

Integrated transcriptomics and metabolomics reveal the mechanism of alliin in improving hyperlipidemia

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Table S1 diet formulation in mice

diet number	GD450B		GD60	
name	35% sucrose control feed		60% high-fat feed	
Typical analysis	Mass ratio (%)	Energy ratio (%)	Mass ratio (%)	Energy ratio (%)
Protein	19.2	20	26	20
Carbohydrate	67.3	70	26	20
Fat	4.3	10	35	60
sum	/	100	/	100
Kcal/g	3.85	/	5.24	/
Product	Mass ratio (g/kg)	kcal	Mass ratio (g/kg)	Kcal
Casein	200	800	200	800
L-Cystine	3	12	3	12
Com Starch	315	1260	0	0
Maltodextrin	35	140	125	500
Sucrose	345	1380	63.8	255.2
Cellulose	50	0	50	0
Soybean Oil	25	225	25	225
Lard	20	180	245	2205
Mineral Mix	50	36	50	36
S10026B				

Vitamin Mix				
	10	39	10	39
AIN-76A				
Choline				
	2	0	2	0
Bitartrate				
sum	1055	4072	738.8	4072.2

Table S2 PCR primer sequences of gene related to liver lipid metabolism

Gene name	Forward	Reverse
Sqle	AGTTCGCTGCCTTCTCGGATA	GCTCCTGTTAATGTCGTTTCTGA
Cel	TGGAGGGCGTCAACAAGAAG	GTGGCCTGTAGGCATCGTTT
Ugt1a2	ATGGACACGGGACTATGTGTG	CATGGGTAACACCAGCACTTTT
Myc	ATGCCCCTCAACGTGAACTTC	CGCAACATAGGATGGAGAGCA
β-actin	GTGACGTTGACATCCGTAAAGA	GCCGGACTCATCGTACTCC

Table S3 Transcriptome analysis of significant difference genes among the three group, according to the criteria of $FC \geq 2$ and $p < 0.05$

Gene id	Gene name	Gene description	HFD_vs _control	alliin_vs _HFD	Su m
Genes	/	/	405	148	514
Number					
ENSMUS	Tmem2	transmembrane protein 215	yes down	no up	1

G0000004	15	[Source:MGI			
6593		Symbol;Acc:MGI:2444167]			
ENSMUS		predicted gene, 47917			
	Gm479				
G0000011		[Source:MGI	yes down	no up	1
	17				
2824		Symbol;Acc:MGI:6097168]			
ENSMUS					
		serum amyloid A 1 [Source:MGI			
G0000007	Saa1		no up	yes down	1
		Symbol;Acc:MGI:98221]			
4115					
ENSMUS		mitochondrially encoded			
		cytochrome c oxidase III			
G0000006	mt-Co3		yes down	yes up	2
		[Source:MGI			
4358		Symbol;Acc:MGI:102502]			
ENSMUS		family with sequence similarity			
	Fam11				
G0000003		117, member A [Source:MGI	yes down	no up	1
	7a				
8893		Symbol;Acc:MGI:2144564]			
ENSMUS		predicted gene 16283			
	Gm162				
G0000008		[Source:MGI	no down	yes up	1
	83				
7020		Symbol;Acc:MGI:3826591]			
ENSMUS		NADH:ubiquinone			
	Ndufaf	oxidoreductase complex			
G0000002			yes down	no up	1
	5	assembly factor 5 [Source:MGI			
7384		Symbol;Acc:MGI:1916737]			

ENSMUS		CTF8, chromosome transmission			
G0000004	Chtf8	fidelity factor 8 [Source:MGI	no up	yes down	1
6691		Symbol;Acc:MGI:2443370]			
ENSMUS		hepcidin antimicrobial peptide 2			
G0000005	Hamp2	[Source:MGI	yes down	no up	1
6978		Symbol;Acc:MGI:2153530]			
ENSMUS		thioredoxin interacting protein			
G0000003	Txnip	[Source:MGI	yes up	no down	1
8393		Symbol;Acc:MGI:1889549]			
ENSMUS		serine (or cysteine) peptidase			
G0000002	Serpine	inhibitor, clade E, member 2	yes up	no down	1
6249	2	[Source:MGI			
		Symbol;Acc:MGI:101780]			
ENSMUS		predicted gene, 40923			
G0000011	Gm409	[Source:MGI	yes up	no down	1
4710	23	Symbol;Acc:MGI:5623808]			
ENSMUS		predicted gene 28756			
G0000010	Gm287	[Source:MGI	no down	yes up	1
9887	56	Symbol;Acc:MGI:5579462]			
ENSMUS		glycoprotein m6a [Source:MGI			
G0000003	Gpm6a	Symbol;Acc:MGI:107671]	yes down	yes up	2
1517					

ENSMUS		phosphatase, orphan 1			
G0000005	Phospho1	[Source:MGI	yes up	no down	1
0860		Symbol;Acc:MGI:2447348]			
ENSMUS		breast cancer 1, early onset			
G0000001	Brcal	[Source:MGI	no down	yes down	1
7146		Symbol;Acc:MGI:104537]			
ENSMUS		B cell leukemia/lymphoma 2			
G0000008	Bcl2a1b	related protein A1b [Source:MGI	yes down	no down	1
9929		Symbol;Acc:MGI:1278326]			
ENSMUS		immunoglobulin kappa variable			
G0000007	Igkv12-46	12-46 [Source:MGI	yes down	no down	1
6564		Symbol;Acc:MGI:4439773]			
ENSMUS		lysophosphatidic acid receptor 2			
G0000003	Lpar2	[Source:MGI	yes down	no up	1
1861		Symbol;Acc:MGI:1858422]			
ENSMUS		unkempt family like zinc finger			
G0000001	Unkl	[Source:MGI	yes up	no down	1
5127		Symbol;Acc:MGI:1921404]			
ENSMUS		predicted gene, 26588			
G0000009	Gm26588	[Source:MGI	yes up	no down	1
7730		Symbol;Acc:MGI:5477082]			
ENSMUS	Gm503	predicted gene, 50388	no up	yes down	1

G0000011	88	[Source:MGI			
7789		Symbol;Acc:MGI:6303291]			
ENSMUS		peroxisomal membrane protein 4			
G0000000	Pxmp4	[Source:MGI	yes up	no down	1
0876		Symbol;Acc:MGI:1891701]			
ENSMUS		predicted gene 42566			
	Gm425				
G0000010		[Source:MGI	no down	yes up	1
	66				
4806		Symbol;Acc:MGI:5662703]			
ENSMUS		trehalase (brush-border			
		membrane glycoprotein)			
G0000003	Treh	[Source:MGI	yes up	no down	1
2098		Symbol;Acc:MGI:1926230]			
ENSMUS					
G0000000	Epha2	Eph receptor A2 [Source:MGI	yes up	no down	1
6445		Symbol;Acc:MGI:95278]			
ENSMUS		Hoxa transcript antisense RNA,			
	Hotair				
G0000008		myeloid-specific 1 [Source:MGI	yes down	no up	1
7658	m1	Symbol;Acc:MGI:3705155]			
ENSMUS		chemokine (C-C motif) ligand 5			
G0000003	Ccl5	[Source:MGI	yes down	no up	1
5042		Symbol;Acc:MGI:98262]			
ENSMUS	Ackr2	atypical chemokine receptor 2	yes up	no down	1

G0000004		[Source:MGI			
4534		Symbol;Acc:MGI:1891697]			
ENSMUS		dysbindin (dystrobrevin binding			
		protein 1) domain containing 2			
G0000001	Dbn	[Source:MGI	yes down	no up	1
7734		Symbol;Acc:MGI:106562]			
ENSMUS		indolethylamine			
		N-methyltransferase			
G0000000	Inmt	[Source:MGI	yes down	no up	1
3477		Symbol;Acc:MGI:102963]			
ENSMUS		cystatin F (leukocystatin)			
G0000006	Cst7	[Source:MGI	no down	yes down	1
8129		Symbol;Acc:MGI:1298217]			
ENSMUS		solute carrier family 25, member			
	Slc25a3	30 [Source:MGI	yes up	no up	1
G0000002	0	Symbol;Acc:MGI:1914804]			
2003					
ENSMUS		predicted gene, 48840			
	Gm488	[Source:MGI	no down	yes up	1
G0000011	40	Symbol;Acc:MGI:6098571]			
0899					
ENSMUS		follistatin [Source:MGI			
G0000002	Fst	Symbol;Acc:MGI:95586]	yes down	no up	1
1765					

ENSMUS		neuronal regeneration related			
G0000004	Nrep	protein [Source:MGI	yes down	no up	1
2834		Symbol;Acc:MGI:99444]			
ENSMUS		predicted gene 14097			
G0000008	Gm140	[Source:MGI	yes up	no down	1
4839	97	Symbol;Acc:MGI:3651729]			
ENSMUS		Ro60, Y RNA binding protein			
G0000001	Ro60	[Source:MGI	no down	yes up	1
8199		Symbol;Acc:MGI:106652]			
ENSMUS		sterol regulatory element binding			
G0000002	Srebf1	transcription factor 1	yes down	no down	1
0538		[Source:MGI			
		Symbol;Acc:MGI:107606]			
ENSMUS		predicted gene 45792			
G0000010	Gm457	[Source:MGI	yes down	no up	1
8884	92	Symbol;Acc:MGI:5804907]			
ENSMUS		predicted gene, 47357			
G0000011	Gm473	[Source:MGI	no down	yes up	1
3386	57	Symbol;Acc:MGI:6096262]			
ENSMUS		defensin beta 1 [Source:MGI			
G0000004	Defb1	Symbol;Acc:MGI:1096878]	no down	yes up	1
4748					

ENSMUS		zinc finger protein 970			
G0000007	Zfp970	[Source:MGI	yes down	no up	1
8866		Symbol;Acc:MGI:3652255]			
ENSMUS		nudix (nucleoside diphosphate			
		linked moiety X)-type motif 18			
G0000004	Nudt18	[Source:MGI	yes up	no down	1
5211		Symbol;Acc:MGI:2385853]			
ENSMUS		acid phosphatase, prostate			
G0000003	Acpp	[Source:MGI	yes down	no down	1
2561		Symbol;Acc:MGI:1928480]			
ENSMUS					
G0000007	Amy2a	amylase 2a1 [Source:MGI	yes up	yes down	2
	1	Symbol;Acc:MGI:104548]			
0360					
ENSMUS		predicted gene, 49366			
	Gm493				
G0000011		[Source:MGI	yes up	yes down	2
	66				
3475		Symbol;Acc:MGI:6121579]			
ENSMUS		predicted gene, 48309			
	Gm483				
G0000011		[Source:MGI	no down	yes up	1
	09				
3476		Symbol;Acc:MGI:6097758]			
ENSMUS		guanylate binding protein 11			
G0000009	Gbp11	[Source:MGI	yes down	yes up	2
2021		Symbol;Acc:MGI:3646307]			

ENSMUS		adaptor-related protein complex			
G0000009	Ap3s1- ps2 4257	3, sigma 1 subunit, pseudogene 2 [Source:MGI Symbol;Acc:MGI:1929217]	yes down	no up	1
ENSMUS	Slc25a4	solute carrier family 25, member			
G0000004	7 8856	47 [Source:MGI Symbol;Acc:MGI:2144766]	yes up	no down	1
ENSMUS		sulfiredoxin 1 homolog (S.			
G0000003	Srxn1 2802	cerevisiae) [Source:MGI Symbol;Acc:MGI:104971]	yes up	no down	1
ENSMUS		solute carrier family 10			
G0000003	Slc10a3 2806	(sodium/bile acid cotransporter family), member 3 [Source:MGI Symbol;Acc:MGI:95048]	no up	yes down	1
ENSMUS		sushi domain containing 4			
G0000003	Susd4 8576	[Source:MGI Symbol;Acc:MGI:2138351]	yes up	no down	1
ENSMUS		major facilitator superfamily			
G0000002	Mfsd2a 8655	domain containing 2A [Source:MGI Symbol;Acc:MGI:1923824]	yes up	yes down	2
ENSMUS	Gpat3	glycerol-3-phosphate	yes up	no down	1

G0000002		acyltransferase 3 [Source:MGI			
9314		Symbol;Acc:MGI:3603816]			
ENSMUS	181006	RIKEN cDNA 1810064F22 gene			
G0000009	4F22Ri	[Source:MGI	yes down	no up	1
0925	k	Symbol;Acc:MGI:1917112]			
ENSMUS		predicted gene, 47025			
	Gm470				
G0000011		[Source:MGI	no down	yes up	1
	25				
2012		Symbol;Acc:MGI:6095715]			
ENSMUS		fatty acid binding protein 5,			
G0000002	Fabp5	epidermal [Source:MGI	yes down	no up	1
7533		Symbol;Acc:MGI:101790]			
ENSMUS		primase and polymerase			
G0000003	Primpol	(DNA-directed) [Source:MGI	yes down	no up	1
8225		Symbol;Acc:MGI:3603756]			
ENSMUS		cDNA sequence BC023105			
	BC023				
G0000006		[Source:MGI	yes down	no up	1
	105				
3388		Symbol;Acc:MGI:2384767]			
ENSMUS		chemokine (C-X-C motif) ligand			
G0000002	Cxcl9	9 [Source:MGI	yes down	no up	1
9417		Symbol;Acc:MGI:1352449]			
ENSMUS	Gm296	predicted gene 29668			
			no down	yes up	1
G0000009	68	[Source:MGI			

9835		Symbol;Acc:MGI:5580374]			
ENSMUS		predicted gene, 33543			
G0000011	Gm335				
	43	[Source:MGI	yes up	no up	1
0353		Symbol;Acc:MGI:5592702]			
ENSMUS	D03005	RIKEN cDNA D030055H07			
G0000008	5H07Ri	gene [Source:MGI	yes up	no down	1
6296	k	Symbol;Acc:MGI:3605036]			
ENSMUS		hypoxia inducible lipid droplet			
G0000004	Hilpda	associated [Source:MGI	yes up	no up	1
3421		Symbol;Acc:MGI:1916823]			
ENSMUS		zinc finger, C2HC-type			
G0000004	Zc2hc1	containing 1A [Source:MGI	yes down	yes up	2
	a				
3542		Symbol;Acc:MGI:1914556]			
ENSMUS		paralemmmin [Source:MGI			
G0000003	Palm	Symbol;Acc:MGI:1261814]	yes down	no up	1
5863					
ENSMUS	231004	RIKEN cDNA 2310040G24			
G0000010	0G24Ri	gene [Source:MGI	yes down	no up	1
1655	k	Symbol;Acc:MGI:1916897]			
ENSMUS		reproductive homeobox 5			
G0000009	Rhox5	[Source:MGI	yes down	no down	1
5180		Symbol;Acc:MGI:97538]			

ENSMUS		pyruvate kinase liver and red			
G0000004	Pklr	blood cell [Source:MGI	yes down	no down	1
1237		Symbol;Acc:MGI:97604]			
ENSMUS		predicted gene 17167			
G0000009	Gm171	[Source:MGI	no down	yes up	1
67					
1542		Symbol;Acc:MGI:4937994]			
ENSMUS		actin binding transcription			
G0000003	Abitra	modulator [Source:MGI	yes up	no down	1
8827	m	Symbol;Acc:MGI:2677850]			
ENSMUS		mucin 16 [Source:MGI			
G0000010	Muc16	Symbol;Acc:MGI:1920982]	yes down	no up	1
9564					
ENSMUS		sperm acrosome associated 6			
G0000008	Spaca6	[Source:MGI	yes down	no up	1
0316		Symbol;Acc:MGI:1922452]			
ENSMUS		immunoglobulin kappa variable			
G0000007	Igkv5-3	5-39 [Source:MGI	yes up	no down	1
6569	9	Symbol;Acc:MGI:2686255]			
ENSMUS		predicted gene, 17644			
G0000009	Gm176	[Source:MGI	no down	yes up	1
7171	44	Symbol;Acc:MGI:4937278]			
ENSMUS	Gm428	predicted gene 42857	yes down	no up	1

G0000010	57	[Source:MGI			
6924		Symbol;Acc:MGI:5662994]			
ENSMUS	943003	RIKEN cDNA 9430037G07			
G0000009	7G07Ri	gene [Source:MGI	yes up	no up	1
7073	k	Symbol;Acc:MGI:2444544]			
ENSMUS		mitogen-activated protein kinase			
	Map3k				
G0000003		kinase kinase 13 [Source:MGI	yes up	no down	1
	13				
3618		Symbol;Acc:MGI:2444243]			
ENSMUS		tRNA methyltransferase 9B			
G0000003	Trmt9b	[Source:MGI	yes up	no down	1
9620		Symbol;Acc:MGI:2442328]			
ENSMUS		zinc finger CCCH type			
	Zc3h11				
G0000010		containing 11A [Source:MGI	no down	yes up	1
	a				
2976		Symbol;Acc:MGI:1917829]			
ENSMUS		predicted gene 45457			
	Gm454				
G0000011		[Source:MGI	no down	yes up	1
	57				
0411		Symbol;Acc:MGI:5791293]			
ENSMUS		cytokine inducible			
		SH2-containing protein			
G0000003	Cish	[Source:MGI	yes down	no up	1
2578		Symbol;Acc:MGI:103159]			
ENSMUS	Fut11	fucosyltransferase 11	yes down	yes up	2

G0000003		[Source:MGI			
9357		Symbol;Acc:MGI:1920318]			
ENSMUS		acyl-CoA synthetase long-chain			
G0000001	Acs11	family member 1 [Source:MGI	yes up	no down	1
8796		Symbol;Acc:MGI:102797]			
ENSMUS		UDP glucuronosyltransferase 1			
		family, polypeptide A2			
G0000009	Ugt1a2	[Source:MGI	no down	yes up	1
0171		Symbol;Acc:MGI:3576049]			
ENSMUS	393040	RIKEN cDNA 3930402G23			
G0000003	2G23Ri	gene [Source:MGI	yes up	no up	1
8917	k	Symbol;Acc:MGI:1921277]			
ENSMUS		predicted gene 43110			
	Gm431	[Source:MGI	yes up	no up	1
G0000010	10	Symbol;Acc:MGI:5663247]			
5081					
ENSMUS		kallikrein 1-related pepidase b4			
G0000006	Klk1b4	[Source:MGI	yes down	no up	1
6513		Symbol;Acc:MGI:97320]			
ENSMUS		leucine rich repeat containing 15			
G0000005	Lrrc15	[Source:MGI	yes up	no down	1
2316		Symbol;Acc:MGI:1921738]			
ENSMUS	Gm457	predicted gene 45732	no down	yes up	1

G0000011	32	[Source:MGI			
0704		Symbol;Acc:MGI:5804847]			
ENSMUS		carboxylesterase 4A			
G0000006	Ces4a	[Source:MGI	no up	yes up	1
0560		Symbol;Acc:MGI:2384581]			
ENSMUS		cytochrome P450, family 7,			
		subfamily b, polypeptide 1			
G0000003	Cyp7b1	[Source:MGI	yes up	no up	1
9519		Symbol;Acc:MGI:104978]			
ENSMUS		zinc finger protein 454			
G0000004	Zfp454	[Source:MGI	yes down	no up	1
8728		Symbol;Acc:MGI:2679253]			
ENSMUS		solute carrier family 2 (facilitated			
		glucose transporter), member 4			
G0000001	Slc2a4	[Source:MGI	yes down	no up	1
8566		Symbol;Acc:MGI:95758]			
ENSMUS		predicted gene, 47789			
	Gm477				
G0000011		[Source:MGI	no down	yes up	1
89					
0838		Symbol;Acc:MGI:6096957]			
ENSMUS					
		serum amyloid A 2 [Source:MGI			
G0000005	Saa2		no up	yes down	1
7465		Symbol;Acc:MGI:98222]			

ENSMUS		predicted gene 11695			
G0000008	Gm116	[Source:MGI	yes up	yes down	2
5651	95	Symbol;Acc:MGI:3649841]			
ENSMUS		membrane-spanning 4-domains,			
G0000005	Ms4a4b	subfamily A, member 4B	yes down	no up	1
6290		[Source:MGI			
		Symbol;Acc:MGI:1913083]			
ENSMUS		tRNA methyltransferase 61A			
G0000006	Trmt61	[Source:MGI	yes up	no down	1
0950	a	Symbol;Acc:MGI:2443487]			
ENSMUS		predicted gene 43189			
G0000010	Gm431	[Source:MGI	no down	yes up	1
5909	89	Symbol;Acc:MGI:5663326]			
ENSMUS		solute carrier family 16			
G0000004	Slc16a1	(monocarboxylic acid	yes up	no down	1
4367	3	transporters), member 13			
		[Source:MGI			
		Symbol;Acc:MGI:1916559]			
ENSMUS		small nucleolar RNA host gene			
G0000008	Snhg15	15 [Source:MGI	no down	yes up	1
5156		Symbol;Acc:MGI:3650059]			
ENSMUS	Mr1	major histocompatibility	yes down	no down	1

G0000002		complex, class I-related			
6471		[Source:MGI			
		Symbol;Acc:MGI:1195463]			
ENSMUS	C13004	RIKEN cDNA C130046K22			
G0000008	6K22Ri	gene [Source:MGI	yes up	no down	1
5154	k	Symbol;Acc:MGI:3026935]			
ENSMUS					
G0000001	Actn1	actinin, alpha 1 [Source:MGI	yes down	no up	1
5143		Symbol;Acc:MGI:2137706]			
ENSMUS		glutaminyl-tRNA synthase			
G0000001	Qrs11	(glutamine-hydrolyzing)-like 1	yes up	no down	1
9863		[Source:MGI			
		Symbol;Acc:MGI:1923813]			
ENSMUS		monocyte to macrophage			
G0000003	Mmd2	differentiation-associated 2	yes down	no down	1
9533		[Source:MGI			
		Symbol;Acc:MGI:1922354]			
ENSMUS		cytochrome P450, family 4,			
G0000006	Cyp4a1	subfamily a, polypeptide 10	yes up	no down	1
6072	0	[Source:MGI			
		Symbol;Acc:MGI:88611]			
ENSMUS	Chrna4	cholinergic receptor, nicotinic,	yes down	no down	1

G0000002		alpha polypeptide 4			
7577		[Source:MGI			
		Symbol;Acc:MGI:87888]			
ENSMUS		solute carrier family 34 (sodium			
		phosphate), member 2			
G0000002	Slc34a2	[Source:MGI	yes up	no down	1
9188		Symbol;Acc:MGI:1342284]			
ENSMUS		G0/G1 switch gene 2			
G0000000	G0s2	[Source:MGI	yes up	no down	1
9633		Symbol;Acc:MGI:1316737]			
ENSMUS		neuritin 1 [Source:MGI			
G0000003	Nrn1	Symbol;Acc:MGI:1915654]	yes down	no up	1
9114					
ENSMUS		zinc finger protein 85			
G0000005	Zfp85	[Source:MGI	no down	yes up	1
8331		Symbol;Acc:MGI:107767]			
ENSMUS		predicted gene 16559			
	Gm165	[Source:MGI	no down	yes up	1
G0000008	59	Symbol;Acc:MGI:4414979]			
9635					
ENSMUS		ankyrin repeat domain 29			
	Ankrd2	[Source:MGI	yes down	no up	1
G0000005	9	Symbol;Acc:MGI:2687055]			
7766					

ENSMUS		predicted gene 29571			
G0000010	Gm295	[Source:MGI	yes down	no down	1
1537	71	Symbol;Acc:MGI:5580277]			
ENSMUS		predicted gene 43660			
G0000010	Gm436	[Source:MGI	yes down	no up	1
7352	60	Symbol;Acc:MGI:5663797]			
ENSMUS		methylenetetrahydrofolate			
G0000002	Mthfr	reductase [Source:MGI	yes up	no down	1
9009		Symbol;Acc:MGI:106639]			
ENSMUS		predicted gene 13292			
G0000008	Gm132	[Source:MGI	yes down	yes up	2
2424	92	Symbol;Acc:MGI:3649470]			
ENSMUS		transmembrane protein 120A			
G0000003	Tmem1	[Source:MGI	yes up	no down	1
9886	20a	Symbol;Acc:MGI:2686991]			
ENSMUS		peptidylprolyl isomerase			
G0000007	Ppil6	(cyclophilin)-like 6 [Source:MGI	no down	yes up	1
8451		Symbol;Acc:MGI:1920325]			
ENSMUS		WD repeat containing planar cell			
G0000002	Wdpcp	polarity effector [Source:MGI	yes down	no up	1
0319		Symbol;Acc:MGI:2144467]			
ENSMUS	Dio3os	deiodinase, iodothyronine type	yes down	no up	1

G0000011		III, opposite strand [Source:MGI			
3581		Symbol;Acc:MGI:2664395]			
ENSMUS		torsin family 3, member A			
G0000006	Tor3a	[Source:MGI	yes up	no down	1
0519		Symbol;Acc:MGI:1353652]			
ENSMUS		storkhead box 2 [Source:MGI			
G0000003	Stox2	Symbol;Acc:MGI:1918319]	yes up	no down	1
8143					
ENSMUS		predicted gene 15622			
G0000008	Gm156	[Source:MGI	yes up	no down	1
5834	22	Symbol;Acc:MGI:3783067]			
ENSMUS		uridine phosphorylase 2			
G0000002	Upp2	[Source:MGI	yes down	no up	1
6839		Symbol;Acc:MGI:1923904]			
ENSMUS		asparagine synthetase			
G0000002	Asns	[Source:MGI	yes up	no up	1
9752		Symbol;Acc:MGI:1350929]			
ENSMUS		serine (or cysteine) peptidase			
G0000007	Serpina	inhibitor, clade A, member 1E	yes up	no up	1
2849	1e	[Source:MGI			
		Symbol;Acc:MGI:891967]			
ENSMUS	Prss2	protease, serine 2 [Source:MGI	yes up	no down	1

G0000005		Symbol;Acc:MGI:102759]			
7163					
ENSMUS		predicted gene, 16867			
G0000009	Gm168	[Source:MGI	yes down	no up	1
3954	67	Symbol;Acc:MGI:4439791]			
ENSMUS		phosphomannomutase 1			
G0000002	Pmm1	[Source:MGI	yes up	no down	1
2474		Symbol;Acc:MGI:1353418]			
ENSMUS		myomesin family, member 3			
G0000003	Myom3	[Source:MGI	yes up	no down	1
7139		Symbol;Acc:MGI:2685280]			
ENSMUS		piggyBac transposable element			
G0000005	Pgbd1	derived 1 [Source:MGI	no up	yes down	1
5313		Symbol;Acc:MGI:2441675]			
		serine (or cysteine) peptidase			
ENSMUS		inhibitor, clade A (alpha-1			
G0000004	Serpina	antiproteinase, antitrypsin),	yes down	no up	1
1567	12	member 12 [Source:MGI			
		Symbol;Acc:MGI:1915304]			
ENSMUS		heat shock protein 4 like			
G0000002	Hspa4l	[Source:MGI	yes up	no down	1
5757		Symbol;Acc:MGI:107422]			

ENSMUS					
G0000006	Msln	mesothelin [Source:MGI	yes down	no up	1
3011		Symbol;Acc:MGI:1888992]			
ENSMUS					
G0000000	Krt23	keratin 23 [Source:MGI	yes up	no down	1
6777		Symbol;Acc:MGI:2148866]			
ENSMUS					
G0000002	Lpin1	lipin 1 [Source:MGI	no up	yes down	1
0593		Symbol;Acc:MGI:1891340]			
ENSMUS					
G0000004	Pcdhb1	protocadherin beta 16			
7910	6	[Source:MGI	no down	yes up	1
		Symbol;Acc:MGI:2136752]			
ENSMUS					
G0000002	Map2k	mitogen-activated protein kinase			
0623	6	kinase 6 [Source:MGI	yes down	no up	1
		Symbol;Acc:MGI:1346870]			
ENSMUS					
G0000004	Bmf	BCL2 modifying factor			
0093		[Source:MGI	yes down	no up	1
		Symbol;Acc:MGI:2176433]			
ENSMUS					
G0000000	Ccne1	cyclin E1 [Source:MGI	yes down	no down	1
2068		Symbol;Acc:MGI:88316]			
ENSMUS					
	Lad1	ladinin [Source:MGI	yes up	no down	1

G0000004		Symbol;Acc:MGI:109343]			
1782					
ENSMUS		predicted gene, 20559			
	Gm205				
G0000010		[Source:MGI	yes down	yes up	2
	59				
6734		Symbol;Acc:MGI:5295666]			
ENSMUS		retinol saturase (all trans retinol			
G0000005	Retsat	13,14 reductase) [Source:MGI	yes up	no down	1
6666		Symbol;Acc:MGI:1914692]			
ENSMUS		family with sequence similarity			
	Fam83				
G0000002		83, member D [Source:MGI	yes down	no down	1
	d				
7654		Symbol;Acc:MGI:1919128]			
	ENSMUSG00002076697		yes down	no up	1
ENSM					
		serine (or cysteine) peptidase inhibitor,			
USG0	Serp				
		clade E, member 1 [Source:MGI	no up	yes down	1
00000	ine1				
		Symbol;Acc:MGI:97608]			
37411					
ENSM					
	Pcd	protocadherin gamma subfamily A, 8			
USG0					
	hga	[Source:MGI	no down	yes up	1
00001					
	8	Symbol;Acc:MGI:1935221]			
03897					
ENSM	Ccn	cyclin F [Source:MGI			
			yes up	no down	1
USG0	f	Symbol;Acc:MGI:102551]			

00000					
72082					
ENSM					
USG0	Gm	predicted gene, 31583 [Source:MGI			
00001	315	Symbol;Acc:MGI:5590742]	yes up	yes up	2
15919	83				
ENSM					
USG0	Stea	six transmembrane epithelial antigen of			
00000	p2	prostate 2 [Source:MGI	yes down	no up	1
15653		Symbol;Acc:MGI:1921301]			
ENSM					
USG0	Nge	neuronal guanine nucleotide exchange			
00000	f	factor [Source:MGI	yes down	no up	1
26259		Symbol;Acc:MGI:1858414]			
ENSM					
USG0	Lrm	leucine rich melanocyte differentiation			
00000	da	associated [Source:MGI	yes down	no up	1
63458		Symbol;Acc:MGI:1923883]			
ENSM					
USG0	Cyp	cytochrome P450, family 51			
00000	51	[Source:MGI	yes up	no down	1
01467		Symbol;Acc:MGI:106040]			

ENSM					
	Gm				
USG0		predicted gene, 32699 [Source:MGI		no no	
	326		yes down		1
00001		Symbol;Acc:MGI:5591858]		change	
	99				
13528					
ENSM					
		cell death-inducing DFFA-like effector			
USG0	Cide				
		c [Source:MGI	yes up	no down	1
00000	c				
		Symbol;Acc:MGI:95585]			
30278					
ENSM					
		tubulin tyrosine ligase-like family,			
USG0	Ttll				
		member 8 [Source:MGI	no up	yes down	1
00000	8				
		Symbol;Acc:MGI:1922902]			
22388					
ENSM					
	Gm				
USG0		predicted gene 15470 [Source:MGI			
	154		yes down	no up	1
00000		Symbol;Acc:MGI:3641891]			
	70				
83500					
ENSM					
		mevalonate (diphospho) decarboxylase			
USG0					
	Mvd	[Source:MGI	yes up	no down	1
00000					
		Symbol;Acc:MGI:2179327]			
06517					
ENSM	Iglv	immunoglobulin lambda variable 1			
			yes down	no up	1
USG0	1	[Source:MGI Symbol;Acc:MGI:96530]			

00000					
76934					
ENSM					
	Gm				
USG0		predicted gene, 49164 [Source:MGI			
	491		no down	yes up	1
00001		Symbol;Acc:MGI:6118590]			
	64				
15289					
ENSM					
	Gm				
USG0		predicted gene, 49602 [Source:MGI			
	496		yes down	no up	1
00001		Symbol;Acc:MGI:6215013]			
	02				
13831					
ENSM					
USG0	Apo	apolipoprotein A-IV [Source:MGI			
			yes down	no up	1
00000	a4	Symbol;Acc:MGI:88051]			
32080					
ENSM					
USG0		interleukin 15 [Source:MGI			
	Il15		yes down	no up	1
00000		Symbol;Acc:MGI:103014]			
31712					
ENSM					
		solute carrier family 27 (fatty acid			
USG0	Slc2				
		transporter), member 1 [Source:MGI	yes up	no up	1
00000	7a1				
		Symbol;Acc:MGI:1347098]			
31808					

ENSM		major facilitator superfamily domain			
USG0	Mfs				
00000	d9	containing 9 [Source:MGI	no up	yes down	1
41945		Symbol;Acc:MGI:2443548]			
ENSM					
USG0	Gm	predicted gene, 50010 [Source:MGI			
00001	500		yes down	no up	1
17499	10	Symbol;Acc:MGI:6275297]			
ENSM					
USG0	Gm	predicted gene 43738 [Source:MGI			
00001	437		yes up	yes down	2
05204	38	Symbol;Acc:MGI:5663875]			
ENSM					
USG0	Hhi	hedgehog interacting protein-like 2			
00000	p12	[Source:MGI	yes up	no down	1
53461		Symbol;Acc:MGI:1926022]			
ENSM	913	RIKEN cDNA 9130409I23 gene			
USG0	040				
00000	9I23	[Source:MGI	yes up	no down	1
38768	Rik	Symbol;Acc:MGI:3588271]			
ENSM	Cer	ceramide kinase-like [Source:MGI			
USG0	kl		yes up	no up	1
		Symbol;Acc:MGI:3037816]			

00000					
75256					
ENSM		DNA-damage-inducible transcript			
USG0	Ddit	4-like [Source:MGI	no down	yes up	1
00000	41	Symbol;Acc:MGI:1920534]			
46818					
ENSM	493	RIKEN cDNA 4933427J07 gene			
USG0	342	[Source:MGI	no down	yes up	1
00000	7J07	Symbol;Acc:MGI:1918470]			
87267	Rik				
ENSM		NLR family, pyrin domain containing			
USG0	Nlrp	12 [Source:MGI	yes up	no up	1
00000	12	Symbol;Acc:MGI:2676630]			
78817					
ENSM					
USG0	Gm	predicted gene, 48415 [Source:MGI	yes down	no up	1
00001	484	Symbol;Acc:MGI:6097908]			
13393	15				
ENSM					
USG0		leptin receptor [Source:MGI	yes down	no up	1
00000	Lepr	Symbol;Acc:MGI:104993]			
57722					

ENSM					
		sulfotransferase family, cytosolic, 1C,			
USG0	Sult				
		member 2 [Source:MGI	yes down	no up	1
00000	1c2				
		Symbol;Acc:MGI:1916333]			
23122					
ENSM					
	Gm				
USG0		predicted gene 14400 [Source:MGI			
	144		yes down	no up	1
00000		Symbol;Acc:MGI:3650076]			
	00				
83817					
	903				
ENSM					
	061	RIKEN cDNA 9030619P08 gene			
USG0					
	9P0	[Source:MGI	yes down	no up	1
00000					
	8Ri	Symbol;Acc:MGI:3612405]			
53168					
	k				
ENSM					
	Gm				
USG0		predicted gene 43323 [Source:MGI			
	433		no down	yes up	1
00001		Symbol;Acc:MGI:5663460]			
	23				
07390					
ENSM					
	Gm				
USG0		predicted gene 42605 [Source:MGI			
	426		yes down	no up	1
00001		Symbol;Acc:MGI:5662742]			
	05				
05446					
ENSM	H3c	H3 clustered histone 14 [Source:MGI	yes up	no up	1

USG0	14	Symbol;Acc:MGI:2448355]			
00000					
93769					
ENSM					
USG0		trefoil factor 3, intestinal [Source:MGI			
00000	Tff3	Symbol;Acc:MGI:104638]	yes down	yes up	2
24029					
ENSM					
USG0		X-linked lymphocyte-regulated 3A			
00000	Xlr3	[Source:MGI	yes up	no down	1
57836	a	Symbol;Acc:MGI:109506]			
ENSM					
USG0	Zfp	zinc finger protein 788 [Source:MGI			
00000	788	Symbol;Acc:MGI:1914857]	yes down	no up	1
74165					
ENSM					
USG0	Gm	predicted gene 20627 [Source:MGI			
00000	206	Symbol;Acc:MGI:5313074]	no down	yes up	1
93507	27				
ENSM					
USG0	Tgtp	T cell specific GTPase 1 [Source:MGI			
00000	1	Symbol;Acc:MGI:98734]	yes down	no up	1

78922					
ENSM					
USG0	Eph	Eph receptor A5 [Source:MGI			
00000	a5	Symbol;Acc:MGI:99654]	yes down	yes up	2
29245					
ENSM					
USG0	Cela	chymotrypsin-like elastase family,			
00000	2a	member 2A [Source:MGI	yes up	yes down	2
58579		Symbol;Acc:MGI:95316]			
ENSM					
USG0	Rb	RNA binding motif protein 20			
00000	m20	[Source:MGI	yes down	no up	1
43639		Symbol;Acc:MGI:1920963]			
ENSM					
USG0	Gm	predicted gene 15441 [Source:MGI			
00000	154	Symbol;Acc:MGI:3641753]	yes up	no down	1
74398	41				
ENSM					
USG0	Cyp	cytochrome P450, family 4, subfamily			
00000	4a3	a, polypeptide 31 [Source:MGI	yes up	no up	1
28712	1	Symbol;Acc:MGI:3028580]			
ENSM	Cyp	cytochrome P450, family 4, subfamily	yes up	no down	1

USG0	4a1	a, polypeptide 14 [Source:MGI			
00000	4	Symbol;Acc:MGI:1096550]			
28715					
ENSM					
USG0	Zfp	zinc finger protein 287 [Source:MGI			
00000	287	Symbol;Acc:MGI:2176561]	yes down	no up	1
05267					
ENSM					
USG0	Fam	family with sequence similarity 221,			
00000	221	member B [Source:MGI	yes down	no up	1
43633	b	Symbol;Acc:MGI:2441678]			
ENSM					
USG0	Cyp	cytochrome P450, family 26, subfamily			
00000	26a	a, polypeptide 1 [Source:MGI	yes down	no down	1
24987	1	Symbol;Acc:MGI:1096359]			
ENSM					
USG0	Hhe	hematopoietically expressed homeobox			
00000	x	[Source:MGI Symbol;Acc:MGI:96086]	no down	yes up	1
24986					
ENSM		solute carrier family 16			
USG0	Slc1	(monocarboxylic acid transporters),	yes up	no down	1
00000	6a1	member 1 [Source:MGI			

32902		Symbol;Acc:MGI:106013]			
ENSM					
USG0	Cntr	centriolin [Source:MGI			
00000	1	Symbol;Acc:MGI:1889576]	yes up	no down	1
57110					
ENSM					
		CASK interacting protein 1			
USG0	Cas	[Source:MGI	no down	yes up	1
00000	kin1	Symbol;Acc:MGI:2442952]			
33597					
ENSM					
USG0		glycoprotein 5 (platelet) [Source:MGI			
00000	Gp5	Symbol;Acc:MGI:1096363]	no down	yes up	1
47953					
ENSM					
USG0	Cyp	cytochrome P450, family 2, subfamily			
00000	2c3	c, polypeptide 39 [Source:MGI	yes up	no down	1
25003	9	Symbol;Acc:MGI:1306818]			
ENSM					
USG0	Cyp	cytochrome P450, family 2, subfamily			
00000	2c5	c, polypeptide 55 [Source:MGI	yes down	no up	1
25002	5	Symbol;Acc:MGI:1919332]			
ENSM	Zfp	zinc finger protein 980 [Source:MGI	yes down	yes up	2

USG0	980	Symbol;Acc:MGI:3712454]			
00000					
58186					
ENSM					
	Gm	predicted pseudogene 10293			
USG0	102	[Source:MGI	no up	yes down	1
00000	93	Symbol;Acc:MGI:3704216]			
70490					
ENSM					
USG0	Hm	heme oxygenase 1 [Source:MGI			
00000	ox1	Symbol;Acc:MGI:96163]	yes up	no down	1
05413					
ENSM					
	Cyp	cytochrome P450, family 2, subfamily			
USG0	2b1	b, polypeptide 10 [Source:MGI	yes up	no down	1
00000	0	Symbol;Acc:MGI:88598]			
30483					
ENSM					
	Gm	predicted gene 20632 [Source:MGI			
USG0	206	Symbol;Acc:MGI:5313079]	yes up	no down	1
00000	32				
93577					
ENSM					
	Gm	predicted gene 20671 [Source:MGI		no no	
USG0	206	Symbol;Acc:MGI:5313118]	yes down	change	1
00000	71				

93574					
ENSM		H1.4 linker histone, cluster member			
USG0	H1f				
		[Source:MGI	yes up	no down	1
00000	4				
		Symbol;Acc:MGI:1931527]			
51627					
	181				
ENSM					
	005	RIKEN cDNA 1810059H22 gene			
USG0					
	9H2	[Source:MGI	yes down	no up	1
00001					
	2Ri	Symbol;Acc:MGI:1917070]			
08207					
	k				
ENSM					
		RAB36, member RAS oncogene family			
USG0	Rab				
		[Source:MGI	yes up	no down	1
00000	36				
		Symbol;Acc:MGI:1924127]			
20175					
ENSM					
USG0	Upk	uroplakin 3B [Source:MGI			
			yes down	yes up	2
00000	3b	Symbol;Acc:MGI:2140882]			
42985					
ENSM					
		regulatory factor X, 4 (influences HLA			
USG0	Rfx				
		class II expression) [Source:MGI	yes up	no down	1
00000	4				
		Symbol;Acc:MGI:1918387]			
20037					

ENSM		kinesin family member 3A			
USG0	Kif3				
00000	a	[Source:MGI	yes up	no down	1
18395		Symbol;Acc:MGI:107689]			
ENSM		cytochrome P450, family 8, subfamily			
USG0	Cyp				
00000	8b1	b, polypeptide 1 [Source:MGI	yes up	no down	1
50445		Symbol;Acc:MGI:1338044]			
ENSM		solute carrier family 16			
USG0	Slc1	(monocarboxylic acid transporters),			
00000	6a5	member 5 [Source:MGI	yes up	yes down	2
45775		Symbol;Acc:MGI:2443515]			
ENSM					
USG0	Gm	predicted gene, 49207 [Source:MGI			
00001	492		yes down	yes up	2
15497	07	Symbol;Acc:MGI:6118657]			
ENSM		adhesion G protein-coupled receptor E1			
USG0	Adg				
00000	rel	[Source:MGI	no up	yes down	1
04730		Symbol;Acc:MGI:106912]			
ENSM	Gm	predicted gene 9796 [Source:MGI			
USG0	979		no up	yes down	1
		Symbol;Acc:MGI:3648412]			

00000	6				
45075					
ENSM		TEN1 telomerase capping complex			
USG0	Ten	subunit [Source:MGI	yes up	no up	1
00000	1	Symbol;Acc:MGI:1916785]			
20778					
ENSM		POU domain, class 2, associating factor			
USG0	Pou	1 [Source:MGI	no up	yes down	1
00000	2af1	Symbol;Acc:MGI:105086]			
32053					
ENSM		protein tyrosine phosphatase 4a1			
USG0	Ptp4	[Source:MGI	yes down	no down	1
00000	a1	Symbol;Acc:MGI:1277096]			
26064					
ENSM		GTPase, very large interferon inducible,			
USG0	Gvi	pseudogene 6 [Source:MGI	yes down	no up	1
00000	n-ps	Symbol;Acc:MGI:3647753]			
53541	6				
ENSM		tumor necrosis factor, alpha-induced			
USG0	Tnfa	protein 8-like 3 [Source:MGI	yes down	no up	1
00000	ip8l	Symbol;Acc:MGI:2685363]			
74345	3				

ENSM						
	Pcd	protocadherin gamma subfamily B, 4				
USG0						
	hgb	[Source:MGI	no down	yes up	1	
00001						
	4	Symbol;Acc:MGI:1935173]				
03585						
ENSM						
	Hsp	heat shock protein 90, alpha (cytosolic),				
USG0						
	90aa	class A member 1 [Source:MGI	yes up	no down	1	
00000						
	1	Symbol;Acc:MGI:96250]				
21270						
ENSM						
	Gm					
USG0		predicted gene 44709 [Source:MGI				
	447		no down	yes up	1	
00001		Symbol;Acc:MGI:5753285]				
	09					
09168						
ENSM						
	Gpc	glypican 3 [Source:MGI				
USG0			yes down	no up	1	
	3	Symbol;Acc:MGI:104903]				
00000						
55653						
ENSM						
	Zfp	zinc finger protein 760 [Source:MGI				
USG0			no down	yes up	1	
	760	Symbol;Acc:MGI:2679257]				
00000						
67928						
ENSM						
	Gm	predicted gene 28959 [Source:MGI				
			yes down	no up	1	
USG0	289	Symbol;Acc:MGI:5579665]				

00001	59				
00039					
ENSM					
	Gm				
USG0		predicted gene 42634 [Source:MGI			
	426		yes down	no up	1
00001		Symbol;Acc:MGI:5662771]			
	34				
06517					
	311				
ENSM					
	005	RIKEN cDNA 3110053B16 gene			
USG0					
	3B1	[Source:MGI	no up	yes down	1
00000					
	6Ri	Symbol;Acc:MGI:1920435]			
85642					
	k				
ENSM		CCCTC-binding factor (zinc finger			
USG0	Ctcf	protein)-like, opposite strand			
			yes up	no up	1
00000	los	[Source:MGI			
87382		Symbol;Acc:MGI:1921411]			
ENSM					
		methylsterol monooxygenase 1			
USG0	Ms				
		[Source:MGI	yes up	no down	1
00000	mo1				
		Symbol;Acc:MGI:1913484]			
31604					
ENSM					
	Cdk	cyclin-dependent kinase 3 [Source:MGI			
USG0			no down	yes up	1
	3	Symbol;Acc:MGI:1916931]			
00000					

92300					
ENSM					
		cysteine sulfinic acid decarboxylase			
USG0	Csa				
		[Source:MGI	yes up	no down	1
00000	d				
		Symbol;Acc:MGI:2180098]			
23044					
ENSM					
USG0		formyl peptide receptor 1 [Source:MGI			
	Fpr1		no up	yes down	1
00000		Symbol;Acc:MGI:107443]			
45551					
ENSM					
		insulin-like growth factor binding			
USG0	Igfb				
		protein 6 [Source:MGI	yes down	yes up	2
00000	p6				
		Symbol;Acc:MGI:96441]			
23046					
ENSM					
USG0	Fkb	FK506 binding protein 7 [Source:MGI			
			yes down	no up	1
00000	p7	Symbol;Acc:MGI:1336879]			
02732					
ENSM					
	Cyp	cytochrome P450, family 17, subfamily			
USG0					
	17a	a, polypeptide 1 [Source:MGI	yes down	no up	1
00000					
	1	Symbol;Acc:MGI:88586]			
03555					
ENSM	Bm	bone morphogenetic protein 4	yes down	no up	1

USG0	p4	[Source:MGI Symbol;Acc:MGI:88180]			
00000					
21835					
ENSM					
	Gm				
USG0		predicted gene 3776 [Source:MGI			
00001	377		no up	yes down	1
		Symbol;Acc:MGI:3826440]			
	6				
11709					
ENSM					
		BTB (POZ) domain containing 19			
USG0	Btb				
00000		[Source:MGI	yes down	no up	1
	d19				
		Symbol;Acc:MGI:1925861]			
73771					
ENSM		Xndc1-transient receptor potential			
USG0	Xntr	cation channel, subfamily C, member 2			
00000			yes up	no down	1
	pc	readthrough [Source:MGI			
70425		Symbol;Acc:MGI:5546370]			
ENSM					
		hydroxy-delta-5-steroid dehydrogenase,			
USG0	Hsd				
00000		3 beta- and steroid delta-isomerase 2	yes down	no up	1
	3b2				
		[Source:MGI Symbol;Acc:MGI:96234]			
63730					
ENSM					
	Zfp	zinc finger protein 945 [Source:MGI			
USG0			yes down	no up	1
	945	Symbol;Acc:MGI:2445132]			
00000					

59142					
ENSM					
		tandem C2 domains, nuclear			
USG0	Tc2				
		[Source:MGI	yes down	no up	1
00000	n				
		Symbol;Acc:MGI:1921663]			
21187					
ENSM					
	Gm				
USG0		predicted gene 5940 [Source:MGI			
	594		no up	yes down	1
00000		Symbol;Acc:MGI:3648847]			
	0				
81205					
ENSM					
		calcium/calmodulin-dependent protein			
USG0	Cam				
		kinase II, beta [Source:MGI	yes up	yes down	2
00000	k2b				
		Symbol;Acc:MGI:88257]			
57897					
ENSM					
		pyruvate dehydrogenase kinase,			
USG0	Pdk				
		isoenzyme 4 [Source:MGI	yes up	no down	1
00000	4				
		Symbol;Acc:MGI:1351481]			
19577					
ENSM					
	Vm	vomeronasal 2, receptor 112			
USG0					
	n2r1	[Source:MGI	no up	yes up	1
00000					
	12	Symbol;Acc:MGI:3644292]			
94921					
ENSM	Syn	synaptopodin [Source:MGI	yes up	no down	1

USG0	po	Symbol;Acc:MGI:1099446]			
00000					
43079					
ENSM					
	Gm				
USG0		predicted gene, 49326 [Source:MGI			
00001	493		no up	yes down	1
		Symbol;Acc:MGI:6121511]			
13294	26				
ENSM					
		serine (or cysteine) peptidase inhibitor,			
USG0	Serp				
00000		clade B, member 8 [Source:MGI	yes down	no up	1
	inb8				
26315		Symbol;Acc:MGI:894657]			
ENSM					
	Mup	major urinary protein, pseudogene 12			
USG0					
00000	-ps1	[Source:MGI	no up	yes up	1
73835	2	Symbol;Acc:MGI:3783148]			
ENSM					
		meiosis-specific nuclear structural			
USG0	Mns				
00000		protein 1 [Source:MGI	no up	yes down	1
	1				
32221		Symbol;Acc:MGI:107933]			
ENSM	Gm	predicted pseudogene 10599			
USG0	105	[Source:MGI	yes down	no up	1
00001	99	Symbol;Acc:MGI:3710582]			

18458						
ENSM						
	Gm					
USG0		predicted gene 5138 [Source:MGI				
	513		yes up	no down	1	
00000		Symbol;Acc:MGI:3779464]				
	8					
79501						
ENSM						
		G protein-coupled receptor 34				
USG0	Gpr					
		[Source:MGI	yes down	no up	1	
00000	34					
		Symbol;Acc:MGI:1346334]				
40229						
ENSM						
USG0	H2-	histocompatibility 2, Q region locus 1				
			yes down	no down	1	
00000	Q1	[Source:MGI Symbol;Acc:MGI:95928]				
79507						
ENSM						
		dual specificity phosphatase 8				
USG0	Dus					
		[Source:MGI	no up	yes down	1	
00000	p8					
		Symbol;Acc:MGI:106626]				
37887						
ENSM						
USG0	Igh	immunoglobulin heavy constant mu				
			no up	yes down	1	
00000	m	[Source:MGI Symbol;Acc:MGI:96448]				
76617						
ENSM	Ighg	immunoglobulin heavy constant gamma	yes down	no up	1	

USG0	2c	2C [Source:MGI			
00000		Symbol;Acc:MGI:2686979]			
76612					
ENSM		immunoglobulin heavy constant gamma			
USG0	Ighg	2B [Source:MGI	yes down	no up	1
00000	2b	Symbol;Acc:MGI:96445]			
76613					
ENSM					
USG0	Zfp	zinc finger protein 981 [Source:MGI	no up	yes down	1
00000	981	Symbol;Acc:MGI:3700965]			
56300					
ENSM					
USG0	Rps	ribosomal protein S12, pseudogene 3			
00000	12-p	[Source:MGI	no down	yes up	1
67038	s3	Symbol;Acc:MGI:3704503]			
ENSM					
USG0	Cel	carboxyl ester lipase [Source:MGI	yes up	yes down	2
00000		Symbol;Acc:MGI:88374]			
26818					
ENSM		immunoglobulin kappa variable 3-4			
USG0	Igkv	[Source:MGI	yes down	no no	1
00000	3-4	Symbol;Acc:MGI:1330855]		change	

96715					
ENSM					
	Gm				
USG0		predicted gene, 18095 [Source:MGI			
	180		no down	yes up	1
00001		Symbol;Acc:MGI:5010280]			
	95				
15856					
ENSM					
	Gm				
USG0		predicted gene 15590 [Source:MGI			
	155		no down	yes up	1
00000		Symbol;Acc:MGI:3831433]			
	90				
58542					
ENSM					
	Zfp				
USG0		zinc finger protein 607B [Source:MGI			
	607		no down	yes up	1
00000		Symbol;Acc:MGI:2148237]			
	b				
57093					
ENSM					
	Kpn	Kpna2 retrotransposed pseudogene			
USG0					
	a2-p	[Source:MGI	no up	yes down	1
00000					
	s	Symbol;Acc:MGI:3647335]			
83672					
ENSM					
		sin3 associated polypeptide			
USG0	Sap				
		[Source:MGI	no down	yes up	1
00000	25				
		Symbol;Acc:MGI:3802945]			
79165					
ENSM	Pcd	protocadherin gamma subfamily A, 12	yes down	no up	1

USG0	hga	[Source:MGI			
00001	12	Symbol;Acc:MGI:1935229]			
02428					
ENSM					
		N-acetyltransferase 8 (GCN5-related)			
USG0	Nat				
		family member 7 [Source:MGI	yes down	no down	1
00000	8f7	Symbol;Acc:MGI:3782661]			
89694					
ENSM					
	Cyp	cytochrome P450, family 2, subfamily			
USG0					
	2c6	c, polypeptide 69 [Source:MGI	yes down	yes up	2
00000		Symbol;Acc:MGI:3721049]			
	9				
92008					
ENSM					
	Gm	predicted gene, 19409 [Source:MGI			
USG0					
	194	Symbol;Acc:MGI:5011594]	yes up	no down	1
00001					
	09				
06229					
ENSM					
		ectodermal-neural cortex 1			
USG0	Enc	[Source:MGI	yes up	no down	1
00000	1	Symbol;Acc:MGI:109610]			
41773					
ENSM		nuclear receptor subfamily 2, group C,			
	Nr2				
USG0		member 2 [Source:MGI	no up	yes down	1
	c2	Symbol;Acc:MGI:1352466]			
00000					

05893					
ENSM					
		solute carrier family 35, member F1			
USG0	Slc3				
		[Source:MGI	yes up	no up	1
00000	5f1				
		Symbol;Acc:MGI:2139810]			
38602					
ENSM					
	Sele	selenium binding protein 2			
USG0					
	nbp	[Source:MGI	yes up	no up	1
00000					
	2	Symbol;Acc:MGI:104859]			
68877					
	A23				
ENSM					
	007	RIKEN cDNA A230072E10 gene			
USG0					
	2E1	[Source:MGI	yes up	no down	1
00000					
	0Ri	Symbol;Acc:MGI:3603753]			
84771					
	k				
ENSM					
	Gm				
USG0		predicted gene, 26782 [Source:MGI			
	267		yes up	no down	1
00000		Symbol;Acc:MGI:5477276]			
	82				
97431					
ENSM					
	Gm				
USG0		predicted gene, 40770 [Source:MGI			
	407		yes down	yes up	2
00001		Symbol;Acc:MGI:5623655]			
	70				
12796					

ENSM					
	Gm				
USG0		predicted gene 10143 [Source:MGI			
	101		yes down	no up	1
00000		Symbol;Acc:MGI:3704492]			
	43				
64032					
ENSM					
		acid-sensing (proton-gated) ion channel			
USG0	Asic				
		family member 5 [Source:MGI	yes up	no down	1
00000	5				
		Symbol;Acc:MGI:1929259]			
28008					
ENSM					
	Gm				
USG0		predicted gene, 48836 [Source:MGI			
	488		yes down	no up	1
00001		Symbol;Acc:MGI:6098565]			
	36				
11890					
ENSM					
		Pbx/knotted 1 homeobox 2			
USG0	Pkn				
		[Source:MGI	yes up	no down	1
00000	ox2				
		Symbol;Acc:MGI:2445415]			
35934					
ENSM					
		thyroid hormone responsive			
USG0	Thrs				
		[Source:MGI	yes down	no down	1
00000	p				
		Symbol;Acc:MGI:109126]			
35686					
ENSM					
		period circadian clock 3 [Source:MGI			
	Per3		yes down	no up	1
USG0		Symbol;Acc:MGI:1277134]			

00000					
28957					
ENSM					
		solute carrier family 6 member 21			
USG0	Slc6				
		[Source:MGI	yes up	no up	1
00000	a21				
		Symbol;Acc:MGI:1923963]			
70568					
ENSM					
USG0	Zfp	zinc finger protein 992 [Source:MGI			
			no down	yes up	1
00000	992	Symbol;Acc:MGI:3700963]			
70605					
ENSM					
USG0	Lam	laminin, beta 3 [Source:MGI			
			yes up	no down	1
00000	b3	Symbol;Acc:MGI:99915]			
26639					
ENSM					
		immunoglobulin kappa chain variable			
USG0	Igkv				
		5-43 [Source:MGI	yes up	no down	1
00000	5-43				
		Symbol;Acc:MGI:4943320]			
94433					
ENSM					
		solute carrier family 22 (organic cation			
USG0	Slc2				
		transporter), member 5 [Source:MGI	yes up	no down	1
00000	2a5				
		Symbol;Acc:MGI:1329012]			
18900					

ENSM						
USG0	Aco	acyl-CoA thioesterase 1 [Source:MGI				
00000	t1	Symbol;Acc:MGI:1349396]	yes up	no down	1	
72949						
ENSM						
		pleiomorphic adenoma gene-like 1				
USG0	Plag	[Source:MGI	yes down	no up	1	
00000	11	Symbol;Acc:MGI:1100874]				
19817						
ENSM						
		Ftx transcript, Xist regulator				
USG0	Ftx	(non-protein coding) [Source:MGI	yes down	no up	1	
00000		Symbol;Acc:MGI:1926128]				
86370						
ENSM						
		calcium-binding				
USG0	Cab	tyrosine-(Y)-phosphorylation regulated				
00000	yr	(fibrousheathin 2) [Source:MGI	yes down	no up	1	
24430		Symbol;Acc:MGI:1918382]				
ENSM						
	Gm	predicted gene 42796 [Source:MGI				
USG0	427	Symbol;Acc:MGI:5662933]	yes down	yes up	2	
00001	96					
05192						
ENSM						
	Syn	synapsin III [Source:MGI				
USG0	3	Symbol;Acc:MGI:1351334]	no down	yes up	1	

00000						
59602						
ENSM						
USG0	Ang	angiopoietin-like 4 [Source:MGI				
00000	ptl4	Symbol;Acc:MGI:1888999]	yes up	no down	1	
02289						
ENSM						
USG0	Tyr	tyrosinase [Source:MGI				
00000		Symbol;Acc:MGI:98880]	no down	yes up	1	
04651						
ENSM						
USG0	Cers	ceramide synthase 6 [Source:MGI				
00000	6	Symbol;Acc:MGI:2442564]	yes down	no up	1	
27035						
ENSM						
USG0	Gm	predicted gene 42846 [Source:MGI				
00001	428	Symbol;Acc:MGI:5662983]	no down	yes down	1	
06702	46					
ENSM						
USG0	Pex	peroxisomal biogenesis factor 11 alpha				
00000	11a	[Source:MGI	yes up	no down	1	
30545		Symbol;Acc:MGI:1338788]				

ENSM		a disintegrin-like and metallopeptidase			
	Ada				
USG0		(reprolysin type) with thrombospondin			
	mts		yes down	no up	1
00000		type 1 motif, 7 [Source:MGI			
	7				
32363		Symbol;Acc:MGI:1347346]			
ENSM					
		interleukin 13 receptor, alpha 1			
USG0	Il13				
		[Source:MGI	yes down	no up	1
00000	ra1				
		Symbol;Acc:MGI:105052]			
17057					
ENSM					
	Rnf				
USG0		ring finger protein 144A [Source:MGI			
	144		yes up	no down	1
00000		Symbol;Acc:MGI:1344401]			
	a				
20642					
ENSM					
	Gm				
USG0		predicted gene, 42109 [Source:MGI			
	421		yes down	no up	1
00001		Symbol;Acc:MGI:5624994]			
	09				
06863					
ENSM					
	Gm				
USG0		predicted gene 12928 [Source:MGI			
	129		no up	yes down	1
00000		Symbol;Acc:MGI:3652022]			
	28				
82381					
ENSM	Cn	chondromodulin [Source:MGI			
			yes down	no up	1
USG0	md	Symbol;Acc:MGI:1341171]			

00000						
22025						
ENSM						
		solute carrier family 6, member 16				
USG0	Slc6					
		[Source:MGI	yes up	no down	1	
00000	a16					
		Symbol;Acc:MGI:2685930]				
94152						
ENSM						
		family with sequence similarity 83,				
USG0	Fam					
		member A [Source:MGI	no up	yes down	1	
00000	83a					
		Symbol;Acc:MGI:2447773]				
51225						
ENSM						
		BCL2 interacting protein 5				
USG0	Bni					
		[Source:MGI	yes up	no down	1	
00000	p5					
		Symbol;Acc:MGI:1925441]				
48905						
ENSM						
	Gm					
USG0		predicted gene, 49387 [Source:MGI				
	493		yes down	yes up	2	
00001		Symbol;Acc:MGI:6121612]				
	87					
15022						
ENSM						
	Gm					
USG0		predicted gene, 46620 [Source:MGI				
	466		yes up	yes down	2	
00001		Symbol;Acc:MGI:5826257]				
	20					
18012						

ENSM						
USG0	Lrp	Lrp2 binding protein [Source:MGI				
00000	2bp	Symbol;Acc:MGI:1914870]	yes down	no up		1
31637						
ENSM						
	Gm					
USG0		predicted gene 21986 [Source:MGI				
00000	219	Symbol;Acc:MGI:5439455]	no up	yes down		1
96056	86					
	160					
ENSM						
	002	RIKEN cDNA 1600023N17 gene				
USG0						
00001	3N1	[Source:MGI	no down	yes up		1
04986	7Ri	Symbol;Acc:MGI:1917038]				
	k					
ENSM						
USG0	Tcf2	transcription factor 24 [Source:MGI				
00000	4	Symbol;Acc:MGI:3780500]	yes down	no up		1
99032						
ENSM						
		small nucleolar RNA host gene 11				
USG0	Snh					
00000	g11	[Source:MGI	yes down	no up		1
44349		Symbol;Acc:MGI:2441845]				
ENSM	170	RIKEN cDNA 1700018L02 gene	no down	yes up		1

USG0	001	[Source:MGI			
00001	8L0	Symbol;Acc:MGI:1914579]			
00075	2Ri				
	k				
ENSM					
USG0	Dcl	doublecortin-like kinase 3 [Source:MGI			
			yes down	no up	1
00000	k3	Symbol;Acc:MGI:3039580]			
32500					
ENSM					
USG0	Plin	perilipin 5 [Source:MGI			
			yes up	no down	1
00000	5	Symbol;Acc:MGI:1914218]			
11305					
ENSM					
		tumor necrosis factor receptor			
USG0	Tnfr				
		superfamily, member 19 [Source:MGI	yes down	no up	1
00000	sf19				
		Symbol;Acc:MGI:1352474]			
60548					
ENSM					
	Gm				
USG0		predicted gene 45724 [Source:MGI			
	457		no down	yes up	1
00001		Symbol;Acc:MGI:5804839]			
	24				
10488					
ENSM	BC0	cDNA sequence BC025920			
			no up	yes up	1
USG0	259	[Source:MGI			

00000	20	Symbol;Acc:MGI:2670983]				
74862						
ENSM						
	Nco	nuclear receptor coactivator 4,				
USG0						
	a4-p	pseudogene [Source:MGI	no down	yes up	1	
00000						
	s	Symbol;Acc:MGI:3648259]				
21908						
ENSM		solute carrier family 37				
USG0	Slc3	(glycerol-3-phosphate transporter),				
			yes down	no down	1	
00000	7a1	member 1 [Source:MGI				
24036		Symbol;Acc:MGI:2446181]				
ENSM						
		neutral cholesterol ester hydrolase 1				
USG0	Nce					
		[Source:MGI	yes up	no down	1	
00000	h1					
		Symbol;Acc:MGI:2443191]				
27698						
ENSM		growth arrest and				
	Gad					
USG0		DNA-damage-inducible 45 gamma				
	d45		yes down	no up	1	
00000		[Source:MGI				
	g					
21453		Symbol;Acc:MGI:1346325]				
ENSM						
	Gm					
USG0		predicted gene, 26903 [Source:MGI				
	269		no down	yes down	1	
00000		Symbol;Acc:MGI:5477397]				
	03					
97836						

ENSM					
	Gm				
USG0		predicted gene 11832 [Source:MGI			
	118		yes up	no down	1
00000		Symbol;Acc:MGI:3650310]			
	32				
86103					
ENSM					
	Gm				
USG0		predicted gene, 20075 [Source:MGI			
	200		yes down	no up	1
00001		Symbol;Acc:MGI:5012260]			
	75				
14133					
ENSM					
USG0		carnitine acetyltransferase [Source:MGI			
	Crat		yes up	no down	1
00000		Symbol;Acc:MGI:109501]			
26853					
ENSM					
USG0	Try	trypsin 5 [Source:MGI			
			no up	yes down	1
00000	5	Symbol;Acc:MGI:102756]			
36938					
ENSM					
USG0	Fox	forkhead box Q1 [Source:MGI			
			yes down	yes up	2
00000	q1	Symbol;Acc:MGI:1298228]			
38415					
ENSM	Trpc	transient receptor potential cation			
			yes down	no up	1
USG0	2	channel, subfamily C, member 2			

00001		[Source:MGI			
00254		Symbol;Acc:MGI:109527]			
ENSM					
USG0	Cpt	carnitine palmitoyltransferase 1b,			
00000	1b	muscle [Source:MGI	yes up	no up	1
78937		Symbol;Acc:MGI:1098297]			
ENSM					
USG0	Egr	early growth response 1 [Source:MGI			
00000	1	Symbol;Acc:MGI:95295]	yes up	no down	1
38418					
ENSM					
USG0	Gm	predicted gene 2602 [Source:MGI			
00001	260	Symbol;Acc:MGI:3780770]	yes down	no up	1
06705	2				
ENSM					
USG0	Sqle	squalene epoxidase [Source:MGI			
00000		Symbol;Acc:MGI:109296]	yes up	yes down	2
22351					
ENSM					
USG0	Gm	predicted gene 7334 [Source:MGI			
00000	733	Symbol;Acc:MGI:3647393]	yes up	no down	1
44645	4				

ENSM						
USG0	Mup	major urinary protein 7 [Source:MGI				
00000	7	Symbol;Acc:MGI:3709615]	yes up	no up		1
73842						
ENSM	B43					
		RIKEN cDNA B430305J03 gene				
USG0	030					
		[Source:MGI	no up	yes down		1
00000	5J03	Symbol;Acc:MGI:3697707]				
53706	Rik					
ENSM						
USG0	Rsp	R-spondin 1 [Source:MGI				
			yes down	no up		1
00000	o1	Symbol;Acc:MGI:2183426]				
28871						
	F83					
ENSM						
	001	RIKEN cDNA F830016B08 gene				
USG0				no no		
	6B0	[Source:MGI	yes down			1
00000				change		
	8Ri	Symbol;Acc:MGI:3588218]				
90942						
	k					
ENSM						
	Tme	transmembrane protein 151A				
USG0						
	m15	[Source:MGI	yes down	no up		1
00000						
	1a	Symbol;Acc:MGI:2147713]				
61451						
ENSM	Bcl6	B cell leukemia/lymphoma 6	yes up	no down		1

USG0		[Source:MGI			
00000		Symbol;Acc:MGI:107187]			
22508					
ENSM		tumor necrosis factor (ligand)			
USG0	Tnfs				
		superfamily, member 10 [Source:MGI	yes down	no up	1
00000	f10				
		Symbol;Acc:MGI:107414]			
39304					
ENSM					
	Hsd	hydroxysteroid (17-beta)			
USG0					
	17b	dehydrogenase 6 [Source:MGI	yes down	no up	1
00000					
	6	Symbol;Acc:MGI:1351670]			
25396					
ENSM					
	Gm	predicted gene 13880 [Source:MGI			
USG0					
	138		yes up	no down	1
00000		Symbol;Acc:MGI:3649539]			
	80				
81010					
ENSM					
	Hsd	hydroxysteroid (17-beta)			
USG0					
	17b	dehydrogenase 7 [Source:MGI	yes up	no down	1
00000					
	7	Symbol;Acc:MGI:1330808]			
26675					
ENSM	Gm	predicted gene, 26608 [Source:MGI			
USG0	266		yes up	no up	1
		Symbol;Acc:MGI:5477102]			
00000	08				

97673					
ENSM					
		cyclin dependent kinase inhibitor 2D			
USG0	Cdk				
		[Source:MGI	yes down	no up	1
00000	n2d				
		Symbol;Acc:MGI:105387]			
96472					
ENSM					
		apoptosis-associated tyrosine kinase			
USG0	Aat				
		[Source:MGI	yes up	no down	1
00000	k				
		Symbol;Acc:MGI:1197518]			
25375					
ENSM					
	Gm				
USG0		predicted gene, 53019 [Source:MGI			
	530		yes down	no up	1
00001		Symbol;Acc:MGI:6388910]			
	19				
18631					
ENSM					
	Gm				
USG0		predicted gene 7599 [Source:MGI			
	759		yes down	no up	1
00000		Symbol;Acc:MGI:3644309]			
	9				
83332					
ENSM					
		calcium homeostasis modulator family			
USG0	Calh				
		member 5 [Source:MGI	yes down	no up	1
00000	m5				
		Symbol;Acc:MGI:2143897]			
49872					
ENSM	Rab	RAB30, member RAS oncogene family	yes up	no down	1

USG0	30	[Source:MGI			
00000		Symbol;Acc:MGI:1923235]			
30643					
ENSM					
		gamma-aminobutyric acid (GABA) B			
USG0	Gab				
		receptor, 2 [Source:MGI	yes down	no up	1
00000	br2				
		Symbol;Acc:MGI:2386030]			
39809					
ENSM					
		nerve growth factor receptor (TNFR			
USG0					
	Ngfr	superfamily, member 16) [Source:MGI	no up	yes down	1
00000					
		Symbol;Acc:MGI:97323]			
00120					
ENSM					
	Gm				
USG0		predicted gene, 49416 [Source:MGI			
	494		yes up	no down	1
00001		Symbol;Acc:MGI:6155046]			
	16				
16347					
ENSM					
USG0	Mei	Meis homeobox 2 [Source:MGI			
			yes down	no up	1
00000	s2	Symbol;Acc:MGI:108564]			
27210					
ENSM					
	Tub	tubulin, alpha 1A [Source:MGI			
USG0			yes down	no up	1
	ala	Symbol;Acc:MGI:98869]			
00000					

72235						
ENSM		S100 calcium binding protein A6				
USG0	S10	(calcyclin) [Source:MGI	yes down	no up	1	
00000	0a6	Symbol;Acc:MGI:1339467]				
01025						
ENSM		growth arrest and				
	Gad					
USG0		DNA-damage-inducible 45 beta				
	d45	[Source:MGI	yes up	no down	1	
00000	b	Symbol;Acc:MGI:107776]				
15312						
ENSM		glutathione S-transferase, mu 3				
USG0	Gst	[Source:MGI	yes down	no down	1	
00000	m3	Symbol;Acc:MGI:106026]				
04038						
ENSM						
USG0	Tme	transmembrane protein 51 [Source:MGI				
			yes down	no up	1	
00000	m51	Symbol;Acc:MGI:2384874]				
40616						
ENSM		betaine-homocysteine				
USG0	Bh	methytransferase [Source:MGI	yes up	no up	1	
00000	mt	Symbol;Acc:MGI:1339972]				
74768						
ENSM	Gm	predicted gene 43798 [Source:MGI	yes up	yes down	2	

USG0	437	Symbol;Acc:MGI:5663935]			
00001	98				
06675					
ENSM					
USG0	Tlr1	toll-like receptor 12 [Source:MGI			
00000	2	Symbol;Acc:MGI:3045221]	yes up	yes down	2
62545					
ENSM					
USG0	Pfkf	6-phosphofructo-2-kinase/fructose-2,6-			
00000	b3	biphosphatase 3 [Source:MGI	no down	yes down	1
26773		Symbol;Acc:MGI:2181202]			
ENSM					
USG0	Gm	predicted gene, 26513 [Source:MGI			
00000	265	Symbol;Acc:MGI:5477007]	no down	yes up	1
97150	13				
ENSM					
USG0	Tsk	tsukushi, small leucine rich			
00000	u	proteoglycan [Source:MGI	yes up	yes down	2
49580		Symbol;Acc:MGI:2443855]			
ENSM					
USG0	Guc	guanylate cyclase 2c [Source:MGI			
00000	y2c	Symbol;Acc:MGI:106903]	yes down	no up	1

42638					
ENSM		TRAF-interacting protein with			
USG0		forkhead-associated domain			
00000	Tifa	[Source:MGI	yes down	no up	1
46688		Symbol;Acc:MGI:2182965]			
ENSM					
USG0	Gm	predicted gene 45244 [Source:MGI			
00001	452	Symbol;Acc:MGI:5791080]	no down	yes up	1
09807	44				
ENSM	943	RIKEN cDNA 9430064I24 gene			
USG0	006	[Source:MGI	yes up	no up	1
00001	4I24	Symbol;Acc:MGI:3704302]			
08402	Rik				
ENSM					
USG0	Kcn	potassium channel, subfamily K,			
00000	k13	member 13 [Source:MGI	yes up	no down	1
45404		Symbol;Acc:MGI:2384976]			
ENSM					
USG0	Gm	predicted gene 4779 [Source:MGI			
00000	477	Symbol;Acc:MGI:3646776]	yes down	yes up	2
45010	9				
ENSM	Nbl	NBL1, DAN family BMP antagonist	yes down	no up	1

USG0	1	[Source:MGI			
00000		Symbol;Acc:MGI:104591]			
41120					
ENSM					
		neuralized E3 ubiquitin protein ligase			
USG0	Neu				
		1B [Source:MGI	yes down	no up	1
00000	rl1b				
		Symbol;Acc:MGI:3643092]			
34413					
ENSM					
	Gm				
USG0		predicted gene 15401 [Source:MGI			
	154		yes up	no up	1
00000		Symbol;Acc:MGI:3642201]			
	01				
72999					
ENSM					
		cytochrome P450, family 2, subfamily			
USG0	Cyp				
		b, polypeptide 9 [Source:MGI	yes down	no up	1
00000	2b9				
		Symbol;Acc:MGI:88600]			
40660					
ENSM					
USG0	Vm	vomeronasal 2, receptor 1 [Source:MGI			
			no down	yes up	1
00000	n2r1	Symbol;Acc:MGI:3645892]			
27824					
ENSM					
		progesterin and adipoQ receptor family			
	Paqr				
USG0		member VII [Source:MGI	yes up	no down	1
	7				
00000		Symbol;Acc:MGI:1919154]			

37348					
ENSM					
	Gm				
USG0		predicted gene, 17300 [Source:MGI			
	173		yes down	no up	1
00000		Symbol;Acc:MGI:4936934]			
	00				
91021					
ENSM					
USG0	Pde	phosphodiesterase 4B, cAMP specific			
			yes down	no up	1
00000	4b	[Source:MGI Symbol;Acc:MGI:99557]			
28525					
ENSM					
		ATP binding cassette subfamily G			
USG0	Abc				
		member 5 [Source:MGI	yes down	no up	1
00000	g5	Symbol;Acc:MGI:1351659]			
40505					
ENSM					
		T cell receptor beta, constant 2			
USG0	Trbc				
		[Source:MGI	yes down	yes up	2
00000	2	Symbol;Acc:MGI:4835227]			
76498					
ENSM					
		actin binding LIM protein family,			
USG0	Abli				
		member 3 [Source:MGI	yes up	no down	1
00000	m3	Symbol;Acc:MGI:2442582]			
32735					
ENSM	Nol	nucleolar protein 3 (apoptosis repressor	yes down	no up	1

USG0	3	with CARD domain) [Source:MGI			
00000		Symbol;Acc:MGI:1925938]			
14776					
ENSM					
		fibroblast growth factor 21			
USG0	Fgf2				
		[Source:MGI	yes up	no up	1
00000	1				
		Symbol;Acc:MGI:1861377]			
30827					
ENSM					
USG0		complement factor D (adipsin)			
	Cfd		yes up	no down	1
00000		[Source:MGI Symbol;Acc:MGI:87931]			
61780					
ENSM					
USG0	Mup	major urinary protein 1 [Source:MGI			
			yes up	no up	1
00000	1	Symbol;Acc:MGI:97233]			
78683					
	170				
ENSM					
	009	RIKEN cDNA 1700094D03 gene			
USG0					
	4D0	[Source:MGI	yes down	no up	1
00001					
	3Ri	Symbol;Acc:MGI:1920795]			
18506					
	k				
ENSM		lipase, endothelial [Source:MGI			
	Lipg		yes up	no down	1
USG0		Symbol;Acc:MGI:1341803]			

00000					
53846					
ENSM					
USG0		matrix Gla protein [Source:MGI			
00000	Mgp	Symbol;Acc:MGI:96976]	yes down	no up	1
30218					
ENSM					
USG0	Gm	predicted gene 45540 [Source:MGI			
00001	455	Symbol;Acc:MGI:5791376]	yes down	no up	1
10397	40				
ENSM					
USG0		chemokine (C-X-C motif) ligand 13			
00000	Cxcl	[Source:MGI	yes up	no down	1
23078	13	Symbol;Acc:MGI:1888499]			
ENSM					
USG0		major urinary protein, pseudogene 5			
00000	Mup	[Source:MGI	yes up	no up	1
82868	-ps5	Symbol;Acc:MGI:3650601]			
ENSM					
USG0	Gm	predicted pseudogene 9923			
00000	992	[Source:MGI	no up	yes down	1
53830	3	Symbol;Acc:MGI:3704365]			

ENSM						
USG0	Hsp	heat shock protein 1 [Source:MGI				
00000	b1	Symbol;Acc:MGI:96240]	yes up	no up	1	
04951						
ENSM						
USG0	Mar	macrophage receptor with collagenous				
00000	co	structure [Source:MGI	yes up	no down	1	
26390		Symbol;Acc:MGI:1309998]				
ENSM		serine (or cysteine) peptidase inhibitor,				
USG0	Serp	clade A (alpha-1 antiproteinase,				
00000	ina7	antitrypsin), member 7 [Source:MGI	yes down	no up	1	
31271		Symbol;Acc:MGI:3041197]				
ENSM						
USG0	Car	carbonic anhydrase 3 [Source:MGI				
00000	3	Symbol;Acc:MGI:88270]	yes down	no down	1	
27559						
ENSM						
USG0	Gm	predicted gene 12195 [Source:MGI				
00000	121	Symbol;Acc:MGI:3651100]	yes up	no up	1	
85192	95					
ENSM	H3c	H3 clustered histone 15 [Source:MGI				
USG0	15	Symbol;Acc:MGI:2448357]	yes up	no down	1	

00000					
81058					
ENSM					
		isopentenyl-diphosphate delta			
USG0	Idi1	isomerase [Source:MGI	yes up	no down	1
00000		Symbol;Acc:MGI:2442264]			
58258					
ENSM					
USG0	Unc	unc-79 homolog [Source:MGI	yes up	no down	1
00000	79	Symbol;Acc:MGI:2684729]			
21198					
ENSM					
		family with sequence similarity 89,			
USG0	Fam	member A [Source:MGI	yes up	no down	1
00000	89a	Symbol;Acc:MGI:1916877]			
43068					
ENSM					
	Gm	predicted gene, 34574 [Source:MGI	yes down	no up	1
USG0	345	Symbol;Acc:MGI:5593733]			
00001	74				
12805					
ENSM					
	Gm	predicted gene 4294 [Source:MGI	yes down	no up	1
USG0	429	Symbol;Acc:MGI:3782472]			
00000	4				
78377					

ENSM						
	BC0	cDNA sequence BC049987				
USG0						
	499	[Source:MGI	yes up	no up	1	
00001						
	87	Symbol;Acc:MGI:3039606]				
10755						
ENSM						
		ankyrin repeat and BTB (POZ) domain				
USG0	Abt					
		containing 2 [Source:MGI	yes up	no down	1	
00000	b2					
		Symbol;Acc:MGI:2139365]				
32724						
ENSM						
USG0	Ank	ankyrin repeat domain 12 [Source:MGI				
			yes down	no up	1	
00000	rd12	Symbol;Acc:MGI:1914357]				
34647						
ENSM						
	Gm					
USG0		predicted gene 43601 [Source:MGI				
	436		yes up	no down	1	
00001		Symbol;Acc:MGI:5663738]				
	01					
04660						
ENSM						
	Gvi	GTPase, very large interferon inducible,				
USG0						
	n-ps	pseudogene 3 [Source:MGI	yes down	no up	1	
00000						
	3	Symbol;Acc:MGI:3703149]				
95649						
ENSM	Wsb	WD repeat and SOCS box-containing 1				
			yes down	no up	1	
USG0	1	[Source:MGI				

00000		Symbol;Acc:MGI:1926139]			
17677					
ENSM					
USG0	Pter	phosphotriesterase related [Source:MGI	yes down	no up	1
00000		Symbol;Acc:MGI:107372]			
26730					
ENSM					
USG0	Ago	argonaute RISC catalytic subunit 4			
00000	4	[Source:MGI	yes down	no up	1
42500		Symbol;Acc:MGI:1924100]			
ENSM					
USG0	Olfr	olfactory receptor 1034 [Source:MGI			
00001	103	Symbol;Acc:MGI:3030868]	yes down	no up	1
02091	4				
ENSM					
USG0	Gm	predicted gene 28548 [Source:MGI		no no	
00000	285	Symbol;Acc:MGI:5579254]	yes down	change	1
99599	48				
ENSM					
USG0	Prd	PR domain containing 9 [Source:MGI			
00000	m9	Symbol;Acc:MGI:2384854]	yes down	no up	1
51977					

ENSM						
USG0	Mup	major urinary protein 12 [Source:MGI				
00000	12	Symbol;Acc:MGI:3780193]	yes up	no up		1
94793						
ENSM						
USG0	Cap	calpain 8 [Source:MGI				
00000	n8	Symbol;Acc:MGI:2181366]	yes up	no up		1
38599						
ENSM						
USG0	Crb	cereblon [Source:MGI				
00000	n	Symbol;Acc:MGI:1913277]	no up	yes down		1
05362						
ENSM		enoyl-Coenzyme A,				
USG0	Ehh	hydratase/3-hydroxyacyl Coenzyme A				
00000	adh	dehydrogenase [Source:MGI	yes up	no up		1
22853		Symbol;Acc:MGI:1277964]				
ENSM						
USG0	Gm	predicted gene 8186 [Source:MGI				
00000	818	Symbol;Acc:MGI:3643110]	yes down	no up		1
49124	6					
ENSM	Fzd	frizzled class receptor 8 [Source:MGI				
USG0	8	Symbol;Acc:MGI:108460]	yes down	no up		1

00000						
36904						
ENSM		fat storage-inducing transmembrane				
USG0	Fitm	protein 2 [Source:MGI	yes up	no down	1	
00000	2	Symbol;Acc:MGI:2444508]				
48486						
ENSM		pleckstrin homology like domain,				
USG0	Phld	family A, member 1 [Source:MGI	yes down	yes up	2	
00000	a1	Symbol;Acc:MGI:1096880]				
20205						
ENSM						
USG0	Gpx	glutathione peroxidase 7 [Source:MGI	yes up	no down	1	
00000	7	Symbol;Acc:MGI:1914555]				
28597						
ENSM						
USG0	Zfp	zinc finger protein 969 [Source:MGI	yes down	no up	1	
00000	969	Symbol;Acc:MGI:3782422]				
95545						
ENSM		SRY (sex determining region Y)-box 5,				
USG0	Sox	opposite strand 4 [Source:MGI	no down	yes up	1	
00000	5os4	Symbol;Acc:MGI:3783128]				
86282						

ENSM						
USG0	Scd	stearoyl-Coenzyme A desaturase 1				
00000	1	[Source:MGI Symbol;Acc:MGI:98239]	yes down	yes down	2	
37071						
ENSM						
USG0	Aco	acyl-CoA thioesterase 11 [Source:MGI				
00000	t11	Symbol;Acc:MGI:1913736]	yes down	no up	1	
34853						
ENSM						
USG0	Cxcl	chemokine (C-X-C motif) ligand 10				
00000	10	[Source:MGI	yes down	no up	1	
34855		Symbol;Acc:MGI:1352450]				
ENSM						
USG0	Sigl	sialic acid binding Ig-like lectin 1,				
00000	ec1	sialoadhesin [Source:MGI	yes up	no down	1	
27322		Symbol;Acc:MGI:99668]				
ENSM						
USG0	Tbx	T-box 3 [Source:MGI				
00000	3	Symbol;Acc:MGI:98495]	yes up	no down	1	
18604						
ENSM	Plin	perilipin 2 [Source:MGI				
USG0	2	Symbol;Acc:MGI:87920]	yes up	no down	1	

00000						
28494						
ENSM	B93					
002		RIKEN cDNA B930025P03 gene				
USG0						
5P0		[Source:MGI	yes up	no up	1	
00001						
3Ri		Symbol;Acc:MGI:2443166]				
09473						
k						
ENSM						
Gm						
USG0		predicted gene 10129 [Source:MGI		no no		
101			yes down		1	
00001		Symbol;Acc:MGI:3641890]		change		
29						
03789						
ENSM						
USG0	Dbf	DBF4 zinc finger [Source:MGI				
00000	4	Symbol;Acc:MGI:1351328]	yes down	no down	1	
02297						
ENSM						
Gm						
USG0		predicted gene 14421 [Source:MGI				
144			yes down	no up	1	
00000		Symbol;Acc:MGI:3652254]				
21						
83111						
ENSM						
Zfp		zinc finger protein 976 [Source:MGI				
USG0			yes down	no up	1	
976		Symbol;Acc:MGI:3036263]				
00000						

74158						
ENSM						
		cytochrome P450, family 2, subfamily				
USG0	Cyp					
		a, polypeptide 4 [Source:MGI	yes down	no up	1	
00000	2a4	Symbol;Acc:MGI:88596]				
74254						
	221					
ENSM						
	001	RIKEN cDNA 2210010C04 gene				
USG0						
	0C0	[Source:MGI	yes up	no down	1	
00000						
	4Ri	Symbol;Acc:MGI:1914623]				
29882						
	k					
ENSM						
		Indian hedgehog [Source:MGI				
USG0	Ihh		yes down	no up	1	
00000		Symbol;Acc:MGI:96533]				
06538						
ENSM						
		acyl-CoA thioesterase 3 [Source:MGI				
USG0	Aco		yes up	no down	1	
00000	t3	Symbol;Acc:MGI:2159619]				
21228						
ENSM						
		acyl-CoA thioesterase 2 [Source:MGI				
USG0	Aco		yes up	no down	1	
00000	t2	Symbol;Acc:MGI:2159605]				
21226						

ENSM					
	Gm				
USG0		predicted gene 11585 [Source:MGI			
	115		yes down	no up	1
00000		Symbol;Acc:MGI:3651395]			
	85				
82045					
ENSM					
		a disintegrin and metallopeptidase			
USG0	Ada				
		domain 22 [Source:MGI	yes down	no down	1
00000	m22				
		Symbol;Acc:MGI:1340046]			
40537					
ENSM					
		2',3'-cyclic nucleotide 3'			
USG0					
	Cnp	phosphodiesterase [Source:MGI	yes down	no up	1
00000					
		Symbol;Acc:MGI:88437]			
06782					
	E03				
ENSM					
	001	RIKEN cDNA E030018B13 gene			
USG0					
	8B1	[Source:MGI	yes up	no down	1
00000					
	3Ri	Symbol;Acc:MGI:2686543]			
95061					
	k				
ENSM					
		nuclear receptor subfamily 4, group A,			
USG0	Nr4				
		member 1 [Source:MGI	yes down	no up	1
00000	a1				
		Symbol;Acc:MGI:1352454]			
23034					
ENSM	Rgs	regulator of G-protein signaling 3	yes down	no up	1

USG0	3	[Source:MGI			
00000		Symbol;Acc:MGI:1354734]			
59810					
ENSM					
		zinc finger, BED type containing 6			
USG0	Zbe				
		[Source:NCBI gene (formerly	yes up	no down	1
00000	d6	Entrezgene);Acc:667118]			
94410					
ENSM					
		scavenger receptor class A, member 5			
USG0	Scar				
		[Source:MGI	no up	yes down	1
00000	a5	Symbol;Acc:MGI:1918395]			
22032					
ENSM					
	Zfp				
USG0		zinc finger protein 119b [Source:MGI			
	119		yes down	no up	1
00000		Symbol;Acc:MGI:2385323]			
	b				
62101					
ENSM					
USG0	Clst	calsyntenin 3 [Source:MGI			
			yes up	no down	1
00000	n3	Symbol;Acc:MGI:2178323]			
08153					
ENSM		mitochondrial pyruvate carrier 1,			
	Mpc				
USG0		pseudogene [Source:MGI	no down	yes up	1
	1-ps				
00000		Symbol;Acc:MGI:3781628]			

91498					
ENSM					
		odorant binding protein 2A			
USG0	Obp				
		[Source:MGI	yes up	no down	1
00000	2a				
		Symbol;Acc:MGI:2387617]			
62061					
ENSM					
	Pcd	protocadherin gamma subfamily A, 11			
USG0					
	hga	[Source:MGI	yes down	no up	1
00001					
	11	Symbol;Acc:MGI:1935228]			
02742					
	493				
ENSM					
	045	RIKEN cDNA 4930458D05 gene			
USG0					
	8D0	[Source:MGI	yes up	no up	1
00000					
	5Ri	Symbol;Acc:MGI:1923052]			
87611					
	k				
ENSM					
USG0	Cdh	cadherin 6 [Source:MGI			
			no down	yes up	1
00000	6	Symbol;Acc:MGI:107435]			
39385					
ENSM					
		ADP-ribosylation factor interacting			
USG0	Arfi				
		protein 1 [Source:MGI	no up	yes down	1
00000	p1				
		Symbol;Acc:MGI:1277120]			
74513					

ENSM					
	Eif4	eukaryotic translation initiation factor			
USG0					
	ebp	4E binding protein 3 [Source:MGI	yes up	no up	1
00000					
	3	Symbol;Acc:MGI:1270847]			
90264					
ENSM					
	Gm				
USG0		predicted gene, 50461 [Source:MGI			
	504		yes down	no up	1
00001		Symbol;Acc:MGI:6324726]			
	61				
18471					
ENSM					
		cell growth regulator with EF hand			
USG0	Cgr				
		domain 1 [Source:MGI	yes up	no down	1
00000	efl				
		Symbol;Acc:MGI:1915817]			
29161					
ENSM					
		serine (or cysteine) peptidase inhibitor,			
USG0	Serp				
		clade A, member 6 [Source:MGI	yes down	no up	1
00000	ina6				
		Symbol;Acc:MGI:88278]			
60807					
ENSM					
	Gm				
USG0		predicted gene 43836 [Source:MGI			
	438		yes up	no down	1
00001		Symbol;Acc:MGI:5663973]			
	36				
06566					
ENSM	Chr	cholinergic receptor, nicotinic, alpha			
			yes up	no down	1
USG0	na2	polypeptide 2 (neuronal) [Source:MGI			

00000		Symbol;Acc:MGI:87886]			
22041					
ENSM					
USG0	Ank	ankyrin repeat domain 52 [Source:MGI			
00000	rd52	Symbol;Acc:MGI:2444029]	no up	yes down	1
14498					
ENSM					
USG0	Gm	predicted gene 10032 [Source:MGI			
00000	100	Symbol;Acc:MGI:3642901]	yes up	no down	1
57913	32				
ENSM					
USG0	Fam	family with sequence similarity 131,			
00000	131	member C [Source:MGI	yes up	no down	1
06218	c	Symbol;Acc:MGI:2685539]			
ENSM					
USG0	Gm	predicted gene 2026 [Source:MGI			
00000	202	Symbol;Acc:MGI:3780195]	no up	yes down	1
78886	6				
ENSM					
USG0	Gm	predicted gene 14434 [Source:MGI			
00000	144	Symbol;Acc:MGI:3702417]	no down	yes up	1
78881	34				

ENSM						
USG0	Zfp	zinc finger protein 968 [Source:MGI				
00000	968	Symbol;Acc:MGI:3782903]	no down	yes up	1	
78898						
	C13					
ENSM						
	001	RIKEN cDNA C130013H08 gene				
USG0						
	3H0	[Source:MGI	yes up	no down	1	
00001						
	8Ri	Symbol;Acc:MGI:3697343]				
05509						
	k					
ENSM						
	Gm					
USG0		predicted gene, 17767 [Source:MGI				
	177		yes up	no down	1	
00000		Symbol;Acc:MGI:5009931]				
	67					
99413						
ENSM						
	Gm					
USG0		predicted gene 4540 [Source:MGI				
	454		no down	yes up	1	
00000		Symbol;Acc:MGI:3782724]				
	0					
92072						
ENSM						
	Gm					
USG0		predicted gene, 48416 [Source:MGI				
	484		yes down	yes up	2	
00001		Symbol;Acc:MGI:6097909]				
	16					
14123						
ENSM	Pcsk	proprotein convertase subtilisin/kexin	yes up	yes down	2	

USG0	9	type 9 [Source:MGI			
00000		Symbol;Acc:MGI:2140260]			
44254					
ENSM					
USG0	Plin	perilipin 4 [Source:MGI			
00000	4	Symbol;Acc:MGI:1929709]	yes up	no down	1
02831					
ENSM					
USG0	Rsb	rosbin, round spermatid basic protein 1			
00000	n1	[Source:MGI	yes down	no up	1
44098		Symbol;Acc:MGI:2444993]			
ENSM					
USG0	Mab	mab-21-like 2 [Source:MGI			
00000	2112	Symbol;Acc:MGI:1346022]	yes up	no down	1
57777					
ENSM					
USG0	Igfb	insulin-like growth factor binding			
00000	p5	protein 5 [Source:MGI	yes down	no up	1
26185		Symbol;Acc:MGI:96440]			
ENSM					
USG0	Snh	small nucleolar RNA host gene 20			
00000	g20	[Source:MGI	yes down	no up	1
		Symbol;Acc:MGI:1924222]			

86859						
ENSM						
		7-dehydrocholesterol reductase				
USG0	Dhc					
		[Source:MGI	yes up	no down	1	
00000	r7					
		Symbol;Acc:MGI:1298378]				
58454						
ENSM						
		glutathione S-transferase pi 3				
USG0	Gstp					
		[Source:MGI	yes down	no up	1	
00000	3					
		Symbol;Acc:MGI:2385078]				
58216						
ENSM						
		myelocytomatosis oncogene				
USG0	Myc		no up	yes up	1	
		[Source:MGI Symbol;Acc:MGI:97250]				
00000						
22346						
ENSM						
		thymosin, beta 10 [Source:MGI				
USG0	Tms		yes down	no up	1	
00000	b10	Symbol;Acc:MGI:109146]				
79523						
ENSM						
		farnesyl diphosphate synthetase				
USG0	Fdp					
		[Source:MGI	yes up	no down	1	
00000	s					
		Symbol;Acc:MGI:104888]				
59743						
ENSM	Gm	predicted gene 45140 [Source:MGI	yes up	no down	1	

USG0	451	Symbol;Acc:MGI:5753716]			
00001	40				
07928					
ENSM					
		sparc/osteonectin, cwcv and kazal-like			
USG0	Spo				
		domains proteoglycan 2 [Source:MGI	yes down	no up	1
00000	ck2				
		Symbol;Acc:MGI:1891351]			
58297					
ENSM					
USG0	Dsg	desmoglein 1 gamma [Source:MGI			
			yes down	no up	1
00000	1c	Symbol;Acc:MGI:2664358]			
34774					
ENSM					
	Gm				
USG0		predicted gene, 49463 [Source:MGI			
	494		no up	yes down	1
00001		Symbol;Acc:MGI:6155122]			
	63				
16508					
ENSM					
USG0	Col	collagen, type IV, alpha 4 [Source:MGI			
			no down	yes up	1
00000	4a4	Symbol;Acc:MGI:104687]			
67158					
ENSM	Gm				
		predicted gene 7332 [Source:MGI			
USG0	733		no down	yes down	1
		Symbol;Acc:MGI:3643344]			
00000	2				

80875					
ENSM					
	Gm				
USG0		predicted gene, 48274 [Source:MGI			
	482		no up	yes down	1
00001		Symbol;Acc:MGI:6097700]			
	74				
11083					
ENSM					
	Gm				
USG0		predicted gene, 36041 [Source:MGI			
	360		yes down	no up	1
00001		Symbol;Acc:MGI:5595200]			
	41				
12774					
ENSM					
		a disintegrin and metalloproteinase			
USG0	Ada				
		domain 11 [Source:MGI	yes down	no down	1
00000	m11				
		Symbol;Acc:MGI:1098667]			
20926					
ENSM					
		leucine rich repeat and fibronectin type			
USG0	Lrfr				
		III domain containing 3 [Source:MGI	yes up	no down	1
00000	3				
		Symbol;Acc:MGI:2442512]			
36957					
		sema domain, seven thrombospondin			
ENSM					
		repeats (type 1 and type 1-like),			
USG0	Sem				
		transmembrane domain (TM) and short	yes up	no down	1
00000	a5b				
		cytoplasmic domain, (semaphorin) 5B			
52133					
		[Source:MGI			

Symbol;Acc:MGI:107555]									
ENSM	FERM domain containing 8, opposite								
USG0	Frm								
		strand [Source:MGI	no down	yes up	1				
00000	d8os	Symbol;Acc:MGI:3704490]							
43488									
ENSM									
	Pga	phosphoglycerate mutase 1, pseudogene							
USG0									
	m1-	2 [Source:MGI	yes down	no no	1				
00000		change							
	ps2	Symbol;Acc:MGI:3645709]							
82016									

Table S4 Metabolome analysis of significant difference metabolites compared the HFD group with alliin group, according to the criteria of $P < 0.05$ and $FC \geq 1.5$

Metabolite Name	Formula	Up or Down	Calc. MW	RT [min]	Area (Max.)
Cyprodenate	C13 H25 N O2	Up	227.18858	18.073	120517362.3
N-Undecanoylglycine	C13 H25 N O3	Up	243.18333	16.568	109696917.9
N-Desmethyltramadol	C15 H23 N O2	Up	249.17067	18.075	85548978.24
Myristyl sulfate	C14 H30 O4 S	Up	294.18681	20.643	56167058.48
Pivagabine	C9 H17 N O3	Up	187.12	8.008	27856378.39
(+/-)-Coniine	C8 H17 N	Up	127.13631	4.085	26468844.74
2-oxa-4-azatetracyclo[6. 3.1.1~6,10~.0~1,5~]trid	C11 H15 N O2	Up	193.10793	8.813	22817042.38

ecan-3-one

Aceclidine	C9 H15 N O2	Up	169.11039	8.018	15679393.96
Stearamide	C18H37NO	Up	283.28745	21.796	583208946.3
Morphine D3	C17 H16 [2]H3 N O3	Up	288.15497	6.812	14858362.96
D-pantothenic acid	C9 H17 N O5	Down	219.11057	3.786	177564458.8
Adipic acid	C6 H10 O4	Down	146.05689	2.837	93310379.43
2-amino-N-(1,3,5-trimet hyl-1H-pyrazol-4-yl)ben zamide	C13 H16 N4 O	Down	244.12893	6.569	79555990.15
2-Thio-acetyl MAGE	C21 H42 O3 S	Down	356.27139	21.207	26122535.15
Furaneol	C6 H8 O3	Down	128.04765	2.878	21199623.52
6β-Prostaglandin I1	C20 H34 O5	Down	354.24113	18.428	17407117.03
8-iso-13,14-dihydro-15- keto Prostaglandin F2?	C20 H34 O5	Down	354.24107	19.227	16637664.58
Amobarbital	C11H18N2O3	Down	226.13195	6.672	15224130.49

Table S4 exegesis: Calc. MW : Molecular Weight Calculator; RT: retention time;
Area (Max.): Maximum peak area.

Table S5 There was significantly differential genes and metabolites enrichment pathway.

Pathway name	Tot al	Expect ed	Hit s	p-value	-log(p)	Holm adjust	FDR	Impact
Steroid biosynthesis	19	0.1278 1	6	1.80E-09	8.744 2	1.51E- 07	1.51E- 07	0.6410 3
Terpenoid backbone biosynthesis	23	0.1547 2	6	6.57E-09	8.182 6	5.45E- 07	2.76E- 07	1.4706

Glycerolipid metabolism	61	0.41035	7	1.41E-07	6.8498	1.16E-05	3.96E-06	1.7222
Glycerophospholipid metabolism	97	0.65252	8	2.31E-07	6.6357	1.87E-05	4.86E-06	0.97959
Steroid hormone biosynthesis	89	0.5987	7	1.93E-06	5.7145	0.000154	3.24E-05	1.2887
Alanine, aspartate and glutamate metabolism	38	0.25563	4	0.00011476	3.9402	0.009066	0.001607	0.40625
Arginine biosynthesis	19	0.12781	3	0.00025934	3.5861	0.020228	0.003105	0.75
Drug metabolism - other enzymes	88	0.59197	5	0.00029574	3.5291	0.022772	0.003105	0.5
Tyrosine metabolism	40	0.26908	3	0.0023923	2.6212	0.18181	0.022328	0.91111
Retinol metabolism	91	0.61215	4	0.00319	2.4962	0.23925	0.026796	1.4118
Primary bile acid biosynthesis	16	0.10763	2	0.0050235	2.299	0.37174	0.038361	0.25581
Glycosaminoglycan biosynthesis - heparan sulfate / heparin	19	0.12781	2	0.0070665	2.1508	0.51586	0.045661	0
Fatty acid biosynthesis	19	0.12781	2	0.0070665	2.1508	0.51586	0.045661	0.066667
Glutathione metabolism	65	0.43725	3	0.0093942	2.0271	0.66699	0.056365	0.7037
Phenylalanine metabolism	23	0.15472	2	0.010277	1.9881	0.71937	0.05755	0.90909
Glyoxylate and dicarboxylate metabolism	31	0.20854	2	0.018251	1.7387	1	0.095816	0.47826
Glycine, serine and threonine metabolism	40	0.26908	2	0.029459	1.5308	1	0.14556	1.2895
Neomycin, kanamycin and gentamicin	5	0.033635	1	0.033193	1.479	1	0.1549	0

biosynthesis								
Ether lipid metabolism	47	0.3161 7	2	0.03962 9	1.402	1	0.1667 4	0.3333 3
Phosphonate and phosphinate metabolism	6	0.0403 62	1	0.0397	1.401 2	1	0.1667 4	0.3333 3
Fatty acid degradation	50	0.3363 5	2	0.04433 9	1.353 2	1	0.1693	0.0483 87
Arginine and proline metabolism	50	0.3363 5	2	0.04433 9	1.353 2	1	0.1693	0.2051 3
Cysteine and methionine metabolism	52	0.3498	2	0.04759	1.322 5	1	0.1738 1	0.2702 7
Phenylalanine, tyrosine and tryptophan biosynthesis	8	0.0538 16	1	0.05258 7	1.279 1	1	0.1840 5	0.3333 3
Pyrimidine metabolism	58	0.3901 6	2	0.05783 8	1.237 8	1	0.1943 4	0.3220 3
Taurine and hypotaurine metabolism	11	0.0739 97	1	0.07159 8	1.145 1	1	0.2313 2	0.5714 3
Metabolism of xenobiotics by cytochrome P450	67	0.4507 1	2	0.07448 2	1.127 9	1	0.2317 2	0.6229 5
Drug metabolism - cytochrome P450	69	0.4641 6	2	0.07836 8	1.105 9	1	0.2351	0.1176 5
Arachidonic acid metabolism	89	0.5987	2	0.12032	0.919 65	1	0.3485 2	2.2619
Various types of N-glycan biosynthesis	20	0.1345 4	1	0.12641	0.898 22	1	0.3539 5	0.2758 6
alpha-Linolenic acid metabolism	25	0.1681 7	1	0.15547	0.808 34	1	0.4212 8	0.25
Ascorbate and aldarate metabolism	27	0.1816 3	1	0.16683	0.777 72	1	0.4379 3	0.3333 3
Mucin type	28	0.1883	1	0.17245	0.763	1	0.4389	0.4444

O-glycan biosynthesis		6			33		7	4
Pentose phosphate pathway	32	0.2152 6	1	0.19457	0.710 92	1	0.4539 8	0
Galactose metabolism	32	0.2152 6	1	0.19457	0.710 92	1	0.4539 8	0.1304 3
Propanoate metabolism	33	0.2219 9	1	0.20001	0.698 95	1	0.4539 8	0.0833 33
Starch and sucrose metabolism	33	0.2219 9	1	0.20001	0.698 95	1	0.4539 8	0.0952 38
Pentose and glucuronate interconversions	34	0.2287 2	1	0.20541	0.687 37	1	0.4539 8	0.1538 5
Fructose and mannose metabolism	35	0.2354 4	1	0.21078	0.676 17	1	0.4539 8	0.2222 2
Pyruvate metabolism	38	0.2556 3	1	0.22666	0.644 62	1	0.476	0.1818 2
Porphyrin and chlorophyll metabolism	41	0.2758 1	1	0.24224	0.615 76	1	0.4962 9	0.0909 09
Tryptophan metabolism	48	0.3228 9	1	0.27738	0.556 92	1	0.5243 2	0.5238 1
Sphingolipid metabolism	48	0.3228 9	1	0.27738	0.556 92	1	0.5243 2	0.6388 9
Amino sugar and nucleotide sugar metabolism	49	0.3296 2	1	0.28227	0.549 33	1	0.5243 2	0.0681 82
N-Glycan biosynthesis	50	0.3363 5	1	0.28713	0.541 93	1	0.5243 2	0.0526 32
Linoleic acid metabolism	50	0.3363 5	1	0.28713	0.541 93	1	0.5243 2	1.0909
Valine, leucine and isoleucine degradation	56	0.3767 1	1	0.31559	0.500 88	1	0.5640 3	0.0816 33
Aminoacyl-tRNA biosynthesis	66	0.4439 8	1	0.36057	0.443 01	1	0.6181 2	0
Glycolysis or Gluconeogenesis	66	0.4439 8	1	0.36057	0.443 01	1	0.6181 2	0.2058 8

Phosphatidylinositol signaling system	98	0.6592 4	1	0.48585	0.313 5	1	0.8162 2	0.0833 33
Purine metabolism	136	0.9148 7	1	0.60357	0.219 27	1	0.9941 1	0.1078 4

Table S5 exegesis: The overview shows all matched pathways according to the p-value from the pathway enrichment analysis and pathway impact values from the pathway topology analysis.