shows the conversion results. Note: *1* indicates exact match, *2* indicates approximate match, and *0* indicates no match. A text file containing the result can be found in the downloaded file *name\_map.csv*

Table 1: Result from Compound Name Mapping

Query	Match
1 1,2-dilinoleoyl-GPC	NA
2 1,2-dioleoyl-GPC	NA
3 1,2-dioleoyl-GPE	NA
4 1,2-dipalmitoyl-GPC	NA
5 1,2-distearoyl-GPC	NA
6 1,5-anhydroglucitol	1,5-Anhydrosorbitol
7 1-(1-enyl-oleoyl)-GPE	NA
8 1-(1-enyl-palmitoyl)-2-arachidonoyl-GPC	NA
9 1-(1-enyl-palmitoyl)-2-arachidonoyl-GPE	NA
10 1-(1-enyl-palmitoyl)-2-linoleoyl-GPC	NA
11 1-(1-enyl-palmitoyl)-2-linoleoyl-GPE	NA
12 1-(1-enyl-palmitoyl)-2-oleoyl-GPC	NA
13 1-(1-enyl-palmitoyl)-2-oleoyl-GPE	NA
14 1-(1-enyl-palmitoyl)-2-palmitoleoyl-GPC	NA
15 1-(1-enyl-palmitoyl)-2-palmitoyl-GPC	NA
16 1-(1-enyl-palmitoyl)-GPC	NA
17 1-(1-enyl-palmitoyl)-GPE	NA
18 1-(1-enyl-stearoyl)-2-arachidonoyl-GPE	NA
19 1-(1-enyl-stearoyl)-2-linoleoyl-GPE	NA
20 1-(1-enyl-stearoyl)-2-oleoyl-GPE	NA
21 1-(1-enyl-stearoyl)-GPE	NA
22 1-(3-aminopropyl)-2-pyrrolidone	NA
23 1-arachidonoyl-GPC	NA
24 1-arachidonoyl-GPE	NA
25 1-arachidonoyl-GPI	NA
26 1-lignoceroyl-GPC	NA
27 1-linolenoyl-GPC	NA
28 1-linoleoyl-2-arachidonoyl-GPC	NA
29 1-linoleoyl-GPC	NA
30 1-linoleoyl-GPE	NA
31 1-linoleoyl-GPI	NA
32 1-linoleoylglycerol	NA
33 1-methylguanidine	Methylguanidine
34 1-methylhistidine	1-Methylhistidine
35 1-methylimidazoleacetate	NA
36 1-methylnicotinamide	1-Methylnicotinamide
37 1-oleoyl-2-linoleoyl-glycerol	NA
38 1-oleoyl-2-linoleoyl-GPC	NA
39 1-oleoyl-2-linoleoyl-GPE	NA
40 1-oleoyl-3-linoleoyl-glycerol	NA
41 1-oleoyl-GPC	NA
42 1-oleoyl-GPE	NA
43 1-oleoyl-GPI	NA
44 1-oleoyl-GPS	NA
45 1-oleoylglycerol	NA
46 1-palmitoleoyl-2-linoleoyl-GPC	NA
47 1-palmitoleoyl-2-oleoyl-glycerol	NA
48 1-palmitoleoyl-3-oleoyl-glycerol	NA
49 1-palmitoleoyl-GPC	NA
50 1-palmitoleoylglycerol	NA
51 1-palmitoyl-2-arachidonoyl-GPC	NA
52 1-palmitoyl-2-arachidonoyl-GPE	NA
53 1-palmitoyl-2-linoleoyl-glycerol	NA
54 1-palmitoyl-2-linoleoyl-GPC	NA
55 1-palmitoyl-2-linoleoyl-GPE	NA
56 1-palmitoyl-2-oleoyl-GPC	NA
57 1-palmitoyl-2-oleoyl-GPE	NA
58 1-palmitoyl-2-oleoyl-GPG	NA
59 1-palmitoyl-2-palmitoleoyl-GPC	NA
60 1-palmitoyl-2-stearoyl-GPC	NA
61 1-palmitoyl-3-linoleoyl-glycerol	NA
62 1-palmitoyl-GPC	NA

63	1-palmitoyl-GPE	NA
64	1-palmitoyl-GPG	NA
65	1-palmitoyl-GPI	NA
66	1-stearoyl-2-arachidonoyl-GPC	NA
67	1-stearoyl-2-arachidonoyl-GPE	NA
68	1-stearoyl-2-arachidonoyl-GPI	NA
69	1-stearoyl-2-arachidonoyl-GPS	NA
70	1-stearoyl-2-linoleoyl-GPC	NA
71	1-stearoyl-2-linoleoyl-GPE	NA
72	1-stearoyl-2-oleoyl-GPC	NA
73	1-stearoyl-2-oleoyl-GPE	NA
74	1-stearoyl-2-oleoyl-GPS	NA
75	1-stearoyl-GPC	NA
76	1-stearoyl-GPE	NA
77	1-stearoyl-GPI	NA
78	1-stearoyl-GPS	NA
79	10-heptadecenoate	NA
80	10-nonadecenoate	NA
81	12,13-DiHOME	12,13-DHOME
82	12-HETE	12-HETE
83	15-HETE	15(S)-HETE
84	15-methylpalmitate	NA
85	16-hydroxypalmitate	NA
86	17-methylstearate	NA
87	2'-deoxycytidine	Deoxycytidine
88	2'-deoxyguanosine	Deoxyguanosine
89	2'-deoxyinosine	Deoxyinosine
90	2'-deoxyuridine	Deoxyuridine
91	2-aminoadipate	Aminoadipic acid
92	2-aminoheptanoate	NA
93	2-aminooctanoate	DL-2-Aminooctanoic acid
94	2-hydroxy-3-methylvalerate	2-Hydroxy-3-methylpentanoic acid
95	2-hydroxyadipate	2-Hydroxyadipic acid
96	2-hydroxybutyrate/2-hydroxyisobutyrate	NA
97	2-hydroxyglutarate	2-Hydroxyglutarate
98	2-hydroxystearate	NA
99	2-linoleoylglycerol	NA
100	2-methylbutyrylcarnitine	NA
101	2-methylbutyrylglycine	2-Methylbutyrylglycine
102	2-methylcitrate/homocitrate	NA
103	2-methylmalonyl carnitine	NA
104	2-oleoylglycerol	NA
105	2-palmitoleoyl-GPC	NA
106	2-palmitoyl-GPC	NA
107	2-stearoyl-GPE	NA
108	3-(4-hydroxyphenyl)lactate	3-(4-Hydroxyphenyl)lactate
109	3-aminoisobutyrate	3-Aminoisobutanoic acid
110	3-hydroxy-3-methylglutarate	3-Hydroxymethylglutaric acid
111	3-hydroxybutyrate	3-Hydroxybutyric acid
112	3-hydroxybutyrylcarnitine	NA
113	3-hydroxyisobutyrate	(S)-3-Hydroxyisobutyric acid
114	3-indoxyl	NA
115	3-methylcytidine	NA
116	3-methylhistidine	3-Methylhistidine
117	3-phosphoglycerate	3-Phosphoglyceric acid
118	3-ureidopropionate	Ureidopropionic acid
119	4-cholesten-3-one	Cholestenone
120	4-ethylphenylsulfate	NA
121	4-guanidinobutanoate	4-Guanidinobutanoic acid
122	4-hydroxy-nonenal-glutathione	NA
123	4-hydroxybutyrate	4-Hydroxybutyric acid
124	4-imidazoleacetate	Imidazoleacetic acid
125	4-vinylphenol sulfate	NA
126	5-aminovalerate	5-Aminopentanoic acid
127	5-dodecenoate	5-Dodecenoic acid
128	5-hydroxylysine	5-Hydroxylysine
129	5-methylthioadenosine	5'-Methylthioadenosine
130	5-oxoproline	Pyroglutamic acid
131	6-oxopiperidine-2-carboxylic acid	NA
132	6-phosphogluconate	6-Phosphogluconic acid
133	7-hydroxycholesterol	7b-Hydroxycholesterol
134	7-methylguanine	7-Methylguanine
135	9,10-DiHOME	9,10-DHOME
136	acetylcarnitine	L-Acetylcarnitine
137	acetylphosphate	Acetylphosphate
138	aconitate	NA
139	adenine	Adenine
140	adenosine	Adenosine
141	adenosine 2'-monophosphate	NA
142	adenosine 3',5'-diphosphate	Adenosine 3',5'-diphosphate
143	adenosine 3'-monophosphate	NA
144	adenosine 5'-diphosphoribose	Adenosine diphosphate ribose
145	adenosine 5'-monophosphate	Adenosine monophosphate
146	adrenate	Adrenic acid
147	alanine	Alanine
148	allantoin	Allantoin
149	alpha-hydroxyisocaproate	Leucinic acid

150	alpha-hydroxyisovalerate	2-Hydroxy-3-methylbutyric acid
151	alpha-ketoglutarate	NA
152	alpha-tocopherol	Alpha-Tocopherol
153	anserine	Anserine
154	arabitol/xylitol	NA
155	arabonate/xylonate	NA
156	arachidate	Arachidic acid
157	arachidonate	NA
158	arachidonoyl ethanolamide	NA
159	arginine	L-Arginine
160	argininosuccinate	Argininosuccinic acid
161	ascorbate	Ascorbic acid
162	asparagine	L-Asparagine
163	aspartate	L-Aspartic acid
164	azelate	Azelaic acid
165	behenoyl sphingomyelin	NA
166	beta-alanine	Beta-Alanine
167	beta-guanidinopropanoate	NA
168	beta-hydroxyisovaleroylcarnitine	NA
169	beta-muricholate	NA
170	betaine	Betaine
171	betaine aldehyde	Betaine aldehyde
172	butyrylcarnitine	Butyrylcarnitine
173	C-glycosyltryptophan	NA
174	campesterol	Campesterol
175	carboxyethyl-GABA	N-Carboxyethyl-g-aminobutyric acid
176	carnitine	Carnitine
177	carnosine	Carnosine
178	catechol sulfate	NA
179	cholesterol	Cholesterol
180	choline	Choline
181	choline phosphate	Phosphorylcholine
182	citrate	Citric acid
183	citrulline	Citrulline
184	corticosterone	Corticosterone
185	creatine	Creatine
186	creatine phosphate	Phosphocreatine
187	creatinine	Creatinine
188	cystathionine	L-Cystathionine
189	cysteine	Cysteine
190	cysteine s-sulfate	NA
191	cysteine sulfinic acid	3-Sulfinioalanine
192	cystine	L-Cystine
193	cytidine	Cytidine
194	cytidine 3'-monophosphate	NA
195	cytidine 5'-diphosphocholine	Citicoline
196	cytidine 5'-monophosphate	Cytidine monophosphate
197	cytidine 5'-monophospho-N-acetylneuraminic acid	NA
198	cytidine-5'-diphosphoethanolamine	NA
199	cytosine	Cytosine
200	decanoylcarnitine	Decanoylcarnitine
201	dehydroascorbate	Dehydroascorbate
202	deoxycarnitine	4-Trimethylammoniobutanoic acid
203	dihomo-linoleate	NA
204	dihomo-linolenate	NA
205	dihydroxyphenylalanine	NA
206	dihydroxyacetone	Dihydroxyacetone
207	dimethyl	NA
208	dimethylarginine	NA
209	dimethylglycine	Dimethylglycine
210	docosadienoate	NA
211	docosaehxaenoate	Docosaehxaenoic acid
212	docosapentaenoate	Docosapentaenoic acid
213	dopamine sulfate	NA
214	eicosapentaenoate	Eicosapentaenoic acid
215	eicosenoate	Eicosenoic acid
216	equol sulfate	NA
217	ergothioneine	Ergothioneine
218	erucate	NA
219	erythronate*	NA
220	ethylmalonate	Ethylmalonic acid
221	flavin adenine dinucleotide	FAD
222	fructose	D-Fructose
223	fumarate	Fumaric acid
224	galactitol	Galactitol
225	galactonate	Galactonic acid
226	gamma-aminobutyrate	Gamma-Aminobutyric acid
227	gamma-carboxyglutamate	NA
228	gamma-glutamyl-epsilon-lysine	NA
229	gamma-glutamylalanine	5-L-Glutamyl-L-alanine
230	gamma-glutamylglutamate	Gamma Glutamylglutamic acid
231	gamma-glutamylglutamine	Gamma-Glutamyl Glutamine
232	gamma-glutamylglycine	NA
233	gamma-glutamylhistidine	NA
234	gamma-glutamylisoleucine*	NA
235	gamma-glutamylleucine	L-gamma-glutamyl-L-leucine
236	gamma-glutamylphenylalanine	Glutamylphenylalanine

237	gamma-glutamylvaline	L-gamma-glutamyl-L-valine
238	gamma-tocopherol/beta-tocopherol	NA
239	gluconate	Gluconic acid
240	glucose	D-Glucose
241	glucuronate	D-Glucuronic acid
242	glutamate	D-Glutamic acid
243	glutamate, gamma-methyl ester	NA
244	glutamine	L-Glutamine
245	glutarate	Glutaric acid
246	glutarylcarntine	Glutarylcarntine
247	glutathione, oxidized (GSSG)	NA
248	glutathione, reduced (GSH)	NA
249	glycerate	Glyceric acid
250	glycerol	Glycerol
251	glycerol 3-phosphate	Glycerol 3-phosphate
252	glycerophosphoethanolamine	Glycerylphosphorylethanolamine
253	glycerophosphoglycerol	NA
254	glycerophosphoinositol*	NA
255	glycerophosphorylcholine	Glycerophosphocholine
256	glycine	Glycine
257	glycosyl-N-palmitoyl-sphingosine	NA
258	glycosyl-N-stearoyl-sphingosine	NA
259	glycylleucine	Glycyl-L-leucine
260	glycylvaline	NA
261	guanidinoacetate	Guanidoacetic acid
262	guanidiniosuccinate	Guanidiniosuccinic acid
263	guanine	Guanine
264	guanosine	Guanosine
265	guanosine 5'- monophosphate	NA
266	gulonic acid*	NA
267	heme	Heme
268	hexadecanedioate	Hexadecanedioic acid
269	hexanoylcarnitine	Hexanoylcarnitine
270	hexanoylglycine	Hexanoylglycine
271	hippurate	Hippuric acid
272	histamine	Histamine
273	histidine	L-Histidine
274	homoarginine	Homo-L-arginine
275	homocitrulline	Homocitrulline
276	homostachydrine*	NA
277	hypotaurine	Hypotaurine
278	hypoxanthine	Hypoxanthine
279	imidazole lactate	Imidazole lactate
280	imidazole propionate	NA
281	indolelactate	Indolelactic acid
282	inosine	Inosine
283	inosine 5'-monophosphate (IMP)	NA
284	Isobar: fructose 1,6-diphosphate, glucose 1,6-diphosphate, myo-inositol 1,4 or 1,3-diphosphate	NA
285	isobutyrylcarnitine	NA
286	isocitrate	Isocitric acid
287	isoleucine	(+/-)-erythro-Isoleucine
288	isoleucylglycine	NA
289	isovalerylcarnitine	Isovalerylcarnitine
290	isovalerylglycine	Isovalerylglycine
291	kynurenate	Kynurenic acid
292	kynurenine	L-Kynurenine
293	lactate	L-Lactic acid
294	laurylcarnitine	NA
295	leucine	L-Leucine
296	leucylglycine	NA
297	linoleate	Linoleic acid
298	linolenate	Alpha-Linolenic acid
299	linoleoylcarnitine*	NA
300	lysine	L-Lysine
301	malate	NA
302	malonylcarnitine	Malonylcarnitine
303	maltose	D-Maltose
304	maltotriose	Maltotriose
305	mannitol/sorbitol	NA
306	mannose	D-Mannose
307	margarate	Heptadecanoic acid
308	mead acid	5,8,11-Eicosatrienoic acid
309	methionine	NA
310	methionine sulfoxide	Methionine sulfoxide
311	methyl glucopyranoside	NA
312	methylmalonate	Methylmalonic acid
313	methylphosphate	NA
314	methylsuccinate	Methylsuccinic acid
315	myo-inositol	Myoinositol
316	myristate	Myristic acid
317	myristoleate	Myristoleic acid
318	myristoylcarnitine	Tetradecanoylcarnitine
319	N-acetyl-aspartyl-glutamate	NA
320	N-acetyl-beta-alanine	N-Acetyl-beta-alanine
321	N-acetyl-glucosamine 1-phosphate	N-Acetyl-glucosamine 1-phosphate
322	N-acetylalanine	N-Acetyl-L-alanine
323	N-acetylarginine	NA

324	N-acetylasparagine	N-Acetylasparagine
325	N-acetylaspartate	N-Acetyl-L-aspartic acid
326	N-acetylglucosamine 6-phosphate	N-Acetylglucosamine 6-phosphate
327	N-acetylglutamate	N-Acetylglutamic acid
328	N-acetylglutamine	N-Acetylglutamine
329	N-acetylglycine	Acetylglycine
330	N-acetylhistidine	N-Acetylhistidine
331	N-acetylleucine	N-Acetylleucine
332	N-acetylmethionine	N-Acetyl-L-methionine
333	N-acetylneuraminate	NA
334	N-acetylphenylalanine	N-Acetyl-L-phenylalanine
335	N-acetylputrescine	N-Acetylputrescine
336	N-acetylserine	N-Acetylserine
337	N-acetyltaurine	NA
338	N-acetylthreonine	NA
339	N-alpha-acetylornithine	NA
340	N-carbamoylaspartate	Ureidosuccinic acid
341	N-delta-acetylornithine	NA
342	N-formylmethionine	NA
343	N-formylphenylalanine	NA
344	N-glycolylneuraminate	N-Glycolylneuraminic acid
345	N-methyl-4-aminobutyric acid	NA
346	N-monomethylarginine	NA
347	N-palmitoyl-sphinganine	NA
348	N-palmitoyl-sphingosine	NA
349	N-palmitoyltaurine	NA
350	N-stearoyltaurine	NA
351	N1-Methyl-2-pyridone-5-carboxamide	N1-Methyl-2-pyridone-5-carboxamide
352	N1-methyladenosine	1-Methyladenosine
353	N2-acetyllysine/N6-acetyllysine	NA
354	N6,N6,N6-trimethyllysine	NA
355	N6-carboxymethyllysine	NA
356	N6-succinyladenosine	NA
357	nicotinamide	Niacinamide
358	nicotinamide adenine dinucleotide	NAD
359	nicotinamide riboside	Nicotinamide riboside
360	nonadecanoate	Nonadecanoic acid
361	O-sulfo-L-tyrosine	NA
362	octanoylcarnitine	L-Octanoylcarnitine
363	oleamide	Oleamide
364	oleate/vaccenate	NA
365	oleoyl ethanolamide	NA
366	oleoylcarnitine	Oleoylcarnitine
367	ornithine	Ornithine
368	orotate	Orotic acid
369	orotidine	Orotidine
370	oxalate	Oxalic acid
371	p-cresol sulfate	p-Cresol sulfate
372	p-cresol-glucuronide*	NA
373	palmitate	Palmitic acid
374	palmitoleate	Palmitoleic acid
375	palmitoyl dihydrosphingomyelin	NA
376	palmitoyl ethanolamide	Palmitoylethanolamide
377	palmitoyl sphingomyelin	NA
378	palmitoylcarnitine	NA
379	pantothenate	Pantothenic acid
380	phenol sulfate	NA
381	phenylacetyl glycine	Phenylacetyl glycine
382	phenylalanine	L-Phenylalanine
383	phenylalanyl glycine	NA
384	phenyllactate	Phenyllactic acid
385	phosphate	Phosphate
386	phosphoenolpyruvate	Phosphoenolpyruvic acid
387	phosphoethanolamine	O-Phosphoethanolamine
388	phosphopantetheine	Pantetheine 4'-phosphate
389	pipecolate	Pipecolic acid
390	pro-hydroxy-pro	NA
391	proline	L-Proline
392	prolylglycine	L-prolyl-L-glycine
393	propionylcarnitine	Propionylcarnitine
394	pseudouridine	Pseudouridine
395	putrescine	Putrescine
396	pyridoxal	Pyridoxal
397	pyridoxamine	Pyridoxamine
398	pyridoxamine phosphate	NA
399	pyridoxate	NA
400	pyroglutamine*	NA
401	quinolinate	Quinolinic acid
402	retinol	Vitamin A
403	ribitol	Ribitol
404	riboflavin	Riboflavin
405	ribonate	Ribonic acid
406	ribose	D-Ribose
407	ribulose	L-Ribulose
408	S-adenosylhomocysteine	S-Adenosylhomocysteine
409	S-adenosylmethionine	S-Adenosylmethionine
410	saccharopine	Saccharopine

411	salicylate	Salicylic acid
412	sarcosine	Sarcosine
413	sebacate	Sebacic acid
414	sedoheptulose-7-phosphate	D-Sedoheptulose 7-phosphate
415	serine	L-Serine
416	spermidine	Spermidine
417	sphinganine	Sphinganine
418	sphingomyelin	SM(d18:1/18:0)
419	sphingosine	Sphingosine
420	stachydrine	Proline betaine
421	stearate	Stearic acid
422	stearidonate	NA
423	stearoyl ethanolamide	Stearoylethanolamide
424	stearoyl sphingomyelin	NA
425	stearoylcarnitine	Stearoylcarnitine
426	succinate	Succinic acid
427	succinylcarnitine	NA
428	sucrose	Sucrose
429	sulfate*	NA
430	tartronate	NA
431	taurine	Taurine
432	tauro-beta-muricholate	Tauro-b-muricholic acid
433	taurochenodeoxycholate	Taurochenodesoxycholic acid
434	taurocholate	Taurocholic acid
435	taurocyamine	Taurocyamine
436	taurodeoxycholate	NA
437	tauroursodeoxycholate	Tauroursodeoxycholic acid
438	tetradecanedioate	Tetradecanedioic acid
439	thiamin	Thiamine
440	thiamin monophosphate	Thiamine monophosphate
441	threonate	Threonic acid
442	threonine	L-Threonine
443	thymidine	Thymidine
444	tiglylcarnitine	Tiglylcarnitine
445	trans-4-hydroxyproline	4-Hydroxyproline
446	trans-uocanate	NA
447	tricosanoyl	NA
448	trigonelline	Trigonelline
449	trimethylamine N-oxide	Trimethylamine N-oxide
450	tryptophan	D-Tryptophan
451	tyrosine	L-Tyrosine
452	tyrosylglycine	NA
453	UDP-galactose	Uridine diphosphategalactose
454	UDP-glucose	Uridine diphosphate glucose
455	UDP-glucuronate	Uridine diphosphate glucuronic acid
456	UDP-N-acetylgalactosamine	Uridine diphosphate-N-acetylgalactosamine
457	UDP-N-acetylglucosamine	Uridine diphosphate-N-acetylglucosamine
458	uracil	Uracil
459	urate	Uric acid
460	urea	Urea
461	uridine	Uridine
462	uridine 5'-diphosphate	Uridine 5'-diphosphate
463	uridine 5'-monophosphate	Uridine 5'-monophosphate
464	valine	L-Valine
465	valylglycine	NA
466	xanthine	Xanthine
467	xanthosine	Xanthosine

The second step is to check concentration values. For SSP analysis, the concentration must be measured in *umol* for blood and CSF samples. The urinary concentrations must be first converted to *umol/mmol\_creatinine* in order to compare with reported concentrations in literature. No missing or negative values are allowed in SSP analysis. The concentration data for QEA analysis is more flexible. Users can upload either the original concentration data or normalized data. Missing or negative values are allowed (coded as *NA*) for QEA. Please note, MSEA does not perform data normalization. If normalization is important, you should first normalize your data before upload. You can use our companion website **MetaboAnalyst** [www.metaboanalyst.ca](http://www.metaboanalyst.ca) for a variety of data processing and normalization methods.

## 5 Selection of Metabolite Set Library

Before proceeding to enrichment analysis, a metabolite set library has to be chosen. There are seven built-in libraries offered by MSEA:

- Metabolic pathway associated metabolite sets (*currently contains 88 entries*);
- Disease associated metabolite sets (reported in blood) (*currently contains 416 entries*);
- Disease associated metabolite sets (reported in urine) (*currently contains 346 entries*);
- Disease associated metabolite sets (reported in CSF) (*currently contains 124 entries*);
- Metabolite sets associated with SNPs (*currently contains 4500 entries*);
- Predicted metabolite sets based on computational enzyme knockout model (*currently contains 912 entries*);
- Metabolite sets based on locations (*currently contains 57 entries*);

In addition, MSEA also allows user-defined metabolite sets to be uploaded to perform enrichment analysis on arbitrary groups of compounds which researchers want to test. The metabolite set library is simply a two-column comma separated text file with the first column for metabolite set names and the second column for its compound names (**must use HMDB compound name**) separated by "; ". Please note, the built-in libraries are mainly from human studies. The functional grouping of metabolites may not be valid. Therefore, for data from subjects other than human being, users are suggested to upload their self-defined metabolite set libraries for enrichment analysis.

## 6 Enrichment Analysis

Quantitative enrichment analysis (QEA) will be performed when the user uploads a concentration table. The enrichment analysis is performed using package **globaltest**<sup>1</sup>. It uses a generalized linear model to estimate a *Q-statistic* for each metabolite set, which describes the correlation between compound concentration profiles, X, and clinical outcomes, Y. The *Q statistic* for a metabolite set is the average of the *Q* statistics for each metabolite in the set. **Figure 2** below summarizes the result.

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<sup>1</sup>Jelle J. Goeman, Sara A. van de Geer, Floor de Kort and Hans C. van Houwelingen. *A global test for groups of genes: testing association with a clinical outcome*, Bioinformatics Vol. 20 no. 1 2004, pages 93-99



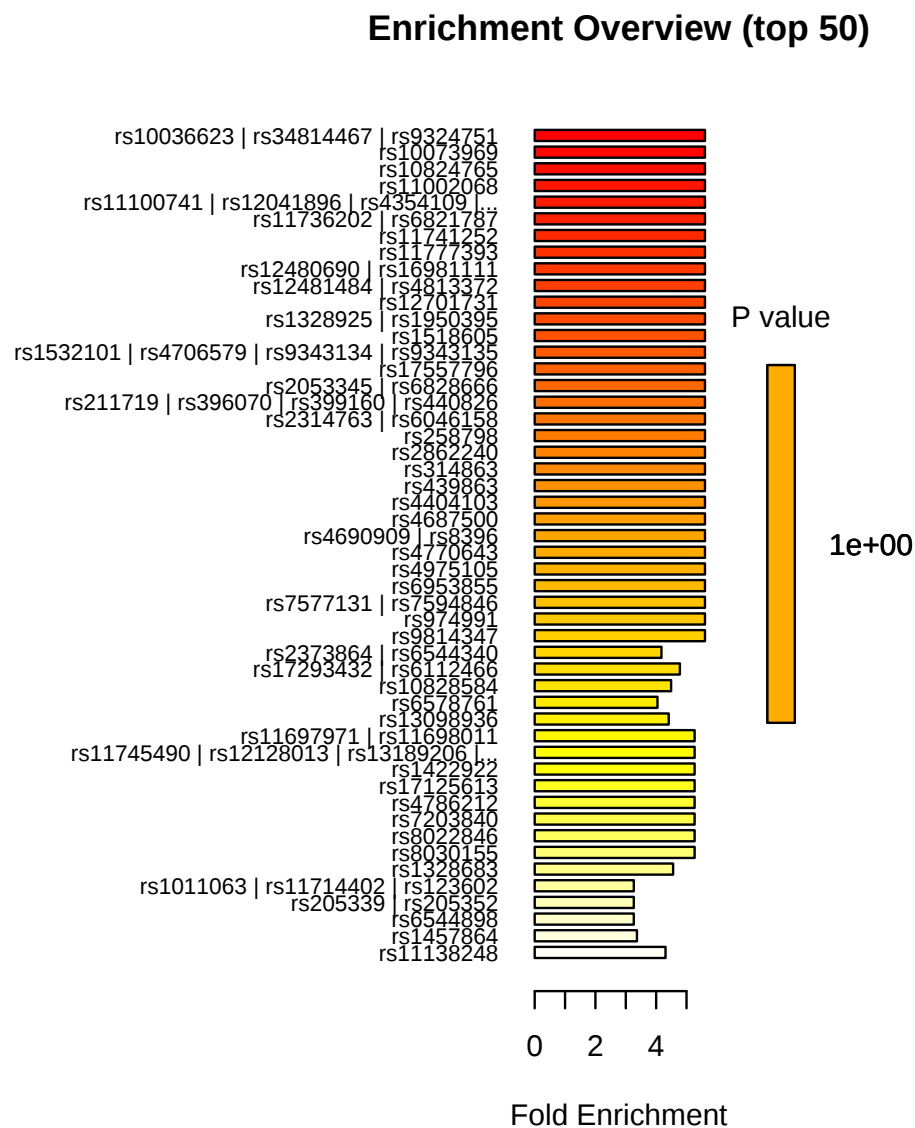


Figure 1: Summary Plot for Quantitative Enrichment Analysis (QEA)

Table 2: Result from Quantitative Enrichment Analysis

	Total Cmpd	Hits	Statistic Q	Expected Q	Raw p	Holm p	FDR
rs10036623   rs34814467   rs9324751	2	1	80.12	14.29	2.66E-03	1.00E+00	7.70E-02
rs10073969	3	1	80.12	14.29	2.66E-03	1.00E+00	7.70E-02
rs10824765	2	1	80.12	14.29	2.66E-03	1.00E+00	7.70E-02
rs11002068	2	1	80.12	14.29	2.66E-03	1.00E+00	7.70E-02
rs11100741   rs12041896   rs4354109   rs6670050   rs875303   rs9293961	2	1	80.12	14.29	2.66E-03	1.00E+00	7.70E-02
rs11736202   rs6821787	2	1	80.12	14.29	2.66E-03	1.00E+00	7.70E-02
rs11741252	2	1	80.12	14.29	2.66E-03	1.00E+00	7.70E-02
rs11777393	2	1	80.12	14.29	2.66E-03	1.00E+00	7.70E-02
rs12480690   rs16981111	3	1	80.12	14.29	2.66E-03	1.00E+00	7.70E-02
rs12481484   rs4813372	2	1	80.12	14.29	2.66E-03	1.00E+00	7.70E-02
rs12701731	2	1	80.12	14.29	2.66E-03	1.00E+00	7.70E-02
rs1328925   rs1950395	2	1	80.12	14.29	2.66E-03	1.00E+00	7.70E-02
rs1518605	2	1	80.12	14.29	2.66E-03	1.00E+00	7.70E-02
rs1532101   rs4706579   rs9343134   rs9343135	3	1	80.12	14.29	2.66E-03	1.00E+00	7.70E-02
rs17557796	4	1	80.12	14.29	2.66E-03	1.00E+00	7.70E-02
rs2053345   rs6828666	3	1	80.12	14.29	2.66E-03	1.00E+00	7.70E-02
rs211719   rs396070   rs399160   rs440826	2	1	80.12	14.29	2.66E-03	1.00E+00	7.70E-02
rs2314763   rs6046158	2	1	80.12	14.29	2.66E-03	1.00E+00	7.70E-02
rs258798	2	1	80.12	14.29	2.66E-03	1.00E+00	7.70E-02
rs2862240	2	1	80.12	14.29	2.66E-03	1.00E+00	7.70E-02
rs314863	2	1	80.12	14.29	2.66E-03	1.00E+00	7.70E-02
rs439863	2	1	80.12	14.29	2.66E-03	1.00E+00	7.70E-02
rs4404103	2	1	80.12	14.29	2.66E-03	1.00E+00	7.70E-02
rs4687500	2	1	80.12	14.29	2.66E-03	1.00E+00	7.70E-02
rs4690909   rs8396	3	1	80.12	14.29	2.66E-03	1.00E+00	7.70E-02
rs4770643	2	1	80.12	14.29	2.66E-03	1.00E+00	7.70E-02
rs4975105	3	1	80.12	14.29	2.66E-03	1.00E+00	7.70E-02
rs6953855	3	1	80.12	14.29	2.66E-03	1.00E+00	7.70E-02
rs7577131   rs7594846	2	1	80.12	14.29	2.66E-03	1.00E+00	7.70E-02
rs974991	3	1	80.12	14.29	2.66E-03	1.00E+00	7.70E-02
rs9814347	2	1	80.12	14.29	2.66E-03	1.00E+00	7.70E-02
rs2373864   rs6544340	2	2	59.65	14.29	3.73E-03	1.00E+00	7.70E-02
rs17293432   rs6112466	2	2	68.32	14.29	3.78E-03	1.00E+00	7.70E-02
rs10828584	3	3	64.18	14.29	4.37E-03	1.00E+00	7.70E-02
rs6578761	9	3	57.77	14.29	4.87E-03	1.00E+00	7.70E-02
rs13098936	2	2	63.06	14.29	4.91E-03	1.00E+00	7.70E-02
rs11697971   rs11698011	2	1	75.25	14.29	5.26E-03	1.00E+00	7.70E-02
rs11745490   rs12128013   rs13189206   rs1392400   rs1505005   rs2003713   rs4576380   rs492265   rs6022299   rs6455736   rs6897438   rs6927285   rs7520483   rs7780870   rs7837887   rs992037	1	1	75.25	14.29	5.26E-03	1.00E+00	7.70E-02
rs1422922	27	1	75.25	14.29	5.26E-03	1.00E+00	7.70E-02
rs17125613	6	1	75.25	14.29	5.26E-03	1.00E+00	7.70E-02
rs4786212	3	1	75.25	14.29	5.26E-03	1.00E+00	7.70E-02
rs7203840	3	1	75.25	14.29	5.26E-03	1.00E+00	7.70E-02
rs8022846	4	1	75.25	14.29	5.26E-03	1.00E+00	7.70E-02
rs8030155	2	1	75.25	14.29	5.26E-03	1.00E+00	7.70E-02
rs1328683	8	3	65.12	14.29	6.27E-03	1.00E+00	7.70E-02
rs1011063   rs11714402   rs123602	3	2	46.63	14.29	6.99E-03	1.00E+00	7.70E-02
rs205339   rs205352	2	2	46.63	14.29	6.99E-03	1.00E+00	7.70E-02
rs6544898	5	2	46.63	14.29	6.99E-03	1.00E+00	7.70E-02
rs1457864	3	3	48.11	14.29	7.25E-03	1.00E+00	7.70E-02
rs11138248	2	2	61.55	14.29	7.29E-03	1.00E+00	7.70E-02
rs2567372   rs7233242   rs9376419	2	2	61.55	14.29	7.29E-03	1.00E+00	7.70E-02
rs6554021	2	2	64.31	14.29	7.42E-03	1.00E+00	7.70E-02
rs6757529	2	2	64.31	14.29	7.42E-03	1.00E+00	7.70E-02
rs659406	5	4	52.75	14.29	7.89E-03	1.00E+00	7.70E-02
rs10954792   rs12681671	4	2	68.62	14.29	8.40E-03	1.00E+00	7.70E-02
rs11133860	5	2	68.62	14.29	8.40E-03	1.00E+00	7.70E-02
rs11149230	3	2	68.62	14.29	8.40E-03	1.00E+00	7.70E-02
rs11163924	3	2	68.62	14.29	8.40E-03	1.00E+00	7.70E-02
rs1144337   rs5745343	3	2	68.62	14.29	8.40E-03	1.00E+00	7.70E-02
rs11678173	3	2	68.62	14.29	8.40E-03	1.00E+00	7.70E-02
rs1441734	6	2	68.62	14.29	8.40E-03	1.00E+00	7.70E-02
rs17669102	7	2	68.62	14.29	8.40E-03	1.00E+00	7.70E-02
rs2523467	3	2	68.62	14.29	8.40E-03	1.00E+00	7.70E-02
rs3935155	3	2	68.62	14.29	8.40E-03	1.00E+00	7.70E-02
rs4484443	3	2	68.62	14.29	8.40E-03	1.00E+00	7.70E-02
rs7298766	8	2	68.62	14.29	8.40E-03	1.00E+00	7.70E-02
rs7438054	3	2	68.62	14.29	8.40E-03	1.00E+00	7.70E-02
rs7953305   rs7968118	3	2	68.62	14.29	8.40E-03	1.00E+00	7.70E-02
rs12549659   rs7819359   rs7842171	2	2	61.95	14.29	8.46E-03	1.00E+00	7.70E-02
rs7215091	2	2	61.95	14.29	8.46E-03	1.00E+00	7.70E-02

rs10953726		12	5	49.45	14.29	8.89E-03	1.00E+00	7.70E-02
rs10051288	rs10941983	2	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs10117640	rs1180948	2	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs1180955								
rs11050428		2	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs11128896	rs4273390	2	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs4390955	rs462296   rs6550597							
rs7428918								
rs11137521		2	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs11137534	rs11137535	3	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs12434833		2	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs12525489		2	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs12554600	rs1539468	1	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs1562797	rs2084347							
rs4304945	rs4933717							
rs7084059	rs716333							
rs12934894		2	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs12947470		2	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs13272388	rs4354274	3	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs1332172	rs1332173	2	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs1360523	rs1537269							
rs1537270								
rs13434089		2	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs1501591		2	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs171752		2	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs1999287	rs9305794	2	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs2157815		3	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs2364212	rs6859760	3	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs9381134								
rs2383528		3	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs2505328		2	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs2538079		3	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs2817649		3	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs309242	rs309251	2	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs4463939		2	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs4612814		2	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs6414812		2	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs6435846		2	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs6449925		2	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs6535212		7	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs6829476	rs7656677	3	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs7085214		2	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs7252966		2	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs760061		2	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs8082856		2	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs9465673		3	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs9504196	rs9504201	2	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs9552409		2	1	69.70	14.29	9.91E-03	1.00E+00	7.70E-02
rs6507022		2	2	44.42	14.29	1.00E-02	1.00E+00	7.70E-02
rs10500023		14	3	43.78	14.29	1.01E-02	1.00E+00	7.70E-02
rs7797620		13	3	43.78	14.29	1.01E-02	1.00E+00	7.70E-02
rs10498648		3	2	61.37	14.29	1.14E-02	1.00E+00	7.70E-02
rs150398	rs183317   rs211211	2	2	61.37	14.29	1.14E-02	1.00E+00	7.70E-02
rs211221								
rs17543807		4	2	61.37	14.29	1.14E-02	1.00E+00	7.70E-02
rs6807064		4	2	61.37	14.29	1.14E-02	1.00E+00	7.70E-02
rs9529473	rs9541678	2	2	66.28	14.29	1.17E-02	1.00E+00	7.70E-02
rs12562383		6	4	46.54	14.29	1.17E-02	1.00E+00	7.70E-02
rs6886262		10	6	53.94	14.29	1.20E-02	1.00E+00	7.70E-02
rs11161620	rs12123977	4	2	59.58	14.29	1.21E-02	1.00E+00	7.70E-02
rs12134854	rs7547056							
rs1250876	rs1303870	4	2	59.58	14.29	1.21E-02	1.00E+00	7.70E-02
rs7516477	rs7519526							
rs3109384		4	2	59.58	14.29	1.21E-02	1.00E+00	7.70E-02
rs646827		3	2	59.58	14.29	1.21E-02	1.00E+00	7.70E-02
rs855122	rs855123	3	2	59.58	14.29	1.21E-02	1.00E+00	7.70E-02
rs2588400		3	3	43.54	14.29	1.26E-02	1.00E+00	7.70E-02
rs2171304		2	2	51.83	14.29	1.27E-02	1.00E+00	7.70E-02
rs10512906	rs16886818	3	2	50.58	14.29	1.31E-02	1.00E+00	7.70E-02
rs6897477								
rs7356928	rs9374352	3	3	44.55	14.29	1.32E-02	1.00E+00	7.70E-02
rs1024819		4	3	58.60	14.29	1.36E-02	1.00E+00	7.70E-02
rs10474500		9	3	58.60	14.29	1.36E-02	1.00E+00	7.70E-02
rs10957988		7	3	58.60	14.29	1.36E-02	1.00E+00	7.70E-02
rs1164194		4	3	58.60	14.29	1.36E-02	1.00E+00	7.70E-02
rs12500116		5	3	58.60	14.29	1.36E-02	1.00E+00	7.70E-02
rs12915016		5	3	58.60	14.29	1.36E-02	1.00E+00	7.70E-02
rs13240515		7	3	58.60	14.29	1.36E-02	1.00E+00	7.70E-02
rs13268776		8	3	58.60	14.29	1.36E-02	1.00E+00	7.70E-02
rs1525804		4	3	58.60	14.29	1.36E-02	1.00E+00	7.70E-02
rs1630972		6	3	58.60	14.29	1.36E-02	1.00E+00	7.70E-02
rs17021918		6	3	58.60	14.29	1.36E-02	1.00E+00	7.70E-02
rs1977620		5	3	58.60	14.29	1.36E-02	1.00E+00	7.70E-02
rs2148979		5	3	58.60	14.29	1.36E-02	1.00E+00	7.70E-02
rs2392780		9	3	58.60	14.29	1.36E-02	1.00E+00	7.70E-02
rs2595040		5	3	58.60	14.29	1.36E-02	1.00E+00	7.70E-02
rs3790692		6	3	58.60	14.29	1.36E-02	1.00E+00	7.70E-02

rs446291   rs576075	5	3	58.60	14.29	1.36E-02	1.00E+00	7.70E-02
rs4871780	7	3	58.60	14.29	1.36E-02	1.00E+00	7.70E-02
rs7002826	10	3	58.60	14.29	1.36E-02	1.00E+00	7.70E-02
rs7007568	8	3	58.60	14.29	1.36E-02	1.00E+00	7.70E-02
rs7815100	8	3	58.60	14.29	1.36E-02	1.00E+00	7.70E-02
rs786038	5	3	58.60	14.29	1.36E-02	1.00E+00	7.70E-02
rs9297608	4	3	58.60	14.29	1.36E-02	1.00E+00	7.70E-02
rs998071	5	3	58.60	14.29	1.36E-02	1.00E+00	7.70E-02
rs6907228	7	3	58.60	14.29	1.36E-02	1.00E+00	7.70E-02
rs10193179	2	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs10203914   rs1438848	2	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs7557460							
rs10250400   rs6952070	2	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs10516472	2	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs1065457   rs741116	1	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs10821910	2	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs10989727	2	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs11624761	4	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs11669128	2	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs12120352   rs12141007	2	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs12145083   rs6678151							
rs6692930   rs904576							
rs12120893   rs942904	2	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs1568921	3	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs1624858   rs1765719	3	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs17022417	2	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs17055997	3	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs17323291	2	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs17587757	2	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs1933934   rs3766231	2	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs1959798   rs956288	2	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs1972586	2	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs2185065	3	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs2247009	3	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs2456223   rs6559515	2	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs2592019	3	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs314709	3	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs3886126	2	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs3924626   rs7164945	2	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs4439164	2	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs4670248	2	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs4765734	3	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs6454630   rs6916994	2	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs9344695   rs9450647							
rs7196425	2	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs853389	2	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs9317053	3	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs9359748	3	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs9829357	2	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs9879195	2	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
SNP_A-1903321	2	1	66.37	14.29	1.38E-02	1.00E+00	7.70E-02
rs698705   rs830153   rs830160	2	2	56.70	14.29	1.42E-02	1.00E+00	7.70E-02
rs10852037	2	2	55.87	14.29	1.45E-02	1.00E+00	7.70E-02
rs7294556	10	2	55.87	14.29	1.45E-02	1.00E+00	7.70E-02
rs12086020	2	2	58.71	14.29	1.46E-02	1.00E+00	7.70E-02
rs603424	3	2	58.55	14.29	1.46E-02	1.00E+00	7.70E-02
rs4750480	2	2	44.91	14.29	1.50E-02	1.00E+00	7.70E-02
rs10917139   rs10917145	2	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
rs11227673	3	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
rs11587512	4	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
rs11620512	3	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
rs11870686   rs4426395	2	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
rs11973506	3	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
rs12211633	5	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
rs12924838	5	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
rs13069338   rs1531386	2	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
rs3979497   rs4597720							
rs7430096							
rs17068332	2	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
rs17376559	4	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
rs1799884	3	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
rs1841096	3	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
rs1858308	3	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
rs1983130	2	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
rs1997483	2	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
rs2078284   rs9554914	3	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
rs2354519	6	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
rs2502780	2	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
rs2774308	2	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
rs2805792	2	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
rs2908289	2	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
rs3095942	2	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
rs3135093	3	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
rs3850569	2	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
rs4027067	2	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
rs431702	7	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
rs6595832	2	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02

rs6706577	6	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
rs7298664	2	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
rs7310793   rs9739748	2	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
rs7751271	8	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
rs7813280	2	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
rs7950447	2	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
rs9394187	5	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
SNP_A-4265221	3	1	65.30	14.29	1.52E-02	1.00E+00	7.70E-02
rs11168326	2	2	63.03	14.29	1.62E-02	1.00E+00	7.70E-02
rs10088994   rs13224992	1	1	64.57	14.29	1.63E-02	1.00E+00	7.70E-02
rs1554246   rs2809901							
rs2832082   rs342931   rs4438803							
rs6460030   rs6460032							
rs6957619   rs868243   rs9862595							
rs2804535	3	1	64.57	14.29	1.63E-02	1.00E+00	7.70E-02
rs7129790	2	1	64.57	14.29	1.63E-02	1.00E+00	7.70E-02
rs12278722   rs1406314	3	2	47.43	14.29	1.66E-02	1.00E+00	7.70E-02
rs3914946	3	2	47.43	14.29	1.66E-02	1.00E+00	7.70E-02
rs17021652   rs7545152	2	2	52.74	14.29	1.68E-02	1.00E+00	7.70E-02
rs2686552   rs2859263	2	2	52.74	14.29	1.68E-02	1.00E+00	7.70E-02
rs3751151   rs473121   rs526007							
rs7961554							
rs10953730	15	6	44.14	14.29	1.69E-02	1.00E+00	7.70E-02
rs11738818	2	2	57.25	14.29	1.74E-02	1.00E+00	7.70E-02
rs2593280   rs334930	2	2	49.62	14.29	1.74E-02	1.00E+00	7.70E-02
rs162097	4	3	61.28	14.29	1.77E-02	1.00E+00	7.70E-02
rs2064419   rs2315321	2	2	61.71	14.29	1.82E-02	1.00E+00	7.70E-02
rs3765475							
rs3765474	3	2	61.71	14.29	1.82E-02	1.00E+00	7.70E-02
rs9268560	4	2	61.71	14.29	1.82E-02	1.00E+00	7.70E-02
rs1462657	3	2	55.54	14.29	1.83E-02	1.00E+00	7.70E-02
rs199243   rs199259	2	2	53.28	14.29	1.85E-02	1.00E+00	7.70E-02
rs6947946	13	4	44.02	14.29	1.87E-02	1.00E+00	7.70E-02
rs10835757   rs578666	2	2	54.47	14.29	1.90E-02	1.00E+00	7.70E-02
rs10117198	2	1	62.62	14.29	1.93E-02	1.00E+00	7.70E-02
rs10229133	3	1	62.62	14.29	1.93E-02	1.00E+00	7.70E-02
rs1032589	2	1	62.62	14.29	1.93E-02	1.00E+00	7.70E-02
rs1034856   rs3181092	2	1	62.62	14.29	1.93E-02	1.00E+00	7.70E-02
rs3735222   rs3917018							
rs7803810   rs7804260   SNP_A-2172620							
rs10489902	3	1	62.62	14.29	1.93E-02	1.00E+00	7.70E-02
rs10873936	2	1	62.62	14.29	1.93E-02	1.00E+00	7.70E-02
rs10889464   rs11208367	3	1	62.62	14.29	1.93E-02	1.00E+00	7.70E-02
rs10925146	3	1	62.62	14.29	1.93E-02	1.00E+00	7.70E-02
rs10962710	3	1	62.62	14.29	1.93E-02	1.00E+00	7.70E-02
rs11110315   rs7958895	2	1	62.62	14.29	1.93E-02	1.00E+00	7.70E-02
rs11208366	3	1	62.62	14.29	1.93E-02	1.00E+00	7.70E-02
rs11583399	3	1	62.62	14.29	1.93E-02	1.00E+00	7.70E-02
rs12589479	2	1	62.62	14.29	1.93E-02	1.00E+00	7.70E-02
rs1286291   rs1286293	2	1	62.62	14.29	1.93E-02	1.00E+00	7.70E-02
rs2401919							
rs13180146	2	1	62.62	14.29	1.93E-02	1.00E+00	7.70E-02
rs1453120   rs1453125   rs309279	2	1	62.62	14.29	1.93E-02	1.00E+00	7.70E-02
rs4844913							
rs1490274	3	1	62.62	14.29	1.93E-02	1.00E+00	7.70E-02
rs16970994	2	1	62.62	14.29	1.93E-02	1.00E+00	7.70E-02
rs17253326	2	1	62.62	14.29	1.93E-02	1.00E+00	7.70E-02
rs17633799	2	1	62.62	14.29	1.93E-02	1.00E+00	7.70E-02
rs1950562	1	1	62.62	14.29	1.93E-02	1.00E+00	7.70E-02
rs2127977	3	1	62.62	14.29	1.93E-02	1.00E+00	7.70E-02
rs3904316	2	1	62.62	14.29	1.93E-02	1.00E+00	7.70E-02
rs6577900	2	1	62.62	14.29	1.93E-02	1.00E+00	7.70E-02
rs666247	2	1	62.62	14.29	1.93E-02	1.00E+00	7.70E-02
rs687734	2	1	62.62	14.29	1.93E-02	1.00E+00	7.70E-02
rs7276043	2	1	62.62	14.29	1.93E-02	1.00E+00	7.70E-02
rs7555700	2	1	62.62	14.29	1.93E-02	1.00E+00	7.70E-02
rs839250	3	1	62.62	14.29	1.93E-02	1.00E+00	7.70E-02
rs9291457	2	1	62.62	14.29	1.93E-02	1.00E+00	7.70E-02
rs2978023	4	3	50.21	14.29	1.94E-02	1.00E+00	7.70E-02
rs1498313	4	3	52.99	14.29	2.08E-02	1.00E+00	7.70E-02
rs12478788   rs12616954	2	2	58.89	14.29	2.10E-02	1.00E+00	7.70E-02
rs1437370   rs6717111							
rs11892597	7	2	51.46	14.29	2.17E-02	1.00E+00	7.70E-02
rs6797400	3	2	51.66	14.29	2.20E-02	1.00E+00	7.70E-02
rs11161510   rs211718	7	4	54.17	14.29	2.20E-02	1.00E+00	7.70E-02
rs11161511	7	4	54.17	14.29	2.20E-02	1.00E+00	7.70E-02
rs1146579   rs1694419	7	4	54.17	14.29	2.20E-02	1.00E+00	7.70E-02
rs10108305	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs10155123   rs10155222	1	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs11097458   rs11244778							
rs2494731   rs3796443							
rs3856510   rs6661325							
rs8026949   rs887802   rs9553939							
rs9579054							
rs10163515   rs8064995	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs10192552   rs12053456	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02

rs10223721   rs17703561	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs6915739							
rs1031327   rs2597771   rs699460	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs10743285	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs10750443   rs10791086	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs1921575   rs7119236							
rs10817168	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs10915269   rs10915270	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs11852212   rs16838247							
rs16838255   rs4459076							
rs716325   rs9426351							
rs11215301	3	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs11690498   rs17349283	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs12072621	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs12118952	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs12433314   rs17126556	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs12530006	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs1530867	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs1554534   rs2811472	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs2811483   rs2811484							
rs2811510   rs2955125							
rs17061254	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs17321800   rs9552028	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs9552034							
rs17563461	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs17717236	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs17811749	3	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs1790313	4	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs1795651	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs1872785	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs203136	4	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs2051138   rs7042278	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs2061231	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs2124458   rs719038	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs2158562	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs2274914	3	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs2839631   rs9325622	3	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs2955132	3	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs4689326	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs4732066	3	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs540524	3	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs570677	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs585208   rs676389	3	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs604428   rs7752880	3	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs617739	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs632065	3	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs674693	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs6840918   rs6840946	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs686406	3	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs7176482	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs7240774	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs7373248	3	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs7532597	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs781200	3	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs7920091	4	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs7956634	3	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs920822	3	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs9306	3	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs9849275	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs9917863	2	1	61.05	14.29	2.20E-02	1.00E+00	7.70E-02
rs10511707	3	2	55.78	14.29	2.26E-02	1.00E+00	7.83E-02
rs7849973	2	2	55.78	14.29	2.26E-02	1.00E+00	7.83E-02
rs2594278	3	3	42.08	14.29	2.26E-02	1.00E+00	7.83E-02
rs2401446	2	2	54.79	14.29	2.28E-02	1.00E+00	7.88E-02
rs6054431	8	4	48.45	14.29	2.38E-02	1.00E+00	8.16E-02
rs642771   rs7653105	2	2	44.25	14.29	2.44E-02	1.00E+00	8.16E-02
rs6565651	2	2	54.41	14.29	2.51E-02	1.00E+00	8.16E-02
rs11165870   rs1434520	1	1	59.22	14.29	2.56E-02	1.00E+00	8.16E-02
rs2060415   rs2710818							
rs4686148							
rs2293336	4	1	59.22	14.29	2.56E-02	1.00E+00	8.16E-02
rs2668804   rs2805809	3	1	59.22	14.29	2.56E-02	1.00E+00	8.16E-02
rs2805811   rs2808693							
rs6478369							
rs3176639	2	1	59.22	14.29	2.56E-02	1.00E+00	8.16E-02
rs38190	32	1	59.22	14.29	2.56E-02	1.00E+00	8.16E-02
rs3748926   rs4670100	3	2	46.84	14.29	2.64E-02	1.00E+00	8.16E-02
rs6714231							
rs477992	5	3	56.02	14.29	2.66E-02	1.00E+00	8.16E-02
rs10847981	3	2	57.00	14.29	2.72E-02	1.00E+00	8.16E-02
rs2036184	9	3	38.68	14.29	2.73E-02	1.00E+00	8.16E-02
rs10867791	2	2	49.79	14.29	2.75E-02	1.00E+00	8.16E-02
rs7686524	2	2	48.10	14.29	2.75E-02	1.00E+00	8.16E-02
rs2973062	3	2	54.06	14.29	2.79E-02	1.00E+00	8.16E-02
rs13041126   rs13044871	2	2	39.40	14.29	2.84E-02	1.00E+00	8.16E-02
rs17203351   rs17806313							
rs6091544   rs6126578							

rs4613692		6	3	45.30	14.29	2.85E-02	1.00E+00	8.16E-02
rs6876815		6	3	45.30	14.29	2.85E-02	1.00E+00	8.16E-02
rs1297676		3	2	39.80	14.29	2.93E-02	1.00E+00	8.16E-02
rs10203676	rs12617694	3	1	57.31	14.29	2.96E-02	1.00E+00	8.16E-02
rs13404325	rs16838793							
rs9646844								
rs10204829	rs12477479	2	1	57.31	14.29	2.96E-02	1.00E+00	8.16E-02
rs12616969	rs2128288							
rs1029554		2	1	57.31	14.29	2.96E-02	1.00E+00	8.16E-02
rs10499809	rs17683445	3	1	57.31	14.29	2.96E-02	1.00E+00	8.16E-02
rs17750977								
rs10783455	rs11722744	1	1	57.31	14.29	2.96E-02	1.00E+00	8.16E-02
rs11944489	rs12423987							
rs1445864	rs2225778							
rs2447613	rs2574713							
rs2823128	rs2823131							
rs2823137	rs3809116							
rs6714749	rs6766610							
rs6878244	rs8000386							
rs9908887								
rs10945084	rs11751542	2	1	57.31	14.29	2.96E-02	1.00E+00	8.16E-02
rs11062770	rs241982	2	1	57.31	14.29	2.96E-02	1.00E+00	8.16E-02
rs11141145	rs11793823	2	1	57.31	14.29	2.96E-02	1.00E+00	8.16E-02
rs1331849	rs7039482							
rs11232476		3	1	57.31	14.29	2.96E-02	1.00E+00	8.16E-02
rs11621824		2	1	57.31	14.29	2.96E-02	1.00E+00	8.16E-02
rs11658442		2	1	57.31	14.29	2.96E-02	1.00E+00	8.16E-02
rs11986722		2	1	57.31	14.29	2.96E-02	1.00E+00	8.16E-02
rs13397179		2	1	57.31	14.29	2.96E-02	1.00E+00	8.16E-02
rs1532591		3	1	57.31	14.29	2.96E-02	1.00E+00	8.16E-02
rs17022452		2	1	57.31	14.29	2.96E-02	1.00E+00	8.16E-02
rs17139256		3	1	57.31	14.29	2.96E-02	1.00E+00	8.16E-02
rs2148057		3	1	57.31	14.29	2.96E-02	1.00E+00	8.16E-02
rs219226		2	1	57.31	14.29	2.96E-02	1.00E+00	8.16E-02
rs2271624	rs269816	2	1	57.31	14.29	2.96E-02	1.00E+00	8.16E-02
rs2294295		2	1	57.31	14.29	2.96E-02	1.00E+00	8.16E-02
rs2836436		2	1	57.31	14.29	2.96E-02	1.00E+00	8.16E-02
rs3014622		2	1	57.31	14.29	2.96E-02	1.00E+00	8.16E-02
rs4398867		2	1	57.31	14.29	2.96E-02	1.00E+00	8.16E-02
rs4403129		2	1	57.31	14.29	2.96E-02	1.00E+00	8.16E-02
rs540364		3	1	57.31	14.29	2.96E-02	1.00E+00	8.16E-02
rs6668600	rs6674622	2	1	57.31	14.29	2.96E-02	1.00E+00	8.16E-02
rs6803690		2	1	57.31	14.29	2.96E-02	1.00E+00	8.16E-02
rs698204		3	1	57.31	14.29	2.96E-02	1.00E+00	8.16E-02
rs7538437		2	1	57.31	14.29	2.96E-02	1.00E+00	8.16E-02
rs7753700		3	1	57.31	14.29	2.96E-02	1.00E+00	8.16E-02
rs8037201		2	1	57.31	14.29	2.96E-02	1.00E+00	8.16E-02
rs7018169		5	4	47.24	14.29	2.99E-02	1.00E+00	8.16E-02
rs35704389	rs4338916	2	2	55.69	14.29	3.05E-02	1.00E+00	8.16E-02
rs4513234		2	2	55.69	14.29	3.05E-02	1.00E+00	8.16E-02
rs1152947	rs1152948	2	2	55.19	14.29	3.05E-02	1.00E+00	8.16E-02
rs595283	rs616111							
rs662243	rs677277							
rs1936806	rs9491697	3	2	55.19	14.29	3.05E-02	1.00E+00	8.16E-02
rs6746494		3	3	53.35	14.29	3.07E-02	1.00E+00	8.16E-02
rs10010674		2	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs1021734	rs11130557	2	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs17288993	rs4458343							
rs4626067								
rs10256412		2	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs10884054	rs11192197	2	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs11192203	rs11192207							
rs12357019	rs2491385							
rs4917430								
rs12076093	rs1251272	2	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs1251539	rs1251552							
rs1417403	rs211713							
rs12362872		3	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs12419699		2	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs1482610	rs1482611	2	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs9833943								
rs1512019		2	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs1543080		2	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs1554406		2	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs1618689		2	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs17445442		3	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs17683262		3	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs1955811		3	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs1956340	rs1958336	2	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs2416126	rs4900816							
rs2181624		2	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs2207537		4	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs2421118		2	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs2461494		2	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs2469349		2	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs2600855		3	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs2749779	rs3129330	2	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02

rs3821135	3	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs4072598	2	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs4476727	2	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs4495077	3	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs4775999   rs7646715	2	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs4839726	3	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs4900784	4	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs7141896	2	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs754298	3	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs7827560	2	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs7939837   rs7940302	3	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs8021759	2	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs8026116	2	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs833115	2	1	56.25	14.29	3.21E-02	1.00E+00	8.16E-02
rs1154758	7	3	43.37	14.29	3.23E-02	1.00E+00	8.16E-02
rs1450494	9	3	43.37	14.29	3.23E-02	1.00E+00	8.16E-02
rs17264185	5	3	43.37	14.29	3.23E-02	1.00E+00	8.16E-02
rs10964817	4	2	51.65	14.29	3.24E-02	1.00E+00	8.16E-02
rs10431384   rs10431386	2	2	43.69	14.29	3.24E-02	1.00E+00	8.16E-02
rs11065286   rs11065393							
rs1151851   rs12368199							
rs1796419   rs2708100   rs509152							
rs532140   rs550349   rs586305							
rs589699   rs610578   rs6489785							
rs674021   rs7956304   rs7964786							
rs868795							
rs11065283   rs11065311	2	2	43.69	14.29	3.24E-02	1.00E+00	8.16E-02
rs11065324   rs1151849							
rs11610621   rs1168954							
rs12370780   rs1696357							
rs1696363   rs2014355							
rs2047568   rs2062507							
rs2066938   rs3213572							
rs3794214   rs3883901							
rs4454799   rs531782   rs688402							
rs694303							
rs662138	3	2	43.69	14.29	3.24E-02	1.00E+00	8.16E-02
rs6909681	3	2	43.69	14.29	3.24E-02	1.00E+00	8.16E-02
rs2097020	3	3	47.95	14.29	3.35E-02	1.00E+00	8.16E-02
rs1501099	2	2	53.05	14.29	3.38E-02	1.00E+00	8.16E-02
rs10182550	2	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs10236173   rs1122171	1	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs11768892   rs1325183							
rs2100969   rs4258212							
rs4800019   rs949092							
rs10266	2	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs10817405	2	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs10968759	3	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs10992070   rs10992073	3	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs11616302   rs11619564	2	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs11737407	2	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs11810706	3	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs11854996	3	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs11906718	3	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs12467963	2	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs12668471	2	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs12908707	2	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs12920660	3	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs13335672	2	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs1382269	6	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs153577	3	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs1558036	2	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs1615876   rs1637931	2	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs16905023	2	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs17003161	2	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs1756248	2	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs17636779	7	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs17642503	2	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs1850725   rs2945908	3	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs2945913							
rs1992622   rs9925302	2	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs2116400	3	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs2211074   rs4568062	2	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs4597662   rs6730418							
rs2389137	19	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs2509354   rs375644	2	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs2710572	2	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs3124512	3	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs35528205	2	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs390350   rs441360	2	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs4719222	3	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs4905389	2	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs569619   rs6478866   rs6682490	2	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs6048361	5	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs6048372   rs742850	6	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs6442955	2	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs6667160	3	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02



rs6845779		2	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs7318895	rs7336995	24	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs9561607								
rs7334290		30	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs7631624		3	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs7778289		2	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs8002991		21	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs8041213		2	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs8041430		2	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs9301972		21	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs9301973		22	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs9301975		34	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs9569018		3	1	55.10	14.29	3.50E-02	1.00E+00	8.16E-02
rs2855149		2	2	42.32	14.29	3.60E-02	1.00E+00	8.16E-02
rs1359442		3	2	45.51	14.29	3.68E-02	1.00E+00	8.16E-02
rs7209945		3	3	44.95	14.29	3.68E-02	1.00E+00	8.16E-02
rs12706898		3	2	42.10	14.29	3.72E-02	1.00E+00	8.16E-02
rs10239860		3	3	43.76	14.29	3.73E-02	1.00E+00	8.16E-02
rs1079926		2	2	50.84	14.29	3.76E-02	1.00E+00	8.16E-02
rs1074530		6	2	50.69	14.29	3.82E-02	1.00E+00	8.16E-02
rs10840031		3	2	50.69	14.29	3.82E-02	1.00E+00	8.16E-02
rs2300701		5	4	48.39	14.29	3.92E-02	1.00E+00	8.16E-02
rs10873788	rs12090849	4	2	48.57	14.29	3.94E-02	1.00E+00	8.16E-02
rs12140121	rs17650138							
rs1770887	rs3818855							
rs6699682								
rs159667		2	2	48.57	14.29	3.94E-02	1.00E+00	8.16E-02
rs721204		4	2	48.57	14.29	3.94E-02	1.00E+00	8.16E-02
rs9575329		4	2	48.57	14.29	3.94E-02	1.00E+00	8.16E-02
rs748596		3	2	49.19	14.29	3.94E-02	1.00E+00	8.16E-02
rs10017084		3	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs1009524		2	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs10170193	rs17188518	3	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs1858104								
rs1032912	rs1385662	2	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
1807787	SNP_A-							
rs10418168	rs11668315	2	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs10491785	rs10491787	2	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs11138197	rs11138236							
rs11138241	rs11138256							
rs13296031	rs17427625							
rs7044969								
rs10944314	rs2207146	3	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs3918467	rs4707376							
rs6454638	rs9444504							
rs11007642		2	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs11137440		2	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs11510517		2	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs11648981	rs1275189	1	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs7131858	rs7983230							
rs9947426								
rs11786743		2	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs1224520		2	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs12507329		2	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs13337624	rs7188674	3	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs1513498		2	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs16823213		2	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs16907788	rs17484841	2	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs3793603								
rs17149367		2	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs17212658		2	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs2030619		2	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs2152597		2	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs2165378		2	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs2269221		2	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs2326478	rs316026	2	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs2589243		2	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs259217	rs259228	13	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs259218		16	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs259219		3	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs2703301		11	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs3775121		3	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs3913305		3	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs438268		9	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs4665273		2	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs6578077		3	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs6588567	rs7548272	2	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs7237247		2	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs9511410		2	1	53.26	14.29	3.99E-02	1.00E+00	8.16E-02
rs1003017		2	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02
rs10509986	rs10885507	2	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02
rs11196515	rs2419864							
rs10512806		3	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02
rs10834976	rs10951257	2	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02

rs10852516   rs1639161	1	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02
rs211191   rs211214   rs233507							
rs233509   rs233520   rs3891621							
rs4770949   rs638458   rs7552672							
rs879151   rs9578975							
rs11020484	2	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02
rs11576942   rs2477425	2	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02
rs4407519							
rs11621355	3	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02
rs11715915	3	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02
rs12224688	3	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02
rs12358487	3	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02
rs12502289	3	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02
rs12513056	3	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02
rs12613696   rs12614440	2	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02
rs2165094   rs9789645							
rs9789646							
rs12778638   rs17287339	2	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02
rs2105193   rs4457676							
rs13276910	2	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02
rs160447	3	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02
rs17086907	2	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02
rs1888344   rs1958648	3	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02
rs7160860							
rs1972384	2	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02
rs2578473	2	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02
rs258857	2	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02
rs2951308   rs2961117	2	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02
rs2961144   rs6464573							
rs379851	3	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02
rs380181	2	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02
rs4773179	3	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02
rs6493397	2	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02
rs6663310	2	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02
rs6678528	3	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02
rs7012	2	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02
rs7199343	2	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02
rs7208903	2	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02
rs9588385	3	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02
SNP_A-1876441	3	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02
SNP_A-1891494	2	1	53.14	14.29	4.02E-02	1.00E+00	8.16E-02
rs10519064   rs8027451	3	2	37.66	14.29	4.19E-02	1.00E+00	8.16E-02
rs26382	5	2	46.91	14.29	4.27E-02	1.00E+00	8.16E-02
rs10226373   rs1419780	2	2	39.37	14.29	4.27E-02	1.00E+00	8.16E-02
rs17169991   rs17169992							
rs579298	2	2	44.47	14.29	4.29E-02	1.00E+00	8.16E-02
rs1355847	2	2	45.09	14.29	4.36E-02	1.00E+00	8.16E-02
rs1992855   rs2364367	3	3	43.02	14.29	4.46E-02	1.00E+00	8.16E-02
rs12519860   rs12520624	3	2	48.29	14.29	4.61E-02	1.00E+00	8.16E-02
rs2194980	8	5	45.37	14.29	4.65E-02	1.00E+00	8.16E-02
rs7754652	2	2	38.90	14.29	4.67E-02	1.00E+00	8.16E-02
rs2286744	2	2	38.62	14.29	4.68E-02	1.00E+00	8.16E-02
rs10005762   rs11843798	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs2389044   rs6814157							
rs7668760   rs7673947							
rs7674844   rs9991654							
rs1004911   rs4784827	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs7185200							
rs10105319   rs4733551	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs4733552   rs6470746							
rs10167685   rs1024896	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs1039652   rs1506180	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs1506188							
rs10818362   rs11083428	1	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs11083430   rs7077025							
rs7114303   rs7194   rs9268645							
rs9268831   rs9364602   SNP_A-4246275							
rs10893670	3	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs10947723	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs10949374	3	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs11208137   rs904282	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs11621572	3	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs11631804   rs2170625	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs7165356   rs7165361							
rs7166401   rs8029617							
rs1171056	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs12462897	3	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs12470865   rs2371019	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs4142151							
rs12619786   rs4654279	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs13000755   rs16844839	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs957749							
rs1574525	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs1580379	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs1592968	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs16866864	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02

rs16917275   rs7923418	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs17815112	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs17836273	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs1836860   rs3821815	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs5029975							
rs1961637	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs2085351	3	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs2165241   rs4243042	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs2216405	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs2371015   rs2887915	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs307385   rs3118492	3	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs4133279   rs6980554	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs7829813							
rs4142152	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs4145202	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs4365449	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs4556361   rs7525951	3	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs4595655   rs9300984	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs9558452							
rs4672596	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs4752090   rs808259	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs6054464	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs6090149	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs7013883	3	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs760358	3	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs7610518	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs7720468	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs7812436	3	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs7958607	3	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs9367924	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs9374658	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs944906	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs9558453	3	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs9890937	2	1	50.90	14.29	4.69E-02	1.00E+00	8.16E-02
rs10025722   rs2412522	1	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs6502764   rs6800029							
rs6834659   rs6857264							
rs10101834		1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs10103826   rs4592425	2	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs10498103   rs12467416	2	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs17415118							
rs10509340	3	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs10829799	2	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs10860548	3	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs10971694	2	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs11078060	3	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs1124376   rs12488369	3	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs9819628							
rs11635590	2	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs11694853	2	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs11707278   rs2276871	2	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs4973898   rs6801859							
rs7625736   rs7631893							
rs9968170							
rs11773084   rs2373414	2	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs11856746	3	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs12470532   rs13039252	2	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs2024675   rs3814045							
rs3912201   rs441233   rs4456126							
rs4508454   rs7270247							
rs978716							
rs12680471	2	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs12726803	3	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs12929971	2	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs17710699   rs4397963	2	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs7329676							
rs17799470	3	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs2047888	2	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs2324812	2	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs2390279   rs9464431	2	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs9475805							
rs2788628	3	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs2833971	2	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs2999433	2	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs346613	4	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs352143	2	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs3756022   rs9307838	2	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs4595080	2	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs4636162	3	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs4681823	2	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs4835456   rs4835457   rs510299	2	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs531964   rs603011							
rs4977334	3	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs530991   rs7982250	2	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs683369	2	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs6840826	3	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs6896246	2	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02

rs7594155		2	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs7659366		2	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs7824610		3	1	50.85	14.29	4.71E-02	1.00E+00	8.16E-02
rs7194881	rs7196895	3	3	46.87	14.29	4.76E-02	1.00E+00	8.25E-02
rs424765		2	2	41.68	14.29	4.87E-02	1.00E+00	8.41E-02
rs300934	rs4277733	3	2	48.45	14.29	4.98E-02	1.00E+00	8.58E-02
rs4270544		4	2	48.45	14.29	4.98E-02	1.00E+00	8.58E-02
rs261948		3	3	38.88	14.29	5.03E-02	1.00E+00	8.66E-02
rs10486822		2	2	40.59	14.29	5.18E-02	1.00E+00	8.89E-02
rs1392880		4	3	45.92	14.29	5.19E-02	1.00E+00	8.89E-02
rs1501098	rs1501100	3	3	45.92	14.29	5.19E-02	1.00E+00	8.89E-02
rs2567397	rs7664292	4	3	45.92	14.29	5.19E-02	1.00E+00	8.89E-02
rs10489353		2	2	36.58	14.29	5.30E-02	1.00E+00	9.06E-02
rs258082		8	3	37.88	14.29	5.33E-02	1.00E+00	9.09E-02
rs7021164		2	2	47.62	14.29	5.40E-02	1.00E+00	9.20E-02
rs1107366	rs12636371	2	2	45.79	14.29	5.50E-02	1.00E+00	9.34E-02
rs1374804	rs1599910							
rs1823213	rs1868123							
rs1992854	rs1992856							
rs1992857	rs2121745							
rs4518075	rs4521172							
rs4646700	rs4679212							
rs4679217	rs9874508							
rs13060596	rs13070856	2	2	45.79	14.29	5.50E-02	1.00E+00	9.34E-02
rs158112		4	2	46.44	14.29	5.60E-02	1.00E+00	9.51E-02
rs12712384		2	2	44.89	14.29	5.71E-02	1.00E+00	9.67E-02
rs6081980		3	3	43.19	14.29	5.83E-02	1.00E+00	9.87E-02
rs10123714		2	2	41.67	14.29	5.91E-02	1.00E+00	9.97E-02
rs710889		2	2	41.67	14.29	5.91E-02	1.00E+00	9.97E-02
rs17733096		2	2	38.95	14.29	5.99E-02	1.00E+00	1.01E-01
rs13294922		8	2	33.66	14.29	6.34E-02	1.00E+00	1.06E-01
rs12894630		5	3	44.42	14.29	6.35E-02	1.00E+00	1.06E-01
rs16949181		3	3	29.60	14.29	6.42E-02	1.00E+00	1.06E-01
rs1957902		5	3	29.60	14.29	6.42E-02	1.00E+00	1.06E-01
rs11939527		3	3	40.91	14.29	6.53E-02	1.00E+00	1.06E-01
rs169712		5	3	40.91	14.29	6.53E-02	1.00E+00	1.06E-01
rs10512514		2	2	36.18	14.29	6.66E-02	1.00E+00	1.06E-01
rs1002321	rs1018702	2	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs10108270		2	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs10266534		10	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs10514480		3	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs11060669		2	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs11062524		2	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs11761388	rs4718785	10	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs12669177		2	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs12830955		2	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs13422432		2	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs13437455		3	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs151473	rs153191	3	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs17128050	rs17253619	2	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs17832281		2	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs1953998		2	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs2040788	rs2189521	2	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs2241990		2	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs2252641	rs4662414	2	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs2689154		3	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs3734974	rs754920	3	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs3861463		3	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs429419		2	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs4318234		2	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs4460877	rs4759527	2	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs7982027	rs7982253							
rs4718786		9	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs478070		2	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs4889485		2	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs4959299		3	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs530649	rs550448   rs849320	2	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs6020732		2	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs6058969		2	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs6559957		2	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs6697763		2	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs6713073		2	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs766434		2	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs7993025		3	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs890206		1	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs930072		3	1	45.43	14.29	6.68E-02	1.00E+00	1.06E-01
rs2593780		4	3	41.02	14.29	6.75E-02	1.00E+00	1.07E-01
rs10459109	rs2001133	2	2	43.38	14.29	6.78E-02	1.00E+00	1.07E-01
rs674240								
rs4933622		4	3	32.14	14.29	6.82E-02	1.00E+00	1.08E-01
rs2377041		4	3	41.35	14.29	7.23E-02	1.00E+00	1.14E-01
rs1316822	rs2807309	2	2	41.20	14.29	7.50E-02	1.00E+00	1.18E-01
rs7871836								
rs2296463	rs4881133	2	2	41.95	14.29	7.69E-02	1.00E+00	1.18E-01
rs2959842		2	2	36.89	14.29	7.70E-02	1.00E+00	1.18E-01
rs12106696		3	2	40.17	14.29	7.85E-02	1.00E+00	1.18E-01
rs1822339		6	3	32.35	14.29	7.88E-02	1.00E+00	1.18E-01

rs1001160		rs11163904		3		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs11579752		rs1159215									
rs12131344		rs1251584									
rs1302808		rs1498311									
rs17647178		rs5745347									
rs1001203		rs6736034		3		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs10186949				3		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs10805921		rs4704532		4		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs1154582		rs1382256		4		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs2724953											
rs11651699				3		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs11720580				3		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs11736002				4		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs11748603				4		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs11948613		rs11950943		3		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs12163993											
rs1251079				3		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs12596251				3		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs13178105				4		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs1445594				5		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs1478281		rs6708936		3		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs1580828				3		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs1675246		rs17725408		3		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs17803886											
rs1683860				3		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs16969946		rs9889895		4		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs17013332				3		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs17076866				3		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs17737768		rs2067774		3		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs7320612		rs9543542									
rs1823512				5		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs1932355				4		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs1981685		rs234508		3		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs2219172				3		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs2866149				3		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs2944277				3		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs4084180				3		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs4147536				3		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs546422				3		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs6499006				3		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs7152950				3		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs7334783				3		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs7666557				3		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs7977822				3		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs9484232		rs9495324		2		1	42.71	14.29	7.89E-02	1.00E+00	1.18E-01
rs2246428				10		3	29.29	14.29	8.27E-02	1.00E+00	1.24E-01
rs10489695				3		2	36.77	14.29	8.46E-02	1.00E+00	1.25E-01
rs10762539		rs1462541		3		2	36.77	14.29	8.46E-02	1.00E+00	1.25E-01
rs10762540		rs1156202		3		2	36.77	14.29	8.46E-02	1.00E+00	1.25E-01
rs1156203											
rs1185027				4		2	36.77	14.29	8.46E-02	1.00E+00	1.25E-01
rs1333099		rs1333100		3		2	36.77	14.29	8.46E-02	1.00E+00	1.25E-01
rs17184251		rs9289544									
rs2158376				5		2	36.77	14.29	8.46E-02	1.00E+00	1.25E-01
rs3761199				6		2	36.77	14.29	8.46E-02	1.00E+00	1.25E-01
rs4615448				3		2	36.77	14.29	8.46E-02	1.00E+00	1.25E-01
rs7820305				8		3	29.47	14.29	8.77E-02	1.00E+00	1.30E-01
rs1251551		rs1689271		3		2	32.86	14.29	8.93E-02	1.00E+00	1.32E-01
rs1796812		rs2792664									
rs1000050				3		3	29.44	14.29	9.29E-02	1.00E+00	1.37E-01
rs10064428				2		2	34.80	14.29	9.33E-02	1.00E+00	1.37E-01
rs11225703				3		3	36.27	14.29	9.51E-02	1.00E+00	1.40E-01
rs313408				5		3	36.27	14.29	9.51E-02	1.00E+00	1.40E-01
rs9976033				3		3	37.07	14.29	9.96E-02	1.00E+00	1.46E-01
rs8041815				3		3	27.96	14.29	1.03E-01	1.00E+00	1.47E-01
rs1399626		rs1515099		3		2	30.29	14.29	1.04E-01	1.00E+00	1.47E-01
rs1515108		rs1515116									
rs2673140											
rs2032033		rs6667717		2		2	30.29	14.29	1.04E-01	1.00E+00	1.47E-01
rs7517821		rs7522053									
rs7529320		rs9970096									
rs9830526				2		2	30.29	14.29	1.04E-01	1.00E+00	1.47E-01
rs1018503		rs11692553		2		2	37.01	14.29	1.05E-01	1.00E+00	1.47E-01
rs1264616		rs1551850									
rs1892543		rs1938522									
rs2523747		rs4302392									
rs6142046		rs6797870									
rs7719968		rs9295843									
rs9653179											
rs10913619		rs2701016		2		2	37.01	14.29	1.05E-01	1.00E+00	1.47E-01
rs4846446		rs6477592									
rs11078873				3		2	37.01	14.29	1.05E-01	1.00E+00	1.47E-01
rs11117970				3		2	37.01	14.29	1.05E-01	1.00E+00	1.47E-01
rs12542759		rs7007220		3		2	37.01	14.29	1.05E-01	1.00E+00	1.47E-01
rs7007939											
rs17618372		rs990714		3		2	37.01	14.29	1.05E-01	1.00E+00	1.47E-01
rs3783638				3		2	37.01	14.29	1.05E-01	1.00E+00	1.47E-01

rs4748387		7	2	37.01	14.29	1.05E-01	1.00E+00	1.47E-01
rs6712279		3	2	37.01	14.29	1.05E-01	1.00E+00	1.47E-01
rs7518523		3	2	37.01	14.29	1.05E-01	1.00E+00	1.47E-01
rs7765897		3	2	37.01	14.29	1.05E-01	1.00E+00	1.47E-01
rs965558		3	2	37.01	14.29	1.05E-01	1.00E+00	1.47E-01
rs10148850	rs12101290	2	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs12433023	rs2282121							
rs2415611	rs2415612							
rs2415626	rs4899720							
rs4903791	rs7155322							
rs8021508								
rs10209173		2	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs10462994		2	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs10497191		2	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs10845053	rs2742115	2	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs3741860	rs7305138							
rs10865731		2	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs11710980	rs1502298	3	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs11958159	rs316220	2	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs316226								
rs12431026	rs12431035	2	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs12871366	rs1336143							
rs4438182								
rs12468547		3	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs12513583		3	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs1277306		2	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs12959381	rs17817351	3	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs8090371	rs9962600							
rs12969033	rs38852	1	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs4564573	rs471766							
rs4787792	rs6478009							
rs7025144	rs7034482							
rs752471								
rs13167091		3	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs13292795		3	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs1482220		2	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs155377		2	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs1676988		2	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs16823313	rs16823318	2	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs6695173								
rs17190412		2	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs17603205		2	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs1820998		3	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs1995380		2	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs2036299	rs7299038	2	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs2123357	rs7917385	3	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs2245973	rs2246785	2	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs2256675								
rs2325561		2	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs259286		17	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs2833581		2	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs336462		3	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs3779106		2	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs3785729		2	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs39510		2	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs434410		2	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs4458905		2	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs4684602	rs4686283	2	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs4704298	rs6859341	2	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs4776573		3	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs4792286		3	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs6505265		2	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs6780425		2	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs7155306	rs8004000	2	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs9491202		3	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs9969729		2	1	37.24	14.29	1.08E-01	1.00E+00	1.47E-01
rs10075320		3	1	36.59	14.29	1.12E-01	1.00E+00	1.47E-01
rs10130720	rs11157594	2	1	36.59	14.29	1.12E-01	1.00E+00	1.47E-01
rs10158079		2	1	36.59	14.29	1.12E-01	1.00E+00	1.47E-01
rs10213019	rs6814406	2	1	36.59	14.29	1.12E-01	1.00E+00	1.47E-01
rs10852851		2	1	36.59	14.29	1.12E-01	1.00E+00	1.47E-01
rs10926186	rs12123394	2	1	36.59	14.29	1.12E-01	1.00E+00	1.47E-01
rs716603								
rs10981981	rs12931268	2	1	36.59	14.29	1.12E-01	1.00E+00	1.47E-01
rs7403957	rs7405208							
rs11065388		2	1	36.59	14.29	1.12E-01	1.00E+00	1.47E-01
rs1123514	rs17558955	2	1	36.59	14.29	1.12E-01	1.00E+00	1.47E-01
rs11713199	rs12630254	2	1	36.59	14.29	1.12E-01	1.00E+00	1.47E-01
rs1211319	rs2704638	2	1	36.59	14.29	1.12E-01	1.00E+00	1.47E-01
rs7974292								
rs12262842		2	1	36.59	14.29	1.12E-01	1.00E+00	1.47E-01
rs12630964	rs12639212	3	1	36.59	14.29	1.12E-01	1.00E+00	1.47E-01
rs1606237	rs2350278	2	1	36.59	14.29	1.12E-01	1.00E+00	1.47E-01
rs2541152								
rs17007920		2	1	36.59	14.29	1.12E-01	1.00E+00	1.47E-01
rs17011077		2	1	36.59	14.29	1.12E-01	1.00E+00	1.47E-01
rs17141284	rs4584085	2	1	36.59	14.29	1.12E-01	1.00E+00	1.47E-01

rs17668291		rs17729993		2	1	36.59	14.29	1.12E-01	1.00E+00	1.47E-01
rs9946494										
rs2326184		rs4346864		2	1	36.59	14.29	1.12E-01	1.00E+00	1.47E-01
rs2448111		rs4749184		2	1	36.59	14.29	1.12E-01	1.00E+00	1.47E-01
rs2736917		rs6693097		2	1	36.59	14.29	1.12E-01	1.00E+00	1.47E-01
rs3116535		rs4675386		2	1	36.59	14.29	1.12E-01	1.00E+00	1.47E-01
rs3849516		rs3849518		2	1	36.59	14.29	1.12E-01	1.00E+00	1.47E-01
rs4145499				2	1	36.59	14.29	1.12E-01	1.00E+00	1.47E-01
rs456598				2	1	36.59	14.29	1.12E-01	1.00E+00	1.47E-01
rs6674691				2	1	36.59	14.29	1.12E-01	1.00E+00	1.47E-01
rs7737281				3	1	36.59	14.29	1.12E-01	1.00E+00	1.47E-01
rs7809422		rs874599		2	1	36.59	14.29	1.12E-01	1.00E+00	1.47E-01
rs7994286				2	1	36.59	14.29	1.12E-01	1.00E+00	1.47E-01
rs8181847				2	1	36.59	14.29	1.12E-01	1.00E+00	1.47E-01
rs9457799				2	1	36.59	14.29	1.12E-01	1.00E+00	1.47E-01
rs9555862				3	1	36.59	14.29	1.12E-01	1.00E+00	1.47E-01
rs9735061				2	1	36.59	14.29	1.12E-01	1.00E+00	1.47E-01
rs9816495				2	1	36.59	14.29	1.12E-01	1.00E+00	1.47E-01
rs11265412		rs11805036		2	2	29.18	14.29	1.15E-01	1.00E+00	1.51E-01
rs10932980		rs9268362		2	2	28.70	14.29	1.19E-01	1.00E+00	1.56E-01
rs11077399		rs11211334		1	1	35.28	14.29	1.21E-01	1.00E+00	1.58E-01
rs17540498		rs17693924								
	rs2275380		rs2570950							
rs2737333		rs3766212		rs611468						
	rs744096									
rs6943375				3	1	35.28	14.29	1.21E-01	1.00E+00	1.58E-01
rs2065952				3	2	31.40	14.29	1.22E-01	1.00E+00	1.59E-01
rs6763882				2	2	31.40	14.29	1.22E-01	1.00E+00	1.59E-01
rs28588043		rs7882102		2	2	29.66	14.29	1.23E-01	1.00E+00	1.59E-01
rs10186240		rs2661798		2	1	34.92	14.29	1.23E-01	1.00E+00	1.59E-01
rs268122		rs268131		rs268138						
rs12585807		rs17460665		3	1	34.92	14.29	1.23E-01	1.00E+00	1.59E-01
rs1526538		rs284531		rs4791794	1	1	34.92	14.29	1.23E-01	1.00E+00
	rs7536659		rs7908131							
rs9594986										
rs17534670				2	1	34.92	14.29	1.23E-01	1.00E+00	1.59E-01
rs2381936				4	1	34.92	14.29	1.23E-01	1.00E+00	1.59E-01
rs29023		rs6413960		2	1	34.92	14.29	1.23E-01	1.00E+00	1.59E-01
rs713285				2	1	34.92	14.29	1.23E-01	1.00E+00	1.59E-01
rs934734				3	1	34.92	14.29	1.23E-01	1.00E+00	1.59E-01
rs2507002				3	2	28.14	14.29	1.26E-01	1.00E+00	1.63E-01
SNP_A-1931204				2	2	28.14	14.29	1.26E-01	1.00E+00	1.63E-01
rs10874325				3	3	29.11	14.29	1.28E-01	1.00E+00	1.65E-01
rs11645254				5	2	27.77	14.29	1.32E-01	1.00E+00	1.69E-01
rs532208				17	2	27.77	14.29	1.32E-01	1.00E+00	1.69E-01
rs11746037		rs11747180		3	2	29.48	14.29	1.37E-01	1.00E+00	1.77E-01
rs17805961				2	2	27.14	14.29	1.41E-01	1.00E+00	1.81E-01
rs11055041				4	1	31.52	14.29	1.48E-01	1.00E+00	1.88E-01
rs1117516		rs17782603		2	1	31.52	14.29	1.48E-01	1.00E+00	1.88E-01
rs2809943		rs475348		rs578597						
	rs6588416									
rs12665654				10	1	31.52	14.29	1.48E-01	1.00E+00	1.88E-01
rs1459060		rs1875732		2	1	31.52	14.29	1.48E-01	1.00E+00	1.88E-01
rs2485250		rs2654689								
rs6534127		rs6675825								
rs1591830				3	1	31.52	14.29	1.48E-01	1.00E+00	1.88E-01
rs3759763				3	1	31.52	14.29	1.48E-01	1.00E+00	1.88E-01
rs4763870				4	1	31.52	14.29	1.48E-01	1.00E+00	1.88E-01
rs4917774				3	1	31.52	14.29	1.48E-01	1.00E+00	1.88E-01
rs9342175				13	1	31.52	14.29	1.48E-01	1.00E+00	1.88E-01
rs13040407				3	2	26.12	14.29	1.56E-01	1.00E+00	1.98E-01
rs2089855		rs272842		rs272889	2	2	26.12	14.29	1.56E-01	1.00E+00
rs273913		rs274559		rs274561						
rs274567		rs4705928		rs7705189						
rs10099364				2	1	27.01	14.29	1.87E-01	1.00E+00	2.32E-01
rs11129978				2	1	27.01	14.29	1.87E-01	1.00E+00	2.32E-01
rs12765977				5	1	27.01	14.29	1.87E-01	1.00E+00	2.32E-01
rs12919591				2	1	27.01	14.29	1.87E-01	1.00E+00	2.32E-01
rs13155466				2	1	27.01	14.29	1.87E-01	1.00E+00	2.32E-01
rs13179862		rs1368391		2	1	27.01	14.29	1.87E-01	1.00E+00	2.32E-01
rs154533				2	1	27.01	14.29	1.87E-01	1.00E+00	2.32E-01
rs17108421				3	1	27.01	14.29	1.87E-01	1.00E+00	2.32E-01
rs17140654		rs6910841		2	1	27.01	14.29	1.87E-01	1.00E+00	2.32E-01
rs7274414										
rs1944951				2	1	27.01	14.29	1.87E-01	1.00E+00	2.32E-01
rs2982525				2	1	27.01	14.29	1.87E-01	1.00E+00	2.32E-01
rs4677169				2	1	27.01	14.29	1.87E-01	1.00E+00	2.32E-01
rs4734010				2	1	27.01	14.29	1.87E-01	1.00E+00	2.32E-01
rs4842239				2	1	27.01	14.29	1.87E-01	1.00E+00	2.32E-01
rs6774973				2	1	27.01	14.29	1.87E-01	1.00E+00	2.32E-01
rs7334943				2	1	27.01	14.29	1.87E-01	1.00E+00	2.32E-01
rs7592190				2	1	27.01	14.29	1.87E-01	1.00E+00	2.32E-01
rs806645				1	1	27.01	14.29	1.87E-01	1.00E+00	2.32E-01
rs9593407				2	1	27.01	14.29	1.87E-01	1.00E+00	2.32E-01
rs9803673				2	1	27.01	14.29	1.87E-01	1.00E+00	2.32E-01
rs9921415				3	1	27.01	14.29	1.87E-01	1.00E+00	2.32E-01
SNP_A-4244266				3	1	27.01	14.29	1.87E-01	1.00E+00	2.32E-01

rs17536158		2	2	24.17	14.29	1.89E-01	1.00E+00	2.35E-01
rs10135025		3	2	23.66	14.29	1.96E-01	1.00E+00	2.42E-01
rs354113		3	2	23.66	14.29	1.96E-01	1.00E+00	2.42E-01
rs7727858		2	2	23.08	14.29	2.02E-01	1.00E+00	2.50E-01
rs10238507	rs10277120	2	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs13238191	rs2299319   rs41562							
rs4730073								
rs10780526		3	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs10785175		3	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs10827283	rs9663087	5	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs10883041		9	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs10905104		2	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs10947809	rs1999045	2	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs10977801	rs12001482	2	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs12350794								
rs10982745		2	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs11057881		3	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs11188938	rs7908787	2	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs11623487		2	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs12144916		2	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs12668040		2	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs12763937		3	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs12887072		2	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs13106755	rs1872607	1	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs688248	rs833283							
rs13322246		9	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs1562861		5	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs17191246		3	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs1822338		7	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs1983193		3	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs2039334		5	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs2149986		2	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs2443426		6	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs2669014		3	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs2805810		3	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs3094138		2	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs4435224		3	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs4500523		3	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs4866533		2	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs551096		7	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs6020796		3	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs6601504		3	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs6736508	rs6753320	3	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs6759892	rs7563561							
rs7608175								
rs7166686		3	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs7227009		2	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs7913601		3	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs8005204		2	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs9261434	rs9261494	2	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs9299055		3	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs9944816		2	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs9966910		3	1	23.49	14.29	2.24E-01	1.00E+00	2.65E-01
rs10983560		3	2	22.24	14.29	2.26E-01	1.00E+00	2.65E-01
rs12520408	rs17076783	3	2	22.24	14.29	2.26E-01	1.00E+00	2.65E-01
rs12523424	rs7703821	3	2	22.24	14.29	2.26E-01	1.00E+00	2.65E-01
rs2863987		3	2	22.24	14.29	2.26E-01	1.00E+00	2.65E-01
rs637868	rs666930	2	2	22.24	14.29	2.26E-01	1.00E+00	2.65E-01
rs6593297	rs7822384	2	2	22.24	14.29	2.26E-01	1.00E+00	2.65E-01
rs1564348		2	2	19.91	14.29	2.71E-01	1.00E+00	3.19E-01
rs2239296		3	2	19.06	14.29	2.73E-01	1.00E+00	3.21E-01
rs11668687	rs47775	2	2	19.02	14.29	2.98E-01	1.00E+00	3.50E-01
rs11250378		2	2	17.62	14.29	3.34E-01	1.00E+00	3.91E-01
rs7269323	rs7271340	3	2	17.62	14.29	3.34E-01	1.00E+00	3.91E-01
rs12598711		2	2	15.50	14.29	3.75E-01	1.00E+00	4.39E-01
rs7636003		3	2	15.03	14.29	3.82E-01	1.00E+00	4.46E-01
rs11591673		2	2	13.88	14.29	4.27E-01	1.00E+00	4.89E-01
rs9806904		4	2	13.69	14.29	4.31E-01	1.00E+00	4.89E-01
rs10171173	rs10497528	2	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs1847420								
rs10485601	rs10485602	2	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs10485603								
rs10485689	rs2223424	3	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs2867064	rs6016703							
rs6030019	rs6072650							
rs6072660	rs6072667							
rs6093597	rs6102728							
rs7262414								
rs10834854		3	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs11082417		8	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs11242337	rs2073968	3	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs2073969								
rs11654370	rs7207687	6	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs11661117	rs12457013	3	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs1429573   rs2163107								
rs7227311	rs7245036							
rs11665249		2	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01



rs12024045		2	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs12658868	rs2108665	2	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs1362811	rs2897020	2	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs4957164	rs4957168							
rs4957169	rs7726449   rs96436							
rs1508523		3	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs16900583	rs1877427	3	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs971564								
rs17429123		2	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs17721181	rs7584450	2	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs2293896		2	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs2346453		2	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs300196		3	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs319407		1	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs327483	rs7111524	3	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs4272709		3	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs4328897		8	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs4854166		3	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs6017252	rs6065690	2	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs6093921	rs766622							
rs6661547		2	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs6684773		2	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs6698681		3	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs6751996	rs6752363	3	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs6846091		2	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs7256006		4	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs7478211		2	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs7578557		9	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs7667046		8	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs7758978		10	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs9308003		2	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs9593138		3	1	10.50	14.29	4.34E-01	1.00E+00	4.89E-01
rs10232999	rs1459958	2	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs9368368								
rs1036431		2	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs10509781		2	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs10520399		2	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs1081780		5	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs11123959		3	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs11646373		2	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs12018495	rs1901214	2	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs2544165	rs2544201							
rs7337996								
rs12206925	rs6905827	3	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs12228767		3	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs1353175	rs2185359	3	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs1369848		2	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs1372884	rs16998515	2	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs17015014	rs2099884							
rs2181774	rs2230576							
rs6823281								
rs1418873		2	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs1444432		2	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs1493018		2	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs1517661	rs2730985	2	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs152053	rs154724   rs159903	2	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs246351	rs45236							
rs16995415		2	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs17131213		2	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs17500902	rs1932604	2	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs1897495	rs9852257	2	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs2098279		2	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs2113889	rs254411   rs7097094	1	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs9815149								
rs2173615	rs2649823	2	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs4687267								
rs2244838		2	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs2384520		3	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs2411745		2	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs247008		2	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs2631360		3	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs2943160	rs7698467	3	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs295999		2	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs4254365		4	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs4668645		3	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs4684704		2	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs491322		2	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs6562995		2	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs6957725		2	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs6969537		3	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs7027029		2	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs708340		2	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs7298527		2	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs729969		3	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs747193		2	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs7602712		2	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs7773714		5	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01

rs8091351	4	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs868486	2	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs9553251	3	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs9787572	2	1	2.85	14.29	6.89E-01	1.00E+00	7.42E-01
rs10786240   rs2653448	1	1	1.26	14.29	7.91E-01	1.00E+00	8.43E-01
rs654379   rs730402							
rs1383525	4	1	1.26	14.29	7.91E-01	1.00E+00	8.43E-01
rs1964079	2	1	1.26	14.29	7.91E-01	1.00E+00	8.43E-01
rs2089220	2	1	1.26	14.29	7.91E-01	1.00E+00	8.43E-01
rs3780668	2	1	1.26	14.29	7.91E-01	1.00E+00	8.43E-01
rs3911238	4	1	1.26	14.29	7.91E-01	1.00E+00	8.43E-01
rs4621851	2	1	1.26	14.29	7.91E-01	1.00E+00	8.43E-01
rs4675542	7	1	1.26	14.29	7.91E-01	1.00E+00	8.43E-01
rs4760022	4	1	1.26	14.29	7.91E-01	1.00E+00	8.43E-01
rs6560005	5	1	1.26	14.29	7.91E-01	1.00E+00	8.43E-01
rs6960855	3	1	1.26	14.29	7.91E-01	1.00E+00	8.43E-01
rs7216104	3	1	1.26	14.29	7.91E-01	1.00E+00	8.43E-01
rs10029872   rs11728461	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs12509596   rs4512036							
rs4547831   rs6819385							
rs1014087	3	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs1075068   rs107690   rs1590429	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs242267   rs242270   rs242287							
rs369674   rs448580   rs451465							
rs4707346   rs4707351							
rs6454598   rs6909021							
rs6909200   rs6925648							
rs6926831   rs9351124							
rs9353465							
rs10809948   rs10809949	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs10824259	3	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs10825989   rs10825991	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs6481257   rs7081958							
rs10927166	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs10927483	3	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs11037908	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs11069612	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs11139966	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs11751085   rs17812980	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs2985700   rs3749870							
rs3935935   rs4072397							
rs11842729	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs1188817   rs242264   rs242265	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs242269   rs379455   rs410683							
rs6871490							
rs12192094   rs12200454	4	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs9348896							
rs1261363	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs12998782   rs17009716	3	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs7559955							
rs1328016   rs13324427	1	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs1899068   rs2033908							
rs4757953   rs4757957							
rs4888626   rs6033574   rs615086							
rs6903519   rs7973657							
rs1361518   rs9446171	3	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs1503904   rs3105307	3	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs3105340							
rs1561843	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs1581570   rs7800678	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs16940401   rs8051750	4	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs17024601	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs17099659	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs1831434	4	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs1924569	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs2036589	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs2376999	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs288701	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs2937353	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs339676	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs4588727	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs4867324	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs4940375	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs6071181	3	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs6483617	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs6507051	3	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs6584594	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs6586496	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs6748289	3	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs6901328	3	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs6941700	3	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs6970813	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs6978652	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs7193148	3	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs7515023	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs760193	4	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs7705566	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01

rs7745131	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs812855	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs905275   rs9357861	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs9396092	3	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs9450613	2	1	0.57	14.29	8.60E-01	1.00E+00	8.74E-01
rs12374017	3	2	2.09	14.29	8.64E-01	1.00E+00	8.77E-01
rs6547168	4	2	2.09	14.29	8.64E-01	1.00E+00	8.77E-01
rs10076899   rs10268219	1	1	0.08	14.29	9.46E-01	1.00E+00	9.47E-01
rs10514242   rs12452001							
rs13281139   rs17188557							
rs271661   rs4520181   rs4560424							
rs6100898   rs684471   rs886831							
rs10503656	23	1	0.08	14.29	9.46E-01	1.00E+00	9.47E-01
rs10507991   rs10507993	4	1	0.08	14.29	9.46E-01	1.00E+00	9.47E-01
rs17267257   rs17267292							
rs10507992   SNP_A-1833980	3	1	0.08	14.29	9.46E-01	1.00E+00	9.47E-01
SNP_A-1924774   SNP_A-2036590							
rs11888959	2	1	0.08	14.29	9.46E-01	1.00E+00	9.47E-01
rs12316815	4	1	0.08	14.29	9.46E-01	1.00E+00	9.47E-01
rs12497461	2	1	0.08	14.29	9.46E-01	1.00E+00	9.47E-01
rs16890931	2	1	0.08	14.29	9.46E-01	1.00E+00	9.47E-01
rs28288	6	1	0.08	14.29	9.46E-01	1.00E+00	9.47E-01
rs28294	8	1	0.08	14.29	9.46E-01	1.00E+00	9.47E-01
rs33731	13	1	0.08	14.29	9.46E-01	1.00E+00	9.47E-01
rs33767	6	1	0.08	14.29	9.46E-01	1.00E+00	9.47E-01
rs33773	7	1	0.08	14.29	9.46E-01	1.00E+00	9.47E-01
rs33794	7	1	0.08	14.29	9.46E-01	1.00E+00	9.47E-01
rs679791	5	1	0.08	14.29	9.46E-01	1.00E+00	9.47E-01
rs7026582	3	1	0.08	14.29	9.46E-01	1.00E+00	9.47E-01
rs9494756	2	1	0.08	14.29	9.46E-01	1.00E+00	9.47E-01
rs9886235	3	2	0.98	14.29	9.51E-01	1.00E+00	9.51E-01

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The report was generated on Fri Sep 25 04:00:46 2015 with R version 3.2.0 (2015-04-16). Thank you for using MetaboAnalyst! For suggestions and feedback please contact Jeff Xia ([jeff.xia@mcgill.ca](mailto:jeff.xia@mcgill.ca)).