

RT² Profiler PCR Array (384-Well Format)

Mouse Ubiquitin Ligases

Cat. no. 330231 PAMM-3079ZE

For pathway expression analysis

Format	For use with the following real-time cyclers
RT ² Profiler PCR Array, Format E	Applied Biosystems® models 7900HT (384-well block), ViiA™ 7 (384-well block); Bio-Rad CFX384™
RT ² Profiler PCR Array, Format G	Roche® LightCycler® 480 (384-well block)

Description

The Mouse Ubiquitin Ligases RT² Profiler PCR Array profiles the expression of 370 ubiquitin ligase genes representing potential drug targets. Ubiquitination, also known as ubiquitylation, regulates degradation of cellular proteins by the ubiquitin-proteasome system. This process involves the sequential action of ubiquitin-activating enzymes (E1), ubiquitin-conjugating enzymes (E2), and ubiquitin ligases (E3). Mammalian genomes encode approximately 12 E1 enzymes, 30–40 E2 enzymes, and 600 E3 enzymes. These enzymes target many protein substrates, and are therefore involved in a wide variety of biological pathways. In addition, ubiquitination does not always target a protein for degradation. For example, monoubiquitination of cell surface transmembrane receptors marks them for endocytosis, whereas polyubiquitination acts as a scaffold for ubiquitin-binding proteins. Disruption of the ubiquitin-proteasomal degradation pathway has been implicated in a wide range of human diseases, such as cancer, diabetes, and cardiovascular and neurodegenerative diseases. The diversity and protein substrate specificity of E3 enzymes allows them to play a major role in normal and disease-related pathways, identifying these enzymes as potential drug targets. Developing drug screening assays requires surveying the expression of not only the drug target, but also related genes with redundant or compensating functions that could possibly cause lower drug efficacy or off-target effects. This array includes ubiquitin ligases from all major E3 families, focusing on the most characterized and broadly expressed enzymes. Using real-time PCR, research studies can easily and reliably analyze the expression of a focused panel of ubiquitin ligases with this array.

For further details, consult the *RT² Profiler PCR Array Handbook*.



Sample & Assay Technologies

Shipping and storage

RT² Profiler PCR Arrays in formats E and G are shipped at ambient temperature, on dry ice, or blue ice packs depending on destination and accompanying products.

For long term storage, keep plates at –20°C.

Note: Ensure that you have the correct RT² Profiler PCR Array format for your real-time cycler (see table above).

Note: Open the package and store the products appropriately immediately on receipt.

Gene table: RT² Profiler PCR Array

Position	UniGene	GenBank	Symbol	Description
A01	Mm.248358	NM_145836	6430527G18 Rik	RIKEN cDNA 6430527G18 gene
A02	Mm.35300	NM_009646	Aire	Autoimmune regulator (autoimmune polyendocrinopathy candidiasis ectodermal dystrophy)
A03	Mm.34641	NM_011787	Amfr	Autocrine motility factor receptor
A04	Mm.257445	NM_026904	Anapc10	Anaphase promoting complex subunit 10
A05	Mm.21645	NM_025389	Anapc11	Anaphase promoting complex subunit 11
A06	Mm.2000	NM_181394	Anapc13	Anaphase promoting complex subunit 13
A07	Mm.291624	NM_175300	Anapc2	Anaphase promoting complex subunit 2
A08	Mm.272568	NM_024213	Anapc4	Anaphase promoting complex subunit 4
A09	Mm.332667	NM_021505	Anapc5	Anaphase-promoting complex subunit 5
A10	Mm.37341	NM_019805	Anapc7	Anaphase promoting complex subunit 7
A11	Mm.130148	NM_001003909	Ankib1	Ankyrin repeat and IBR domain containing 1
A12	Mm.57247	NM_011789	Apc2	Adenomatosis polyposis coli 2
A13	Mm.305925	NM_019927	Arih1	Ariadne ubiquitin-conjugating enzyme E2 binding protein homolog 1 (Drosophila)
A14	Mm.290447	NM_011790	Arih2	Ariadne homolog 2 (Drosophila)
A15	Mm.234152	NM_001039126	Asb1	Ankyrin repeat and SOCS box-containing 1
A16	Mm.33225	NM_026853	Asb11	Ankyrin repeat and SOCS box-containing 11
A17	Mm.215164	NM_139152	Asb18	Ankyrin repeat and SOCS box-containing 18
A18	Mm.27159	NM_023049	Asb2	Ankyrin repeat and SOCS box-containing 2
A19	Mm.440539	NM_023906	Asb3	Ankyrin repeat and SOCS box-containing 3
A20	Mm.79031	NM_027027	Asb9	Ankyrin repeat and SOCS box-containing 9
A21	Mm.10141	NM_009530	Atrx	Alpha thalassemia/mental retardation syndrome X-linked homolog (human)
A22	Mm.10764	NM_007525	Bard1	BRCA1 associated RING domain 1
A23	Mm.196328	NM_029510	Bcor	Bcl6 interacting corepressor
A24	Mm.223689	NM_025976	Bfar	Bifunctional apoptosis regulator
B01	Mm.335659	NM_007465	Birc2	Baculoviral IAP repeat-containing 2
B02	Mm.2026	NM_007464	Birc3	Baculoviral IAP repeat-containing 3
B03	Mm.187879	NM_001163247	Birc7	Baculoviral IAP repeat-containing 7 (livin)
B04	Mm.289584	NM_007552	Bmi1	Bmi1 polycomb ring finger oncogene
B05	Mm.153372	NM_028227	Brap	BRCA1 associated protein
B06	Mm.244975	NM_009764	Brca1	Breast cancer 1
B07	Mm.236256	NM_009765	Brca2	Breast cancer 2
B08	Mm.226957	NM_145956	Brcc3	BRCA1/BRCA2-containing complex, subunit 3
B09	Mm.60720	NM_145361	Bitb2	BTB (POZ) domain containing 2
B10	Mm.119717	NM_009771	Btrc	Beta-transducin repeat containing protein
B11	Mm.266871	NM_007619	Cbl	Casitas B-lineage lymphoma
B12	Mm.328206	NM_001033238	Cblb	Casitas B-lineage lymphoma b
B13	Mm.81698	NM_023224	Cblc	Casitas B-lineage lymphoma c
B14	Mm.273270	NM_134048	Cbl1	Casitas B-lineage lymphoma-like 1
B15	Mm.99953	NM_013926	Cbx8	Chromobox homolog 8 (Drosophila Pc class)
B16	Mm.343880	NM_001111119	Ccnb1ip1	Cyclin B1 interacting protein 1
B17	Mm.77695	NM_007634	Ccnf	Cyclin F
B18	Mm.182412	NM_027276	Cdc16	CDC16 cell division cycle 16 homolog (S. cerevisiae)
B19	Mm.289747	NM_023223	Cdc20	Cell division cycle 20 homolog (S. cerevisiae)
B20	Mm.196638	NM_178347	Cdc23	CDC23 (cell division cycle 23, yeast, homolog)
B21	Mm.109930	NM_139291	Cdc26	Cell division cycle 26
B22	Mm.89845	NM_145436	Cdc27	Cell division cycle 27 homolog (S. cerevisiae)
B23	Mm.21981	NM_177613	Cdc34	Cell division cycle 34 homolog (S. cerevisiae)

Position	UniGene	GenBank	Symbol	Description
B24	Mm.35605	NM_009864	Cdh1	Cadherin 1
C01	Mm.343809	NM_026832	Cgrrf1	Cell growth regulator with ring finger domain 1
C02	Mm.30264	NM_172717	Chfr	Checkpoint with forkhead and ring finger domains
C03	Mm.4592	NM_009895	Cish	Cytokine inducible SH2-containing protein
C04	Mm.214525	NM_016877	Cnot4	CCR4-NOT transcription complex, subunit 4
C05	Mm.290085	NM_175357	Crbn	Cereblon
C06	Mm.87611	NM_012042	Cul1	Cullin 1
C07	Mm.291707	NM_029402	Cul2	Cullin 2
C08	Mm.12665	NM_016716	Cul3	Cullin 3
C09	Mm.212861	NM_146207	Cul4a	Cullin 4A
C10	Mm.327675	NM_028288	Cul4b	Cullin 4B
C11	Mm.218910	NM_027807	Cul5	Cullin 5
C12	Mm.329078	NM_025611	Cul7	Cullin 7
C13	Mm.164013	NM_029974	Dcst1	DC-STAMP domain containing 1
C14	Mm.260360	NM_025600	Dda1	DET1 and DDB1 associated 1
C15	Mm.289915	NM_015735	Ddb1	Damage specific DNA binding protein 1
C16	Mm.389334	NM_028119	Ddb2	Damage specific DNA binding protein 2
C17	Mm.250541	NM_029585	Det1	De-etiolated homolog 1 (Arabidopsis)
C18	Mm.46716	NM_023232	Diablo	Diablo homolog (Drosophila)
C19	Mm.189102	NM_029766	Dhl	Denticleless homolog (Drosophila)
C20	Mm.271724	NM_030714	Dtx3	Deltex 3 homolog (Drosophila)
C21	Mm.247695	NM_172442	Dtx4	Deltex 4 homolog (Drosophila)
C22	Mm.275138	NM_001110017	Dzip3	DAZ interacting protein 3, zinc finger
C23	Mm.241073	NM_007930	Enc1	Ectodermal-neural cortex 1
C24	Mm.212208	NM_028042	Ercc8	Excision repair cross-complementing rodent repair deficiency, complementation group 8
D01	Mm.18875	NM_025923	Fancl	Fanconi anemia, complementation group L
D02	Mm.24608	NM_013911	Fbxl12	F-box and leucine-rich repeat protein 12
D03	Mm.125477	NM_133940	Fbxl14	F-box and leucine-rich repeat protein 14
D04	Mm.136366	NM_015794	Fbxl17	F-box and leucine-rich repeat protein 17
D05	Mm.89753	NM_001033312	Fbxl18	F-box and leucine-rich repeat protein 18
D06	Mm.386808	NM_178624	Fbxl2	F-box and leucine-rich repeat protein 2
D07	Mm.214746	NM_015822	Fbxl3	F-box and leucine-rich repeat protein 3
D08	Mm.40708	NM_172988	Fbxl4	F-box and leucine-rich repeat protein 4
D09	Mm.25794	NM_178729	Fbxl5	F-box and leucine-rich repeat protein 5
D10	Mm.386857	NM_001081034	Fbxo11	F-box protein 11
D11	Mm.358659	NM_015796	Fbxo17	F-box protein 17
D12	Mm.24088	NM_015792	Fbxo18	F-box protein 18
D13	Mm.262287	NM_176848	Fbxo2	F-box protein 2
D14	Mm.21912	NM_145564	Fbxo21	F-box protein 21
D15	Mm.276429	NM_028049	Fbxo22	F-box protein 22
D16	Mm.37950	NM_025785	Fbxo25	F-box protein 25
D17	Mm.116116	NM_207238	Fbxo27	F-box protein 27
D18	Mm.143768	NM_020593	Fbxo3	F-box protein 3
D19	Mm.276229	NM_027968	Fbxo30	F-box protein 30
D20	Mm.467749	NM_133765	Fbxo31	F-box protein 31
D21	Mm.292042	NM_026346	Fbxo32	F-box protein 32
D22	Mm.476875	NM_001033156	Fbxo33	F-box protein 33
D23	Mm.234191	NM_134099	Fbxo4	F-box protein 4
D24	Mm.26393	NM_001081253	Fbxo43	F-box protein 43
E01	Mm.220327	NM_173401	Fbxo44	F-box protein 44
E02	Mm.197520	NM_025995	Fbxo5	F-box protein 5
E03	Mm.27445	NM_015797	Fbxo6	F-box protein 6
E04	Mm.44236	NM_153195	Fbxo7	F-box protein 7
E05	Mm.28584	NM_023605	Fbxo9	F-box protein 9
E06	Mm.482259	NM_001033669	Fbxw10	F-box and WD-40 domain protein 10
E07	Mm.28017	NM_134015	Fbxw11	F-box and WD-40 domain protein 11
E08	Mm.4465	NM_013890	Fbxw2	F-box and WD-40 domain protein 2
E09	Mm.450846	NM_001008428	Fbxw20	F-box and WD-40 domain protein 20
E10	Mm.254739	NM_013907	Fbxw4	F-box and WD-40 domain protein 4
E11	Mm.29170	NM_013908	Fbxw5	F-box and WD-40 domain protein 5
E12	Mm.196475	NM_080428	Fbxw7	F-box and WD-40 domain protein 7
E13	Mm.221769	NM_172721	Fbxw8	F-box and WD-40 domain protein 8
E14	Mm.24069	NM_010193	Fem1b	Feminization 1 homolog b (C. elegans)
E15	Mm.132992	NM_001081151	Gan	Giant axonal neuropathy
E16	Mm.458633	NM_172473	Hace1	HECT domain and ankyrin repeat containing, E3 ubiquitin protein ligase 1
E17	Mm.249391	NM_144788	Hectd1	HECT domain containing 1
E18	Mm.61107	NM_172637	Hectd2	HECT domain containing 2
E19	Mm.251420	NM_175244	Hectd3	HECT domain containing 3
E20	Mm.125298	NM_001081348	Hecw1	HECT, C2 and WW domain containing E3 ubiquitin protein ligase 1
E21	Mm.244179	NM_145617	Herc1	Hect (homologous to the E6-AP (UBE3A) carboxyl terminus) domain and RCC1

Position	UniGene	GenBank	Symbol	Description
				(CHC1)-like domain (RLD) 1
E22	Mm.20929	NM_010418	Herc2	Hect (homologous to the E6-AP (UBE3A) carboxyl terminus) domain and RCC1 (CHC1)-like domain (RLD) 2
E23	Mm.191892	NM_028705	Herc3	Hect domain and RLD 3
E24	Mm.234437	NM_026101	Herc4	Hect domain and RLD 4
F01	Mm.297393	NM_025992	Herc6	Hect domain and RLD 6
F02	Mm.209650	NM_144959	Hlrf	Helicase-like transcription factor
F03	Mm.27372	NM_021523	Huwe1	HECT, UBA and WWE domain containing 1
F04	Mm.38241	NM_008363	Irak1	Interleukin-1 receptor-associated kinase 1
F05	Mm.208286	NM_008395	Itch	Itchy, E3 ubiquitin protein ligase
F06	Mm.178784	NM_001081087	Kbtbd10	Kelch repeat and BTB (POZ) domain containing 10
F07	Mm.284526	NM_001024135	Kbtbd7	Kelch repeat and BTB (POZ) domain containing 7
F08	Mm.268504	NM_026145	Kctd10	Potassium channel tetramerisation domain containing 10
F09	Mm.245897	NM_172747	Kctd13	Potassium channel tetramerisation domain containing 13
F10	Mm.248266	NM_016679	Keap1	Kelch-like ECH-associated protein 1
F11	Mm.478061	NM_153128	Klhl12	Kelch-like 12 (Drosophila)
F12	Mm.224306	NM_026167	Klhl13	Kelch-like 13 (Drosophila)
F13	Mm.350347	NM_178633	Klhl2	Kelch-like 2, Mayven (Drosophila)
F14	Mm.255165	NM_001039482	Klhl20	Kelch-like 20 (Drosophila)
F15	Mm.22306	NM_001033352	Klhl21	Kelch-like 21 (Drosophila)
F16	Mm.282807	NM_145479	Klhl22	Kelch-like 22 (Drosophila)
F17	Mm.392450	NM_029436	Klhl24	Kelch-like 24 (Drosophila)
F18	Mm.273768	NM_026448	Klhl7	Kelch-like 7 (Drosophila)
F19	Mm.260601	NM_172871	Klhl9	Kelch-like 9 (Drosophila)
F20	Mm.475718	NM_201529	Lmo7	LIM domain only 7
F21	Mm.440403	NM_010727	Ln timer	Ligand of numb-protein X 1
F22	Mm.260786	NM_153521	Lrrc41	Leucine rich repeat containing 41
F23	Mm.248037	NM_199302	Lrsam1	Leucine rich repeat and sterile alpha motif containing 1
F24	Mm.249005	NM_001081068	Ltn1	Listerin E3 ubiquitin protein ligase 1
G01	Mm.132613	NM_172833	Malt1	Mucosa associated lymphoid tissue lymphoma translocation gene 1
G02	Mm.15918	NM_011945	Map3k1	Mitogen-activated protein kinase kinase kinase 1
G03	Mm.380457	NM_175188	March1	Membrane-associated ring finger (C3HC4) 1
G04	Mm.54257	NM_177597	March11	Membrane-associated ring finger (C3HC4) 11
G05	Mm.374865	NM_145486	March2	Membrane-associated ring finger (C3HC4) 2
G06	Mm.312623	NM_177115	March3	Membrane-associated ring finger (C3HC4) 3
G07	Mm.175989	NM_027314	March5	Membrane-associated ring finger (C3HC4) 5
G08	Mm.272185	NM_172606	March6	Membrane-associated ring finger (C3HC4) 6
G09	Mm.260635	NM_020575	March7	Membrane-associated ring finger (C3HC4) 7
G10	Mm.27064	NM_027920	March8	Membrane-associated ring finger (C3HC4) 8
G11	Mm.22670	NM_010786	Mdm2	Transformed mouse 3T3 cell double minute 2
G12	Mm.426531	NM_008575	Mdm4	Transformed mouse 3T3 cell double minute 4
G13	Mm.275154	NM_001029890	Mex3a	Mex3 homolog A (C. elegans)
G14	Mm.24131	NM_001039214	Mex3c	Mex3 homolog C (C. elegans)
G15	Mm.268389	NM_198615	Mex3d	Mex3 homolog D (C. elegans)
G16	Mm.291326	NM_029657	Mgrr1	Mahogunin, ring finger 1
G17	Mm.21500	NM_144860	Mib1	Mindbomb homolog 1 (Drosophila)
G18	Mm.235738	NM_145124	Mib2	Mindbomb homolog 2 (Drosophila)
G19	Mm.34441	NM_010797	Mid1	Midline 1
G20	Mm.131097	NM_011845	Mid2	Midline 2
G21	Mm.270484	NM_018810	Mkrr1	Makorin, ring finger protein, 1
G22	Mm.101316	NM_023290	Mkrr2	Makorin, ring finger protein, 2
G23	Mm.246750	NM_008612	Mnat1	Menage a trois 1
G24	Mm.326206	NM_001100451	Msl2	Male-specific lethal 2 homolog (Drosophila)
H01	Mm.103413	NM_026689	Mul1	Mitochondrial ubiquitin ligase activator of NFKB 1
H02	Mm.6478	NM_207215	Mycbp2	MYC binding protein 2
H03	Mm.212855	NM_153789	Mylip	Myosin regulatory light chain interacting protein
H04	Mm.279923	NM_010890	Nedd4	Neural precursor cell expressed, developmentally down-regulated 4
H05	Mm.98668	NM_031881	Nedd4l	Neural precursor cell expressed, developmentally down-regulated gene 4-like
H06	Mm.313651	NM_021360	Neur1a	Neuralized homolog 1A (Drosophila)
H07	Mm.247456	NM_023739	Nfx1	Nuclear transcription factor, X-box binding 1
H08	Mm.187453	NM_133921	Nfxl1	Nuclear transcription factor, X-box binding-like 1
H09	Mm.25593	NM_175340	Nhlrc1	NHL repeat containing 1
H10	Mm.272139	NM_025533	Nosip	Nitric oxide synthase interacting protein
H11	Mm.46636	NM_172416	Ostm1	Osteopetrosis associated transmembrane protein 1
H12	Mm.311110	NM_016694	Park2	Parkinson disease (autosomal recessive, juvenile) 2, parkin
H13	Mm.3608	NM_013627	Pax6	Paired box gene 6
H14	Mm.2418	NM_009545	Pcgr2	Polycomb group ring finger 2
H15	Mm.261218	NM_172716	Pcgr3	Polycomb group ring finger 3
H16	Mm.259180	NM_029508	Pcgr5	Polycomb group ring finger 5
H17	Mm.321654	NM_018884	Pdzr3	PDZ domain containing RING finger 3
H18	Mm.309826	NM_001164593	Pdzr4	PDZ domain containing RING finger 4

Position	UniGene	GenBank	Symbol	Description
H19	Mm.28957	NM_023324	Peli1	Pellino 1
H20	Mm.296457	NM_033602	Peli2	Pellino 2
H21	Mm.102205	NM_134025	Pex12	Peroxisomal biogenesis factor 12
H22	Mm.221688	NM_001081216	Phip	Pleckstrin homology domain interacting protein
H23	Mm.248656	NM_001081118	Phrf1	PHD and ring finger domains 1
H24	Mm.431253	NM_019663	Pias1	Protein inhibitor of activated STAT 1
I01	Mm.6370	NM_008602	Pias2	Protein inhibitor of activated STAT 2
I02	Mm.34428	NM_021501	Pias4	Protein inhibitor of activated STAT 4
I03	Mm.8211	NM_008853	Pja1	Praja1, RING-H2 motif containing
I04	Mm.478022	NM_144859	Pja2	Praja 2, RING-H2 motif containing
I05	Mm.392123	NM_008884	Pml	Promyelocytic leukemia
I06	Mm.132336	NM_008994	Pxmp3	Peroxisomal membrane protein 3
I07	Mm.103812	NM_021385	Rad18	RAD18 homolog (S. cerevisiae)
I08	Mm.471596	NM_011234	Rad51	RAD51 homolog (S. cerevisiae)
I09	Mm.431695	NM_011240	Ranbp2	RAN binding protein 2
I10	Mm.182145	NM_019705	Rbck1	RanBP-type and C3HC4-type zinc finger containing 1
I11	Mm.29405	NM_019712	Rbx1	Ring-box 1
I12	Mm.329667	NM_001024952	Rc3h1	RING CCCH (C3H) domains 1
I13	Mm.288785	NM_001100591	Rc3h2	Ring finger and CCCH-type zinc finger domains 2
I14	Mm.159453	NM_026557	Rchy1	Ring finger and CHY zinc finger domain containing 1
I15	Mm.328135	NM_011931	Rfwd2	Ring finger and WD repeat domain 2
I16	Mm.26659	NM_001081347	Rhobtb1	Rho-related BTB domain containing 1
I17	Mm.102367	NM_153514	Rhobtb2	Rho-related BTB domain containing 2
I18	Mm.276200	NM_028493	Rhobtb3	Rho-related BTB domain containing 3
I19	Mm.20343	NM_009066	Ring1	Ring finger protein 1
I20	Mm.30051	NM_016698	Rnf10	Ring finger protein 10
I21	Mm.422969	NM_009543	Rnf103	Ring finger protein 103
I22	Mm.172605	NM_013876	Rnf11	Ring finger protein 11
I23	Mm.29783	NM_033604	Rnf111	Ring finger 111
I24	Mm.24846	NM_025525	Rnf113a2	Ring finger protein 113A2
J01	Mm.22225	NM_030743	Rnf114	Ring finger protein 114
J02	Mm.386792	NM_026406	Rnf115	Ring finger protein 115
J03	Mm.101141	NM_029211	Rnf121	Ring finger protein 121
J04	Mm.379272	NM_032543	Rnf123	Ring finger protein 123
J05	Mm.45980	NM_026301	Rnf125	Ring finger protein 125
J06	Mm.27764	NM_023270	Rnf128	Ring finger protein 128
J07	Mm.274360	NM_011883	Rnf13	Ring finger protein 13
J08	Mm.359004	NM_021540	Rnf130	Ring finger protein 130
J09	Mm.22985	NM_028019	Rnf135	Ring finger protein 135
J10	Mm.253542	NM_019706	Rnf138	Ring finger protein 138
J11	Mm.4537	NM_175226	Rnf139	Ring finger protein 139
J12	Mm.228903	NM_020012	Rnf14	Ring finger protein 14
J13	Mm.214932	NM_080563	Rnf144a	Ring finger protein 144A
J14	Mm.287609	NM_146042	Rnf144b	Ring finger protein 144B
J15	Mm.156771	NM_028862	Rnf145	Ring finger protein 145
J16	Mm.475694	NM_026518	Rnf146	Ring finger protein 146
J17	Mm.485619	NM_177378	Rnf150	Ring finger protein 150
J18	Mm.321153	NM_178779	Rnf152	Ring finger protein 152
J19	Mm.34356	NM_001033142	Rnf166	Ring finger protein 166
J20	Mm.261818	NM_027445	Rnf167	Ring finger protein 167
J21	Mm.228263	NM_027355	Rnf168	Ring finger protein 168
J22	Mm.291906	NM_029965	Rnf170	Ring finger protein 170
J23	Mm.317015	NM_027934	Rnf180	Ring finger protein 180
J24	Mm.170023	NM_025607	Rnf181	Ring finger protein 181
K01	Mm.249986	NM_022423	Rnf187	Ring finger protein 187
K02	Mm.5181	NM_013923	Rnf19a	Ring finger protein 19A
K03	Mm.259672	NM_029219	Rnf19b	Ring finger protein 19B
K04	Mm.482250	NM_011277	Rnf2	Ring finger protein 2
K05	Mm.24765	NM_182999	Rnf20	Ring finger protein 20
K06	Mm.156205	NM_001033489	Rnf207	Ring finger protein 207
K07	Mm.24777	NM_176834	Rnf208	Ring finger protein 208
K08	Mm.244849	XM_001475859	Rnf212	Ring finger protein 212
K09	Mm.240586	NM_027859	Rnf215	Ring finger protein 215
K10	Mm.381440	NM_080561	Rnf216	Ring finger protein 216
K11	Mm.291811	NM_026047	Rnf219	Ring finger protein 219
K12	Mm.318331	NM_025739	Rnf220	Ring finger protein 220
K13	Mm.101264	NM_178607	Rnf24	Ring finger protein 24
K14	Mm.23748	NM_194346	Rnf31	Ring finger protein 31
K15	Mm.388529	NM_030564	Rnf34	Ring finger protein 34
K16	Mm.262859	NM_175201	Rnf38	Ring finger protein 38
K17	Mm.21281	NM_011278	Rnf4	Ring finger protein 4

Position	UniGene	GenBank	Symbol	Description
K18	Mm.41122	NM_172281	Rnf40	Ring finger protein 40
K19	Mm.294120	NM_026259	Rnf41	Ring finger protein 41
K20	Mm.440230	NM_172448	Rnf43	Ring finger protein 43
K21	Mm.25366	NM_134064	Rnf44	Ring finger protein 44
K22	Mm.274542	NM_019403	Rnf5	Ring finger protein 5
K23	Mm.26696	NM_028774	Rnf6	Ring finger protein (C3H2C3 type) 6
K24	Mm.28235	NM_011279	Rnf7	Ring finger protein 7
L01	Mm.305994	NM_021419	Rnf8	Ring finger protein 8
L02	Mm.109074	NM_026274	Rspry1	Ring finger and SPRY domain containing 1
L03	Mm.27949	NM_021506	Sh3rf1	SH3 domain containing ring finger 1
L04	Mm.133101	NM_172937	Shprh	SNF2 histone linker PHD RING helicase
L05	Mm.324553	NM_009172	Siah1a	Seven in absentia 1A
L06	Mm.2847	NM_009174	Siah2	Seven in absentia 2
L07	Mm.42944	NM_011543	Skp1a	S-phase kinase-associated protein 1A
L08	Mm.35584	NM_013787	Skp2	S-phase kinase-associated protein 2 (p45)
L09	Mm.27735	NM_029438	Smurf1	SMAD specific E3 ubiquitin protein ligase 1
L10	Mm.340955	NM_025481	Smurf2	SMAD specific E3 ubiquitin protein ligase 2
L11	Mm.130	NM_009896	Socs1	Suppressor of cytokine signaling 1
L12	Mm.474283	NM_007706	Socs2	Suppressor of cytokine signaling 2
L13	Mm.3468	NM_007707	Socs3	Suppressor of cytokine signaling 3
L14	Mm.425886	NM_080843	Socs4	Suppressor of cytokine signaling 4
L15	Mm.126885	NM_019654	Socs5	Suppressor of cytokine signaling 5
L16	Mm.476577	NM_018821	Socs6	Suppressor of cytokine signaling 6
L17	Mm.285454	NM_025287	Spop	Speckle-type POZ protein
L18	Mm.30	NM_029035	Spsb1	SplA/ryanodine receptor domain and SOCS box containing 1
L19	Mm.261906	NM_013539	Spsb2	SplA/ryanodine receptor domain and SOCS box containing 2
L20	Mm.485539	NM_145134	Spsb4	SplA/ryanodine receptor domain and SOCS box containing 4
L21	Mm.277599	NM_019719	Stub1	STIP1 homology and U-Box containing protein 1
L22	Mm.149870	NM_028769	Syvn1	Synovial apoptosis inhibitor 1, synoviolin
L23	Mm.289248	NM_026456	Tceb1	Transcription elongation factor B (SIII), polypeptide 1
L24	Mm.153758	NM_026305	Tceb2	Transcription elongation factor B (SIII), polypeptide 2
M01	Mm.386774	NM_009395	Tnfaip1	Tumor necrosis factor, alpha-induced protein 1 (endothelial)
M02	Mm.116683	NM_009397	Tnfaip3	Tumor necrosis factor, alpha-induced protein 3
M03	Mm.251548	NM_134097	Topors	Topoisomerase I binding, arginine/serine-rich
M04	Mm.3399	NM_009422	Traf2	Tnf receptor-associated factor 2
M05	Mm.27431	NM_011632	Traf3	Tnf receptor-associated factor 3
M06	Mm.390418	NM_009423	Traf4	Tnf receptor-associated factor 4
M07	Mm.380491	NM_011633	Traf5	Tnf receptor-associated factor 5
M08	Mm.292729	NM_009424	Traf6	Tnf receptor-associated factor 6
M09	Mm.275150	NM_153792	Traf7	Tnf receptor-associated factor 7
M10	Mm.297870	NM_011634	Traip	TRAF-interacting protein
M11	Mm.299155	NM_011280	Trim10	Tripartite motif-containing 10
M12	Mm.248049	NM_053168	Trim11	Tripartite motif-containing 11
M13	Mm.475709	NM_023233	Trim13	Tripartite motif-containing 13
M14	Mm.179733	NM_031172	Trim17	Tripartite motif-containing 17
M15	Mm.44876	NM_030706	Trim2	Tripartite motif-containing 2
M16	Mm.321227	NM_009277	Trim21	Tripartite motif-containing 21
M17	Mm.244190	NM_030731	Trim23	Tripartite motif-containing 23
M18	Mm.41063	NM_145076	Trim24	Tripartite motif-containing 24
M19	Mm.248445	NM_009546	Trim25	Tripartite motif-containing 25
M20	Mm.34587	NM_001025599	Trim26	Tripartite motif-containing 26
M21	Mm.314056	NM_009054	Trim27	Tripartite motif-containing 27
M22	Mm.15701	NM_011588	Trim28	Tripartite motif-containing 28
M23	Mm.29290	NM_018880	Trim3	Tripartite motif-containing 3
M24	Mm.213417	NM_146077	Trim31	Tripartite motif-containing 31
N01	Mm.22786	NM_053084	Trim32	Tripartite motif-containing 32
N02	Mm.195036	NM_053170	Trim33	Tripartite motif-containing 33
N03	Mm.277382	NM_178872	Trim36	Tripartite motif-containing 36
N04	Mm.17436	NM_197987	Trim37	Tripartite motif-containing 37
N05	Mm.314151	NM_001029935	Trim38	Tripartite motif-containing 38
N06	Mm.40624	NM_024468	Trim39	Tripartite motif-containing 39
N07	Mm.32606	NM_001033235	Trim40	Tripartite motif-containing 40
N08	Mm.315002	NM_020267	Trim44	Tripartite motif-containing 44
N09	Mm.189351	NM_194343	Trim45	Tripartite motif-containing 45
N10	Mm.482375	XM_992714	Trim5	Tripartite motif-containing 5
N11	Mm.78128	NM_198601	Trim52	Tripartite motif-containing 52
N12	Mm.143796	NM_021447	Trim54	Tripartite motif-containing 54
N13	Mm.35419	NM_001081281	Trim55	Tripartite motif-containing 55
N14	Mm.28010	NM_153110	Trim61	Tripartite motif-containing 61
N15	Mm.30653	NM_178110	Trim62	Tripartite motif-containing 62
N16	Mm.331961	NM_001039048	Trim63	Tripartite motif-containing 63

Position	UniGene	GenBank	Symbol	Description
N17	Mm.39043	NM_198012	Trim68	Tripartite motif-containing 68
N18	Mm.479793	NM_001042503	Trim71	Tripartite motif-containing 71
N19	Mm.389924	NM_001079932	Trim72	Tripartite motif-containing 72
N20	Mm.334557	NM_001033429	Trim75	Tripartite motif-containing 75
N21	Mm.481672	NM_053100	Trim8	Tripartite motif-containing 8
N22	Mm.184012	NM_053167	Trim9	Tripartite motif-containing 9
N23	Mm.64542	NM_177742	Triml1	Tripartite motif family-like 1
N24	Mm.209265	NM_133975	Trip12	Thyroid hormone receptor interactor 12
O01	Mm.32883	NM_028841	Tspan17	Tetraspanin 17
O02	Mm.213408	NM_009441	Ttc3	Tetratricopeptide repeat domain 3
O03	Mm.282093	NM_011664	Ubb	Ubiquitin B
O04	Mm.331	NM_019639	Ubc	Ubiquitin C
O05	Mm.9002	NM_173010	Ube3a	Ubiquitin protein ligase E3A
O06	Mm.28792	NM_054093	Ube3b	Ubiquitin protein ligase E3B
O07	Mm.137746	NM_133907	Ube3c	Ubiquitin protein ligase E3C
O08	Mm.215069	NM_145400	Ube4a	Ubiquitination factor E4A, UFD2 homolog (S. cerevisiae)
O09	Mm.393991	NM_022022	Ube4b	Ubiquitination factor E4B, UFD2 homolog (S. cerevisiae)
O10	Mm.389330	NM_009461	Ubr1	Ubiquitin protein ligase E3 component n-recognin 1
O11	Mm.28234	NM_146078	Ubr2	Ubiquitin protein ligase E3 component n-recognin 2
O12	Mm.314576	NM_177783	Ubr3	Ubiquitin protein ligase E3 component n-recognin 3
O13	Mm.476840	NM_001081359	Ubr5	Ubiquitin protein ligase E3 component n-recognin 5
O14	Mm.34261	NM_025666	Ubr7	Ubiquitin protein ligase E3 component n-recognin 7 (putative)
O15	Mm.313364	NM_144873	Uhrf2	Ubiquitin-like, containing PHD and RING finger domains 2
O16	Mm.297706	NM_172569	Unk	Unkempt homolog (Drosophila)
O17	Mm.267353	NM_028789	Unkl	Unkempt-like (Drosophila)
O18	Mm.29407	NM_009507	Vhl	Von Hippel-Lindau tumor suppressor
O19	Mm.440089	NM_001015507	Vprbp	Vpr (HIV-1) binding protein
O20	Mm.295013	NM_027889	Vps11	Vacuolar protein sorting 11 (yeast)
O21	Mm.294761	NM_172269	Vps18	Vacuolar protein sorting 18 (yeast)
O22	Mm.27389	NM_172120	Vps41	Vacuolar protein sorting 41 (yeast)
O23	Mm.235683	NM_001081366	Vps8	Vacuolar protein sorting 8 homolog (S. cerevisiae)
O24	Mm.288734	NM_028118	Wdsub1	WD repeat, SAM and U-box domain containing 1
P01	Mm.19892	NM_001081102	Whsc1	Wolf-Hirschhorn syndrome candidate 1 (human)
P02	Mm.307022	NM_019653	Wsb1	WD repeat and SOCS box-containing 1
P03	Mm.78312	NM_177327	Wwp1	WW domain containing E3 ubiquitin protein ligase 1
P04	Mm.259879	NM_009688	Xiap	X-linked inhibitor of apoptosis
P05	Mm.457803	NM_001033324	Zbtb16	Zinc finger and BTB domain containing 16
P06	Mm.44526	NM_178694	Zer1	Zer-1 homolog (C. elegans)
P07	Mm.289471	NM_024231	Zfp11	Zinc finger like protein 1
P08	Mm.271578	NM_133206	Znrf1	Zinc and ring finger 1
P09	Mm.286149	NM_199143	Znrf2	Zinc and ring finger 2
P10	Mm.426241	NM_001033634	Zyg11b	Zyg-II homolog B (C. elegans)
P11	Mm.328431	NM_007393	Actb	Actin, beta
P12	Mm.163	NM_009735	B2m	Beta-2 microglobulin
P13	Mm.343110	NM_008084	Gapdh	Glyceraldehyde-3-phosphate dehydrogenase
P14	Mm.3317	NM_010368	Gusb	Glucuronidase, beta
P15	Mm.2180	NM_008302	Hsp90ab1	Heat shock protein 90 alpha (cytosolic), class B member 1
P16	N/A	SA_00106	MGDC	Mouse Genomic DNA Contamination
P17	N/A	SA_00106	MGDC	Mouse Genomic DNA Contamination
P18	N/A	SA_00106	MGDC	Mouse Genomic DNA Contamination
P19	N/A	SA_00104	RTC	Reverse Transcription Control
P20	N/A	SA_00104	RTC	Reverse Transcription Control
P21	N/A	SA_00104	RTC	Reverse Transcription Control
P22	N/A	SA_00103	PPC	Positive PCR Control
P23	N/A	SA_00103	PPC	Positive PCR Control
P24	N/A	SA_00103	PPC	Positive PCR Control

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RT ² SYBR Green qPCR Mastermix (8)*	For 4 x 384 assays in 384-well plates; suitable for use with real-time cyclers that do not require a reference dye, including: Bio-Rad model CFX384; Roche LightCycler 480 (384-well); all other cyclers	330501
RT ² SYBR Green ROX [™] qPCR Mastermix (8)*	For 4 x 384 assays in 384-well plates; suitable for use with the following real-time cyclers: Applied Biosystems models 7900HT, ViiA 7 (384-well blocks)	330521
RT ² SYBR Green Fluor qPCR Mastermix (8)*	For 4 x 384 assays in 384-well plates; suitable for use with the following real-time cyclers: Bio-Rad models iCycler [®] , iQ [™] 5, MyiQ [™] , MyiQ2	330511

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