

PANTHER Pathway	Mus musculus genes (26,185)	NAc sustained increase, Coc & Wit (1,387)	NAc sustained increase, Coc & Wit (P-value)	NAc increase, Wit only (1,001)	NAc increase, Wit only (P-value)	NAc sustained decrease, Coc & Wit (2,670)	NAc sustained decrease, Coc & Wit (P-value)
Cadherin signaling pathway	167	19	1.94E-03	16	9.25E-04	30	2.70E-03
Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha	169	19	2.21E-03	18	1.32E-04	32	8.89E-04
Wnt signaling pathway	348	46	3.67E-08	27	5.77E-04	64	9.02E-06
Angiogenesis	193	30	3.42E-07	17	1.58E-03	21	4.12E-01
Endothelin signaling pathway	89	17	9.04E-06	11	7.93E-04	9	5.78E-01
Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha	139	16	3.78E-03	15	4.05E-04	21	5.26E-02
PDGF signaling pathway	162	20	5.73E-04	20	7.43E-06	16	5.14E-01
Alzheimer disease-presenilin pathway	124	21	5.31E-06	10	2.31E-02	16	2.05E-01
Axon guidance mediated by netrin	29	6	4.96E-03	4	2.63E-02	4	3.43E-01
Axon guidance mediated by semaphorins	44	9	6.94E-04	2	5.01E-01	7	1.67E-01
Insulin/IGF pathway-protein kinase B signaling cascade	83	15	5.50E-05	6	1.02E-01	7	3.90E-01
Ionotropic glutamate receptor pathway	56	13	1.39E-05	3	3.61E-01	8	2.17E-01
Metabotropic glutamate receptor group III pathway	77	13	3.20E-04	4	3.40E-01	15	1.47E-02
Nicotinic acetylcholine receptor signaling pathway	98	12	7.11E-03	6	1.76E-01	7	2.20E-01
Tryptophan biosynthesis	0	1	0.00E+00	0	1.00E+00	0	1.00E+00
Chorismate biosynthesis	0	0	1.00E+00	1	0.00E+00	0	1.00E+00
EGF receptor signaling pathway	138	9	3.12E-01	18	1.02E-05	21	4.95E-02
Histamine H1 receptor mediated signaling pathway	53	5	1.53E-01	7	4.81E-03	10	4.88E-02
Inflammation mediated by chemokine and cytokine signaling path	298	20	1.72E-01	25	3.01E-04	34	2.78E-01
Integrin signalling pathway	185	13	1.89E-01	24	4.04E-07	25	1.00E-01
JAK/STAT signaling pathway	20	0	3.47E-01	4	7.76E-03	2	6.66E-01
Muscarinic acetylcholine receptor 1 and 3 signaling pathway	69	9	1.26E-02	10	4.09E-04	13	2.78E-02
Unclassified	23373	1226	1.58E-01	862	1.11E-03	2357	5.50E-02
VEGF signaling pathway	76	9	2.20E-02	8	9.87E-03	7	4.88E-01
5HT1 type receptor mediated signaling pathway	48	2	5.33E-01	3	2.79E-01	13	1.66E-03
5HT4 type receptor mediated signaling pathway	38	1	4.02E-01	5	1.64E-02	10	6.56E-03
Anandamide_degradation	1	0	9.48E-01	0	9.62E-01	2	4.86E-03
Beta3 adrenergic receptor signaling pathway	33	0	1.74E-01	4	3.92E-02	9	7.75E-03
Cell cycle	24	2	3.63E-01	1	6.01E-01	14	3.19E-07
Corticotropin releasing factor receptor signaling pathway	37	0	1.41E-01	3	1.70E-01	10	5.49E-03
DNA replication	25	2	3.82E-01	0	3.84E-01	9	1.29E-03
FGF signaling pathway	125	9	2.23E-01	9	5.42E-02	24	3.06E-03
General transcription regulation	40	0	1.20E-01	3	1.98E-01	14	9.17E-05
Heterotrimeric G-protein signaling pathway-rod outer segment pho	49	0	7.44E-02	3	2.89E-01	13	1.98E-03
Histamine H2 receptor mediated signaling pathway	28	0	2.27E-01	4	2.35E-02	8	9.03E-03
Huntington disease	199	14	1.77E-01	14	2.35E-02	35	1.80E-03
Metabotropic glutamate receptor group II pathway	55	5	1.70E-01	2	6.49E-01	15	7.15E-04

mRNA splicing	14	1	5.24E-01	0	5.85E-01	9	1.88E-05
Muscarinic acetylcholine receptor 2 and 4 signaling pathway	67	2	3.12E-01	3	4.72E-01	16	1.87E-03
p53 pathway	127	9	2.36E-01	5	5.34E-01	27	4.11E-04
p53 pathway by glucose deprivation	27	2	4.19E-01	0	3.56E-01	8	7.36E-03
Parkinson disease	106	4	3.39E-01	5	3.81E-01	30	1.12E-06
Transcription regulation by bZIP transcription factor	58	3	6.31E-01	4	1.84E-01	19	1.41E-05
Ubiquitin proteasome pathway	88	3	3.15E-01	5	2.49E-01	38	4.38E-13
Vasopressin synthesis	13	0	5.02E-01	1	3.92E-01	7	4.50E-04
2-arachidonoylglycerol biosynthesis	6	1	2.72E-01	0	7.95E-01	1	4.58E-01
5-Hydroxytryptamine biosynthesis	6	0	7.28E-01	0	7.95E-01	2	1.26E-01
5-Hydroxytryptamine degradation	23	0	2.96E-01	0	4.15E-01	0	9.57E-02
5HT2 type receptor mediated signaling pathway	77	8	5.57E-02	6	7.80E-02	13	5.66E-02
5HT3 type receptor mediated signaling pathway	17	1	5.94E-01	0	5.22E-01	4	9.82E-02
Acetate utilization	3	1	1.47E-01	0	8.92E-01	0	7.36E-01
Adenine and hypoxanthine salvage pathway	13	2	1.52E-01	0	6.08E-01	1	6.18E-01
Adrenaline and noradrenaline biosynthesis	35	1	4.47E-01	0	2.62E-01	6	1.51E-01
Alanine biosynthesis	2	0	8.99E-01	0	9.26E-01	0	8.16E-01
Allantoin degradation	1	0	9.48E-01	0	9.62E-01	0	9.03E-01
Alpha adrenergic receptor signaling pathway	34	5	3.64E-02	2	3.73E-01	5	2.68E-01
Alzheimer disease-amyloid secretase pathway	73	9	1.75E-02	5	1.51E-01	6	3.86E-01
Aminobutyrate degradation	2	0	8.99E-01	0	9.26E-01	0	8.16E-01
Androgen/estrogene/progesterone biosynthesis	28	0	2.27E-01	0	3.43E-01	0	5.75E-02
Apoptosis signaling pathway	141	7	5.29E-01	8	1.77E-01	17	2.77E-01
Arginine biosynthesis	8	0	6.55E-01	1	2.64E-01	0	4.42E-01
Ascorbate degradation	5	1	2.33E-01	0	8.26E-01	3	1.51E-02
Asparagine and aspartate biosynthesis	5	0	7.67E-01	0	8.26E-01	1	3.99E-01
ATP synthesis	11	0	5.58E-01	0	6.57E-01	0	3.26E-01
Axon guidance mediated by Slit/Robo	21	3	1.02E-01	1	5.52E-01	3	3.62E-01
B cell activation	87	6	3.16E-01	8	2.04E-02	15	3.72E-02
Beta1 adrenergic receptor signaling pathway	49	3	4.81E-01	5	4.18E-02	10	3.16E-02
Beta2 adrenergic receptor signaling pathway	49	4	2.63E-01	5	4.18E-02	10	3.16E-02
Blood coagulation	55	0	5.41E-02	4	1.62E-01	3	1.89E-01
Bupropion degradation	5	0	7.67E-01	0	8.26E-01	0	6.01E-01
Carnitine and CoA metabolism	2	0	8.99E-01	0	9.26E-01	0	8.16E-01
Carnitine metabolism	2	0	8.99E-01	0	9.26E-01	0	8.16E-01
Cholesterol biosynthesis	14	0	4.76E-01	0	5.85E-01	4	5.68E-02
Circadian clock system	9	0	6.21E-01	2	4.72E-02	2	2.34E-01
Cobalamin biosynthesis	1	0	9.48E-01	0	9.62E-01	0	9.03E-01
Coenzyme A biosynthesis	6	1	2.72E-01	1	2.05E-01	1	4.58E-01
Cysteine biosynthesis	1	0	9.48E-01	0	9.62E-01	1	9.69E-02
Cytoskeletal regulation by Rho GTPase	101	8	1.72E-01	7	9.63E-02	18	1.83E-02
De novo purine biosynthesis	39	1	3.88E-01	1	5.61E-01	7	1.08E-01

De novo pyrimidine deoxyribonucleotide biosynthesis	23	1	6.56E-01	1	5.85E-01	2	5.84E-01
De novo pyrimidine ribonucleotides biosynthesis	21	1	6.94E-01	1	5.52E-01	2	6.38E-01
Endogenous_cannabinoid_signaling	29	2	4.54E-01	2	3.04E-01	8	1.10E-02
FAS signaling pathway	38	2	6.73E-01	3	1.79E-01	4	5.42E-01
Flavin biosynthesis	1	0	9.48E-01	0	9.62E-01	0	9.03E-01
Folate biosynthesis	5	0	7.67E-01	0	8.26E-01	3	1.51E-02
Formyltetrahydroformate biosynthesis	10	1	4.11E-01	0	6.82E-01	2	2.71E-01
Fructose galactose metabolism	14	0	4.76E-01	0	5.85E-01	3	1.73E-01
GABA-B_receptor_II_signaling	43	6	2.87E-02	4	8.48E-02	9	3.50E-02
Gamma-aminobutyric acid synthesis	6	1	2.72E-01	1	2.05E-01	0	5.42E-01
General transcription by RNA polymerase I	18	1	6.15E-01	1	4.98E-01	6	1.13E-02
Glutamine glutamate conversion	5	0	7.67E-01	1	1.74E-01	0	6.01E-01
Glycolysis	60	0	4.15E-02	0	1.01E-01	8	2.72E-01
Hedgehog signaling pathway	25	2	3.82E-01	3	7.22E-02	5	1.15E-01
Heme biosynthesis	14	0	4.76E-01	0	5.85E-01	2	4.18E-01
Histamine synthesis	2	0	8.99E-01	0	9.26E-01	1	1.84E-01
Hypoxia response via HIF activation	28	4	6.34E-02	3	9.36E-02	5	1.61E-01
Insulin/IGF pathway-mitogen activated protein kinase kinase/MAF	36	6	1.34E-02	1	6.00E-01	4	5.00E-01
Interferon-gamma signaling pathway	30	1	5.28E-01	3	1.09E-01	4	3.66E-01
Interleukin signaling pathway	160	15	2.64E-02	11	4.71E-02	11	1.11E-01
Isoleucine biosynthesis	3	1	1.47E-01	0	8.92E-01	1	2.64E-01
Leucine biosynthesis	2	0	8.99E-01	0	9.26E-01	0	8.16E-01
Lipoate_biosynthesis	2	0	8.99E-01	0	9.26E-01	0	8.16E-01
Lysine biosynthesis	2	1	1.01E-01	0	9.26E-01	0	8.16E-01
Mannose metabolism	8	0	6.55E-01	1	2.64E-01	2	1.97E-01
Metabotropic glutamate receptor group I pathway	35	5	4.03E-02	3	1.52E-01	5	2.88E-01
Methionine biosynthesis	1	1	5.16E-02	0	9.62E-01	0	9.03E-01
Methylcitrate cycle	4	0	8.09E-01	0	8.58E-01	0	6.65E-01
Methylmalonyl pathway	5	0	7.67E-01	0	8.26E-01	0	6.01E-01
N-acetylglucosamine metabolism	8	2	6.80E-02	0	7.36E-01	2	1.97E-01
Notch signaling pathway	49	7	1.69E-02	6	1.23E-02	9	6.77E-02
O-antigen biosynthesis	4	1	1.91E-01	0	8.58E-01	2	6.37E-02
Ornithine degradation	3	0	8.53E-01	0	8.92E-01	1	2.64E-01
Oxidative stress response	62	6	1.15E-01	7	1.08E-02	6	5.55E-01
Oxytocin receptor mediated signaling pathway	68	6	1.56E-01	6	4.88E-02	11	9.36E-02
P53 pathway feedback loops 1	8	1	3.45E-01	0	7.36E-01	2	1.97E-01
p53 pathway feedback loops 2	51	5	1.37E-01	4	1.34E-01	10	3.95E-02
Pentose phosphate pathway	8	0	6.55E-01	0	7.36E-01	3	4.97E-02
Phenylalanine biosynthesis	3	0	8.53E-01	0	8.92E-01	1	2.64E-01
Phenylethylamine degradation	14	0	4.76E-01	1	4.15E-01	0	2.40E-01
PI3 kinase pathway	110	10	7.21E-02	7	1.33E-01	19	2.08E-02
Plasminogen activating cascade	18	0	3.85E-01	2	1.52E-01	1	4.52E-01

PLP biosynthesis	2	0	8.99E-01	0	9.26E-01	2	1.82E-02
Proline biosynthesis	4	0	8.09E-01	0	8.58E-01	1	3.35E-01
Purine metabolism	9	1	3.79E-01	1	2.91E-01	2	2.34E-01
Pyridoxal phosphate salvage pathway	2	1	1.01E-01	0	9.26E-01	1	1.84E-01
Pyrimidine Metabolism	15	0	4.52E-01	0	5.64E-01	2	4.52E-01
Pyruvate metabolism	15	0	4.52E-01	0	5.64E-01	1	5.48E-01
Ras Pathway	80	10	1.16E-02	8	1.31E-02	14	3.88E-02
S adenosyl methionine biosynthesis	3	1	1.47E-01	0	8.92E-01	0	7.36E-01
Salvage pyrimidine deoxyribonucleotides	5	0	7.67E-01	1	1.74E-01	0	6.01E-01
Salvage pyrimidine ribonucleotides	15	1	5.48E-01	2	1.13E-01	1	5.48E-01
Serine glycine biosynthesis	6	0	7.28E-01	0	7.95E-01	2	1.26E-01
Succinate to proprionate conversion	2	0	8.99E-01	0	9.26E-01	0	8.16E-01
Sulfate assimilation	2	0	8.99E-01	0	9.26E-01	0	8.16E-01
Synaptic_vesicle_trafficking	41	3	3.70E-01	2	4.65E-01	8	6.25E-02
T cell activation	142	9	3.41E-01	11	2.29E-02	22	3.87E-02
TCA cycle	18	1	6.15E-01	0	5.02E-01	0	1.59E-01
TGF-beta signaling pathway	143	11	1.44E-01	10	5.16E-02	17	2.96E-01
Thiamine metabolism	2	1	1.01E-01	0	9.26E-01	0	8.16E-01
Threonine biosynthesis	2	1	1.01E-01	0	9.26E-01	1	1.84E-01
Thyrotropin-releasing hormone receptor signaling pathway	71	6	1.78E-01	7	2.09E-02	12	6.47E-02
Toll receptor signaling pathway	64	3	5.60E-01	1	2.98E-01	7	4.78E-01
Triacylglycerol metabolism	1	0	9.48E-01	0	9.62E-01	0	9.03E-01
Tyrosine biosynthesis	4	0	8.09E-01	0	8.58E-01	1	3.35E-01
Valine biosynthesis	3	0	8.53E-01	0	8.92E-01	1	2.64E-01
Vitamin B6 metabolism	3	1	1.47E-01	0	8.92E-01	2	3.82E-02
Vitamin D metabolism and pathway	13	0	5.02E-01	1	3.92E-01	1	6.18E-01
Xanthine and guanine salvage pathway	6	0	7.28E-01	0	7.95E-01	1	4.58E-01

(i) NAC sustained increase, Coc & Wit								
Gene ID	Gene symbol	Gene name	Protein ID	GO Mol Function	GO Biological Process	GO Cellular Component	Panther Protein Class	Pathway
MOUSE MG 1098280 UniProt KB=P45481	Crebbp	CREB-binding protein;Crebbp	P45481	acyltransferase activity;DNA binding;chromatin binding;transcription factor activity;transcription cofactor activity	nucleobase, nucleoside, nucleotide and nucleic acid metabolic process		acetyl-transferase	p53 pathway->P300;;Transcription regulation by bZIP transcription factor->CBP/P300;;Hedgehog signaling pathway->CBP;;Huntington disease->CREB binding protein;;Hypoxia response via HIF activation->p300;;Wnt signaling pathway->CREB binding protein;;TGF-beta signaling pathway->Co-activators or corepressors;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->cAMP responding element-binding protein;;p53 pathway->CREB binding protein;;;;;;
MOUSE MG 99677 UniProt KB=O88444	Adcy1	Adenylate cyclase type 1;Adcy1	O88444	adenylate cyclase activity;guanylate cyclase activity	nucleobase, nucleoside, nucleotide and nucleic acid metabolic process		adenylate cyclase	Endothelin signaling pathway->3',5'-cyclic AMP synthetase;;GABA-B_receptor_II_signaling->Adenylate cyclase;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Adenylyl cyclase;;;
MOUSE MG 99674 UniProt KB=Q91WF3	Adcy4	Adenylate cyclase type 4;Adcy4	Q91WF3	adenylate cyclase activity;guanylate cyclase activity	nucleobase, nucleoside, nucleotide and nucleic acid metabolic process		adenylate cyclase	Endothelin signaling pathway->3',5'-cyclic AMP synthetase;;GABA-B_receptor_II_signaling->Adenylate cyclase;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Adenylyl cyclase;;;
MOUSE MG 87917 UniProt KB=Q01341	Adcy6	Adenylate cyclase type 6;Adcy6	Q01341	adenylate cyclase activity;guanylate cyclase activity	nucleobase, nucleoside, nucleotide and nucleic acid metabolic process		adenylate cyclase	Endothelin signaling pathway->3',5'-cyclic AMP synthetase;;Inflammation mediated by chemokine and cytokine signaling pathway->Adenylyl cyclase;;GABA-B_receptor_II_signaling->Adenylate cyclase;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Adenylyl cyclase;;;
MOUSE MG 108450 UniProt KB=P51830	Adcy9	Adenylate cyclase type 9;Adcy9	P51830	adenylate cyclase activity;guanylate cyclase activity	nucleobase, nucleoside, nucleotide and nucleic acid metabolic process		adenylate cyclase	Endothelin signaling pathway->3',5'-cyclic AMP synthetase;;GABA-B_receptor_II_signaling->Adenylate cyclase;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Adenylyl cyclase;;;
MOUSE MG 106673 UniProt KB=P97714	Adra1a	Alpha-1D adrenergic receptor;Adra1d	P97714	G-protein coupled receptor activity	muscle contraction;blood circulation;neurological system process;apoptosis;cell surface receptor linked signal transduction;cell motion;signal transduction		G-protein coupled receptor	Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Gi protein coupled receptor;;Alpha adrenergic receptor signaling pathway->Alpha1A/1B/1C;;;
MOUSE MG 104773 UniProt KB=P97718	Adra1a	Alpha-1A adrenergic receptor;Adra1a	P97718	G-protein coupled receptor activity	muscle contraction;blood circulation;neurological system process;apoptosis;cell surface receptor linked signal transduction;cell motion;signal transduction		G-protein coupled receptor	Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Gi protein coupled receptor;;Alpha adrenergic receptor signaling pathway->Alpha1A/1B/1C;;;
MOUSE MG 87938 UniProt KB=P18762	Adrb2	Beta-2 adrenergic receptor;Adrb2	P18762	G-protein coupled receptor activity	muscle contraction;blood circulation;neurological system process;lysosomal transport;intracellular protein transport;endocytosis;apoptosis;cell surface receptor linked signal transduction;intracellular signaling cascade;cell-cell signaling;cell motion;signal transduction;cell-cell signaling		G-protein coupled receptor	Beta2 adrenergic receptor signaling pathway->Beta2;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Gs-protein coupled receptor;;;

MOUSE MG 1333877 UniProt KB=O88495	Gpr50	Melatonin-related receptor;Gpr50	O88495	G-protein coupled receptor activity	immune system process;sensory perception;cell surface receptor linked signal transduction;cell-cell signaling;cell motion;signal transduction;cell-cell signaling		G-protein coupled receptor	Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Gi protein coupled receptor;;	Gi
MOUSE MG 1351344 UniProt KB=Q9QYS2	Grm3	Metabotropic glutamate receptor 3;Grm3	Q9QYS2	G-protein coupled receptor activity	neurological system process;cell surface receptor linked signal transduction;signal transduction		G-protein coupled receptor	Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Gi protein coupled receptor;;Ionotropic glutamate receptor pathway->Metabotropic Glutamate Receptor 2, Metabotropic Glutamate Receptor 3;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->Go-protein coupled receptor;;Metabotropic glutamate receptor group II pathway->Metabotropic Glutamate Receptor 2, Metabotropic Glutamate Receptor 3;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->Gq-protein coupled receptor;;;	Gi/Go/Gq
MOUSE MG 1351344 UniProt KB=Q68ED2	Grm7	Metabotropic glutamate receptor 7;Grm7	Q68ED2	G-protein coupled receptor activity	neurological system process;cell surface receptor linked signal transduction;signal transduction		G-protein coupled receptor	Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Gi protein coupled receptor;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->Go-protein coupled receptor;;Metabotropic glutamate receptor group III pathway->mGluR4/6/7/8;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->Gq-protein coupled receptor;;;	Gi/Go/Gq
MOUSE MG 96274 UniProt KB=P28334	Htr1b	5-hydroxytryptamine receptor 1B;Htr1b	P28334	G-protein coupled receptor activity	neurological system process;cell surface receptor linked signal transduction;cell-cell signaling;signal transduction;cell-cell signaling		G-protein coupled receptor	Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Gi protein coupled receptor;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Gs-protein coupled receptor;;5HT1 type receptor mediated signaling pathway->5HT1 Receptor;;;	Gi/Gs
MOUSE MG 96281 UniProt KB=P34968	Htr2c	5-hydroxytryptamine receptor 2C;Htr2c	P34968	G-protein coupled receptor activity	neurological system process;cell surface receptor linked signal transduction;signal transduction		G-protein coupled receptor	Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Gi protein coupled receptor;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Gs-protein coupled receptor;;5HT2 type receptor mediated signaling pathway->5HT2 Receptor;;;	Gi/Gs
MOUSE MG 96283 UniProt KB=P30966	Htr5a	5-hydroxytryptamine receptor 5A;Htr5a	P30966	G-protein coupled receptor activity	neurological system process;cell surface receptor linked signal transduction;cell-cell signaling;signal transduction;cell-cell signaling		G-protein coupled receptor	Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Gi protein coupled receptor;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Gs-protein coupled receptor;;;	Gi/Gs
MOUSE MG 97439 UniProt KB=P33534	Oprk1	Kappa-type opioid receptor;Oprk1	P33534	G-protein coupled receptor activity	sensory perception;cell surface receptor linked signal transduction;synaptic transmission;cell motion;signal transduction;cell-cell signaling		G-protein coupled receptor	Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Gi protein coupled receptor;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->Go-protein coupled receptor;;;	Gi/Go
MOUSE MG 97441 UniProt KB=P42866	Oprm1	Mu-type opioid receptor;Oprm1	P42866	G-protein coupled receptor activity	sensory perception;cell surface receptor linked signal transduction;synaptic transmission;cell motion;signal transduction;cell-cell signaling		G-protein coupled receptor	Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Gi protein coupled receptor;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->Go-protein coupled receptor;;;	Gi/Go

MOUSE MG 1861437 UniProt KB=Q9WV60	Gsk3b	Glycogen synthase kinase-3 beta;Gsk3b	Q9WV60	kinase activity	mitosis;cell surface receptor linked signal transduction;intracellular signaling cascade;carbohydrate metabolic process;protein metabolic process;mitosis;signal transduction;segment specification;ectoderm development;mesoderm development;embryonic development;nervous system development	protein kinase	Ras Pathway->Glycogen synthase kinase 3;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Glycogen synthase kinase;;PDGF signaling pathway->GSK3;;Angiogenesis->Glycogen Synthase Kinase 3-beta;;Insulin/IGF pathway-protein kinase B signaling cascade->Glycogen synthase kinase 3;;Wnt signaling pathway->Glycogen Synthase Kinase-3Beta;;Alzheimer disease-presenilin pathway->Glycogen synthase kinase 3beta;;Hedgehog signaling pathway->GSK3;;Interleukin signaling pathway->Glycogen synthase kinase 3;;Cadherin signaling pathway->Glycogen synthase kinase 3-beta;;PI3 kinase pathway->GSK3;.....
MOUSE MG 99473 UniProt KB=Q8BWG8	Arrb1	Beta-arrestin-1;Arrb1	Q8BWG8	protein binding	visual perception;sensory perception;intracellular protein transport;endocytosis;cell surface receptor linked signal transduction;signal transduction	enzyme modulator	Wnt signaling pathway->Beta-Arrestin;;Inflammation mediated by chemokine and cytokine signaling pathway->Arrestin;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Arrestin;;
MOUSE MG 97577 UniProt KB=Q8BWJ3	Phka2	Phosphorylase b kinase regulatory subunit alpha, liver isoform;Phka2	Q8BWJ3	protein binding;kinase activator activity;kinase regulator activity	carbohydrate metabolic process	kinase activator	Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Phosphorylase b kinase;;
MOUSE MG 1354730 UniProt KB=Q9Z2H2	Rgs6	Regulator of G-protein signaling 6;Rgs6	Q9Z2H2	protein binding;small GTPase regulator activity	cell surface receptor linked signal transduction;signal transduction;dorsal/ventral axis specification	G-protein modulator	Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Regulator of G-protein signaling;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->Regulator of G-protein signaling;;

(ii) NAc increase, Wit only								
Gene ID	Gene symbol	Gene name	Protein ID	GO Mol Function	GO Biological Process	GO Cellular Component	Panther Protein Class	Pathway
MOUSE MG 99676 UniProt KB=Q80TL1	Adcy2	Adenylate cyclase type 2;Adcy2	Q80TL1	adenylate cyclase activity;guanylate cyclase activity	nucleobase, nucleoside, nucleotide and nucleic acid metabolic process		adenylate cyclase	5HT4 type receptor mediated signaling pathway->AC;;5HT1 type receptor mediated signaling pathway->AC;;Beta3 adrenergic receptor signaling pathway->AC;;Endothelin signaling pathway->3',5'-cyclic AMP synthetase;;Inflammation mediated by chemokine and cytokine signaling pathway->Adenylyl cyclase;;GABA-B_receptor_II_signaling->Adenylate cyclase;;Beta1 adrenergic receptor signaling pathway->AC;;Beta2 adrenergic receptor signaling pathway->AC;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Adenylyl cyclase;;Histamine H2 receptor mediated signaling pathway->AC;;;
MOUSE MG 99673 UniProt KB=P84309	Adcy5	Adenylate cyclase type 5;Adcy5	P84309	adenylate cyclase activity;guanylate cyclase activity	nucleobase, nucleoside, nucleotide and nucleic acid metabolic process		adenylate cyclase	Endothelin signaling pathway->3',5'-cyclic AMP synthetase;;Inflammation mediated by chemokine and cytokine signaling pathway->Adenylyl cyclase;;GABA-B_receptor_II_signaling->Adenylate cyclase;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Adenylyl cyclase;;;
MOUSE MG 88495 UniProt KB=P27699	Crem	cAMP-responsive element modulator;Crem	P27699	DNA binding;transcription factor activity	immune system process;neurological system process;signal transduction;nucleobase, nucleoside, nucleotide and nucleic acid metabolic process;signal transduction;ectoderm development;nervous system development;response to stress		CREB transcription factor	Transcription regulation by bZIP transcription factor->CREB;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->CREB binding protein;;Apoptosis signaling pathway->Activating transcription factor;;;
MOUSE MG 88396 UniProt KB=P12657	Chrm1	Muscarinic acetylcholine receptor M1;Chrm1	P12657	G-protein coupled receptor activity	immune system process;muscle contraction;neurotransmitter secretion;cell surface receptor linked signal transduction;synaptic transmission;signal transduction;cell-cell signaling;response to stress		G-protein coupled receptor	Alzheimer disease-amyloid secretase pathway->Muscarinic acetylcholine receptors;;Muscarinic acetylcholine receptor 1 and 3 signaling pathway->mAChR1/3;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Gi protein coupled receptor;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->Go-protein coupled receptor;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->Gq-protein coupled receptor;;;
MOUSE MG 94925 UniProt KB=P30728	Drd3	D(3) dopamine receptor;Drd3	P30728	G-protein coupled receptor activity	immune system process;muscle contraction;neurological system process;cell surface receptor linked signal transduction;synaptic transmission;signal transduction;cell-cell signaling		G-protein coupled receptor	Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Gi protein coupled receptor;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->Go-protein coupled receptor;;;
MOUSE MG 1351341 UniProt KB=Q68EF4	Grm4	Metabotropic glutamate receptor 4;Grm4	Q68EF4	G-protein coupled receptor activity	neurological system process;cell surface receptor linked signal transduction;signal transduction		G-protein coupled receptor	Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Gi protein coupled receptor;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->Go-protein coupled receptor;;Metabotropic glutamate receptor group III pathway->mGluR4/6/7/8;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->Gq-protein coupled receptor;;;

MOUSE MGi=109246 UniProtKB=P97288	Htr4	5-hydroxytryptamine receptor 4;Htr4	P97288	G-protein coupled receptor activity	immune system process;muscle contraction;visual perception;sensory perception;cell surface receptor linked signal transduction;synaptic transmission;signal transduction;cell-cell signaling		G-protein coupled receptor	Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Gi protein coupled receptor;;5HT4 type receptor mediated signaling pathway->5HT4 Receptor;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Gs-protein coupled receptor;;;	Gi/Gs
MOUSE MGi=1196627 UniProtKB=Q9R1C8	Htr6	5-hydroxytryptamine receptor 6;Htr6	Q9R1C8	G-protein coupled receptor activity	neurological system process;cell surface receptor linked signal transduction;signal transduction		G-protein coupled receptor	Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Gi protein coupled receptor;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Gs-protein coupled receptor;;;	Gi/Gs
MOUSE MGi=97438 UniProtKB=P32300	Opr1	Delta-type opioid receptor;Opr1	P32300	G-protein coupled receptor activity	sensory perception;cell surface receptor linked signal transduction;synaptic transmission;cell motion;signal transduction;cell-cell signaling		G-protein coupled receptor	Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Gi protein coupled receptor;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->Go-protein coupled receptor;;;	Gi/Go
MOUSE MGi=95774 UniProtKB=Q8CGK7	Gnal	Guanine nucleotide-binding protein G(olf) subunit alpha;Gnal	Q8CGK7	GTPase activity;protein binding	cell surface receptor linked signal transduction;signal transduction	heterotrimeric G-protein complex	heterotrimeric G-protein	5HT4 type receptor mediated signaling pathway->G-protein;;Endothelin signaling pathway->stimulatory G protein;;Beta3 adrenergic receptor signaling pathway->G-Protein;;Histamine H2 receptor mediated signaling pathway->G-Protein;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Gs alpha subunit;;Beta1 adrenergic receptor signaling pathway->G-Protein;;Beta2 adrenergic receptor signaling pathway->G-Protein;;Corticotropin releasing factor receptor signaling pathway->G-Protein;;;	Gs-alpha
MOUSE MGi=104581 UniProtKB=P29387	Gnb4	Guanine nucleotide-binding protein subunit beta-4;Gnb4	P29387	GTPase activity;protein binding	sensory perception;cell surface receptor linked signal transduction;signal transduction	heterotrimeric G-protein complex	hydrolase	Heterotrimeric G-protein signaling pathway-rod outer segment phototransduction->G protein, beta subunit;;5HT4 type receptor mediated signaling pathway->G-protein;;5HT1 type receptor mediated signaling pathway->G-protein;;Endogenous_cannabinoid_signaling->Gbeta;;Inflammation mediated by chemokine and cytokine signaling pathway->G beta/gamma subunits;;Beta3 adrenergic receptor signaling pathway->G-Protein;;Thyrotropin-releasing hormone receptor signaling pathway->G-Protein;;Muscarinic acetylcholine receptor 1 and 3 signaling pathway->Gq;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->G protein, beta subunit;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->G protein-activated inward rectifying potassium channel;;Histamine H2 receptor mediated signaling pathway->G-Protein;;PI3 kinase pathway->Gbetagamma;;Metabotropic glutamate receptor group III pathway->Gi;;Metabotropic glutamate receptor group II pathway->G-protein;;Muscarinic acetylcholine receptor 2 and 4 signaling pathway->Gi;;GABA-B_receptor_II_signaling->Gbeta;;Oxytocin receptor mediated signaling pathway->G-Protein;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->G protein beta subunit;;Beta1 adrenergic receptor signaling pathway->G-Protein;;Beta2 adrenergic receptor signaling pathway->G-Protein;;5HT2 type receptor mediated signaling pathway->G-protein;;Histamine H1 receptor mediated signaling pathway->G-Protein;;Wnt signaling pathway->G_Beta;;Corticotropin releasing factor receptor signaling pathway->G-	G-beta

MOUSE MG 95787 UniProt KB=Q61016	Gng7	Guanine nucleotide-binding protein G(I)/G(S)/G(O) subunit gamma-7;Gng7	Q61016	GTPase activity;protein binding	cell surface receptor linked signal transduction;signal transduction	heterotrimeric G-protein complex	heterotrimeric G-protein	5HT4 type receptor mediated signaling pathway->G-protein;;5HT1 type receptor mediated signaling pathway->G-protein;;Inflammation mediated by chemokine and cytokine signaling pathway->G beta/gamma subunits;;Beta3 adrenergic receptor signaling pathway->G-Protein;;GABA-B_receptor_IL_signaling->Ggamma;;Thyrotropin-releasing hormone receptor signaling pathway->G-Protein;;Muscarinic acetylcholine receptor 1 and 3 signaling pathway->Gq;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->G protein-activated inward rectifying potassium channel;;Wnt signaling pathway->Ggamma;;Histamine H2 receptor mediated signaling pathway->G-Protein;;Metabotropic glutamate receptor group III pathway->Gi;;Endogenous_cannabinoid_signaling->Ggamma;;Heterotrimeric G-protein signaling pathway-rod outer segment phototransduction->G protein gamma subunit;;Metabotropic glutamate receptor group II pathway->G-protein;;Muscarinic acetylcholine receptor 2 and 4 signaling pathway->Gi;;Oxytocin receptor mediated signaling pathway->G-Protein;;Beta1 adrenergic receptor signaling pathway->G-Protein;;Beta2 adrenergic receptor signaling pathway->G-Protein;;5HT2 type receptor mediated signaling pathway->G-protein;;Histamine H1 receptor mediated signaling pathway->G-Protein;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->G protein gamma subunit;;Corticotropin releasing factor receptor signaling pathway->G-Protein;;	G-gamma
MOUSE MG 1354739 UniProt KB=Q9Z2H1	Rgs11	Regulator of G-protein signaling 11;Rgs11	Q9Z2H1	protein binding;small GTPase regulator activity	cell surface receptor linked signal transduction;signal transduction;dorsal/ventral axis specification		G-protein modulator	Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Regulator of G-protein signaling;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->Regulator of G-protein signaling;;	
MOUSE MG 108408 UniProt KB=Q8BXT1	Rgs8	Regulator of G-protein signaling 8;Rgs8	Q8BXT1	protein binding;small GTPase regulator activity	cell surface receptor linked signal transduction;signal transduction;dorsal/ventral axis specification		G-protein modulator	Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Regulator of G-protein signaling;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->Regulator of G-protein signaling;;	
MOUSE MG 2142610 UniProt KB=Q3ZT31	Snx25	Sorting nexin-25;Snx25	Q3ZT31	protein binding;small GTPase regulator activity	intracellular protein transport;intracellular signaling cascade;signal transduction		G-protein modulator	Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Regulator of G-protein signaling-PX1;;	
MOUSE MG 1915089 UniProt KB=Q61R34	Gpsm1	G-protein-signaling modulator 1;Gpsm1	Q61R34	protein binding;small GTPase regulator activity;guanyl-nucleotide exchange factor activity	neurological system process;mitosis;cell surface receptor linked signal transduction;synaptic transmission;cytokinesis;mitosis;signal transduction;cell-cell signaling		transmembrane receptor regulatory/adaptor protein	Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->Activator of G-protein signaling;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Activator of G-protein signaling;;	
MOUSE MG 1923373 UniProt KB=Q8VDU0	Gpsm2	G-protein-signaling modulator 2;Gpsm2	Q8VDU0	protein binding;small GTPase regulator activity;guanyl-nucleotide exchange factor activity	neurological system process;mitosis;cell surface receptor linked signal transduction;synaptic transmission;cytokinesis;mitosis;signal transduction;cell-cell signaling		transmembrane receptor regulatory/adaptor protein	Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->Activator of G-protein signaling;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Activator of G-protein signaling;;	
MOUSE MG 1916299 UniProt KB=Q9QXS8	Cml5	Probable N-acetyltransferase CML5;Cml5	Q9QXS8						

(v) NAc sustained decrease, Coc & Wit								
Gene ID	Gene symbol	Gene name	Protein ID	GO Mol Function	GO Biological Process	GO Cellular Component	Panther Protein Class	Pathway
MOUSE MG1=103249 UniProtKB=P62204	Calm3	Calmodulin;Calm3	P62204	calcium ion binding;calmodulin binding	cell cycle;intracellular signaling cascade;cell cycle;signal transduction		calmodulin	Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Phosphorylase b kinase;;T cell activation->Calmodulin;;B cell activation->Calmodulin;;Heterotrimeric G-protein signaling pathway-rod outer segment phototransduction->Calmodulin;;;
MOUSE MG1=108007 UniProtKB=P48543	Kcnj9	G protein-activated inward rectifier potassium channel 3;Kcnj9	P48543	cation transmembrane transporter activity;voltage-gated potassium channel activity;cation channel activity	muscle contraction;neuronal action potential propagation;cation transport		potassium channel	Muscarinic acetylcholine receptor 2 and 4 signaling pathway->G protein-coupled inwardly rectifying potassium channel;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->G-protein receptor kinase;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->G protein-activated inward rectifying potassium channel;;;
MOUSE MG1=99946 UniProtKB=Q61817	Creb3	Processed cyclic AMP-responsive element-binding protein 3;Creb3	Q61817	DNA binding;transcription factor activity	immune system process;neurological system process;signal transduction;nucleobase, nucleoside, nucleotide and nucleic acid metabolic process;signal transduction;ectoderm development;nervous system development;response to stress		CREB transcription factor	Transcription regulation by bZIP transcription factor->CREB;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->CREB binding protein;;;
MOUSE MG1=1338057 UniProtKB=Q9EQ15	Gnb11	Guanine nucleotide-binding protein subunit beta-like protein 1;Gnb11	Q9EQ15	G-protein coupled receptor activity	cell surface receptor linked signal transduction;signal transduction		G-protein coupled receptor	
MOUSE MG1=107619 UniProtKB=P70174	Hrh1	Histamine H1 receptor;Hrh1	P70174	G-protein coupled receptor activity	immune system process;muscle contraction;neurotransmitter secretion;cell surface receptor linked signal transduction;synaptic transmission;signal transduction;cell-cell signaling;response to stress		G-protein coupled receptor	Histamine H1 receptor mediated signaling pathway->H1;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Gs-protein coupled receptor;;;
MOUSE MG1=2139279 UniProtKB=P58406	Hrh3	Histamine H3 receptor;Hrh3	P58406	G-protein coupled receptor activity	immune system process;muscle contraction;neurotransmitter secretion;cell surface receptor linked signal transduction;synaptic transmission;signal transduction;cell-cell signaling;response to stress		G-protein coupled receptor	Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Gs-protein coupled receptor;;;
MOUSE MG1=102967 UniProtKB=Q61184	Mtnr1a	Melatonin receptor type 1A;Mtnr1a	Q61184	G-protein coupled receptor activity	immune system process;sensory perception;cell surface receptor linked signal transduction;cell-cell signaling;cell motion;signal transduction;cell-cell signaling		G-protein coupled receptor	Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Gi protein coupled receptor;;;
MOUSE MG1=98328 UniProtKB=P30875	Sstr2	Somatostatin receptor type 2;Sstr2	P30875	G-protein coupled receptor activity	sensory perception;cell surface receptor linked signal transduction;synaptic transmission;cell motion;signal transduction;cell-cell signaling		G-protein coupled receptor	Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Gi protein coupled receptor;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Gs-protein coupled receptor;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->Go-protein coupled receptor;;;

MOUSE MG 95772 UniProt KB=P08752	Gnai2	Guanine nucleotide-binding protein G(i), alpha-2 subunit;Gnai2	P08752	GTPase activity;protein binding	cell surface receptor linked signal transduction;signal transduction	heterotrimeric G-protein complex	heterotrimeric G-protein	PI3 kinase pathway->Galpha;;5HT1 type receptor mediated signaling pathway->G-protein;;Heterotrimeric G-protein signaling pathway->Gi alpha and Gs alpha mediated pathway->Gi alpha subunit;;Metabotropic glutamate receptor group III pathway->Gi;;Metabotropic glutamate receptor group II pathway->G-protein;;Muscarinic acetylcholine receptor 2 and 4 signaling pathway->Gi;::;	Gnai2
MOUSE MG 95781 UniProt KB=P62874	Gnb1	Guanine nucleotide-binding protein G(l)/G(s)/G(t) subunit beta-1;Gnb1	P62874	GTPase activity;protein binding	sensory perception;cell surface receptor linked signal transduction;signal transduction	heterotrimeric G-protein complex	hydrolase	Heterotrimeric G-protein signaling pathway-rod outer segment phototransduction->G protein, beta subunit;;5HT4 type receptor mediated signaling pathway->G-protein;;5HT1 type receptor mediated signaling pathway->G-protein;;Endogenous_cannabinoid_signaling->Gbeta;;Inflammation mediated by chemokine and cytokine signaling pathway->G beta/gamma subunits;;Beta3 adrenergic receptor signaling pathway->G-Protein;;Thyrotropin-releasing hormone receptor signaling pathway->G-Protein;;Muscarinic acetylcholine receptor 1 and 3 signaling pathway->Gq;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->G protein, beta subunit;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->G protein-activated inward rectifying potassium channel;;Histamine H2 receptor mediated signaling pathway->G-Protein;;PI3 kinase pathway->Gbetagamma;;Metabotropic glutamate receptor group III pathway->Gi;;Metabotropic glutamate receptor group II pathway->G-protein;;Muscarinic acetylcholine receptor 2 and 4 signaling pathway->Gi;;GABA-B_receptor_II_signaling->Gbeta;;Oxytocin receptor mediated signaling pathway->G-Protein;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->G protein beta subunit;;Beta1 adrenergic receptor signaling pathway->G-Protein;;Beta2 adrenergic receptor signaling pathway->G-Protein;;5HT2 type receptor mediated signaling pathway->G-protein;;Histamine H1 receptor mediated signaling pathway->G-Protein;;Wnt signaling pathway->G_Beta;;Corticotropin releasing factor receptor signaling pathway->G-	Gnb1

<p>MOUSE MG1=95784 UniProtKB=P62880</p>	<p>Gnb2</p>	<p>Guanine nucleotide-binding protein G(I)/G(S)/G(T) subunit beta-2;Gnb2</p>	<p>P62880</p>	<p>GTPase activity;protein binding</p>	<p>sensory perception;cell surface receptor linked signal transduction;signal transduction</p>	<p>heterotrimeric G-protein complex</p>	<p>hydrolase</p>	<p>Heterotrimeric G-protein signaling pathway-rod outer segment phototransduction->G protein, beta subunit;;5HT4 type receptor mediated signaling pathway->G-protein;;5HT1 type receptor mediated signaling pathway->G-protein;;Endogenous_cannabinoid_signaling->Gbeta;;Inflammation mediated by chemokine and cytokine signaling pathway->G beta/gamma subunits;;Beta3 adrenergic receptor signaling pathway->G-Protein;;Thyrotropin-releasing hormone receptor signaling pathway->G-Protein;;Muscarinic acetylcholine receptor 1 and 3 signaling pathway->Gq;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->G protein, beta subunit;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->G protein-activated inward rectifying potassium channel;;Histamine H2 receptor mediated signaling pathway->G-Protein;;PI3 kinase pathway->Gbetagamma;;Metabotropic glutamate receptor group III pathway->Gi;;Metabotropic glutamate receptor group II pathway->G-protein;;Muscarinic acetylcholine receptor 2 and 4 signaling pathway->Gi;;GABA-B_receptor_IL_signaling->Gbeta;;Oxytocin receptor mediated signaling pathway->G-Protein;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->G protein beta subunit;;Beta1 adrenergic receptor signaling pathway->G-Protein;;Beta2 adrenergic receptor signaling pathway->G-Protein;;5HT2 type receptor mediated signaling pathway->G-protein;;Histamine H1 receptor mediated signaling pathway->G-Protein;;Wnt signaling pathway->G_Beta;;Corticotropin releasing factor receptor signaling pathway->G-</p>	<p>Gnb2</p>
<p>MOUSE MG1=1336169 UniProtKB=Q9CXP8</p>	<p>Gng10</p>	<p>Guanine nucleotide-binding protein G(I)/G(S)/G(O) subunit gamma-10;Gng10</p>	<p>Q9CXP8</p>	<p>GTPase activity;protein binding</p>	<p>cell surface receptor linked signal transduction;signal transduction</p>	<p>heterotrimeric G-protein complex</p>	<p>heterotrimeric G-protein</p>	<p>5HT4 type receptor mediated signaling pathway->G-protein;;5HT1 type receptor mediated signaling pathway->G-protein;;Inflammation mediated by chemokine and cytokine signaling pathway->G beta/gamma subunits;;Beta3 adrenergic receptor signaling pathway->G-Protein;;GABA-B_receptor_IL_signaling->Ggamma;;Thyrotropin-releasing hormone receptor signaling pathway->G-Protein;;Muscarinic acetylcholine receptor 1 and 3 signaling pathway->Gq;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->G protein-activated inward rectifying potassium channel;;Wnt signaling pathway->Ggamma;;Histamine H2 receptor mediated signaling pathway->G-Protein;;Metabotropic glutamate receptor group III pathway->Gi;;Endogenous_cannabinoid_signaling->Ggamma;;Heterotrimeric G-protein signaling pathway-rod outer segment phototransduction->G protein gamma subunit;;Metabotropic glutamate receptor group II pathway->G-protein;;Muscarinic acetylcholine receptor 2 and 4 signaling pathway->Gi;;Oxytocin receptor mediated signaling pathway->G-Protein;;Beta1 adrenergic receptor signaling pathway->G-Protein;;Beta2 adrenergic receptor signaling pathway->G-Protein;;5HT2 type receptor mediated signaling pathway->G-protein;;Histamine H1 receptor mediated signaling pathway->G-Protein;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->G protein gamma subunit;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->G protein gamma subunit;;Corticotropin releasing factor receptor signaling pathway->G-Protein;;</p>	<p>Gng10</p>

MOUSE MG1=19 13316 UniP rotKB=P61 953	Gng11	Guanine nucleotide-binding protein G(I)/G(S)/G(O) subunit gamma-11;Gng11	P61953	GTPase activity;protein binding	cell surface receptor linked signal transduction;signal transduction	heterotrimeric G-protein complex	heterotrimeric G-protein	5HT1 type receptor mediated signaling pathway->G-protein;;GABA-B_receptor_II_signaling->Ggamma;;Muscarinic acetylcholine receptor 1 and 3 signaling pathway->Gq;;PI3 kinase pathway->Gbetagamma;;Endogenous_cannabinoid_signaling->Ggamma;;Heterotrimeric G-protein signaling pathway-rod outer segment phototransduction->G protein gamma subunit;;Metabotropic glutamate receptor group II pathway->G-protein;;Muscarinic acetylcholine receptor 2 and 4 signaling pathway->Gi;;5HT2 type receptor mediated signaling pathway->G-protein;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->G protein gamma subunit;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->G protein gamma subunit;.....	Gng11
MOUSE MG1=19 25616 UniP rotKB=Q9J MF3	Gng13	Guanine nucleotide-binding protein G(I)/G(S)/G(O) subunit gamma-13;Gng13	Q9JMF3	GTPase activity;protein binding	sensory perception;cell surface receptor linked signal transduction;signal transduction	heterotrimeric G-protein complex	hydrolase	Wnt signaling pathway->Ggamma;;Heterotrimeric G-protein signaling pathway-rod outer segment phototransduction->G protein gamma subunit;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->G protein gamma subunit;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->G protein gamma subunit;.....	Gng13
MOUSE MG1=10 2704 UniP rotKB=P632 16	Gng3	Guanine nucleotide-binding protein G(I)/G(S)/G(O) subunit gamma-3;Gng3	P63216	GTPase activity;protein binding	cell surface receptor linked signal transduction;signal transduction	heterotrimeric G-protein complex	heterotrimeric G-protein	5HT1 type receptor mediated signaling pathway->G-protein;;5HT2 type receptor mediated signaling pathway->G-protein;;Inflammation mediated by chemokine and cytokine signaling pathway->G beta/gamma subunits;;Beta3 adrenergic receptor signaling pathway->G-Protein;;GABA-B_receptor_II_signaling->Ggamma;;Thyrotropin-releasing hormone receptor signaling pathway->G-Protein;;Muscarinic acetylcholine receptor 1 and 3 signaling pathway->Gq;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->G protein-activated inward rectifying potassium channel;;Wnt signaling pathway->Ggamma;;Histamine H2 receptor mediated signaling pathway->G-Protein;;Metabotropic glutamate receptor group III pathway->Gi;;Endogenous_cannabinoid_signaling->Ggamma;;Heterotrimeric G-protein signaling pathway-rod outer segment phototransduction->G protein gamma subunit;;Metabotropic glutamate receptor group II pathway->G-protein;;Muscarinic acetylcholine receptor 2 and 4 signaling pathway->Gi;;Oxytocin receptor mediated signaling pathway->G-Protein;;Beta1 adrenergic receptor signaling pathway->G-Protein;;Beta2 adrenergic receptor signaling pathway->G-Protein;;5HT2 type receptor mediated signaling pathway->G-protein;;Histamine H1 receptor mediated signaling pathway->G-Protein;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->G protein gamma subunit;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->G protein gamma subunit;;Corticotropin releasing factor receptor signaling pathway->G-Protein;.....	Gng3

<p>MOUSE MG 893584 UniProt KB=Q61017</p>	<p>Gng8</p>	<p>Guanine nucleotide-binding protein G(I)/G(S)/G(O) subunit gamma-T2;Gngt2</p>	<p>Q61017</p>	<p>GTPase activity;protein binding</p>	<p>cell surface receptor linked signal transduction;signal transduction</p>	<p>heterotrimeric G-protein complex</p>	<p>heterotrimeric G-protein</p>	<p>5HT4 type receptor mediated signaling pathway->G-protein;;5HT1 type receptor mediated signaling pathway->G-protein;;Beta3 adrenergic receptor signaling pathway->G-Protein;;GABA-B_receptor_IL_signaling->Ggamma;;Thyrotropin-releasing hormone receptor signaling pathway->G-Protein;;Muscarinic acetylcholine receptor 1 and 3 signaling pathway->Gq;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->G protein-activated inward rectifying potassium channel;;Histamine H2 receptor mediated signaling pathway->G-Protein;;PI3 kinase pathway->Gbetagamma;;Metabotropic glutamate receptor group III pathway->Gi;;Endogenous_cannabinoid_signaling->Ggamma;;Heterotrimeric G-protein signaling pathway-rod outer segment phototransduction->G protein gamma subunit;;Metabotropic glutamate receptor group II pathway->G-protein;;Muscarinic acetylcholine receptor 2 and 4 signaling pathway->Gi;;Oxytocin receptor mediated signaling pathway->G-Protein;;Beta1 adrenergic receptor signaling pathway->G-Protein;;Beta2 adrenergic receptor signaling pathway->G-Protein;;5HT2 type receptor mediated signaling pathway->G-protein;;Histamine H1 receptor mediated signaling pathway->G-Protein;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->G protein gamma subunit;;Corticotropin releasing factor receptor signaling pathway->G-Protein;.....</p>	<p>Gng8</p>
<p>MOUSE MG 109163 UniProt KB=P63078</p>	<p>Gng8</p>	<p>Guanine nucleotide-binding protein G(I)/G(S)/G(O) subunit gamma-8;Gng8</p>	<p>P63078</p>	<p>GTPase activity;protein binding</p>	<p>cell surface receptor linked signal transduction;signal transduction</p>	<p>heterotrimeric G-protein complex</p>	<p>heterotrimeric G-protein</p>	<p>5HT4 type receptor mediated signaling pathway->G-protein;;5HT1 type receptor mediated signaling pathway->G-protein;;Inflammation mediated by chemokine and cytokine signaling pathway->G beta/gamma subunits;;Beta3 adrenergic receptor signaling pathway->G-Protein;;GABA-B_receptor_IL_signaling->Ggamma;;Thyrotropin-releasing hormone receptor signaling pathway->G-Protein;;Muscarinic acetylcholine receptor 1 and 3 signaling pathway->Gq;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->G protein-activated inward rectifying potassium channel;;Wnt signaling pathway->Ggamma;;Histamine H2 receptor mediated signaling pathway->G-Protein;;Metabotropic glutamate receptor group III pathway->Gi;;Endogenous_cannabinoid_signaling->Ggamma;;Heterotrimeric G-protein signaling pathway-rod outer segment phototransduction->G protein gamma subunit;;Metabotropic glutamate receptor group II pathway->G-protein;;Muscarinic acetylcholine receptor 2 and 4 signaling pathway->Gi;;Oxytocin receptor mediated signaling pathway->G-Protein;;Beta1 adrenergic receptor signaling pathway->G-Protein;;Beta2 adrenergic receptor signaling pathway->G-Protein;;5HT2 type receptor mediated signaling pathway->G-protein;;Histamine H1 receptor mediated signaling pathway->G-Protein;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->G protein gamma subunit;;Corticotropin releasing factor receptor signaling pathway->G-Protein;.....</p>	<p></p>

MOUSE MG 894315 UniProt KB=Q99JL6	Rap1b	Ras-related protein Rap-1b;Rap1b	Q99JL6	GTPase activity;protein binding	intracellular protein transport;endocytosis;cell surface receptor linked signal transduction;intracellular signaling cascade;cell adhesion;signal transduction;cell adhesion	small GTPase	Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->Ras associated protein 1;;Integrin signalling pathway->Rap1;;EGF receptor signaling pathway->Ras;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Ras related protein 1;;;
MOUSE MG 1345146 UniProt KB=Q9WVL4	Grk1	Rhodopsin kinase;Grk1	Q9WVL4	kinase activity	sensory perception;cell surface receptor linked signal transduction;protein metabolic process;signal transduction	protein kinase	Heterotrimeric G-protein signaling pathway-rod outer segment phototransduction->Rhodopsin kinase;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->G protein receptor kinase;;Inflammation mediated by chemokine and cytokine signaling pathway->G-protein receptor kinase;;;
MOUSE MG 97579 UniProt KB=P07934	Phkg1	Phosphorylase b kinase gamma catalytic chain, skeletal muscle isoform;Phkg1	P07934	kinase activity;structural constituent of cytoskeleton;cytoskeletal protein binding	immune system process;muscle contraction;neurological system process;induction of apoptosis;mitosis;meiosis;intracellular signaling cascade;carbohydrate metabolic process;protein metabolic process;cytokinesis;mitosis;meiosis;signal transduction;cellular component morphogenesis;cellular component morphogenesis;cellular component morphogenesis;embryonic development;response to stress	microtubule protein kinase	Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Phosphorylase b kinase;;
MOUSE MG 1916211 UniProt KB=Q9DB30	Phkg2	Phosphorylase b kinase gamma catalytic chain, testis/liver isoform;Phkg2	Q9DB30	kinase activity;structural constituent of cytoskeleton;cytoskeletal protein binding	immune system process;muscle contraction;neurological system process;induction of apoptosis;mitosis;meiosis;intracellular signaling cascade;carbohydrate metabolic process;protein metabolic process;cytokinesis;mitosis;meiosis;signal transduction;cellular component morphogenesis;cellular component morphogenesis;cellular component morphogenesis;embryonic development;response to stress	microtubule protein kinase	Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Phosphorylase b kinase;;
MOUSE MG 99474 UniProt KB=Q91Y14	Arrb2	Beta-arrestin-2;Arrb2	Q91Y14	protein binding	visual perception;sensory perception;intracellular protein transport;endocytosis;cell surface receptor linked signal transduction;signal transduction	enzyme modulator	Wnt signaling pathway->Beta-Arrestin;;Inflammation mediated by chemokine and cytokine signaling pathway->Arrestin;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Arrestin;;;
MOUSE MG 97759 UniProt KB=P12849	Prkar1b	cAMP-dependent protein kinase type I-beta regulatory subunit;Prkar1b	P12849	protein binding;kinase regulator activity	signal transduction;protein metabolic process;signal transduction	kinase modulator	Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Protein kinase A, regulatory subunit;;Transcription regulation by bZIP transcription factor->Protein Kinase A;;GABA-B_receptor_II_signaling->cAMP-dependent protein kinase;;Metabotropic glutamate receptor group II pathway->Protein Kinase A;;Endothelin signaling pathway->adenosine-3'-5'-cyclic monophosphate -dependent kinase;;Muscarinic acetylcholine receptor 2 and 4 signaling pathway->Protein Kinase A;;Metabotropic glutamate receptor group III pathway->Protein Kinase A;;Hedgehog signaling pathway->PKA;;Metabotropic glutamate receptor group I pathway->Protein Kinase A;;;
MOUSE MG 1915115 UniProt KB=Q9CQE5	Rgs10	Regulator of G-protein signaling 10;Rgs10	Q9CQE5	protein binding;small GTPase regulator activity	cell surface receptor linked signal transduction;signal transduction;dorsal/ventral axis specification	G-protein modulator	Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Regulator of G-protein signaling;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->Regulator of G-protein signaling;;;

MOUSE MG 108407 UniProt KB=P97428	Rgs16	Regulator of G-protein signaling 16;Rgs16	P97428	protein binding;small GTPase regulator activity	cell surface receptor linked signal transduction;signal transduction;dorsal/ventral axis specification		G-protein modulator	Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Regulator of G-protein signaling;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->Regulator of G-protein signaling;;;
MOUSE MG 1098271 UniProt KB=O08849	Rgs2	Regulator of G-protein signaling 2;Rgs2	O08849	protein binding;small GTPase regulator activity	cell surface receptor linked signal transduction;signal transduction;dorsal/ventral axis specification		G-protein modulator	Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Regulator of G-protein signaling;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->Regulator of G-protein signaling;;;
MOUSE MG 1929866 UniProt KB=Q9QZB1	Rgs20	Regulator of G-protein signaling 20;Rgs20	Q9QZB1	protein binding;small GTPase regulator activity	cell surface receptor linked signal transduction;signal transduction;dorsal/ventral axis specification		G-protein modulator	Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Regulator of G-protein signaling;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->Regulator of G-protein signaling;;;
MOUSE MG 108409 UniProt KB=O08899	Rgs4	Regulator of G-protein signaling 4;Rgs4	O08899	protein binding;small GTPase regulator activity	cell surface receptor linked signal transduction;signal transduction;dorsal/ventral axis specification		G-protein modulator	Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Regulator of G-protein signaling;;Inflammation mediated by chemokine and cytokine signaling pathway->Regulator of G-protein signaling;;Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->Regulator of G-protein signaling;;;
MOUSE MG 1338801 UniProt KB=Q7TMB8	Sra1	Cytoplasmic FMR1-interacting protein 1;Cyflp1	Q7TMB8	protein binding;small GTPase regulator activity	signal transduction;signal transduction		G-protein modulator	Huntington disease->P53 tumor suppressor phosphoprotein;;;
MOUSE MG 103250 UniProt KB=P62204	Calm3	Calmodulin;Calm3	P62204					
MOUSE MG 88251 UniProt KB=P62204	Calm3	Calmodulin;Calm3	P62204					
MOUSE MG 894297 UniProt KB=O08585	Cita	Clathrin light chain A;Cita	O08585		intracellular protein transport;endocytosis	vesicle coat	vesicle coat protein	Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->Clathrin;;Huntington disease->Clathrin;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Clathrin;;;
MOUSE MG 1921575 UniProt KB=Q61RU5	Cltb	Clathrin light chain B;Cltb	Q61RU5		intracellular protein transport;endocytosis	vesicle coat	vesicle coat protein	Heterotrimeric G-protein signaling pathway-Gq alpha and Go alpha mediated pathway->Clathrin;;Huntington disease->Clathrin;;Heterotrimeric G-protein signaling pathway-Gi alpha and Gs alpha mediated pathway->Clathrin;;;
MOUSE MG 1344414 UniProt KB=Q80VJ2	Sra1	Steroid receptor RNA activator 1;Sra1	Q80VJ2					