



Research paper

Novel approach to identifying autoantibodies in rheumatoid synovitis with a biotinylated human autoantigen library and the enzyme-labeled antigen method

Yasuyoshi Mizutani ^{a,1}, Kazuhiro Matsuoka ^{b,1,2}, Hiroyuki Takeda ^b, Kazuya Shiogama ^a, Ken-ichi Inada ^a, Kazue Hayakawa ^c, Harumoto Yamada ^c, Tatsuhiko Miyazaki ^d, Tatsuya Sawasaki ^{b,e}, Yaeta Endo ^{b,e}, Yutaka Tsutsumi ^{a,*}

^a Department of Pathology, Fujita Health University School of Medicine, Toyoake, Aichi, Japan

^b Cell-free Science and Technology Research Center, Ehime University, Matsuyama, Ehime, Japan

^c Department of Orthopedics, Fujita Health University School of Medicine, Toyoake, Aichi, Japan

^d Department of Pathogenomics, Ehime University Graduate School of Medicine, To-on, Ehime, Japan

^e Proteo-Medicine Research Center, Ehime University, To-on, Ehime, Japan

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ABSTRACT

Synovial tissue in rheumatoid arthritis (RA) shows dense infiltration of plasmacytes. The purpose of the present study is to identify and localize autoantibodies produced in these immunocytes in RA synovitis. We developed a novel screening system for detecting specific autoantigens. Protein antigens recognized by antibodies in the serum and synovial tissue extract from five RA patients were screened with the AlphaScreen method. For screening, a biotinylated human autoantigen library was constructed by the wheat germ cell-free protein synthesis system. The AlphaScreen analysis of 2183 proteins detected a limited number of antigens reactive with the serum and synovial tissue extract. Eighteen biotinylated proteins, containing top five showing high signals in each synovitis tissue extract, were utilized as probes for the enzyme-labeled antigen method, in order to visualize the site of specific antibody production in synovial lesions. Specific antibodies against two proteins, tripartite motif-containing 21 (TRIM21, also known as SSA/Ro52) and F-box only protein 2 (FBXO2), were visualized in the cytoplasm of plasmacytes in two RA synovitis lesions, respectively. Absorption experiments using unlabeled proteins confirmed the specificity of staining. No positive signals against these two proteins were identified in the additionally evaluated RA and osteoarthritis synovial lesions. The present study indicated 1) the usefulness of screening the human autoantigen library with the AlphaScreen assay for detecting autoantibodies in RA synovitis, and 2) the applicability of biotinylated proteins to the enzyme-labeled antigen method for visualizing the site of autoantibody production within the lesion.

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1. Introduction

Rheumatoid arthritis (RA) is a systemic autoimmune disorder featured by multifocal and symmetrical arthritis with progressive bone destruction (Sweeney and Firestein, 2004). The exact etiology of RA remains unclear. Histologically, the pannus in RA synovitis shows formation of activated lymphoid follicles and dense infiltration of plasmacytes (Yanaba et al., 2008). Antigens recognized by antibodies secreted from plasmacytes which infiltrate in the diseased synovium have not

* Corresponding author at: Department of Pathology, Fujita Health University School of Medicine, Toyoake, Aichi 470-1192, Japan. Tel.: +81 562 93 2439; fax: +81 562 93 3063.

E-mail address: tsutsumi@fujita-hu.ac.jp (Y. Tsutsumi).

¹ These authors equally contributed to this work.

² Present address: Department of Infectious Diseases and Immunology, Clinical Research Center, National Hospital Organization, Nagoya Medical Center, Nagoya, Aichi, Japan.

been specified. It is highly likely that these immunocytes locally produce disease-specific antibodies, simply because they are distributed within the lesion. Thus, the detection of such autoantigens may give us novel breakthrough in analyzing the disease process or even cause of the disease. Multiple autoantibodies have so far been identified in the serum of RA patients, including rheumatoid factors and antibodies against cyclic citrullinated peptide (Niewold et al., 2007) and glucose-6-phosphate isomerase (Schaller et al., 2001).

In 1972, Munthe and Natvig demonstrated rheumatoid factor-producing plasmacytes in synovial tissue of RA. They successfully applied fluorescent immunoglobulins and their subclasses, native and degenerated, to pepsin-digested, cold ethanol-fixed paraffin sections in order to visualize the site of autoantibody production. In 2010, Snir et al. reported that the levels of antibodies to cyclic citrullinated peptide and citrullinated proteins were higher in the synovial fluid than in the serum. These well-designed studies clearly demonstrated autoantibody secretion from plasmacytes in the diseased synovium.

The AlphaScreen assay is a high-sensitivity antibody screening technique (Matsuoka et al., 2010; Tsuge et al., 2011). By using the biotinylated human autoantigen library, antibodies in both the serum and synovial tissue extract were evaluated. Through the wheat germ extract-derived cell-free biotinylated protein synthesis system (Endo and Sawasaki, 2003), a number of N-terminally biotinylated proteins can simultaneously be synthesized in a short period of time (Sawasaki et al., 2005, 2007).

The enzyme-labeled antigen method is a histochemical technique that visualizes antigen-specific antibody-producing cells in tissue sections with labeled antigens as probes (Mizutani et al., 2009). This method was documented in 1968 independently by two research groups for visualizing anti-horseradish peroxidase (HRP) antibody-producing cells in the lymph nodes of HRP-immunized rabbits (Leduc et al., 1968; Straus, 1968). Recently, after a long latent period for more than 40 years, we extended our study to visualize specific antibodies against *Porphyromonas gingivalis* in gingival radicular cyst, where the specific antibody localization well correlated with antibody titers in the tissue extract assayed by the AlphaScreen method (Tsuge et al., 2011).

The present study was designed to evaluate unknown autoantigens in the diseased synovium of RA patients showing dense infiltration of plasmacytes and to identify the corresponding autoantibodies in these immunocytes *in situ* in RA synovitis. Firstly, a biotinylated human autoantigen library was constructed by the wheat germ cell-free protein synthesis system. Secondly, protein antigens recognized by antibodies in the serum and synovial tissue extract of RA patients were screened with the AlphaScreen assay. Finally, the biotinylated proteins were used as probes for the enzyme-labeled antigen method to visualize the site of specific antibody production in synovial lesion.

2. Materials and methods

2.1. Patients

At surgery in Fujita Health University Hospital, Toyoake, Japan, synovial tissue of the large joint was excised from five

patients (cases 1–5) with typical clinical and serological features of RA. Sera were also sampled. These samples were utilized for screening autoantibodies. Thereafter, the serum and synovial tissue of additional five RA (cases 6–10) and five osteoarthritis (OA) patients (cases 11–15) were evaluated for the autoantibodies. All the patients were female, and the ages ranging from 49 to 84 years (mean: 65.5) for RA, and from 68 to 80 years (mean: 75.4) for OA. The ankle joint was targeted in case 2, while the synovium of knee joints was removed from the remaining 14 cases. Clinical and laboratory data of the patients (RA 10 and OA 5) are shown in Table 1. In all of the RA patients, the official classification criteria from ACR/EULAR (Aletaha et al., 2010) were fulfilled. Case 1 was complicated with Sjögren's syndrome accompanying high anti-SSA autoantibody titer, and case 8 with systemic lupus erythematosus (SLE) but without accompanying antinuclear antibody.

Our study was approved by the ethical committee for Epidemiological and Clinical Studies in Fujita Health University, Toyoake (acknowledgement no. 08-166, December 2008). Before analysis, written informed consent was obtained from each patient.

2.2. Synovial tissue preparation

Part of the surgically removed synovial tissue was fixed in 100 mmol/l phosphate-buffered 4% paraformaldehyde, pH 7.4, at 4 °C for 4 h to cut 4 µm-thick frozen sections, as previously described (Tsuge et al., 2011). Another part was stored fresh-frozen at –80 °C until homogenization. The remaining tissue was processed for unbuffered 10% formalin-fixed, paraffin-embedded sections.

All of the 10 RA synovial tissues histologically showed villous projections of the synovial lining cells and dense infiltration of inflammatory cells, including plasmacytes. Lymphoid follicles were scattered in the lesions. In contrast, inflammatory reactions were minimal in the OA synovia (5 lesions).

2.3. Preparation of synovial tissue extracts

Frozen synovial tissue (100 mg) was homogenized in 300 µl of 10 mmol/l phosphate-buffered saline (PBS) with a Polytron homogenizer (Kinematica, AG, Lucerne, Switzerland). The homogenate was centrifuged at 15,000 rpm for 5 min twice, and the supernatant was stored at –80 °C for the AlphaScreen assay.

2.4. Measurement of IgG concentration in sera and tissue extracts

IgG in the serum and tissue extract was assayed by the enzyme-linked immunosorbent assay (ELISA) using Human IgG ELISA Quantitation Kit (Bethyl Laboratories, Montgomery, TX, USA), according to the manufacturer's instruction.

2.5. Preparation of N-terminally biotinylated protein library using the wheat germ cell-free protein synthesis system

The N-terminally biotinylated protein library was prepared using the wheat germ extract (ENDEXT kits, CellFree Sciences, Matsuyama, Japan), as previously reported (Matsuoka et al., 2010). Briefly, we chose proteins encoded by genes in the human

autoimmune susceptibility loci associated with RA, SLE, etc. (Bowcock, 2005; Jawaheer et al., 2001; Cornelis et al., 1998), as well as proteins classified as “membrane proteins” and “proteins in extracellular spaces” in the Gene Ontology database, as tentative autoantigens. A total of 2183 genes encoding these target proteins were translated from the human full-length complementary DNA (cDNA) resource (mammalian gene collection, MGC clone, DANAFORM, Tokyo, Japan), and are listed in supplementary Table 1. From the plasmid-inserted cDNA, transcription templates were synthesized with split-primer polymerase chain reaction (PCR) (Sawasaki et al., 2002a, 2007). The promoter sequence and transcription enhancer sequence for SP6 RNA polymerase, as well as the sequence coding biotin ligase recognition peptide, were inserted to the constructs.

Cell-free construction of the biotinylated protein library was based on the previously described bilayer diffusion system (Matsuoka et al., 2010). One μ l (50 ng) of crude cell-free-expressed biotin ligase was added to the translation layer, and 500 nmol/l of D-biotin (Nacalai Tesque, Kyoto, Japan) was supplemented to both the translation and substrate layers (Sawasaki et al., 2002b, 2008). *In vitro* transcription to yield RNA and cell-free protein translation to yield the biotinylated proteins were carried out using the GenDecoder 1000 robotic synthesizer (CellFree Sciences), as previously described (Sawasaki et al., 2005, 2007). Unlabeled proteins were prepared without adding D-biotin to those layers.

2.6. Antigen screening with the AlphaScreen assay

The AlphaScreen assay was performed using a 384 well Optiwell microtiter plate, according to the manufacturer's instruction (PerkinElmer Life and Analytical Sciences, Boston, MA, USA). Briefly, 1 μ l of the translation solution containing biotinylated proteins was admixed per well with 14 μ l of buffer containing 0.05 μ l of the synovial tissue extract or 0.025 μ l of the serum. The mixture solution, containing a final concentration of 100 mmol/l Tris–HCl, pH 8.0, 0.01% Tween 20 and 0.1% bovine serum albumin (BSA), was incubated at 26 °C for 30 min. Then, 10 μ l of a mixture of streptavidin-coated donor beads and protein G-conjugated acceptor beads (PerkinElmer Life and Analytical Sciences) was added, and incubated at 26 °C for 1 h in a dark box. The final concentration of the beads was 12 μ g/ml per well. Fluorescence emission at 520–620 nm was measured on the EnVision plate reader (PerkinElmer Life and Analytical Sciences), and the data were analyzed with the AlphaScreen detection program. All the repetitive mechanical procedures were performed on a Biomek FX robotic workstation (Beckman Coulter, Fullerton, CA, USA).

Translation solution reacted without template RNA served as a negative control. Signals in the negative control well were regarded as noise, and the signal/noise ratio was calculated.

2.7. Enzyme-labeled antigen method using biotinylated proteins screened with the AlphaScreen assay

Five biotinylated proteins showing high AlphaScreen reactivities in the respective synovial tissue extract were selected as probes for the enzyme-labeled antigen method. A total of 18 kinds of N-terminal biotinylated proteins were newly synthesized to yield a total of 1 ml of “crude” (unpurified) solution. The

crude biotinylated protein solutions also served as indifferent antigens to cross-check the specificity of the methodology.

After rinsing the fixed frozen sections in tap water for 5 min, endogenous peroxidase activity was inactivated in methanol containing 0.3% hydrogen peroxide at room temperature for 30 min, and the sections were pretreated with 4 μ g/ml proteinase K (Roche Diagnostics, Tokyo, Japan) in 50 mmol/l Tris-buffered saline, pH 7.6, at room temperature for 15 min, as reported previously (Mizutani et al., 2009). PBS rinse was interposed in every step thereafter. Crude biotinylated protein solution was incubated for 1 h at room temperature, followed by incubation with HRP-labeled streptavidin (Nichirei Bioscience, Tokyo, Japan) at room temperature for 1 h. The peroxidase activity was visualized by incubating in 50 mmol/l Tris–HCl buffer, pH 7.6, containing 0.02% diaminobenzidine tetrahydrochloride (Dojindo, Kumamoto, Japan) and 0.006% hydrogen peroxide. Finally, the nuclei were counterstained with Mayer's hematoxylin.

When necessary, we changed the staining conditions, including the dilution of the biotinylated probes (1:10 for tripartite motif-containing 21 (TRIM21) and 1:40 for F-box only protein 2 (FBXO2), the duration of incubation (up to overnight), and the addition of 0.05% Tween 20 to the probe solution.

2.8. Double fluorescence staining using biotinylated proteins and CD138 monoclonal antibody

In order to demonstrate that the cells labeled with the biotinylated proteins belonged to plasmacytes, double immunofluorescence staining using biotinylated proteins and a monoclonal antibody against CD138 (a plasmacytic membrane marker) (Costes et al., 1999) was performed, as previously described (Tsuge et al., 2011). The sections were incubated with a mouse monoclonal antibody against human CD138 (clone Mi15, Dako, Carpinteria, CA, USA) at a 1:100 dilution, followed by incubation with Alexa Fluor 568 (colored red)-labeled goat anti-mouse IgG antibody (Molecular Probes, Tokyo, Japan) at 1:1000 dilution. For TRIM21-staining, proteinase K digestion was then performed. Crude biotinylated protein solutions and Alexa fluor 488-conjugated streptavidin (Molecular Probes) were sequentially incubated. The fluorescence was observed under a microscope (AXIO Imager A1, Carl Zeiss, Oberkochen, Germany). The nuclei were fluoresced blue with 4',6-diamidino-2-phenylindole.

2.9. Absorption experiment

In order to confirm the specificity of the enzyme-labeled antigen method, absorption experiments were performed. We prepared two kinds of crude unlabeled proteins (TRIM21 and FBXO2) by the wheat germ cell-free system. Crude biotinylated protein solution was diluted at 1:10 with crude unlabeled protein solution. For the FBXO2 experiment, the biotinylated and unlabeled protein solutions were mixed at 1:9 and the mixture was further diluted with at 1:4 with the AlphaScreen buffer (consisting of 0.05% Tween 20, 0.1% BSA and 100 mmol/l Tris–HCl, pH 8.0), the final dilution of the biotinylated probe being 1:40. Expectedly, an excess amount of the corresponding antigens abolish the specific staining, but the indifferent antigens do not.

Table 1

Summary of clinical and laboratory data of 10 RA patients and five OA patients.

Case	Age	Sex	RA/OA	Duration of disease (years)	Sampled tissue	Intraoperative finding Outgrowth of synovia	Steinbrocker functional class	Plain X ray findings (Larsen grade)	RA-related extra-articular findings
1	63	F	RA	28	Knee	+++	3	Artificial joint	Sjögren's syndrome
2	84	F	RA	7	Knee	++	4	3	
3	67	F	RA	14	Ankle	+/-	2	2	
4	67	F	RA	4	Knee	++	3	4	
5	64	F	RA	20	Knee	+	2	4	
6	68	F	RA	18	Knee	++	3	4	
7	60	F	RA	4	Knee	+	2	4	
8	49	F	RA	15	Knee	+++	2	4	SLE
9	76	F	RA	4	Knee	+	3	4	
10	57	F	RA	1	Knee	+++	2	3	
11	77	F	OA	1	Knee	—			
12	80	F	OA	8	Knee	—			
13	76	F	OA	18	Knee	—			
14	76	F	OA	7	Knee	—			
15	68	F	OA	10	Knee	—			

N.D.: no data obtained, —: negative, RA: rheumatoid arthritis, OA: osteoarthritis, SLE: systemic lupus erythematoses.

CRP: C-reactive protein, MMP3: matrix metalloproteinase 3, RF: rheumatoid factor, RAPA: rheumatoid arthritis particle agglutination, CCP: cyclic citrullinated peptide, SSA/SSB: Sjögren's syndrome A/B

Outgrowth of synovia: +++ marked, ++ moderate, + mild, +/-: minimal, —: none

Steinbrocker functional class:

Class 1: Complete functional capacity with ability to carry on all usual duties without handicaps.

Class 2: Functional capacity adequate to conduct normal activities despite handicap of discomfort or limited mobility of one or more joints.

Class 3: Functional capacity adequate to perform only few or none of the duties of usual occupation or of self-care.

Class 4: Largely or wholly incapacitated with patient bedridden or confined to wheelchair, permitting little or no self-care.

Larsen grade

Grade 0: Normal conditions

Grade 1: Slight abnormality

Grade 2: Definite early abnormality

Grade 3: Medium destructive abnormality

Grade 4: Severe destructive abnormality

Grade 5: Mutilating abnormality

2.10. Purification of biotinylated proteins

Biotinylated proteins were purified in order to compare their effectiveness as probes for the enzyme-labeled antigen method with the crude biotinylated proteins.

For purification of biotinylated proteins, a polyhistidine tag was added to the N-terminus of the biotinylated proteins on a specialized vector pEU-E01GW having attR1 and attR2 sequences at the cloning site. cDNA was inserted to the vector using GATEWAY technology (Invitrogen, Carlsbad, CA, USA), according to the manufacturer's manual. cDNA inserted into plasmid was PCR-amplified to add polyhistidine, biotin ligase recognition peptide, attB1 and attB2 sequences. The products were inserted into the plasmid vector pDNOR221 with BP clonase II (Invitrogen). After treatment with LR clonase II (Invitrogen), cDNA was inserted into pEU-E01GW. The plasmids were then transfected into *Escherichia coli* JM109 (TakaraBio, Otsu, Japan). Following a large scale culture, the plasmids were recovered by Maxiprep kit (Qiagen, Venio, Netherlands), and were used as template cDNA for synthesizing polyhistidine tag-added biotinylated proteins.

Ni²⁺ affinity chromatography using nickel-chelating nitrilotriacetic acid Sepharose (GE Healthcare, Waukesha, WI, USA)

was employed for one-step purification of the tagged proteins. The cell-free protein synthesis and polyhistidine-tagged protein purification using the imidazole buffer for elution were carried out using an automatic robot, Protomist DTII (CellFree Sciences), as previously reported (Tsuge et al., 2011).

The purified biotinylated proteins (concentration: 500 µg/ml) were separated by sodium dodecyl sulfate-polyacrylamide gel electrophoresis (SDS-PAGE) to be stained with Coomassie brilliant blue. Biotinylated proteins were also detected by the western blot with Alexa Fluor 488 conjugated-streptavidin (Invitrogen), as previously described (Tsuge et al., 2011).

2.11. Evaluation of anti-TRIM 21 and anti-FBXO2 activities in synovial tissues from additional five RA and five OA cases

The AlphaScreen assay for screening antibodies against TRIM21 and FBXO2 was performed using the serum and synovial tissue extract sampled from additional five RA (cases 6–10) and five OA patients (cases 11–15). The enzyme-labeled antigen method was applied to synovial tissue sections by using these two kinds of crude biotinylated proteins.

Laboratory data									Treatment	
CRP (mg/dl)	MMP3 (ng/ml)	RF (IU/ml)	RAPA (dilution)	anti-CCP (U/ml)	anti-SSA (index)	anti-SSB (index)	anti-nuclear antibody	anti-DNA antibody (IU/ml)	Predon- isolone	Anti-rheumatic or biological drugs
3.4	524.4	1980	5120	N.D.	169.7	24.1	+	2.0 $\geq$	+	Bucillamine
2.0	217.9	N.D.	640	N.D.	0.1	2.3	+	N.D.	—	Bucillamine
2.3	124.3	26	640	N.D.	1.3	5.5	—	N.D.	+	Tacrolimus
5.6	383.6	N.D.	640	100.0 $\leq$	0.5	3.0	+	N.D.	+	Tacrolimus
1.6	297.8	N.D.	640	N.D.	2.5	5.2	—	26.2	+	Methotrexate
1.7	916.5	44	160	100.0 $\leq$	—	N.D.	$\pm$	47.9	+	—
0.3>	77.6	382	160	87.5	N.D.	N.D.	$\pm$	0.1	+	Tacrolimus, Etanercept
2.2	250.0	182	320	87.5	1.1	7.3	—	N.D.	+	Penicillamine
0.8	414.6	N.D.	80	100.0 $\leq$	0.3	2.9	+	7.3	+	Salazosulfapyridine
1.0	392.6	43	40>	100.0 $\leq$	—	—	+	2.0 $\geq$	+	Methotrexate
0.3>	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	—	—
0.3>	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	—	—
0.3>	53.5	N.D.	N.D.	0.6>	N.D.	N.D.	N.D.	N.D.	—	—
0.3>	N.D.	20	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	—	—
0.3>	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	—	—

2.12. Enzyme-labeled antigen method using formalin-fixed, paraffin-embedded sections

With biotinylated TRIM21 and FBXO2, 10% formalin-fixed, paraffin-embedded sections were evaluated. For retrieving the antigen-binding activity, the sections were pretreated with high concentration (20 μ g/ml) of proteinase K at room temperature for 15 min. Heat-assisted retrieval by pressure pan cooking in 10 mmol/l citrate buffer, pH 6.0 or pH 7.0, and in 1 mmol/l EDTA solution, pH 8.0, was also tried (Tsutsumi and Kamoshida, 2003). The crude biotinylated protein solutions were incubated overnight at room temperature. The other procedures were fundamentally the same as for the frozen sections.

3. Results

3.1. Screening of autoantigens reactive with antibodies in synovial tissue extracts

With the AlphaScreen assay, a total of 2183 biotinylated proteins were evaluated for the reactivity to antibodies in the serum and synovial tissue extract from five RA patients (cases

1–5). Multiple proteins showed positive signals with the serum, tissue extract or both of them. Some proteins were reactive with either the serum or tissue extract, whereas proteins that showed positive signals with the tissue extract were often reactive with the serum. Representative AlphaScreen signal patterns of the serum and tissue extract in each case are shown in Fig. 1, in which signal/noise ratios in the AlphaScreen assay are demonstrated. Five proteins showing high AlphaScreen signals with the tissue extract were picked up in each case. A total of 18 kinds of biotinylated proteins and the corresponding gene symbols are listed in Table 2: There was no protein universally reactive to all five synovitis lesions. Molecular weight and the expected isoelectric point (pI) value of the respective proteins are also described. All of these were used as probes for the enzyme-labeled antigen method to detect signals in plasma-cytes in the fixed frozen sections of the synovial tissue.

IgG concentrations in the serum and synovial tissue extract of 10 RA patients, assayed by the ELISA, ranged from 4.69 to 29.93 mg/ml (mean: 11.76 mg/ml) in the serum and from 0.25 to 2.83 mg/ml (mean: 0.99 mg/ml) in the tissue extract. IgG concentrations in five OA patients ranged from 8.65 to 13.85 mg/ml (mean 10.11 mg/ml) in the serum and from 0.20 to 0.47 mg/ml (mean: 0.30 mg/ml) in the tissue extract. While

Gene Symbol	Case 1			Case 2			Case 3			Case 4			Case 5		
	AS signal		Enzyme-labeled antigen method	AS signal		Enzyme-labeled antigen method	AS signal		Enzyme-labeled antigen method	AS signal		Enzyme-labeled antigen method	AS signal		Enzyme-labeled antigen method
	Tissue	Serum		Tissue	Serum		Tissue	Serum		Tissue	Serum		Tissue	Serum	
ABCF1	4.3	8.7	-	4.8	32.8	BG	10.6	6.3	-	10.1	18.7	BG	5.7	3.8	-
ZNF207	2.9	5.1	-	2.4	12.7	-	5.2	4.0	-	4.9	13.6	-	6.1	2.0	-
S100A13	0.9	3.7	-	13.2	13.3	-	2.3	6.9	-	1.8	12.8	-	1.3	5.8	-
NOL1	1.9	3.4	-	6.8	22.5	-	4.1	4.6	-	2.1	7.4	-	1.7	1.8	-
PNRC2	7.2	1.1	-	1.1	0.9	-	1.1	1.1	-	1.1	1.0	-	1.1	1.2	-
PMVK	1.1	1.1	-	7.3	5.3	-	3.6	2.0	-	1.4	2.6	BG	1.6	1.4	-
ING4	2.7	3.5	BG	6.2	12.0	-	3.2	2.7	BG	1.8	5.9	BG	1.3	2.1	BG
FKBP4	2.7	5.4	-	5.9	10.4	BG	10.3	3.4	BG	3.4	9.2	BG	6.2	2.5	BG
FBXO2	3.4	2.9	-	5.9	2.7	-	96.4	1.4	+	6.3	1.8	-	1.6	1.2	-
PRM2	7.9	13.1	-	6.0	19.1	-	11.9	5.4	BG	9.4	15.0	-	6.1	2.3	-
IMPACT	3.3	5.9	BG	4.0	12.8	-	11.2	2.2	BG	2.8	11.5	BG	3.3	1.5	BG
MAP1LC3B	0.9	14.6	-	6.7	40.1	-	1.8	10.4	-	2.5	41.2	-	0.8	4.7	-
SRP19	9.1	11.1	BG	3.1	30.4	BG	5.1	8.7	BG	7.7	21.1	BG	5.3	3.8	BG
KCTD18	4.4	7.5	BG	3.0	20.1	BG	6.5	4.8	BG	8.1	13.0	BG	5.1	2.1	BG
GABARAPL2	9.0	14.8	-	1.6	13.9	-	3.0	5.4	-	5.1	15.6	-	4.7	2.8	-
TRIM21	77.6	86.8	+	1.3	2.0	-	1.4	1.3	-	1.4	1.6	-	1.2	1.3	-
KIAA0409	4.8	8.0	-	5.3	35.6	-	15.7	11.1	BG	11.2	30.0	BG	5.7	4.4	-
HIST1H1C	6.9	9.6	BG	5.9	30.9	BG	17.0	11.9	BG	14.9	30.4	BG	9.3	3.7	BG

Fig. 1. Heat map of the AlphaScreen (AS) signals against 18 autoantigens in the serum and tissue extract of five RA patients. Gene symbols encoding the autoantigens are abbreviated in Table 2. Signal/noise ratios are written on the map, and the results of the enzyme-labeled antigen method are given (BG indicates high background staining). As boxed in yellow in each case, top five proteins showing high signals in the tissue extract were chosen, resulting in a total of 18 proteins listed here for evaluating with the enzyme-labeled antigen method. Bright signals for TRIM21 in case 1 are seen with both the serum and tissue extract. In case 3, bright FBXO2 signals are obtained in the tissue extract, but with little signals in the serum.

IgG concentrations in the tissue extract were much lower than those of the serum, a number of biotinylated proteins were AlphaScreen-reactive with the tissue extract. The RA synovium showed higher IgG concentrations than the OA synovium.

3.2. Enzyme-labeled antigen method using crude biotinylated proteins as probes

As shown in Figs. 1 and 2, two biotinylated proteins decorated the cytoplasm of some plasmacytes in the diseased synovium sampled from two patients (cases 1 and 3). One protein was TRIM21, and the other was FBXO2. Antibodies against TRIM21 were detected in the synovium in case 1 but not in case 3, while anti-FBXO2 activity was shown only in the case 3 lesion. Mild background staining was observed in sections for

FBXO2. Proteinase K pretreatment was effective for demonstrating anti-TRIM21 activity, but for FBXO2, the same procedure inactivated antigen-binding activity of antibodies in frozen sections (Fig. 2). AlphaScreen signal/noise ratios in the tissue extract were particularly high for these two: 77.6 and 96.4, respectively. The signal/noise ratios in the other 16 proteins were less than 17. Of particular note is that antibodies against FBXO2 in case 3 were detected only in the tissue extract (undetectable in the serum). TRIM21 antibodies in case 1 were detected in both the serum and tissue extract.

No specific staining was obtained with the other 16 biotinylated proteins in any of the fixed synovial tissues. Frequently, high background staining was encountered. Non-specific binding of biotinylated histone 1H1c (HIST1H1C) to most of the inflammatory cells in cases 4 and 5 is illustrated in

Table 2

List of 18 autoantigens showing high AlphaScreen signals in the tissue extract from five RA patients.

Gene	Gene symbol	Molecular weight (kDa)	Expected isoelectric point
ATP-binding cassette, sub-family F (GCN20), member 1, transcript variant 1	ABCF1	95.9	6.40
Zinc finger protein 207, transcript variant 2	ZNF207	49.7	9.21
S100 calcium binding protein A13, transcript variant 3	S100A13	11.5	5.93
Nucleolar protein 1, 120 kDa	NOL1	89.3	9.27
Proline-rich nuclear receptor coactivator 2	PNRC2	15.6	10.40
Phosphomevalonate kinase	PMVK	22.0	5.57
Inhibitor of growth family, member 4, transcript variant 1	ING4	28.5	7.53
FK506 binding protein 4, 59 kDa	FKBP4	51.8	5.35
F-box only protein 2	FBXO2	33.3	4.29
Protamine 2	PRM2	13.1	11.90
Impact homolog (mouse)	IMPACT	36.5	4.86
Microtubule-associated protein 1 light chain 3 beta	MAP1LC3B	15.7	8.52
Signal recognition particle 19 kDa	SRP19	16.2	9.87
Potassium channel tetramerization domain containing 18	KCTD18	46.7	9.23
GABA(A) receptor-associated protein-like 2	GABARAPL2	13.7	7.81
Tripartite motif-containing 21	TRIM21	54.2	5.98
KIAA0409 protein	KIAA0409	50.7	9.51
Histone 1, H1c	HIST1H1C	21.4	10.94

Fig. 2. Proteinase K pretreatment were ineffective for enhancing the antigen-binding activity of antibodies or reducing non-specific binding in the fixed tissues. Biotinylated TRIM21 and FBXO2 failed to demonstrate signals in cases 2, 4 and 5.

Double fluorescence staining with biotinylated proteins and monoclonal antibody to CD138 indicated that cells stained with biotinylated TRIM21 in case 1 and biotinylated FBXO2 in case 3 were CD138-positive, as shown in Fig. 3. Nonspecific binding of biotinylated FBXO2 to small-sized CD138-negative stromal cells was also noted.

In absorption experiments (Fig. 4), the positive anti-TRIM21 signals in plasmacytes were eliminated with an excess amount of unlabeled TRIM21 antigen but not with unlabeled FBXO2. The positive anti-FBXO2 signals in plasmacytes were significantly diminished with unlabeled FBXO2 but not with unlabeled TRIM21.

3.3. Enzyme-labeled antigen method employing purified biotinylated proteins

Plasmids were successfully constructed in 10 of 18 proteins (Fig. 5), and the biotinylated proteins was purified in seven, including TRIM21, MAP1LC3B, S100A13, KIAA0409, FKBP4, SRP19, and FBXO2 (for abbreviations, see Table 2). HIST1H1C failed to be purified. Electrophoretic analysis demonstrated that biotinylated protein bands showing appropriate molecular weights were visualized with both Coomassie brilliant blue and streptavidin-Alexa 488 (Fig. 5). The molecular weight of the synthesized proteins appeared to be a little bit larger than the theoretical sizes, because of the addition of polyhistidine tags (Sawasaki et al., 2008).

The enzyme-labeled antigen method was further performed using purified biotinylated proteins (concentration: 100 µg/ml). Purified biotinylated TRIM21 gave positive plasmacyte staining with low background in case 1 lesion (Fig. 6). In contrast, the stainability of plasmacytes was not evidently improved for FBXO2, and the background staining remained relatively high in case 3 lesion. However, overnight incubation with 5-times diluted (20 µg/ml) purified biotinylated FBXO2 gave much better signals in plasmacytes (Fig. 6). The use of purified biotinylated proteins did not improve the staining for the remaining five markers: no specific staining was obtained in the fixed frozen sections of these RA synovitis lesions.

3.4. Evaluation of anti-TRIM21 and anti-FBXO2 activities in additional RA and OA cases

No significant anti-TRIM21 and anti-FBXO2 AlphaScreen signals were obtained in both the serum and tissue extract from additional five RA patients (cases 6–10) and five OA patients (cases 11–15). In cases 1–5, the AlphaScreen method was repeated to reproduce strong signals for TRIM21 in both the serum and tissue extract in case 1, and for FBXO2 in the tissue extract in case 3. Positivity of the enzyme-labeled antigen method was also retrieved for TRIM21 in case 1 and for FBXO2 in case 3. This method showed fundamentally negative findings in the other cases. The results are summarized in Fig. 7.

The AlphaScreen signal of the tissue extract (but not of the serum) in case 10 was moderately high for FBXO2, and weak anti-FBXO2 signals were observed in the inflammatory cells with the enzyme-labeled antigen method in the synovial tissue

of this case. However, the absorption experiment failed to abolish the signals, thus the reactivity was judged negative.

3.5. Enzyme-labeled antigen method using formalin-fixed, paraffin-embedded sections

Applicability of the enzyme-labeled antigen method to formalin-fixed, paraffin-embedded sections of cases 1 and 3 lesions was examined using crude biotinylated TRIM21 and FBXO2 as probes, respectively. No positivity was seen even after proteinase K pretreatment and heat-induced retrieval.

4. Discussion

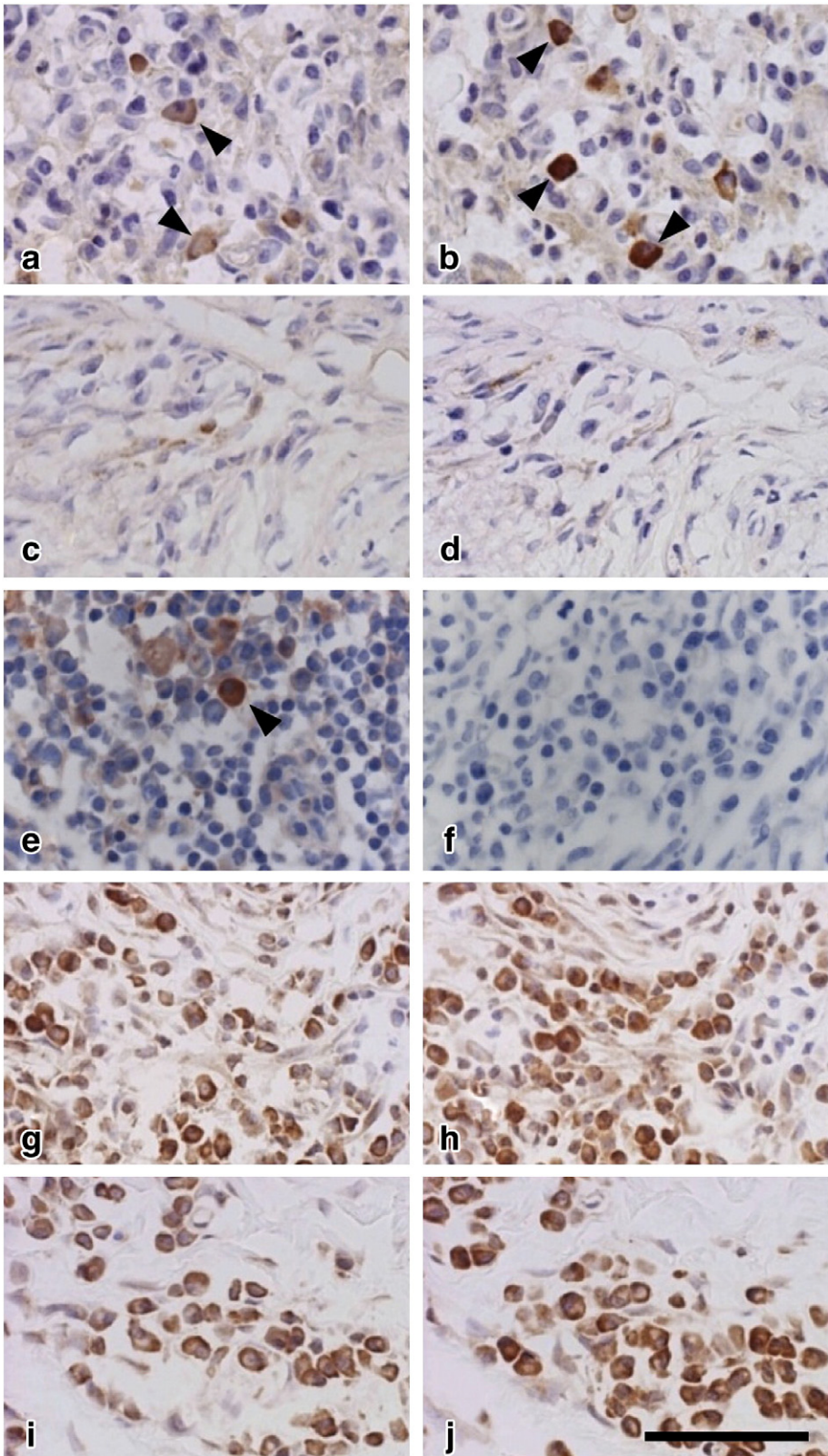
We proposed herein a novel approach to detecting autoantigens in autoimmune disorders. Target autoantigens were identified in the diseased synovial tissue of RA patients, and the site of autoantibody production was visualized with N-terminally biotinylated proteins. Our study design was made possible only when we combined the following techniques such as the wheat germ cell-free protein synthesis system, the AlphaScreen assay and the enzyme-labeled antigen method.

The wheat germ cell-free protein synthesis system (Sawasaki et al., 2002a,b) is excellent in the following aspects. By using transcriptional templates amplified by the split-primer PCR method, the wheat germ extract effectively and simultaneously synthesized multiple proteins encoded by cDNA in 96-well plastic plates. The plasmid vectors with cDNA insertion and the biotin ligase recognition sequence were used as templates for protein synthesis. Biotin labeling was performed through biotin ligase activity to yield labeled proteins. Translation mixtures were directly used for analysis without further purification. These features were indispensable for establishing the human autoantigen library used in the present study.

It is emphasized that three dimensional conformation of proteins is important for maintaining the antigenicity (Martins et al., 2007; Jiang et al., 2010). The AlphaScreen assay is strong at performing antigen–antibody reaction in solution, using biotinylated antigens with intact three dimensional conformation. Other merits of this method are as follows (Matsuoka et al., 2010). Only a small aliquot of sample (0.025 µl serum per well) is needed. Antibody detection is highly efficient, since no rinsing is needed, and multiple assays can be done simultaneously in 384-well plates. The sensitivity and specificity of detection are high enough with low background.

Positive AlphaScreen signals were obtained in both the serum and tissue extract for numbers of protein antigens, including TRIM21, but the signals happened to be detected in the tissue extract but not in the serum. Typical example of the latter included FBXO2. It is plausible that specific antibodies were locally produced in the diseased synovium, without secretion to the blood flow.

IgG concentrations in the tissue extract were much lower than those in the serum: 11.76 mg/ml in the serum vs. 0.99 mg/ml in the tissue extract on average. It is of note that the AlphaScreen signals in the tissue extract were often comparable to or even higher than those in the serum. This strongly suggests that specific antibodies are locally concentrated in the inflamed tissue. The direct evaluation of the tissue extract using the AlphaScreen assay may attribute to analyzing pathogenic antibodies locally produced within the lesion.



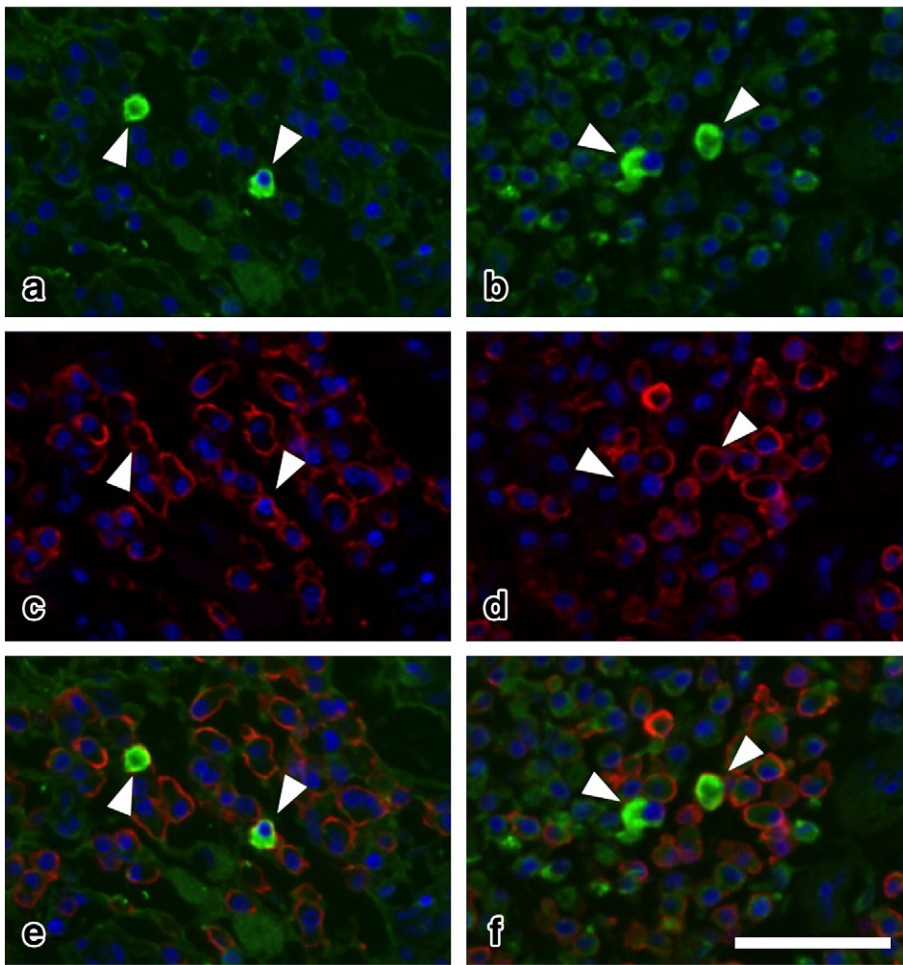


Fig. 3. Double fluorescence labeling with the biotinylated proteins and a monoclonal antibody against CD138. a, c, e: Anti-TRIM21 reactivity in case 1, b, d, f: anti-FBXO2 reactivity in case 3. Anti-TRIM21 signals in case 1 and anti-FBXO2 signals in case 3 are labeled green with Alexa Fluor 488 (a, b), while CD138-positive plasma membranes of plasmacytes are stained red with Alexa Fluor 568 (c, d). Arrowheads indicate plasmacytes producing the specific antibodies (merged panels; e, f). In case 3, positive signals for FBXO2 are also noted in the cytoplasm of small-sized non-plasmacytes. Bar indicates 50 μ m.

With the enzyme-labeled antigen method (Tsuge et al., 2011; Mizutani et al., 2009), we visualized the site of specific antibody production by locally infiltrating plasmacytes in the RA synovial lesion. Two biotinylated proteins, TRIM21 and FBXO2, reproducibly gave positive staining in the immunocytes. The signalized cells were CD138-positive, confirming antibody production in plasmacytes.

Plasmacytes labeled with biotinylated TRIM21 were demonstrated only in case 1, and antibodies against FBXO2 were visualized only in case 3. No other specific signals were discerned in the present study. This may result from the detection sensitivity of the enzyme-labeled antigen method under our present condition. Another possibility includes the instability of the antigen probe solution. Biotinylated FBXO2 tended to give higher

background staining than TRIM21. This may be partly due to the acidic pI of FBXO2 at 4.29 (Otani et al., 2011). The pI of TRIM21 was estimated as 5.98 (Table 2). Molecular properties of the labeled antigens, including the molecular size, surface charge, water solubility, etc., were variable, with some showing nonspecific binding to tissue components. For example, HIST1H1C as shown in Fig. 2 is a basic nuclear protein with pI at 10.94 (Franke et al., 1998), and thus tends to bind to acidic substances in tissues, as is exemplified by egg white avidin binding to nuclear chromatin (Heggeness, 1977). This should be one of the troubleshooting matters to be technically settled in this re-emerging histochemical method.

Reportedly, TRIM21 (also called Ro52 or SSA) is a major autoantigen in RA, systemic lupus erythematosus, and partic-

Fig. 2. Enzyme-labeled antigen method with paraformaldehyde-fixed frozen sections of RA synovitis lesions of cases 1 to 5, before (a, c, e, g, i) and after (b, d, f, h, j) proteinase K digestion. Arrowheads indicate plasmacytes labeled with crude (unpurified) biotinylated TRIM21 in case 1 (a, b) and FBXO2 in case 3 (e). Nonspecific signals are also seen in FBXO2 staining. Proteinase K pretreatment effectively increases signal intensity for TRIM21 (b), while both the specific and nonspecific signals for FBXO2 are lost after digestion. (f) No specific binding to crude biotinylated S100A13 (S100 calcium binding protein A13, transcript variant 3) was observed in case 2 (c, d). In case 4 (g, h) and case 5 (i, j), nonspecific binding of crude biotinylated HIST1H1C not only to plasmacytes but also to macrophages is evident before and after proteinase K pretreatment. Bar indicates 50 μ m.

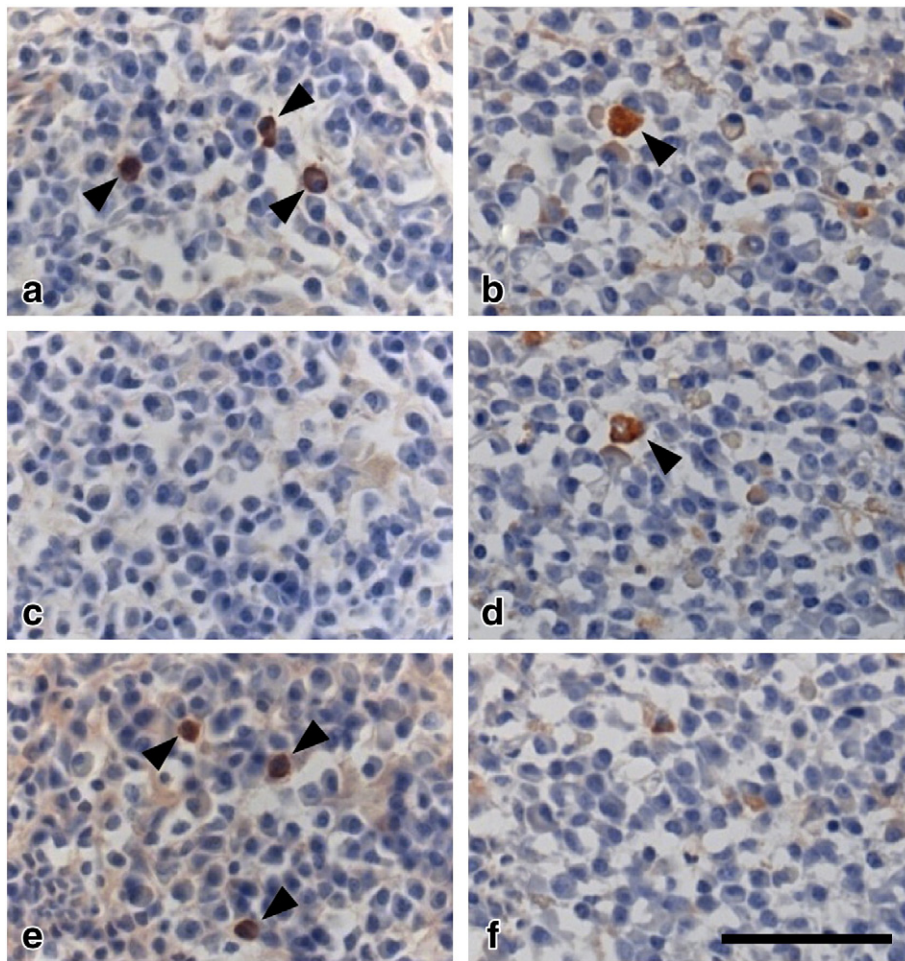


Fig. 4. Absorption experiments using unlabeled proteins. a, c, e: Anti-TRIM21 reactivity in case 1; b, d, f: anti-FBXO2 reactivity in case 3, with absorption experiments using an excess amount of unlabeled TRIM21 (c, d) or FBXO2 (e, f). Anti-TRIM21 signals in plasmacytes in case 1 (a) and anti-FBXO2 signals in plasmacytes in case 3 (b) are abolished with an excess amount of the corresponding unlabeled proteins (c, f). Indifferent proteins fail to eliminate the reactivity (d, e). Arrowheads indicate positive signals. Bar indicates 50 μ m.

ularly in Sjögren's syndrome (Ben-Chetrit et al., 1990; Keeble et al., 2008). Antibody against TRIM21 is seen in 6% of the serum of RA patients often with extraarticular manifestations (Cavazzana et al., 2006). We demonstrated anti-TRIM21 activity in one (10%) of the 10 RA lesions examined, and this positive case was clinically complicated with Sjögren's syndrome and a high anti-SSA antibody titer in the serum.

TRIM21, an E3 ligase that ubiquitinates various members of the interferon (IFN) regulatory factor family, is an IFN-inducible protein of the TRIM family that translocates to the nucleus upon IFN- α stimulation (Strandberg et al., 2008). Actually, TRIM21 synthesis is activated by viral infection or toll like receptor engagement via type I IFN induction. This molecule translocates from the cytoplasm to the cell surface in apoptotic or stressed cells (Strandberg et al., 2008). In the keratinocyte, the same phenomenon was induced by ultraviolet irradiation, oxidative stress, nitric oxide or estradiol treatment (Yoshimi et al., 2012). Such environmental stresses as viral or bacterial infection may increase the opportunity for the exposure of TRIM21 to immunocytes, causing anti-TRIM21 autoantibody production. TRIM21 negatively regulates the production of type I IFN, such as INF- α ,

via ubiquitination of IFN regulatory factors: TRIM21 represses type I IFN production, resulting in protecting cells from prolonged IFN overproduction (Stacey et al., 2012). TRIM21 also functions as a cytosolic IgG receptor, and contributes to ubiquitination-mediated degradation of IgG-bound viral particles in virus-infected cells (Mallery et al., 2010).

In addition, the disease-associated single-nucleotide polymorphism (SNP) of the TRIM21 gene has been reported in SLE and Sjögren's syndrome (Frank et al., 1993; Tsugu et al., 1994; Nakken et al., 2001). Imanishi et al. (2005) documented that the SNP of the TRIM21 gene was closely associated with anti-TRIM21 autoantibody production in Sjögren's syndrome.

FBXO2 belongs to the F-box protein family characterized by an approximately 40 amino acids motif, the F-box. The F-box proteins constitute one of the four subunits of the ubiquitin protein ligase complex called SKP1-cullin-F-box, and function in phosphorylation-dependent ubiquitination (Winston et al., 1999). FBXO2 binds to proteins containing mannose-rich oligosaccharides, and contributes to eliminating N-glycoproteins in the cytosol (Yoshida et al., 2002). This molecule also recognizes Nogo receptor 2, involving the

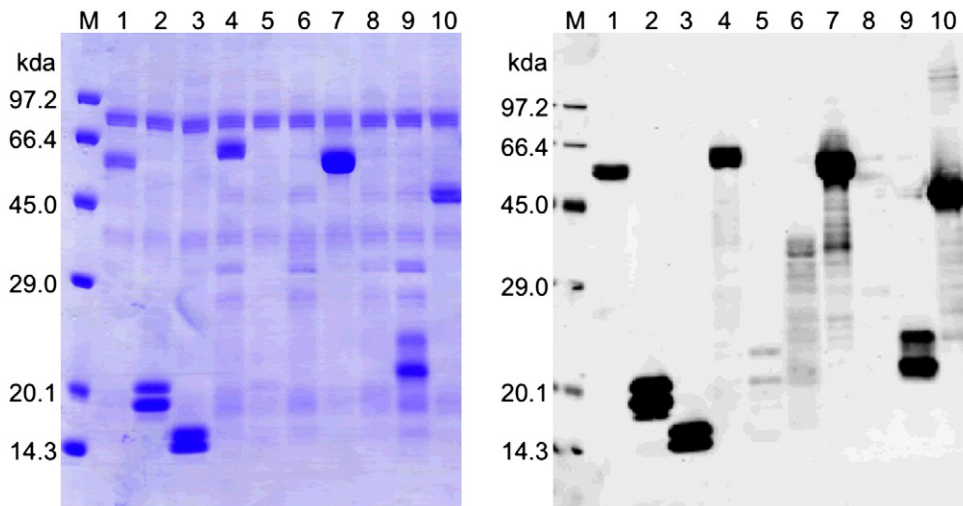


Fig. 5. Electrophoretic patterns of 10 purified polyhistidine-tagged proteins. Protein bands showing appropriate molecular weights are visualized with both Coomassie brilliant blue staining (left panel) and western blot analysis using streptavidin-Alexa 488 (right panel), except in lanes 5, 6 and 8. Because of addition of polyhistidine tag, the sizes of the purified proteins are a bit larger than the expected ones. M: molecular weight markers, 1: TRIM21, 54.2 kDa, 2: MAP1LC3B, 14.7 kDa, 3: S100A13, 11.5 kDa, 4: KIAA0409, 50.7 kDa, 5: PNRC2, 15.6 kDa, 6: HIST1H1C, 21.4 kDa, 7: FKBP4, 51.8 kDa, 8: PRM2, 13.1 kDa, 9: SRP19, 16.2 kDa, and 10: FBXO2, 33.3 kDa.

inhibition and plasticity of nerve growth in the central nervous system (Kern et al., 2012). Little is known about the possible association between RA and FBXO2.

Expression of FBXO3, another member of the F-box protein family but not included in our autoantigen library, is enhanced in RA synovial tissue (Masuda et al., 2002). However, FBXO2 and FBXO3 are mapped at an opposite location on the phylogenetic tree, and thus distantly correlated (Jin et al., 2004). Recently, Tada et al. (2010) isolated FBXO45, normally expressed in variable regions of the brain, as a target of autoantibodies in a gastric cancer patient with psychiatric symptoms, and identified the F-box domain of FBXO45 as an antigen recognized by the autoantibodies. The non-secretory antibodies we found in RA synovitis may thus be directed toward the F-box domain of FBXO2.

The other 16 biotinylated proteins gave no specific reactions with the enzyme-labeled antigen method in fixed frozen sections of RA synovitis. In addition to nonspecific binding of the charged probes to tissue components, the reasons for the negativity may include 1) rare distribution of specific antibody-producing plasmacytes, 2) low sensitivity of the enzyme-labeled antigen method, and 3) alteration of the antigen-binding activity of antibody molecules by paraformaldehyde fixation.

Only one biotin molecule was *N*-terminally labeled on the probe proteins we used in the present study. This may have caused low sensitivity of the enzyme-labeled antigen method. The use of proteins chemically labeled with multiple biotin molecules may lead to increased sensitivity and thus to lowered nonspecific reaction or background staining. It is known that autoantibodies tend to recognize conformational epitopes (Xie et al., 1997; Tuomi et al., 1994). Hence, the possibility that chemical biotinylation hampers the antigenicity of the probe proteins should also be considered. In order to improve the detection sensitivity, introduction of such a high-sensitivity technique as the catalyzed signal amplification method (Adams,

1992) is a simple choice, but not only specific signals but also background staining are expected to be amplified.

As a result of paraformaldehyde fixation, antigen-binding activity of antibodies may be diminished through conformational changes of antigen-binding sites. Suitable fixation solutions should thus be chosen. Cold ethanol fixation is a possibility (Munthe and Natvig, 1972). As reported previously (Tsuge et al., 2011; Mizutani et al., 2009), we have just tested paraformaldehyde fixation for the enzyme-labeled antigen method. The antigen-binding activity altered by fixation was retrieved by proteolytic enzyme digestion (Munthe and Natvig, 1972; Tsuge et al., 2011; Mizutani et al., 2009). We used proteinase K, a nonspecific serine protease, for this purpose. It is theoretically plausible that the antigen-binding site on the antibody molecules may be inactivated by proteinase K treatment, as was so in the case of anti-FBXO2 reactivity. Other proteases such as trypsin, pepsin, pronase, ficin and actinase (Hazelbag et al., 1995; Liapis and Hutton, 1997) should further be tried for retrieving the antigen-binding ability of antibodies in fixed tissues.

In the present study, no ubiquitous autoantigen molecules related to RA were found in our approach analyzing the synovial tissue extract. RA is caused by and modified with multiple intrinsic factors, and clinical features and responses to therapy are thus different in individual RA patients. It may be difficult to find out a single autoantigen commonly pathogenic in RA synovitis lesions. Our strategy should thus be focused on detecting marker autoantigens to predict certain clinical features or therapeutic responses.

Finally, we would like to propose that our technology can be applied to variegated disorders showing dense plasma cell infiltration within the lesions. Examples include 1) non-RA autoimmune disorders such as Hashimoto thyroiditis and Sjögren's syndrome (Szysko et al., 2011), 2) infectious diseases such as syphilis and *Helicobacter pylori*-induced gastritis

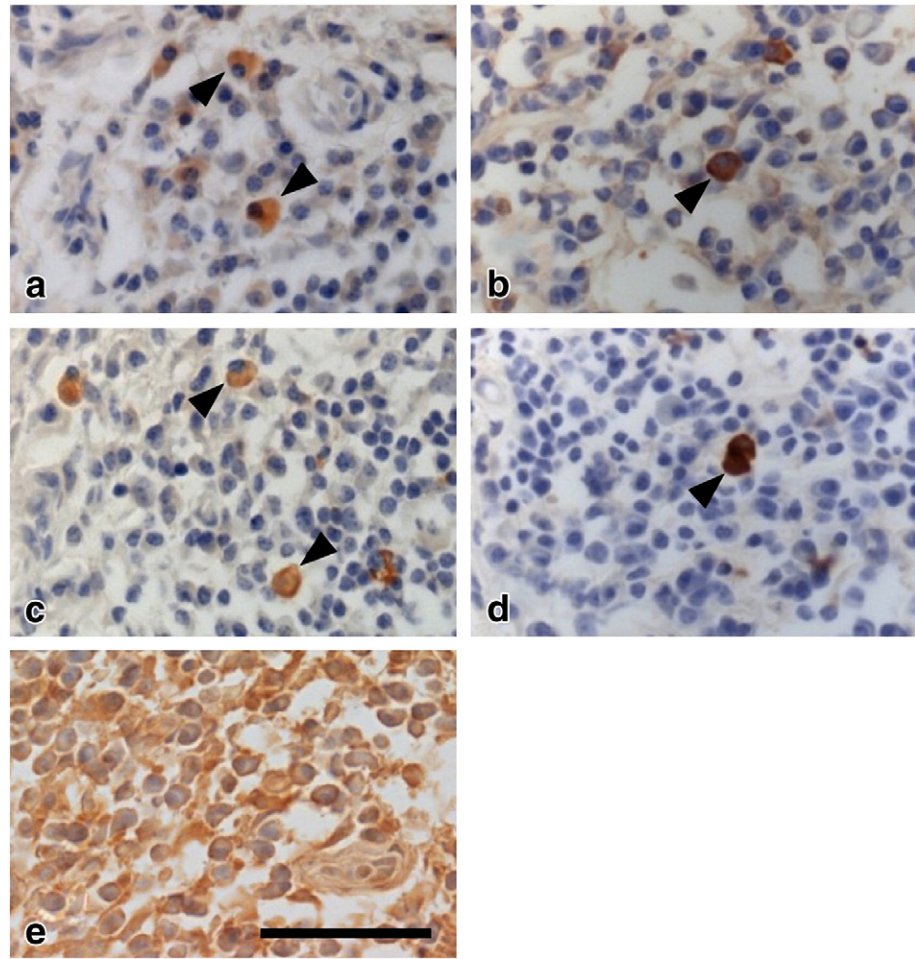


Fig. 6. Enzyme-labeled antigen method using crude (a, b) and purified (c, d, e) biotinylated proteins. a, c, e: anti-FBXO2 reactivity in case 3, b, d: anti-TRIM21 reactivity in case 1. Plasmacytes producing antibodies against FBXO2 and TRIM21 are visualized with both the crude and purified proteins (arrowheads). The crude solutions were diluted at 1:10 for TRIM21 and 1:40 for FBXO2. The concentration of purified TRIM21 was 100 µg/ml. For FBXO2, overnight incubation with 5-times diluted (20 µg/ml) purified biotinylated protein solution gives clean signals in plasmacytes in case 3 lesion (c). Purified biotinylated FBXO2 at a concentration of 100 µg/ml for 1 h incubation gave high background staining (e). Bar indicates 50 µm.

(Tsutsumi, 2003), and 3) certain kinds of cancers such as medullary carcinoma of the breast and Epstein–Barr virus-related carcinomas (i.e., nasopharyngeal lymphoepithelioma and gastric carcinoma with lymphoid stroma) (Fukayama et al., 1998). Our technology is expected to identify key antigens

recognized by the antibodies produced by plasmacytes within these lesions.

In conclusion, the combination of three techniques, 1) the wheat germ cell-free protein synthesis system, 2) the AlphaScreen assay for both the serum and tissue extract, and

RA/OA		Original RA cases					Additional RA cases					OA				
Case		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
TRIM21	AS signal	Tissue	48.1	2.5	1.0	1.0	1.1	1.8	1.1	1.0	1.0	0.9	1.0	0.9	0.9	0.9
		Serum	46.9	1.4	1.1	1.2	1.3	2.7	1.2	1.3	1.4	1.1	1.1	1.1	1.0	1.3
	Enzyme-labeled antigen method		+	-	-	-	-	-	-	-	-	-	-	-	-	-
FBXO2	AS signal	Tissue	2.4	18.2	123.6	9.7	6.6	8.3	3.9	9.4	3.2	32.7	2.6	2.0	2.7	4.3
		Serum	1.7	1.7	1.2	1.3	1.2	1.9	1.2	1.3	1.4	1.2	1.2	1.4	1.3	1.3
	Enzyme-labeled antigen method		-	-	+	-	-	-	-	-	-	-	-	-	-	-

Fig. 7. Heatmap of the AlphaScreen signals against TRIM21 and FBXO2 in the serum and tissue extract, comparing the results of the original five RA patients (cases 1–5) with those of additional five RA patients (cases 6–10) and five OA patients (cases 11–15). Signal/noise ratios are written on the map, in association with the results of the enzyme-labeled antigen method. The positive findings for TRIM21 in case 1 and FBXO2 in case 3 have been reproduced, and no significant positivity is noted in the additionally evaluated cases. In case 10, slightly high AlphaScreen signal/noise ratio is recorded in the tissue extract, but without specific staining with the enzyme-labeled antigen method.

3) the enzyme-labeled antigen method using biotinylated antigen probes, gives us a novel and potentially powerful tool for analyzing unknown disease processes.

5. Disclosures

There are no conflicts of interest associated with the present research. The patent no. 2010-79277 in Japan has been submitted by Fujita Health University and Ehime University (contents: methods for antigen screening and antibody detection).

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <http://dx.doi.org/10.1016/j.jim.2012.09.011>.

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Supplementary Table 1. Total list of 2,183 genes encoding tentative
“autoantigens” screened in the present study

Gene symbol	GenBank accession number	Function
AADAC	BC032309	arylacetamide deacetylase (esterase), mRNA (cDNA clone MGC:40338)
ABCA6	BC070125	cDNA clone MGC:88103 complete cds
ABCB9	BC064384	ATP-binding cassette, sub-family B (MDR/TAP), member 9, mRNA (cDNA clone MGC:74955)
ABCD3	BC068509	ATP-binding cassette, sub-family D (ALD), member 3, mRNA (cDNA clone MGC:87282)
ABCF1	BC034488	ATP-binding cassette, sub-family F (GCN20), member 1, transcript variant 1, mRNA (cDNA clone MGC:26501)
ABHD2	BC019248	abhydrolase domain containing 2, transcript variant 1, mRNA (cDNA clone MGC:26249)
ABHD8	BC007895	abhydrolase domain containing 8, mRNA (cDNA clone MGC:14280)
ABP1	BC014093	amiloride binding protein 1 (amine oxidase (copper-containing)), mRNA (cDNA clone MGC:20107)
ACAD9	BC007970	acyl-Coenzyme A dehydrogenase family, member 9, mRNA (cDNA clone MGC:14452)
ACAT2	BC000408	acetyl-Coenzyme A acetyltransferase 2 (acetoacetyl Coenzyme A thiolase), mRNA (cDNA clone MGC:8573)
ACE	BC036375	angiotensin I converting enzyme (peptidyl-dipeptidase A) 1, transcript variant 3, mRNA (cDNA clone MGC:26566)
ACOX1	BC010425	acyl-Coenzyme A oxidase 1, palmitoyl, transcript variant 1, mRNA (cDNA clone MGC:15225)
ACOX3	BC017053	acyl-Coenzyme A oxidase 3, pristanoyl, mRNA (cDNA clone MGC:9319)
ACP1	BC007422	acid phosphatase 1, soluble, mRNA (cDNA clone MGC:3499)
ACP5	BC025414	acid phosphatase 5, tartrate resistant, mRNA (cDNA clone MGC:1189)
ACPP	BC007460	acid phosphatase, prostate, mRNA (cDNA clone MGC:12236)
ACRBP	BC033010	acrosin binding protein, mRNA (cDNA clone MGC:26629)
ACSL1	BC050073	acyl-CoA synthetase long-chain family member 1, mRNA (cDNA clone MGC:50988)
ACSL4	BC034959	acyl-CoA synthetase long-chain family member 4, transcript variant 1, mRNA (cDNA clone MGC:26481)
ACSL5	BC007985	acyl-CoA synthetase long-chain family member 5, transcript variant 1, mRNA (cDNA clone MGC:3494)
ACSL6	BC047453	acyl-CoA synthetase long-chain family member 6, mRNA (cDNA clone MGC:48352)
ACSM3	BC002790	acyl-CoA synthetase medium-chain family member 3, transcript variant 2, mRNA (cDNA clone MGC:3570)
ACSS1	BC039261	acyl-CoA synthetase short-chain family member 1, mRNA (cDNA clone MGC:33843)
ACSS2	BC012172	acyl-CoA synthetase short-chain family member 2, transcript variant 1, mRNA (cDNA clone MGC:20418)
ACTA1	BC012597	actin, alpha 1, skeletal muscle, mRNA (cDNA clone MGC:13546)
ACTA2	BC017554	actin, alpha 2, smooth muscle, aorta, mRNA (cDNA clone MGC:9221)
ACTG1	BC007442	actin, gamma 1, mRNA (cDNA clone MGC:4484)
ACTR6	BC015107	ARP6 actin-related protein 6 homolog (yeast), mRNA (cDNA clone MGC:22861)
ACVR1B	BC000254	activin A receptor, type IB, transcript variant 1, mRNA (cDNA clone MGC:2177)

Gene symbol	GenBank accession number	Function
ACVRL1	BC042637	activin A receptor type II-like 1, mRNA (cDNA clone MGC:34522)
ACY3	BC008689	aspartoacylase (aminocyclase) 3, mRNA (cDNA clone MGC:9740)
ADAM2	BC034957	ADAM metallopeptidase domain 2 (fertilin beta), mRNA (cDNA clone MGC:26432)
ADAM20	BC025378	ADAM metallopeptidase domain 20, mRNA (cDNA clone MGC:25993)
ADAM30	BC028372	ADAM metallopeptidase domain 30, mRNA (cDNA clone MGC:27020)
ADAM32	BC026169	ADAM metallopeptidase domain 32, mRNA (cDNA clone MGC:26899)
ADAMTS1	BC036515	ADAM metallopeptidase with thrombospondin type 1 motif, 1, mRNA (cDNA clone MGC:32979)
ADAMTS12	BC058841	cDNA clone MGC:61868 complete cds
ADAMTSL1	BC030262	ADAMTS-like 1, transcript variant 3, mRNA (cDNA clone MGC:40193)
ADD1	BC042998	adducin 1 (alpha), mRNA (cDNA clone MGC:44427)
ADD3	BC062559	adducin 3 (gamma), transcript variant 1, mRNA (cDNA clone MGC:71198)
ADFP	BC005127	adipose differentiation-related protein, mRNA (cDNA clone MGC:10598)
ADH1B	BC033009	alcohol dehydrogenase IB (class I), beta polypeptide, mRNA (cDNA clone MGC:26565)
ADM	BC015961	adrenomedullin, mRNA (cDNA clone MGC:1811)
ADORA1	BC026340	adenosine A1 receptor, mRNA (cDNA clone MGC:26536)
ADORA3	BC029831	adenosine A3 receptor, mRNA (cDNA clone MGC:34402)
ADPRHL1	BC009755	ADP-ribosylhydrolase like 1, transcript variant 2, mRNA (cDNA clone MGC:11146)
AFG3L1	BC021245	AFG3 ATPase family gene 3-like 1 (yeast), mRNA (cDNA clone MGC:20817)
AGER	BC020669	advanced glycosylation end product-specific receptor, transcript variant 1, mRNA (cDNA clone MGC:22357)
AGMAT	BC005090	agmatine ureohydrolase (agmatinase), mRNA (cDNA clone MGC:13078)
AGPAT3	BC011971	1-acylglycerol-3-phosphate O-acyltransferase 3, mRNA (cDNA clone MGC:16906)
AGPAT6	BC051377	1-acylglycerol-3-phosphate O-acyltransferase 6 (lysophosphatidic acid acyltransferase, zeta), mRNA (cDNA clone MGC:59880)
AGT	BC011519	angiotensinogen (serpin peptidase inhibitor, clade A, member 8), mRNA (cDNA clone MGC:17092)
AGTR1	BC022447	angiotensin II receptor, type 1, transcript variant 2, mRNA (cDNA clone MGC:25987)
AGTRAP	BC017328	angiotensin II receptor-associated protein, mRNA (cDNA clone MGC:29646)
AICDA	BC006296	activation-induced cytidine deaminase, mRNA (cDNA clone MGC:12911)
AIF1	BC009474	allograft inflammatory factor 1, transcript variant 3, mRNA (cDNA clone MGC:13674)
AKAP1	BC000729	A kinase (PRKA) anchor protein 1, transcript variant 1, mRNA (cDNA clone MGC:1807)
AKAP3	BC047535	A kinase (PRKA) anchor protein 3, mRNA (cDNA clone MGC:41847)
AKAP8L	BC000713	A kinase (PRKA) anchor protein 8-like, mRNA (cDNA clone MGC:1206)
ALDH3A2	BC002430	aldehyde dehydrogenase 3 family, member A2, transcript variant 1, mRNA (cDNA clone MGC:2136)
ALDH7A1	BC071712	aldehyde dehydrogenase 7 family, member A1, mRNA (cDNA clone MGC:88005)

Gene symbol	GenBank accession number	Function
ALG1	BC031095	asparagine-linked glycosylation 1 homolog (yeast, beta-1,4-mannosyltransferase), mRNA (cDNA clone MGC:33924)
ALG12	BC001729	asparagine-linked glycosylation 12 homolog (yeast, alpha-1,6-mannosyltransferase), mRNA (cDNA clone MGC:3136)
ALG2	BC017876	asparagine-linked glycosylation 2 homolog (yeast, alpha-1,3-mannosyltransferase), transcript variant 1, mRNA (cDNA clone MGC:22677)
ALG3	BC002839	asparagine-linked glycosylation 3 homolog (yeast, alpha-1,3-mannosyltransferase), mRNA (cDNA clone MGC:3573)
ALG5	BC012531	asparagine-linked glycosylation 5 homolog (yeast, dolichyl-phosphate beta-glucosyltransferase), mRNA (cDNA clone MGC:13316)
ALG8	BC001133	asparagine-linked glycosylation 8 homolog (yeast, alpha-1,3-glucosyltransferase), mRNA (cDNA clone MGC:2840)
ALKBH7	BC004393	alkB, alkylation repair homolog 7 (E. coli), mRNA (cDNA clone MGC:10974)
ALOX5AP	BC018538	arachidonate 5-lipoxygenase-activating protein, mRNA (cDNA clone MGC:17120)
ALS2CR11	BC030659	amyotrophic lateral sclerosis 2 (juvenile) chromosome region, candidate 11, mRNA (cDNA clone MGC:33354)
ALS2CR2	BC008302	amyotrophic lateral sclerosis 2 (juvenile) chromosome region, candidate 2, mRNA (cDNA clone MGC:15130)
ALS2CR4	BC029611	amyotrophic lateral sclerosis 2 (juvenile) chromosome region, candidate 4, mRNA (cDNA clone MGC:39837)
AMDHD2	BC018734	CGI-14 protein, mRNA (cDNA clone MGC:31856)
AMIGO2	BC047595	adhesion molecule with Ig-like domain 2, mRNA (cDNA clone MGC:48648)
AMOTL2	BC011454	angiomotin like 2, mRNA (cDNA clone MGC:16955)
ANAPC11	BC000607	APC11 anaphase promoting complex subunit 11 homolog (yeast), transcript variant 1, mRNA (cDNA clone MGC:882)
ANGPTL4	BC023647	angiopoietin-like 4, transcript variant 1, mRNA (cDNA clone MGC:29488)
ANGPTL7	BC001881	angiopoietin-like 7, mRNA (cDNA clone MGC:1422)
ANKMY1	BC073146	ankyrin repeat and MYND domain containing 1, mRNA (cDNA clone MGC:87951)
ANKRD1	BC018667	ankyrin repeat domain 1 (cardiac muscle), mRNA (cDNA clone MGC:27140)
ANKRD10	BC001727	ankyrin repeat domain 10, mRNA (cDNA clone MGC:1076)
ANKRD5	BC022878	ankyrin repeat domain 5, transcript variant 1, mRNA (cDNA clone MGC:26575)
ANP32E	BC003380	acidic (leucine-rich) nuclear phosphoprotein 32 family, member E, mRNA (cDNA clone MGC:5350)
ANTXR1	BC012074	anthrax toxin receptor 1, transcript variant 3, mRNA (cDNA clone MGC:19967)
ANXA11	BC007564	annexin A11, transcript variant b, mRNA (cDNA clone MGC:15491)
ANXA2	BC023990	annexin A2, mRNA (cDNA clone MGC:24294)
ANXA7	BC002632	annexin A7, transcript variant 1, mRNA (cDNA clone MGC:3917)
ANXA9	BC005830	annexin A9, mRNA (cDNA clone MGC:1925)

Gene symbol	GenBank accession number	Function
AP1M2	BC005021	adaptor-related protein complex 1, mu 2 subunit, mRNA (cDNA clone MGC:12546)
AP2A1	BC014214	adaptor-related protein complex 2, alpha 1 subunit, mRNA (cDNA clone MGC:20679)
APBB3	BC013158	amyloid beta (A4) precursor protein-binding, family B, member 3, transcript variant 2, mRNA (cDNA clone MGC:9100)
APCS	BC007039	amyloid P component, serum, mRNA (cDNA clone MGC:12419)
APEX2	BC002959	APEX nuclease (apurinic/apyrimidinic endonuclease) 2, mRNA (cDNA clone MGC:1419)
APH1A	BC001230	anterior pharynx defective 1 homolog A (C. elegans), mRNA (cDNA clone MGC:4880)
APH1B	BC020905	anterior pharynx defective 1 homolog B (C. elegans), mRNA (cDNA clone MGC:24164)
APOA2	BC005282	apolipoprotein A-II, mRNA (cDNA clone MGC:12334)
APOH	BC020703	apolipoprotein H (beta-2-glycoprotein I), mRNA (cDNA clone MGC:22465)
APOM	BC020683	apolipoprotein M, mRNA (cDNA clone MGC:22400)
AQP1	BC022486	aquaporin 1 (channel-forming integral protein, 28kDa, CO blood group), mRNA (cDNA clone MGC:26324)
AQP11	BC040443	aquaporin 11, mRNA (cDNA clone MGC:48975)
AQP4	BC022286	aquaporin 4, transcript variant a, mRNA (cDNA clone MGC:22454)
AQP5	BC032946	aquaporin 5, mRNA (cDNA clone MGC:33163)
AQP9	BC026258	aquaporin 9, mRNA (cDNA clone MGC:22555)
AREG	BC009799	amphiregulin (schwannoma-derived growth factor), mRNA (cDNA clone MGC:13647)
ARF4	BC016325	ADP-ribosylation factor 4, mRNA (cDNA clone MGC:23710)
ARFIP2	BC000392	ADP-ribosylation factor interacting protein 2 (arfaptin 2), mRNA (cDNA clone MGC:8467)
ARHGDIB	BC009200	Rho GDP dissociation inhibitor (GDI) beta, mRNA (cDNA clone MGC:15348)
ARHGEF7	BC033905	Rho guanine nucleotide exchange factor (GEF) 7, mRNA (cDNA clone MGC:33815)
ARL2BP	BC003087	ADP-ribosylation factor-like 2 binding protein, mRNA (cDNA clone MGC:1121)
ARL3	BC009841	ADP-ribosylation factor-like 3, mRNA (cDNA clone MGC:15269)
ARL6	BC024239	ADP-ribosylation factor-like 6, mRNA (cDNA clone MGC:32934)
ARL6IP5	BC020797	ADP-ribosylation-like factor 6 interacting protein 5, mRNA (cDNA clone MGC:23779)
ARL6IP6	BC028741	ADP-ribosylation-like factor 6 interacting protein 6, mRNA (cDNA clone MGC:33864)
ARMC6	BC067125	armadillo repeat containing 6, mRNA (cDNA clone MGC:74781)
ARMC9	BC065271	armadillo repeat containing 9, mRNA (cDNA clone MGC:74894)
ARMC9	BC065271	
ARMCX1	BC002691	armadillo repeat containing, X-linked 1, mRNA (cDNA clone MGC:3387)
ARMCX2	BC012541	armadillo repeat containing, X-linked 2, mRNA (cDNA clone MGC:13343)
ARPC2	BC000590	actin related protein 2/3 complex, subunit 2, 34kDa, transcript variant 1, mRNA (cDNA clone MGC:1416)
ARRDC2	BC022516	arrestin domain containing 2, transcript variant 1, mRNA (cDNA clone MGC:26574)
ARSA	BC014210	arylsulfatase A, mRNA (cDNA clone MGC:20637)

Gene symbol	GenBank accession number	Function
ART3	BC008397	ADP-ribosyltransferase 3, mRNA (cDNA clone MGC:14489)
ART5	BC014577	ADP-ribosyltransferase 5, mRNA (cDNA clone MGC:22848)
ARV1	BC016309	ARV1 homolog (yeast), mRNA (cDNA clone MGC:22705)
ASB5	BC065710	ankyrin repeat and SOCS box-containing 5, mRNA (cDNA clone MGC:71906)
ASF1B	BC036521	ASF1 anti-silencing function 1 homolog B (S. cerevisiae), mRNA (cDNA clone MGC:33288)
ASGR2	BC017251	asialoglycoprotein receptor 2, transcript variant 2, mRNA (cDNA clone MGC:29619)
ASL	BC033146	argininosuccinate lyase, mRNA (cDNA clone MGC:45766)
ASNA1	BC002651	arsA arsenite transporter, ATP-binding, homolog 1 (bacterial), mRNA (cDNA clone MGC:3821)
ASPN	BC063114	asporin (LRR class 1), mRNA (cDNA clone MGC:71931)
ATAD3A	BC007803	ATPase family, AAA domain containing 3A, mRNA (cDNA clone MGC:14291)
ATAD3B	BC018701	ATPase family, AAA domain containing 3B, mRNA (cDNA clone MGC:15562)
ATG4B	BC000719	ATG4 autophagy related 4 homolog B (S. cerevisiae), transcript variant 1, mRNA (cDNA clone MGC:1353)
ATP1B1	BC000006	ATPase, Na ⁺ /K ⁺ transporting, beta 1 polypeptide, transcript variant 1, mRNA (cDNA clone MGC:1798)
ATP2B4	BC000988	hypothetical protein MGC5457, mRNA (cDNA clone MGC:5457)
ATP4B	BC029059	ATPase, H ⁺ /K ⁺ exchanging, beta polypeptide, mRNA (cDNA clone MGC:34515)
ATP5C1	BC000931	ATP synthase, H ⁺ transporting, mitochondrial F1 complex, gamma polypeptide 1, transcript variant 1, mRNA (cDNA clone MGC:5380)
ATP5F1	BC005960	ATP synthase, H ⁺ transporting, mitochondrial F0 complex, subunit B1, transcript variant 1, mRNA (cDNA clone MGC:14609)
ATP5G1	BC004963	ATP synthase, H ⁺ transporting, mitochondrial F0 complex, subunit C1 (subunit 9), transcript variant 2, mRNA (cDNA clone MGC:1359)
ATP5G2	BC020826	ATP synthase, H ⁺ transporting, mitochondrial F0 complex, subunit C2 (subunit 9), transcript variant 2, mRNA (cDNA clone MGC:23910)
ATP5I	BC003679	ATP synthase, H ⁺ transporting, mitochondrial F0 complex, subunit E, mRNA (cDNA clone MGC:12532)
ATP5J	BC001178	ATP synthase, H ⁺ transporting, mitochondrial F0 complex, subunit F6, mRNA (cDNA clone MGC:2243)
ATP5L	BC015128	ATP synthase, H ⁺ transporting, mitochondrial F0 complex, subunit G, mRNA (cDNA clone MGC:24237)
ATP5S	BC011549	ATP synthase, H ⁺ transporting, mitochondrial F0 complex, subunit s (factor B), transcript variant 2, mRNA (cDNA clone MGC:19945)
ATP6AP1	BC000724	ATPase, H ⁺ transporting, lysosomal accessory protein 1, mRNA (cDNA clone MGC:1570)
ATP6V0B	BC005876	ATPase, H ⁺ transporting, lysosomal 21kDa, V0 subunit b, transcript variant 1, mRNA (cDNA clone MGC:4498)
ATP6V0E2L	BC015899	ATPase, H ⁺ transporting V0 subunit E2-like (rat), mRNA (cDNA clone MGC:17890)
ATP6V1B1	BC063411	ATPase, H ⁺ transporting, lysosomal 56/58kDa, V1 subunit B1 (Renal tubular acidosis with deafness), mRNA (cDNA clone MGC:74733)

Gene symbol	GenBank accession number	Function
ATP6V1B2	BC030640	ATPase, H ⁺ transporting, lysosomal 56/58kDa, V1 subunit B2, mRNA (cDNA clone MGC:26702)
ATP6V1C1	BC010960	ATPase, H ⁺ transporting, lysosomal 42kDa, V1 subunit C, isoform 1, transcript variant 1, mRNA (cDNA clone MGC:13646)
ATP6V1C2	BC012142	ATPase, H ⁺ transporting, lysosomal 42kDa, V1 subunit C2, mRNA (cDNA clone MGC:20253)
ATP6V1D	BC031002	ATPase, H ⁺ transporting, lysosomal 34kDa, V1 subunit D, mRNA (cDNA clone MGC:32729)
ATP6V1E1	BC004443	ATPase, H ⁺ transporting, lysosomal 31kDa, V1 subunit E1, mRNA (cDNA clone MGC:4040)
ATP6V1E2	BC034808	ATPase, H ⁺ transporting, lysosomal 31kDa, V1 subunit E2, mRNA (cDNA clone MGC:35093)
ATP6V1G1	BC008452	ATPase, H ⁺ transporting, lysosomal 13kDa, V1 subunit G1, mRNA (cDNA clone MGC:14698)
ATP8B3	BC035162	ATPase, Class I, type 8B, member 3, mRNA (cDNA clone MGC:43311)
ATPBD1C	BC031024	ATP binding domain 1 family, member C, mRNA (cDNA clone MGC:32810)
ATPBD4	BC066652	ATP binding domain 4, mRNA (cDNA clone MGC:74761)
ATPIF1	BC009677	ATPase inhibitory factor 1, transcript variant 1, mRNA (cDNA clone MGC:8898)
AUP1	BC033646	ancient ubiquitous protein 1, transcript variant 2, mRNA (cDNA clone MGC:45163)
AVEN	BC063533	apoptosis, caspase activation inhibitor, mRNA (cDNA clone MGC:74954)
AXIN2	BC006295	cDNA clone MGC:10366 complete cds
AYTL1	BC002472	acyltransferase like 1, mRNA (cDNA clone MGC:1037)
B2M	BC064910	beta-2-microglobulin, mRNA (cDNA clone MGC:70796)
B3GALNT2	BC029564	UDP-GalNAc:betaGlcNAc beta 1,3-galactosaminyltransferase, polypeptide 2, mRNA (cDNA clone MGC:39558)
B3GALT2	BC022507	UDP-Gal:betaGlcNAc beta 1,3-galactosyltransferase, polypeptide 2, mRNA (cDNA clone MGC:26499)
B3GALT3	BC047618	UDP-Gal:betaGlcNAc beta 1,3-galactosyltransferase, polypeptide 3, transcript variant 2, mRNA (cDNA clone MGC:50980)
B3GNT3	BC067423	UDP-GlcNAc:betaGal beta-1,3-N-acetylglucosaminyltransferase 3, mRNA (cDNA clone MGC:79246)
B3GNT5	BC028058	UDP-GlcNAc:betaGal beta-1,3-N-acetylglucosaminyltransferase 5, mRNA (cDNA clone MGC:39847)
B4GALT1	BC045773	UDP-Gal:betaGlcNAc beta 1,4- galactosyltransferase, polypeptide 1, mRNA (cDNA clone MGC:50983)
B4GALT2	BC002431	UDP-Gal:betaGlcNAc beta 1,4- galactosyltransferase, polypeptide 2, mRNA (cDNA clone MGC:2008)
B4GALT7	BC062983	xylosylprotein beta 1,4-galactosyltransferase, polypeptide 7 (galactosyltransferase I), mRNA (cDNA clone MGC:71300)
BACE1	BC065492	beta-site APP-cleaving enzyme 1, transcript variant a, mRNA (cDNA clone MGC:71162)
BAT1	BC013006	HLA-B associated transcript 1, transcript variant 1, mRNA (cDNA clone MGC:3991)
BAT4	BC008783	HLA-B associated transcript 4, mRNA (cDNA clone MGC:3737)
BAX	BC014175	BCL2-associated X protein, transcript variant alpha, mRNA (cDNA clone MGC:20956)
BCAM	BC050450	basal cell adhesion molecule (Lu and Au blood groups), transcript variant 1, mRNA (cDNA clone MGC:54226)
BCAP29	BC008478	B-cell receptor-associated protein 29, transcript variant 2, mRNA (cDNA clone MGC:14772)

Gene symbol	GenBank accession number	Function
BCAP31	BC065292	B-cell receptor-associated protein 31, mRNA (cDNA clone MGC:70705)
BCAS2	BC012623	breast carcinoma amplified sequence 2, mRNA (cDNA clone MGC:13667)
BCKDK	BC007363	branched chain ketoacid dehydrogenase kinase, mRNA (cDNA clone MGC:16138)
BCL2L13	BC007658	BCL2-like 13 (apoptosis facilitator), mRNA (cDNA clone MGC:747)
BDH2	BC001953	3-hydroxybutyrate dehydrogenase, type 2, mRNA (cDNA clone MGC:4385)
BET1	BC000899	BET1 homolog (<i>S. cerevisiae</i>), mRNA (cDNA clone MGC:5210)
BGN	BC004244	biglycan, mRNA (cDNA clone MGC:10461)
BHLHB3	BC025968	basic helix-loop-helix domain containing, class B, 3, mRNA (cDNA clone MGC:39365)
BIK	BC001599	BCL2-interacting killer (apoptosis-inducing), mRNA (cDNA clone MGC:1907)
BIRC5	BC034148	baculoviral IAP repeat-containing 5 (survivin), mRNA (cDNA clone MGC:32768)
BLCAP	BC047692	bladder cancer associated protein, mRNA (cDNA clone MGC:51898)
BLZF1	BC020716	basic leucine zipper nuclear factor 1 (JEM-1), mRNA (cDNA clone MGC:22497)
BMPR1A	BC028383	bone morphogenetic protein receptor, type IA, mRNA (cDNA clone MGC:33112)
BNIP3	BC021989	BCL2/adenovirus E1B 19kDa interacting protein 3, mRNA (cDNA clone MGC:24394)
BNIP3L	BC009603	BCL2/adenovirus E1B 19kDa interacting protein 3-like, mRNA (cDNA clone MGC:14695)
BOK	BC006203	BCL2-related ovarian killer, mRNA (cDNA clone MGC:4631)
BOLA1	BC063405	bolA-like 1 (<i>E. coli</i>), mRNA (cDNA clone MGC:75015)
BPNT1	BC017801	3'(2'), 5'-bisphosphate nucleotidase 1, mRNA (cDNA clone MGC:22359)
BRD8	BC008076	bromodomain containing 8, mRNA (cDNA clone MGC:3524)
BRUNOL4	BC004167	bruno-like 4, RNA binding protein (<i>Drosophila</i>), mRNA (cDNA clone MGC:2693)
BST1	BC012095	bone marrow stromal cell antigen 1, mRNA (cDNA clone MGC:20065)
BTBD10	BC005071	BTB (POZ) domain containing 10, mRNA (cDNA clone MGC:13007)
BTN3A3	BC015815	butyrophilin, subfamily 3, member A3, transcript variant 1, mRNA (cDNA clone MGC:10692)
BYSL	BC062627	bystin-like, mRNA (cDNA clone MGC:74801)
BZW1	BC026303	basic leucine zipper and W2 domains 1, mRNA (cDNA clone MGC:24775)
C10orf116	BC004471	chromosome 10 open reading frame 116, mRNA (cDNA clone MGC:10343)
C10orf4	BC018007	chromosome 10 open reading frame 4, mRNA (cDNA clone MGC:24718)
C10orf57	BC022252	chromosome 10 open reading frame 57, mRNA (cDNA clone MGC:22197)
C10orf59	BC005364	chromosome 10 open reading frame 59, transcript variant 1, mRNA (cDNA clone MGC:12474)
C11orf10	BC015968	chromosome 11 open reading frame 10, mRNA (cDNA clone MGC:22907)
C12orf11	BC008368	chromosome 12 open reading frame 11, mRNA (cDNA clone MGC:946)
C12orf32	BC005106	chromosome 12 open reading frame 32, mRNA (cDNA clone MGC:13204)
C12orf39	BC004336	chromosome 12 open reading frame 39, mRNA (cDNA clone MGC:10946)
C12orf57	BC009925	chromosome 12 open reading frame 57, mRNA (cDNA clone MGC:4750)

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C13orf6	BC022566	chromosome 13 open reading frame 6, mRNA (cDNA clone MGC:27058)
C13orf7	BC028586	chromosome 13 open reading frame 7, mRNA (cDNA clone MGC:26922)
C14orf1	BC002444	chromosome 14 open reading frame 1, mRNA (cDNA clone MGC:1219)
C16orf28	BC000150	chromosome 16 open reading frame 28, mRNA (cDNA clone MGC:5179)
C16orf30	BC004932	chromosome 16 open reading frame 30, mRNA (cDNA clone MGC:10688)
C16orf33	BC009179	chromosome 16 open reading frame 33, mRNA (cDNA clone MGC:14880)
C16orf35	BC012825	chromosome 16 open reading frame 35, mRNA (cDNA clone MGC:4491)
C16orf50	BC036667	chromosome 16 open reading frame 50, mRNA (cDNA clone MGC:33410)
C16orf52	BC027604	chromosome 16 open reading frame 52, mRNA (cDNA clone MGC:26782)
C16orf53	BC003640	chromosome 16 open reading frame 53, mRNA (cDNA clone MGC:4606)
C16orf57	BC006291	chromosome 16 open reading frame 57, mRNA (cDNA clone MGC:10683)
C16orf58	BC009308	chromosome 16 open reading frame 58, mRNA (cDNA clone MGC:14982)
C16orf59	BC018719	chromosome 16 open reading frame 59, mRNA (cDNA clone MGC:31805)
C16orf63	BC022321	hypothetical protein FLJ31153, mRNA (cDNA clone MGC:22646)
C16orf9	BC032112	chromosome 16 open reading frame 9, mRNA (cDNA clone MGC:23152)
C17orf62	BC004171	chromosome 17 open reading frame 62, mRNA (cDNA clone MGC:2743)
C17orf80	BC005005	chromosome 17 open reading frame 80, mRNA (cDNA clone MGC:1012)
C18orf20	BC029565	chromosome 18 open reading frame 20, mRNA (cDNA clone MGC:39571)
C18orf25	BC016149	chromosome 18 open reading frame 25, mRNA (cDNA clone MGC:12909)
C18orf37	BC039404	chromosome 18 open reading frame 37, mRNA (cDNA clone MGC:44599)
C18orf54	BC036054	chromosome 18 open reading frame 54, mRNA (cDNA clone MGC:33382)
C18orf55	BC000892	chromosome 18 open reading frame 55, mRNA (cDNA clone MGC:4897)
C19orf22	BC012775	chromosome 19 open reading frame 22, mRNA (cDNA clone MGC:16353)
C19orf23	BC026041	chromosome 19 open reading frame 23, mRNA (cDNA clone MGC:39338)
C19orf24	BC000890	chromosome 19 open reading frame 24, mRNA (cDNA clone MGC:4953)
C19orf28	BC068439	chromosome 19 open reading frame 28, mRNA (cDNA clone MGC:86957)
C19orf34	BC029585	chromosome 19 open reading frame 34, mRNA (cDNA clone MGC:39696)
C19orf36	BC014609	chromosome 19 open reading frame 36, transcript variant 1, mRNA (cDNA clone MGC:26973)
C19orf6	BC008957	chromosome 19 open reading frame 6, transcript variant 2, mRNA (cDNA clone MGC:4022)
C1GALT1C1	BC050441	C1GALT1-specific chaperone 1, mRNA (cDNA clone MGC:54192)
C1orf103	BC008115	chromosome 1 open reading frame 103, mRNA (cDNA clone MGC:16981)
C1orf124	BC068478	chromosome 1 open reading frame 124, transcript variant 1, mRNA (cDNA clone MGC:87129)
C1orf128	BC017208	chromosome 1 open reading frame 128, mRNA (cDNA clone MGC:10673)
C1orf144	BC065538	chromosome 1 open reading frame 144, mRNA (cDNA clone MGC:70432)

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C1orf162	BC017973	chromosome 1 open reading frame 162, mRNA (cDNA clone MGC:24133)
C1orf33	BC006504	chromosome 1 open reading frame 33, mRNA (cDNA clone MGC:2400)
C1orf35	BC002843	chromosome 1 open reading frame 35, mRNA (cDNA clone MGC:4174)
C1orf43	BC000152	chromosome 1 open reading frame 43, mRNA (cDNA clone MGC:5332)
C1orf54	BC017761	chromosome 1 open reading frame 54, mRNA (cDNA clone MGC:22166)
C1orf55	BC071563	chromosome 1 open reading frame 55, mRNA (cDNA clone MGC:87025)
C1orf56	BC002469	chromosome 1 open reading frame 56, mRNA (cDNA clone MGC:1029)
C1orf57	BC005102	chromosome 1 open reading frame 57, mRNA (cDNA clone MGC:13186)
C1orf59	BC012198	chromosome 1 open reading frame 59, mRNA (cDNA clone MGC:4408)
C1orf62	BC030647	chromosome 1 open reading frame 62, mRNA (cDNA clone MGC:26989)
C1orf63	BC065040	chromosome 1 open reading frame 63, transcript variant 2, mRNA (cDNA clone MGC:74698)
C1orf64	BC017946	chromosome 1 open reading frame 64, mRNA (cDNA clone MGC:24047)
C1orf65	BC031066	chromosome 1 open reading frame 65, mRNA (cDNA clone MGC:33445)
C1orf89	BC002946	chromosome 1 open reading frame 89, mRNA (cDNA clone MGC:10731)
C1orf93	BC022547	chromosome 1 open reading frame 93, mRNA (cDNA clone MGC:26818)
C1orf96	BC071609	chromosome 1 open reading frame 96, mRNA (cDNA clone MGC:87639)
C1QA	BC030153	complement component 1, q subcomponent, A chain, mRNA (cDNA clone MGC:29490)
C1QB	BC008983	complement component 1, q subcomponent, B chain, mRNA (cDNA clone MGC:17227)
C1QBP	BC013731	complement component 1, q subcomponent binding protein, mRNA (cDNA clone MGC:9242)
C1QTNF5	BC029485	C1q and tumor necrosis factor related protein 5, mRNA (cDNA clone MGC:32938)
C1S	BC056903	complement component 1, s subcomponent, transcript variant 2, mRNA (cDNA clone MGC:65134)
C20orf18	BC015219	chromosome 20 open reading frame 18, transcript variant 2, mRNA (cDNA clone MGC:17759)
C20orf195	BC000912	chromosome 20 open reading frame 195, mRNA (cDNA clone MGC:5356)
C20orf31	BC016184	chromosome 20 open reading frame 31, mRNA (cDNA clone MGC:23193)
C20orf39	BC030637	chromosome 20 open reading frame 39, mRNA (cDNA clone MGC:26011)
C20orf55	BC004222	chromosome 20 open reading frame 55, transcript variant 2, mRNA (cDNA clone MGC:4675)
C20orf58	BC041812	chromosome 20 open reading frame 58, mRNA (cDNA clone MGC:41932)
C21orf119	BC007928	chromosome 21 open reading frame 119, mRNA (cDNA clone MGC:14136)
C21orf121	BC029588	chromosome 21 open reading frame 121, mRNA (cDNA clone MGC:39705)
C21orf122	BC004343	chromosome 21 open reading frame 122, mRNA (cDNA clone MGC:10960)
C21orf128	BC063412	chromosome 21 open reading frame 128, mRNA (cDNA clone MGC:70496)
C21orf13	BC031059	chromosome 21 open reading frame 13, mRNA (cDNA clone MGC:33295)
C21orf2	BC031300	chromosome 21 open reading frame 2, mRNA (cDNA clone MGC:39230)
C21orf33	BC003587	chromosome 21 open reading frame 33, transcript variant 1, mRNA (cDNA clone MGC:3859)

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C21orf55	BC029509	chromosome 21 open reading frame 55, mRNA (cDNA clone MGC:33722)
C21orf59	BC000709	chromosome 21 open reading frame 59, mRNA (cDNA clone MGC:1040)
C21orf6	BC017912	chromosome 21 open reading frame 6, mRNA (cDNA clone MGC:23842)
C21orf63	BC038710	chromosome 21 open reading frame 63, mRNA (cDNA clone MGC:26677)
C21orf7	BC008567	chromosome 21 open reading frame 7, mRNA (cDNA clone MGC:16916)
C21orf70	BC009341	chromosome 21 open reading frame 70, mRNA (cDNA clone MGC:16722)
C2orf24	BC001393	chromosome 2 open reading frame 24, mRNA (cDNA clone MGC:782)
C2orf25	BC023995	chromosome 2 open reading frame 25, mRNA (cDNA clone MGC:24534)
C2orf28	BC035850	chromosome 2 open reading frame 28, mRNA (cDNA clone MGC:45977)
C2orf33	BC000797	chromosome 2 open reading frame 33, mRNA (cDNA clone MGC:5474)
C3AR1	BC020742	complement component 3a receptor 1, mRNA (cDNA clone MGC:22570)
C3orf1	BC012341	chromosome 3 open reading frame 1, mRNA (cDNA clone MGC:19908)
C3orf28	BC010896	chromosome 3 open reading frame 28, mRNA (cDNA clone MGC:13362)
C3orf37	BC009993	chromosome 3 open reading frame 37, transcript variant 1, mRNA (cDNA clone MGC:16741)
C3orf46	BC042038	chromosome 3 open reading frame 46, transcript variant 1, mRNA (cDNA clone MGC:48649)
C4orf18	BC043193	chromosome 4 open reading frame 18, transcript variant 1, mRNA (cDNA clone MGC:44228)
C5orf15	BC020875	chromosome 5 open reading frame 15, mRNA (cDNA clone MGC:24093)
C5orf4	BC007216	chromosome 5 open reading frame 4, mRNA (cDNA clone MGC:14986)
C6orf105	BC007011	chromosome 6 open reading frame 105, mRNA (cDNA clone MGC:12335)
C6orf106	BC075810	chromosome 6 open reading frame 106, transcript variant 1, mRNA (cDNA clone MGC:87922)
C6orf125	BC006007	chromosome 6 open reading frame 125, mRNA (cDNA clone MGC:14833)
C6orf128	BC026012	chromosome 6 open reading frame 128, mRNA (cDNA clone MGC:33285)
C6orf149	BC009552	chromosome 6 open reading frame 149, mRNA (cDNA clone MGC:10097)
C6orf206	BC029519	chromosome 6 open reading frame 206, mRNA (cDNA clone MGC:33840)
C6orf211	BC011348	chromosome 6 open reading frame 211, mRNA (cDNA clone MGC:16862)
C6orf48	BC017660	chromosome 6 open reading frame 48, mRNA (cDNA clone MGC:14608)
C6orf64	BC022007	chromosome 6 open reading frame 64, mRNA (cDNA clone MGC:26272)
C6orf71	BC056253	chromosome 6 open reading frame 71, mRNA (cDNA clone MGC:62115)
C6orf72	BC014320	chromosome 6 open reading frame 72, mRNA (cDNA clone MGC:22821)
C6orf81	BC033033	chromosome 6 open reading frame 81, mRNA (cDNA clone MGC:33273)
C9orf19	BC017918	chromosome 9 open reading frame 19, mRNA (cDNA clone MGC:23864)
CA14	BC034412	carbonic anhydrase XIV, mRNA (cDNA clone MGC:34392)
CABC1	BC005171	chaperone, ABC1 activity of bc1 complex like (S. pombe), mRNA (cDNA clone MGC:4849)
CACNB1	BC037311	calcium channel, voltage-dependent, beta 1 subunit, transcript variant 1, mRNA (cDNA clone MGC:41896)

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CACYBP	BC067823	calcyclin binding protein, transcript variant 1, mRNA (cDNA clone MGC:87355)
CALB2	BC015484	calbindin 2, 29kDa (calretinin), transcript variant CALB2, mRNA (cDNA clone MGC:8907)
CALM1	BC011834	calmodulin 1 (phosphorylase kinase, delta), mRNA (cDNA clone MGC:20018)
CALM2	BC006464	calmodulin 2 (phosphorylase kinase, delta), mRNA (cDNA clone MGC:2168)
CALM3	BC005137	calmodulin 3 (phosphorylase kinase, delta), mRNA (cDNA clone MGC:1447)
CALR3	BC014595	calreticulin 3, mRNA (cDNA clone MGC:26577)
CAMK2N1	BC020630	calcium/calmodulin-dependent protein kinase II inhibitor 1, mRNA (cDNA clone MGC:22256)
CAP2	BC008481	CAP, adenylate cyclase-associated protein, 2 (yeast), mRNA (cDNA clone MGC:14779)
CAPN10	BC004260	calpain 10, transcript variant 1, mRNA (cDNA clone MGC:10770)
CAPN9	BC027993	calpain 9, mRNA (cDNA clone MGC:39972)
CAPNS2	BC006000	calpain, small subunit 2, mRNA (cDNA clone MGC:14804)
CAPZA1	BC000144	capping protein (actin filament) muscle Z-line, alpha 1, mRNA (cDNA clone MGC:5240)
CAPZA3	BC016745	capping protein (actin filament) muscle Z-line, alpha 3, mRNA (cDNA clone MGC:26617)
CARS	BC002880	cysteinyl-tRNA synthetase, transcript variant 2, mRNA (cDNA clone MGC:11246)
CASP9	BC006463	caspase 9, apoptosis-related cysteine peptidase, transcript variant alpha, mRNA (cDNA clone MGC:2105)
CASQ1	BC022289	calsequestrin 1 (fast-twitch, skeletal muscle), mRNA (cDNA clone MGC:22462)
CASQ2	BC022288	calsequestrin 2 (cardiac muscle), mRNA (cDNA clone MGC:22461)
CATSPER1	BC036522	cation channel, sperm associated 1, mRNA (cDNA clone MGC:33368)
CATSPER2	BC064387	cation channel, sperm associated 2, transcript variant 1, mRNA (cDNA clone MGC:74466)
CAV2	BC005256	caveolin 2, transcript variant 1, mRNA (cDNA clone MGC:12294)
CBR3	BC002812	carbonyl reductase 3, mRNA (cDNA clone MGC:3489)
CBS	BC007257	cystathionine-beta-synthase, mRNA (cDNA clone MGC:15515)
CBX8	BC019289	chromobox homolog 8 (Pc class homolog, Drosophila), mRNA (cDNA clone MGC:4043)
CCDC11	BC030606	coiled-coil domain containing 11, mRNA (cDNA clone MGC:26909)
CCDC14	BC040285	coiled-coil domain containing 14, mRNA (cDNA clone MGC:42614)
CCDC28B	BC002462	coiled-coil domain containing 28B, mRNA (cDNA clone MGC:1203)
CCDC40	BC058288	coiled-coil domain containing 40, mRNA (cDNA clone MGC:61915)
CCDC56	BC002698	coiled-coil domain containing 56, mRNA (cDNA clone MGC:3372)
CCDC68	BC029508	coiled-coil domain containing 68, mRNA (cDNA clone MGC:33688)
CCDC77	BC006444	coiled-coil domain containing 77, mRNA (cDNA clone MGC:13183)
CCL20	BC020698	chemokine (C-C motif) ligand 20, mRNA (cDNA clone MGC:22449)
CCND2	BC010958	cyclin D2, mRNA (cDNA clone MGC:13641)
CCNL2	BC071622	cyclin L2, mRNA (cDNA clone MGC:87744)
CCR6	BC037960	chemokine (C-C motif) receptor 6, mRNA (cDNA clone MGC:46000)

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CCRK	BC002655	cell cycle related kinase, mRNA (cDNA clone MGC:3757)
CCT8	BC012584	chaperonin containing TCP1, subunit 8 (theta), mRNA (cDNA clone MGC:13491)
CD14	BC010507	CD14 antigen, mRNA (cDNA clone MGC:17221)
CD2	BC033583	CD2 antigen (p50), sheep red blood cell receptor, mRNA (cDNA clone MGC:34621)
CD200	BC031103	CD200 antigen, transcript variant 1, mRNA (cDNA clone MGC:33959)
CD207	BC022278	CD207 antigen, langerin, mRNA (cDNA clone MGC:22374)
CD276	BC062581	CD276 antigen, mRNA (cDNA clone MGC:74893)
CD2BP2	BC001947	CD2 antigen (cytoplasmic tail) binding protein 2, mRNA (cDNA clone MGC:4324)
CD300C	BC022279	CD300C antigen, mRNA (cDNA clone MGC:22395)
CD300LB	BC028091	CD300 antigen like family member B, mRNA (cDNA clone MGC:40124)
CD300LG	BC025395	CD300 antigen like family member G, mRNA (cDNA clone MGC:26887)
CD302	BC020646	CD302 antigen, mRNA (cDNA clone MGC:22301)
CD320	BC007083	CD320 antigen, mRNA (cDNA clone MGC:14623)
CD33	BC028152	CD33 antigen (gp67), mRNA (cDNA clone MGC:40026)
CD36	BC008406	CD36 antigen (collagen type I receptor, thrombospondin receptor), transcript variant 3, mRNA (cDNA clone MGC:14530)
CD40	BC012419	CD40 antigen (TNF receptor superfamily member 5), transcript variant 1, mRNA (cDNA clone MGC:9013)
CD44	BC004372	CD44 antigen (Indian blood group), transcript variant 2, mRNA (cDNA clone MGC:10468)
CD46	BC030594	CD46 antigen, complement regulatory protein, transcript variant d, mRNA (cDNA clone MGC:26544)
CD55	BC001288	decay accelerating factor for complement (CD55, Cromer blood group), mRNA (cDNA clone MGC:5192)
CD58	BC005930	CD58 antigen, (lymphocyte function-associated antigen 3), mRNA (cDNA clone MGC:14538)
CD69	BC007037	CD69 antigen (p60, early T-cell activation antigen), mRNA (cDNA clone MGC:12409)
CD79B	BC032651	CD79B antigen (immunoglobulin-associated beta), transcript variant 1, mRNA (cDNA clone MGC:45004)
CD82	BC001821	CD82 antigen, mRNA (cDNA clone MGC:3696)
CD83	BC030830	CD83 antigen (activated B lymphocytes, immunoglobulin superfamily), mRNA (cDNA clone MGC:26322)
CD86	BC040261	CD86 antigen (CD28 antigen ligand 2, B7-2 antigen), transcript variant 1, mRNA (cDNA clone MGC:34413)
CD9	BC011988	CD9 antigen (p24), mRNA (cDNA clone MGC:9067)
CD96	BC020749	CD96 antigen, mRNA (cDNA clone MGC:22596)
CD99	BC002584	CD99 antigen, mRNA (cDNA clone MGC:2282)
CDAN1	BC066640	congenital dyserythropoietic anemia, type I, mRNA (cDNA clone MGC:71365)
CDC25B	BC051711	cell division cycle 25B, transcript variant 3, mRNA (cDNA clone MGC:44614)
CDC34	BC023979	cell division cycle 34, mRNA (cDNA clone MGC:22659)
CDC37L1	BC014133	CDC37 cell division cycle 37 homolog (S. cerevisiae)-like 1, mRNA (cDNA clone MGC:20783)
CDC42EP2	BC022337	CDC42 effector protein (Rho GTPase binding) 2, mRNA (cDNA clone MGC:23686)

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CDC42EP5	BC065910	CDC42 effector protein (Rho GTPase binding) 5, mRNA (cDNA clone MGC:71153)
CDC91L1	BC030512	CDC91 cell division cycle 91-like 1 (<i>S. cerevisiae</i>), mRNA (cDNA clone MGC:40420)
CDCA1	BC008489	cell division cycle associated 1, transcript variant 2, mRNA (cDNA clone MGC:14815)
CDCA7L	BC039823	cell division cycle associated 7-like, mRNA (cDNA clone MGC:48716)
CDCA8	BC000703	cell division cycle associated 8, mRNA (cDNA clone MGC:964)
CDH18	BC031051	cadherin 18, type 2, mRNA (cDNA clone MGC:33098)
CDH19	BC015877	cadherin 19, type 2, mRNA (cDNA clone MGC:27490)
CDH2	BC036470	cadherin 2, type 1, N-cadherin (neuronal), mRNA (cDNA clone MGC:41765)
CDH3	BC041846	cadherin 3, type 1, P-cadherin (placental), mRNA (cDNA clone MGC:43574)
CDH6	BC000019	cadherin 6, type 2, K-cadherin (fetal kidney), mRNA (cDNA clone MGC:1470)
CDK2	BC003065	cyclin-dependent kinase 2, transcript variant 1, mRNA (cDNA clone MGC:1784)
CDK2AP2	BC016704	CDK2-associated protein 2, mRNA (cDNA clone MGC:22912)
CDK3	BC047782	cDNA clone MGC:54300 complete cds
CDK5	BC005115	cyclin-dependent kinase 5, mRNA (cDNA clone MGC:1469)
CDK5R1	BC030792	cyclin-dependent kinase 5, regulatory subunit 1 (p35), mRNA (cDNA clone MGC:33831)
CDK7	BC005298	cyclin-dependent kinase 7 (MO15 homolog, <i>Xenopus laevis</i> , cdk-activating kinase), mRNA (cDNA clone MGC:12365)
CDK9	BC001968	cyclin-dependent kinase 9 (CDC2-related kinase), mRNA (cDNA clone MGC:5166)
CDKL3	BC041799	cyclin-dependent kinase-like 3, mRNA (cDNA clone MGC:41758)
CDKL5	BC036091	cyclin-dependent kinase-like 5, mRNA (cDNA clone MGC:33802)
CDKN1B	BC001971	cyclin-dependent kinase inhibitor 1B (p27, Kip1), mRNA (cDNA clone MGC:5304)
CDKN2B	BC014469	cyclin-dependent kinase inhibitor 2B (p15, inhibits CDK4), transcript variant 1, mRNA (cDNA clone MGC:23110)
CDO1	BC024241	cysteine dioxygenase, type I, mRNA (cDNA clone MGC:33161)
CDRT4	BC029542	CMT1A duplicated region transcript 4, mRNA (cDNA clone MGC:33988)
CDX2	BC014461	caudal type homeobox transcription factor 2, mRNA (cDNA clone MGC:23081)
CEACAM1	BC014473	cDNA clone MGC:23120 complete cds
CENTA2	BC033758	centaurin, alpha 2, mRNA (cDNA clone MGC:45054)
CEP55	BC008947	centrosomal protein 55kDa, mRNA (cDNA clone MGC:3422)
CFB	BC007990	complement factor B, mRNA (cDNA clone MGC:4445)
CFDP1	BC000991	craniofacial development protein 1, mRNA (cDNA clone MGC:5126)
CFI	BC020718	complement factor I, mRNA (cDNA clone MGC:22501)
CFLAR	BC001602	CASP8 and FADD-like apoptosis regulator, mRNA (cDNA clone MGC:2044)
CHCHD6	BC006123	coiled-coil-helix-coiled-coil-helix domain containing 6, mRNA (cDNA clone MGC:13016)

Gene symbol	GenBank accession number	Function
CHGB	BC000375	chromogranin B (secretogranin 1), mRNA (cDNA clone MGC:8377)
CHI3L1	BC008568	chitinase 3-like 1 (cartilage glycoprotein-39), mRNA (cDNA clone MGC:17093)
CHI3L2	BC011460	chitinase 3-like 2, transcript variant 1, mRNA (cDNA clone MGC:17183)
CHID1	BC000001	chitinase domain containing 1, mRNA (cDNA clone MGC:3234)
CHMP6	BC010108	chromatin modifying protein 6, mRNA (cDNA clone MGC:19477)
CHRM5	BC041805	cholinergic receptor, muscarinic 5, mRNA (cDNA clone MGC:41838)
CHRNA3	BC002996	cholinergic receptor, nicotinic, alpha 3, mRNA (cDNA clone MGC:3862)
CHRNA6	BC014456	cholinergic receptor, nicotinic, alpha 6, mRNA (cDNA clone MGC:23050)
CHRNA7	BC037571	cholinergic receptor, nicotinic, alpha 7, mRNA (cDNA clone MGC:45359)
CHRNB1	BC011371	cholinergic receptor, nicotinic, beta 1 (muscle), mRNA (cDNA clone MGC:9005)
CHST10	BC010441	carbohydrate sulfotransferase 10, mRNA (cDNA clone MGC:17148)
CHST11	BC013315	carbohydrate (chondroitin 4) sulfotransferase 11, mRNA (cDNA clone MGC:13319)
CHST12	BC002918	carbohydrate (chondroitin 4) sulfotransferase 12, mRNA (cDNA clone MGC:10632)
CHST7	BC045537	carbohydrate (N-acetylglucosamine 6-O) sulfotransferase 7, mRNA (cDNA clone MGC:57153)
CIAPIN1	BC071740	cytokine induced apoptosis inhibitor 1, mRNA (cDNA clone MGC:88090)
CIB1	BC000846	calcium and integrin binding 1 (calmyrin), mRNA (cDNA clone MGC:5148)
CIRBP	BC000901	cold inducible RNA binding protein, mRNA (cDNA clone MGC:5232)
CKLF	BC004380	chemokine-like factor, transcript variant 1, mRNA (cDNA clone MGC:10658)
CKS1B	BC070319	CDC28 protein kinase regulatory subunit 1B, mRNA (cDNA clone MGC:88322)
CLCC1	BC002939	chloride channel CLIC-like 1, mRNA (cDNA clone MGC:11343)
CLCNKB	BC020873	chloride channel Kb, mRNA (cDNA clone MGC:24087)
CLDN10	BC010920	claudin 10, transcript variant 2, mRNA (cDNA clone MGC:13492)
CLDN12	BC068532	claudin 12, mRNA (cDNA clone MGC:87367)
CLDN2	BC014424	claudin 2, mRNA (cDNA clone MGC:20191)
CLDN20	BC020838	claudin 20, mRNA (cDNA clone MGC:23949)
CLDN3	BC016056	claudin 3, mRNA (cDNA clone MGC:23079)
CLDN4	BC000671	claudin 4, mRNA (cDNA clone MGC:1778)
CLDN5	BC032363	claudin 5 (transmembrane protein deleted in velocardiofacial syndrome), mRNA (cDNA clone MGC:40358)
CLDN7	BC001055	claudin 7, mRNA (cDNA clone MGC:1858)
CLDND1	BC013610	claudin domain containing 1, mRNA (cDNA clone MGC:9861)
CLEC12A	BC063424	C-type lectin domain family 12, member A, mRNA (cDNA clone MGC:70602)
CLEC1B	BC029554	C-type lectin domain family 1, member B, mRNA (cDNA clone MGC:39478)
CLGN	BC028357	calmegin, mRNA (cDNA clone MGC:26321)
CLIC1	BC064527	chloride intracellular channel 1, mRNA (cDNA clone MGC:74817)

Gene symbol	GenBank accession number	Function
CLIC3	BC007012	chloride intracellular channel 3, mRNA (cDNA clone MGC:12337)
CLIC4	BC012444	chloride intracellular channel 4, mRNA (cDNA clone MGC:8812)
CLIC5	BC035968	chloride intracellular channel 5, mRNA (cDNA clone MGC:32580)
CLPP	BC002956	ClpP caseinolytic peptidase, ATP-dependent, proteolytic subunit homolog (E. coli), mRNA (cDNA clone MGC:1379)
CLPTM1	BC004865	cleft lip and palate associated transmembrane protein 1, mRNA (cDNA clone MGC:10593)
CLSTN1	BC033902	calsynenin 1, transcript variant 2, mRNA (cDNA clone MGC:33741)
CMAH	BC022302	cytidine monophosphate-N-acetylneuraminic acid hydroxylase (CMP-N-acetylneuraminate monooxygenase), mRNA (cDNA clone MGC:22537)
CMKOR1	BC036661	chemokine orphan receptor 1, mRNA (cDNA clone MGC:33224)
CMTM8	BC041390	CKLF-like MARVEL transmembrane domain containing 8, mRNA (cDNA clone MGC:43963)
CNDP2	BC001375	CNDP dipeptidase 2 (metallopeptidase M20 family), mRNA (cDNA clone MGC:928)
CNOT8	BC017366	CCR4-NOT transcription complex, subunit 8, mRNA (cDNA clone MGC:1191)
CNTN1	BC036569	contactin 1, mRNA (cDNA clone MGC:41894)
COG3	BC038953	component of oligomeric golgi complex 3, mRNA (cDNA clone MGC:47545)
COG6	BC051723	component of oligomeric golgi complex 6, mRNA (cDNA clone MGC:48438)
COIL	BC010385	coilin, mRNA (cDNA clone MGC:13569)
COL1A1	BC036531	collagen, type I, alpha 1, mRNA (cDNA clone MGC:33668)
COL20A1	BC043183	collagen, type XX, alpha 1, mRNA (cDNA clone MGC:44186)
COL25A1	BC036669	collagen, type XXV, alpha 1, mRNA (cDNA clone MGC:33431)
COL4A3BP	BC000102	collagen, type IV, alpha 3 (Goodpasture antigen) binding protein, mRNA (cDNA clone MGC:1410)
COL9A1	BC063646	collagen, type IX, alpha 1, transcript variant 2, mRNA (cDNA clone MGC:74763)
COLEC11	BC000078	collectin sub-family member 11, transcript variant 1, mRNA (cDNA clone MGC:3279)
COPB	BC037280	coatomer protein complex, subunit beta, mRNA (cDNA clone MGC:33032)
COPS8	BC003090	COP9 constitutive photomorphogenic homolog subunit 8 (Arabidopsis), transcript variant 1, mRNA (cDNA clone MGC:1297)
COPZ1	BC002849	coatomer protein complex, subunit zeta 1, mRNA (cDNA clone MGC:3349)
COPZ2	BC015924	coatomer protein complex, subunit zeta 2, mRNA (cDNA clone MGC:23008)
COQ10B	BC022453	coenzyme Q10 homolog B (yeast), mRNA (cDNA clone MGC:26023)
COQ2	BC020728	coenzyme Q2 homolog, prenyltransferase (yeast), mRNA (cDNA clone MGC:22534)
COQ7	BC003185	coenzyme Q7 homolog, ubiquinone (yeast), mRNA (cDNA clone MGC:671)
COQ9	BC064946	coenzyme Q9 homolog (yeast), mRNA (cDNA clone MGC:75177)
CORO2B	BC026335	coronin, actin binding protein, 2B, mRNA (cDNA clone MGC:26435)
CORT	BC029430	apoptosis-inducing, TAF9-like domain 1, mRNA (cDNA clone MGC:32686)

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COX11	BC005895	COX11 homolog, cytochrome c oxidase assembly protein (yeast), mRNA (cDNA clone MGC:14469)
COX17	BC010933	COX17 homolog, cytochrome c oxidase assembly protein (yeast), mRNA (cDNA clone MGC:13542)
COX4NB	BC005886	COX4 neighbor, mRNA (cDNA clone MGC:4817)
COX5A	BC024240	cytochrome c oxidase subunit Va, mRNA (cDNA clone MGC:33109)
COX6A2	BC029818	cytochrome c oxidase subunit VIa polypeptide 2, mRNA (cDNA clone MGC:34466)
COX6B1	BC002478	cytochrome c oxidase subunit VIb polypeptide 1 (ubiquitous), mRNA (cDNA clone MGC:1153)
COX6B2	BC064548	cytochrome c oxidase subunit VIb polypeptide 2 (testis), mRNA (cDNA clone MGC:74620)
COX6C	BC000187	cytochrome c oxidase subunit VIc, mRNA (cDNA clone MGC:1520)
COX7A1	BC002757	cytochrome c oxidase subunit VIIa polypeptide 1 (muscle), mRNA (cDNA clone MGC:3716)
COX7A2L	BC007095	cytochrome c oxidase subunit VIIa polypeptide 2 like, mRNA (cDNA clone MGC:14718)
COX7B	BC018386	cytochrome c oxidase subunit VIIb, mRNA (cDNA clone MGC:9065)
COX7B2	BC035923	cytochrome c oxidase subunit VIIb2, mRNA (cDNA clone MGC:46258)
COX7C	BC007498	cytochrome c oxidase subunit VIIc, mRNA (cDNA clone MGC:3715)
COX8A	BC063025	cytochrome c oxidase subunit 8A (ubiquitous), mRNA (cDNA clone MGC:70795)
CPA3	BC012613	carboxypeptidase A3 (mast cell), mRNA (cDNA clone MGC:13637)
CPD	BC045549	carboxypeptidase D, mRNA (cDNA clone MGC:57215)
CPEB3	BC036444	cytoplasmic polyadenylation element binding protein 3, mRNA (cDNA clone MGC:26333)
CPNE1	BC012787	RNA binding motif protein 12, mRNA (cDNA clone MGC:16487)
CPNE6	BC018046	copine VI (neuronal), mRNA (cDNA clone MGC:26354)
CPSF3L	BC007978	cleavage and polyadenylation specific factor 3-like, mRNA (cDNA clone MGC:14999)
CPT1A	BC000185	carnitine palmitoyltransferase 1A (liver), transcript variant 2, mRNA (cDNA clone MGC:1772)
CRABP2	BC001109	cellular retinoic acid binding protein 2, mRNA (cDNA clone MGC:1183)
CRB3	BC018409	crumbs homolog 3 (Drosophila), transcript variant 3, mRNA (cDNA clone MGC:17303)
CRISP2	BC022011	cysteine-rich secretory protein 2, mRNA (cDNA clone MGC:26358)
CRNN	BC030807	cornulin, mRNA (cDNA clone MGC:22281)
CRTAP	BC008745	cartilage associated protein, mRNA (cDNA clone MGC:1926)
CRYAB	BC007008	crystallin, alpha B, mRNA (cDNA clone MGC:12326)
CRYM	BC018061	crystallin, mu, transcript variant 1, mRNA (cDNA clone MGC:26518)
CRYZL1	BC033023	crystallin, zeta (quinone reductase)-like 1, transcript variant 1, mRNA (cDNA clone MGC:32911)
CSDA	BC015564	cold shock domain protein A, mRNA (cDNA clone MGC:12695)
CSF2RA	BC002635	colony stimulating factor 2 receptor, alpha, low-affinity (granulocyte-macrophage), transcript variant 1, mRNA (cDNA clone MGC:3848)
CSF3R	BC053585	colony stimulating factor 3 receptor (granulocyte), transcript variant 1, mRNA (cDNA clone MGC:61541)
CSNK1D	BC003558	casein kinase 1, delta, transcript variant 1, mRNA (cDNA clone MGC:1768)

Gene symbol	GenBank accession number	Function
CSNK2A1	BC071167	casein kinase 2, alpha 1 polypeptide, transcript variant 2, mRNA (cDNA clone MGC:88038)
CSRP3	BC057221	cysteine and glycine-rich protein 3 (cardiac LIM protein), mRNA (cDNA clone MGC:61993)
CST1	BC021225	cystatin SN, mRNA (cDNA clone MGC:12741)
CST2	BC062679	cystatin SA, mRNA (cDNA clone MGC:71924)
CST4	BC065714	cystatin S, mRNA (cDNA clone MGC:71923)
CST5	BC062678	cystatin D, mRNA (cDNA clone MGC:71922)
CSTA	BC010379	cystatin A (stefin A), mRNA (cDNA clone MGC:13552)
CTHRC1	BC014245	collagen triple helix repeat containing 1, mRNA (cDNA clone MGC:20766)
CTNND1	BC075795	catenin (cadherin-associated protein), delta 1, mRNA (cDNA clone MGC:87286)
CTNS	BC032850	cystinosis, nephropathic, transcript variant 1, mRNA (cDNA clone MGC:33097)
CTSB	BC010240	cathepsin B, transcript variant 4, mRNA (cDNA clone MGC:17266)
CTSD	BC016320	cathepsin D (lysosomal aspartyl peptidase), mRNA (cDNA clone MGC:2311)
CTSH	BC002479	cathepsin H, transcript variant 1, mRNA (cDNA clone MGC:1519)
CTSL	BC012612	cathepsin L, transcript variant 1, mRNA (cDNA clone MGC:13635)
CUL4A	BC008308	cullin 4A, transcript variant 1, mRNA (cDNA clone MGC:15238)
CUTA	BC005890	cutA divalent cation tolerance homolog (E. coli), transcript variant 4, mRNA (cDNA clone MGC:833)
CXADR	BC003684	coxsackie virus and adenovirus receptor, mRNA (cDNA clone MGC:5086)
CXCL14	BC003513	chemokine (C-X-C motif) ligand 14, mRNA (cDNA clone MGC:10687)
CXXC5	BC002490	cDNA clone MGC:915 complete cds
CYB561	BC002976	cytochrome b-561, mRNA (cDNA clone MGC:2190)
CYB561D2	BC047691	cytochrome b-561 domain containing 2, mRNA (cDNA clone MGC:51893)
CYB5A	BC015182	cytochrome b5 type A (microsomal), transcript variant 1, mRNA (cDNA clone MGC:10230)
CYB5B	BC004373	cytochrome b5 type B (outer mitochondrial membrane), mRNA (cDNA clone MGC:10477)
CYB5R2	BC001346	cytochrome b5 reductase 2, transcript variant 2, mRNA (cDNA clone MGC:4869)
CYBA	BC006465	cytochrome b-245, alpha polypeptide, mRNA (cDNA clone MGC:2279)
CYBRD1	BC065290	cytochrome b reductase 1, mRNA (cDNA clone MGC:74716)
CYC1	BC015616	cytochrome c-1, mRNA (cDNA clone MGC:23492)
CYHR1	BC065484	cysteine/histidine-rich 1, mRNA (cDNA clone MGC:71403)
CYP19A1	BC035959	cytochrome P450, family 19, subfamily A, polypeptide 1, transcript variant 1, mRNA (cDNA clone MGC:32521)
CYP1B1	BC012049	cytochrome P450, family 1, subfamily B, polypeptide 1, mRNA (cDNA clone MGC:19842)
CYP2C8	BC020596	cytochrome P450, family 2, subfamily C, polypeptide 8, transcript variant Hp1-1, mRNA (cDNA clone MGC:22146)
CYP2J2	BC032594	cytochrome P450, family 2, subfamily J, polypeptide 2, mRNA (cDNA clone MGC:44831)

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CYP2S1	BC033691	cytochrome P450, family 2, subfamily S, polypeptide 1, mRNA (cDNA clone MGC:44853)
CYP39A1	BC010358	cytochrome P450, family 39, subfamily A, polypeptide 1, mRNA (cDNA clone MGC:13370)
CYP3A5	BC033862	cytochrome P450, family 3, subfamily A, polypeptide 5, mRNA (cDNA clone MGC:44864)
CYP46A1	BC022539	cytochrome P450, family 46, subfamily A, polypeptide 1, mRNA (cDNA clone MGC:26700)
CYP4A11	BC041158	cytochrome P450, family 4, subfamily A, polypeptide 11, mRNA (cDNA clone MGC:48730)
CYP4B1	BC017758	cytochrome P450, family 4, subfamily B, polypeptide 1, mRNA (cDNA clone MGC:22150)
CYP4F11	BC016853	cytochrome P450, family 4, subfamily F, polypeptide 11, mRNA (cDNA clone MGC:16892)
CYP4F12	BC035350	cytochrome P450, family 4, subfamily F, polypeptide 12, mRNA (cDNA clone MGC:34177)
CYP51A1	BC032322	cytochrome P450, family 51, subfamily A, polypeptide 1, mRNA (cDNA clone MGC:40249)
CYSLTR1	BC035750	cysteinyl leukotriene receptor 1, mRNA (cDNA clone MGC:46139)
DAD1	BC009798	defender against cell death 1, mRNA (cDNA clone MGC:13634)
DARC	BC017817	Duffy blood group, mRNA (cDNA clone MGC:22402)
DCI	BC019316	dodecenoyl-Coenzyme A delta isomerase (3,2 trans-enoyl-Coenzyme A isomerase), mRNA (cDNA clone MGC:4344)
DCN	BC005322	decorin, transcript variant A1, mRNA (cDNA clone MGC:12406)
DCP1B	BC043437	DCP1 decapping enzyme homolog B (S. cerevisiae), mRNA (cDNA clone MGC:44405)
DCTN4	BC026323	dynactin 4 (p62), mRNA (cDNA clone MGC:26190)
DCTN5	BC004191	dynactin 5 (p25), mRNA (cDNA clone MGC:3248)
DCUN1D2	BC056669	DCN1, defective in cullin neddylation 1, domain containing 2 (S. cerevisiae), transcript variant 2, mRNA (cDNA clone MGC:61919)
DDAH2	BC001435	dimethylarginine dimethylaminohydrolase 2, mRNA (cDNA clone MGC:1351)
DDI2	BC006011	DDI1, DNA-damage inducible 1, homolog 2 (S. cerevisiae), mRNA (cDNA clone MGC:14844)
DDR1	BC070070	discoidin domain receptor family, member 1, mRNA (cDNA clone MGC:87336)
DDX39	BC001009	DEAD (Asp-Glu-Ala-Asp) box polypeptide 39, transcript variant 1, mRNA (cDNA clone MGC:8417)
DDX47	BC068009	DEAD (Asp-Glu-Ala-Asp) box polypeptide 47, transcript variant 1, mRNA (cDNA clone MGC:74686)
DDX48	BC004386	DEAD (Asp-Glu-Ala-Asp) box polypeptide 48, mRNA (cDNA clone MGC:10862)
DEF6	BC017504	cDNA clone MGC:23250 complete cds
DERL2	BC010890	Der1-like domain family, member 2, mRNA (cDNA clone MGC:13338)
DFFA	BC007721	DNA fragmentation factor, 45kDa, alpha polypeptide, transcript variant 1, mRNA (cDNA clone MGC:12704)
DGAT2	BC015234	diacylglycerol O-acyltransferase homolog 2 (mouse), mRNA (cDNA clone MGC:17861)
DGKA	BC031870	diacylglycerol kinase, alpha 80kDa, mRNA (cDNA clone MGC:42356)
DHCR7	BC000054	7-dehydrocholesterol reductase, mRNA (cDNA clone MGC:1760)
DHODH	BC065245	dihydroorotate dehydrogenase, mRNA (cDNA clone MGC:70636)
DIRAS1	BC030660	DIRAS family, GTP-binding RAS-like 1, mRNA (cDNA clone MGC:33391)

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DKK3	BC007660	dickkopf homolog 3 (<i>Xenopus laevis</i>), mRNA (cDNA clone MGC:1123)
DLK1	BC014015	delta-like 1 homolog (<i>Drosophila</i>), mRNA (cDNA clone MGC:20310)
DLL3	BC000218	delta-like 3 (<i>Drosophila</i>), transcript variant 1, mRNA (cDNA clone MGC:652)
DNAJB12	BC064920	DnaJ (Hsp40) homolog, subfamily B, member 12, mRNA (cDNA clone MGC:74986)
DNAJB14	BC022248	DnaJ (Hsp40) homolog, subfamily B, member 14, transcript variant 1, mRNA (cDNA clone MGC:22187)
DNAJB8	BC029521	DnaJ (Hsp40) homolog, subfamily B, member 8, mRNA (cDNA clone MGC:33884)
DNAJC16	BC047363	DnaJ (Hsp40) homolog, subfamily C, member 16, mRNA (cDNA clone MGC:48460)
DNAJC4	BC044584	DnaJ (Hsp40) homolog, subfamily C, member 4, mRNA (cDNA clone MGC:57189)
DNAJC5B	BC016742	DnaJ (Hsp40) homolog, subfamily C, member 5 beta, mRNA (cDNA clone MGC:26226)
DNASE1	BC029437	deoxyribonuclease I, mRNA (cDNA clone MGC:32697)
DNASE1L1	BC028092	deoxyribonuclease I-like 1, mRNA (cDNA clone MGC:39969)
DNASE2	BC065209	deoxyribonuclease II, lysosomal, mRNA (cDNA clone MGC:75162)
DNMT3L	BC002560	DNA (cytosine-5-)-methyltransferase 3-like, transcript variant 2, mRNA (cDNA clone MGC:1090)
DNPEP	BC000653	aspartyl aminopeptidase, mRNA (cDNA clone MGC:899)
DOK4	BC003541	docking protein 4, mRNA (cDNA clone MGC:10806)
DPEP1	BC017023	dipeptidase 1 (renal), mRNA (cDNA clone MGC:8990)
DPP10	BC030832	dipeptidyl-peptidase 10, transcript variant 1, mRNA (cDNA clone MGC:26674)
DSCR1	BC002864	Down syndrome critical region gene 1, mRNA (cDNA clone MGC:10263)
DSCR9	BC066653	Down syndrome critical region gene 9, mRNA (cDNA clone MGC:70520)
DSPG3	BC030958	dermatan sulfate proteoglycan 3, mRNA (cDNA clone MGC:32553)
DTNA	BC005300	dystrobrevin, alpha, mRNA (cDNA clone MGC:12368)
DTX3L	BC060509	deltex 3-like (<i>Drosophila</i>), mRNA (cDNA clone MGC:62133)
DTYMK	BC001827	deoxythymidylate kinase (thymidylate kinase), mRNA (cDNA clone MGC:3923)
DUS1L	BC064918	dihydrouridine synthase 1-like (<i>S. cerevisiae</i>), mRNA (cDNA clone MGC:70546)
DUS3L	BC009973	dihydrouridine synthase 3-like (<i>S. cerevisiae</i>), mRNA (cDNA clone MGC:14981)
DUSP12	BC006286	dual specificity phosphatase 12, mRNA (cDNA clone MGC:10337)
DUSP13	BC009778	dual specificity phosphatase 13, mRNA (cDNA clone MGC:13471)
DYM	BC064394	dymeclin, mRNA (cDNA clone MGC:70355)
DYNLT1	BC029412	dynein, light chain, Tctex-type 1, mRNA (cDNA clone MGC:32652)
DYRK4	BC031244	dual-specificity tyrosine-(Y)-phosphorylation regulated kinase 4, mRNA (cDNA clone MGC:39640)
DZIP1	BC041804	DAZ interacting protein 1, transcript variant 2, mRNA (cDNA clone MGC:41819)
E2F4	BC033180	E2F transcription factor 4, p107/p130-binding, mRNA (cDNA clone MGC:45817)
EBAG9	BC005249	estrogen receptor binding site associated, antigen, 9, transcript variant 1, mRNA (cDNA clone MGC:12283)

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EBI2	BC020752	Epstein-Barr virus induced gene 2 (lymphocyte-specific G protein-coupled receptor), mRNA (cDNA clone MGC:22599)
EBP	BC046501	emopamil binding protein (sterol isomerase), mRNA (cDNA clone MGC:29952)
ECEL1P2	BC067110	endothelin converting enzyme-like 1, pseudogene 2, mRNA (cDNA clone MGC:75260)
EDG1	BC018650	endothelial differentiation, sphingolipid G-protein-coupled receptor, 1, mRNA (cDNA clone MGC:22155)
EDG2	BC036034	endothelial differentiation, lysophosphatidic acid G-protein-coupled receptor, 2, transcript variant 2, mRNA (cDNA clone MGC:33157)
EDNRA	BC022511	endothelin receptor type A, mRNA (cDNA clone MGC:26548)
EDNRB	BC014472	endothelin receptor type B, mRNA (cDNA clone MGC:23118)
EEFSEC	BC007933	eukaryotic elongation factor, selenocysteine-tRNA-specific, mRNA (cDNA clone MGC:14173)
EFEMP2	BC010456	EGF-containing fibulin-like extracellular matrix protein 2, mRNA (cDNA clone MGC:16972)
EFNA3	BC017722	ephrin-A3, mRNA (cDNA clone MGC:21335)
EFNB3	BC042944	ephrin-B3, mRNA (cDNA clone MGC:41892)
EFTUD2	BC002360	elongation factor Tu GTP binding domain containing 2, mRNA (cDNA clone MGC:8581)
EGFL9	BC000230	EGF-like-domain, multiple 9, mRNA (cDNA clone MGC:2487)
EHD2	BC014445	EH-domain containing 2, mRNA (cDNA clone MGC:22994)
EHMT2	BC018718	euchromatic histone-lysine N-methyltransferase 2, mRNA (cDNA clone MGC:31802)
EIF2S2	BC000934	eukaryotic translation initiation factor 2, subunit 2 beta, 38kDa, mRNA (cDNA clone MGC:5085)
EIF3S4	BC008469	eukaryotic translation initiation factor 3, subunit 4 delta, 44kDa, mRNA (cDNA clone MGC:14741)
EIF3S5	BC000490	eukaryotic translation initiation factor 3, subunit 5 epsilon, 47kDa, mRNA (cDNA clone MGC:8365)
EIF3S8	BC071705	eukaryotic translation initiation factor 3, subunit 8, 110kDa, transcript variant 2, mRNA (cDNA clone MGC:87986)
EIF4E	BC012611	eukaryotic translation initiation factor 4E, mRNA (cDNA clone MGC:13631)
EIF4E2	BC000360	eukaryotic translation initiation factor 4E-like 3, mRNA (cDNA clone MGC:8672)
ELAC1	BC014624	elaC homolog 1 (E. coli), mRNA (cDNA clone MGC:4455)
ELF3	BC003569	E74-like factor 3 (ets domain transcription factor, epithelial-specific), mRNA (cDNA clone MGC:2088)
ELOF1	BC007516	elongation factor 1 homolog (S. cerevisiae), mRNA (cDNA clone MGC:4549)
ELOVL1	BC000618	elongation of very long chain fatty acids (FEN1/Elo2, SUR4/Elo3, yeast)-like 1, mRNA (cDNA clone MGC:701)
ELOVL4	BC038506	elongation of very long chain fatty acids (FEN1/Elo2, SUR4/Elo3, yeast)-like 4, mRNA (cDNA clone MGC:33699)
EMD	BC000738	emerin (Emery-Dreifuss muscular dystrophy), mRNA (cDNA clone MGC:2126)
EMG1	BC055314	EMG1 nucleolar protein homolog (S. cerevisiae), mRNA (cDNA clone MGC:62024)
EMP3	BC009718	epithelial membrane protein 3, mRNA (cDNA clone MGC:9511)

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ENO1	BC009912	enolase 1, (alpha), mRNA (cDNA clone MGC:2689)
ENO2	BC002745	enolase 2 (gamma, neuronal), mRNA (cDNA clone MGC:3520)
ENPP2	BC034961	ectonucleotide pyrophosphatase/phosphodiesterase 2 (autotaxin), mRNA (cDNA clone MGC:26529)
ENPP4	BC018054	ectonucleotide pyrophosphatase/phosphodiesterase 4 (putative function), mRNA (cDNA clone MGC:26424)
ENPP5	BC027615	ectonucleotide pyrophosphatase/phosphodiesterase 5 (putative function), mRNA (cDNA clone MGC:27041)
ENSA	BC004461	endosulfine alpha, transcript variant 3, mRNA (cDNA clone MGC:4319)
ENTPD3	BC029869	ectonucleoside triphosphate diphosphohydrolase 3, mRNA (cDNA clone MGC:34514)
ENTPD4	BC034477	ectonucleoside triphosphate diphosphohydrolase 4, mRNA (cDNA clone MGC:26335)
EPIM	BC047496	epimorphin, transcript variant 1, mRNA (cDNA clone MGC:51014)
EPS8	BC030010	epidermal growth factor receptor pathway substrate 8, mRNA (cDNA clone MGC:26317)
ERCC8	BC009793	excision repair cross-complementing rodent repair deficiency, complementation group 8, transcript variant 3, mRNA (cDNA clone MGC:13580)
ERGIC1	BC014490	endoplasmic reticulum-golgi intermediate compartment (ERGIC) 1, transcript variant 1, mRNA (cDNA clone MGC:23224)
ERGIC3	BC009765	ERGIC and golgi 3, transcript variant 2, mRNA (cDNA clone MGC:13325)
ERO1L	BC012941	ERO1-like (S. cerevisiae), mRNA (cDNA clone MGC:17305)
ESAM	BC016868	endothelial cell adhesion molecule, mRNA (cDNA clone MGC:17599)
ESD	BC001169	esterase D/formylglutathione hydrolase, mRNA (cDNA clone MGC:1873)
ETFDH	BC011890	electron-transferring-flavoprotein dehydrogenase, mRNA (cDNA clone MGC:20062)
ETNK2	BC010082	ethanolamine kinase 2, mRNA (cDNA clone MGC:19512)
ETS2	BC042954	v-ets erythroblastosis virus E26 oncogene homolog 2 (avian), mRNA (cDNA clone MGC:43964)
ETV3	BC022868	ets variant gene 3, mRNA (cDNA clone MGC:23753)
EVA1	BC017774	epithelial V-like antigen 1, transcript variant 2, mRNA (cDNA clone MGC:22243)
EVI2A	BC035572	ecotropic viral integration site 2A, transcript variant 2, mRNA (cDNA clone MGC:45142)
EVI2B	BC005926	ecotropic viral integration site 2B, mRNA (cDNA clone MGC:14529)
EXO1	BC007491	exonuclease 1, transcript variant 2, mRNA (cDNA clone MGC:1908)
EXOC6	BC028395	exocyst complex component 6, transcript variant 1, mRNA (cDNA clone MGC:33397)
EXT2	BC068545	exostoses (multiple) 2, transcript variant 2, mRNA (cDNA clone MGC:87428)
EXTL1	BC065528	exostoses (multiple)-like 1, mRNA (cDNA clone MGC:70794)
EXTL2	BC036015	exostoses (multiple)-like 2, transcript variant 2, mRNA (cDNA clone MGC:32939)
F3	BC011029	coagulation factor III (thromboplastin, tissue factor), mRNA (cDNA clone MGC:13630)
FA2H	BC004263	fatty acid 2-hydroxylase, mRNA (cDNA clone MGC:10804)
FABP6	BC022489	fatty acid binding protein 6, ileal (gastrotropin), mRNA (cDNA clone MGC:26343)
FADS2	BC009011	fatty acid desaturase 2, mRNA (cDNA clone MGC:17124)

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FADS3	BC004901	fatty acid desaturase 3, mRNA (cDNA clone MGC:4158)
FAIM2	BC000051	Fas apoptotic inhibitory molecule 2, mRNA (cDNA clone MGC:1113)
FAM104A	BC025238	family with sequence similarity 104, member A, mRNA (cDNA clone MGC:39091)
FAM18B	BC008430	family with sequence similarity 18, member B, mRNA (cDNA clone MGC:14598)
FAM26B	BC000039	family with sequence similarity 26, member B, mRNA (cDNA clone MGC:1824)
FAM32A	BC017286	family with sequence similarity 32, member A, mRNA (cDNA clone MGC:29653)
FAM44C	BC035018	family with sequence similarity 44, member C, mRNA (cDNA clone MGC:33543)
FAM54B	BC017175	family with sequence similarity 54, member B, mRNA (cDNA clone MGC:1164)
FAM57B	BC007892	family with sequence similarity 57, member B, mRNA (cDNA clone MGC:14223)
FAM62A	BC004998	family with sequence similarity 62 (C2 domain containing), member A, mRNA (cDNA clone MGC:4422)
FAM86A	BC010084	family with sequence similarity 86, member A, transcript variant 1, mRNA (cDNA clone MGC:19636)
FAM89A	BC009447	family with sequence similarity 89, member A, mRNA (cDNA clone MGC:15887)
FANCL	BC054517	Fanconi anemia, complementation group L, mRNA (cDNA clone MGC:60295)
FARSLA	BC006495	phenylalanine-tRNA synthetase-like, alpha subunit, mRNA (cDNA clone MGC:1507)
FARSLB	BC017783	phenylalanine-tRNA synthetase-like, beta subunit, mRNA (cDNA clone MGC:22277)
FASLG	BC017502	Fas ligand (TNF superfamily, member 6), mRNA (cDNA clone MGC:23109)
FATE1	BC022064	fetal and adult testis expressed 1, mRNA (cDNA clone MGC:32906)
FBL	BC019260	fibrillarin, mRNA (cDNA clone MGC:2347)
FBLN1	BC022497	fibulin 1, transcript variant C, mRNA (cDNA clone MGC:26399)
FBLN2	BC051690	fibulin 2, transcript variant 2, mRNA (cDNA clone MGC:51013)
FBLN5	BC022280	fibulin 5, mRNA (cDNA clone MGC:22412)
FBXL12	BC001586	F-box and leucine-rich repeat protein 12, mRNA (cDNA clone MGC:1070)
FBXL16	BC036680	F-box and leucine-rich repeat protein 16, mRNA (cDNA clone MGC:33974)
FBXO15	BC029579	F-box protein 15, mRNA (cDNA clone MGC:39671)
FBXO2	BC025233	F-box protein 2, mRNA (cDNA clone MGC:39079)
FBXO44	BC007832	F-box protein 44, transcript variant 3, mRNA (cDNA clone MGC:14140)
FBXO5	BC018905	F-box protein 5, mRNA (cDNA clone MGC:10344)
FBXO6	BC020880	F-box protein 6, mRNA (cDNA clone MGC:24107)
FBXW9	BC004290	F-box and WD-40 domain protein 9, mRNA (cDNA clone MGC:10870)
FCER1G	BC033872	Fc fragment of IgE, high affinity I, receptor for; gamma polypeptide, mRNA (cDNA clone MGC:45270)
FCGRT	BC008734	Fc fragment of IgG, receptor, transporter, alpha, mRNA (cDNA clone MGC:1506)
FCRL2	BC069185	cDNA clone MGC:71916 complete cds
FDFT1	BC003573	farnesyl-diphosphate farnesyltransferase 1, mRNA (cDNA clone MGC:2200)
FEM1A	BC004988	fem-1 homolog a (C.elegans), mRNA (cDNA clone MGC:4216)

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FEV	BC023511	FEV (ETS oncogene family), mRNA (cDNA clone MGC:12793)
FGFR1OP2	BC032143	FGFR1 oncogene partner 2, mRNA (cDNA clone MGC:29513)
FGFR2	BC039243	fibroblast growth factor receptor 2 (bacteria-expressed kinase, keratinocyte growth factor receptor, craniofacial dysostosis 1, Crouzon syndrome, Pfeiffer syndrome, Jackson-Weiss syndrome), mRNA (cDNA clone MGC:32962)
FH	BC017444	fumarate hydratase, mRNA (cDNA clone MGC:15363)
FIS1	BC003540	fission 1 (mitochondrial outer membrane) homolog (yeast), mRNA (cDNA clone MGC:10803)
FKBP4	BC007924	FK506 binding protein 4, 59kDa, mRNA (cDNA clone MGC:14457)
FKBP6	BC036817	FK506 binding protein 6, 36kDa, mRNA (cDNA clone MGC:45980)
FLOT2	BC017292	flotillin 2, mRNA (cDNA clone MGC:29558)
FLRT3	BC020870	fibronectin leucine rich transmembrane protein 3, transcript variant 1, mRNA (cDNA clone MGC:24073)
FLT1	BC039007	fms-related tyrosine kinase 1 (vascular endothelial growth factor/vascular permeability factor receptor), mRNA (cDNA clone MGC:47768)
FLYWCH1	BC018712	FLYWCH-type zinc finger 1, mRNA (cDNA clone MGC:31777)
FMO1	BC047129	flavin containing monooxygenase 1, mRNA (cDNA clone MGC:47767)
FMO2	BC005894	flavin containing monooxygenase 2, mRNA (cDNA clone MGC:14468)
FNDC5	BC062297	fibronectin type III domain containing 5, mRNA (cDNA clone MGC:71121)
FOXA2	BC011780	forkhead box A2, transcript variant 1, mRNA (cDNA clone MGC:19807)
FPR1	BC005315	formyl peptide receptor 1, mRNA (cDNA clone MGC:12392)
FRAT2	BC020165	frequently rearranged in advanced T-cell lymphomas 2, mRNA (cDNA clone MGC:10562)
FREM1	BC031064	FRAS1 related extracellular matrix 1, mRNA (cDNA clone MGC:33379)
FSD1	BC003124	fibronectin type III and SPRY domain containing 1, mRNA (cDNA clone MGC:3213)
FSTL1	BC000055	folliculin-like 1, mRNA (cDNA clone MGC:1993)
FSTL4	BC024300	folliculin-like 4, mRNA (cDNA clone MGC:39367)
FTS	BC001134	fused toes homolog (mouse), transcript variant 1, mRNA (cDNA clone MGC:2845)
FUS	BC002459	fusion (involved in t(12;16) in malignant liposarcoma), transcript variant 1, mRNA (cDNA clone MGC:3068)
FUSIP1	BC005039	FUS interacting protein (serine/arginine-rich) 1, transcript variant 2, mRNA (cDNA clone MGC:12764)
FUT11	BC036037	fucosyltransferase 11 (alpha (1,3) fucosyltransferase), mRNA (cDNA clone MGC:33202)
FUT9	BC036101	fucosyltransferase 9 (alpha (1,3) fucosyltransferase), mRNA (cDNA clone MGC:33876)
FXC1	BC011014	fracture callus 1 homolog (rat), mRNA (cDNA clone MGC:13456)
FXYD3	BC005238	FXYD domain containing ion transport regulator 3, mRNA (cDNA clone MGC:12265)
FXYD4	BC054876	FXYD domain containing ion transport regulator 4, mRNA (cDNA clone MGC:62088)
FXYD5	BC009642	FXYD domain containing ion transport regulator 5, transcript variant 1, mRNA (cDNA clone MGC:17850)
FZD9	BC026333	frizzled homolog 9 (Drosophila), mRNA (cDNA clone MGC:26396)

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FZR1	BC013413	fizzy/cell division cycle 20 related 1 (Drosophila), mRNA (cDNA clone MGC:4589)
G0S2	BC009694	G0/G1switch 2, mRNA (cDNA clone MGC:9181)
G1P2	BC009507	interferon, alpha-inducible protein (clone IFI-15K), mRNA (cDNA clone MGC:3945)
GABARAPL2	BC014594	GABA(A) receptor-associated protein-like 2, mRNA (cDNA clone MGC:26328)
GABPA	BC035031	GA binding protein transcription factor, alpha subunit 60kDa, mRNA (cDNA clone MGC:33827)
GABRA1	BC030696	gamma-aminobutyric acid (GABA) A receptor, alpha 1, mRNA (cDNA clone MGC:26564)
GABRA2	BC022488	gamma-aminobutyric acid (GABA) A receptor, alpha 2, mRNA (cDNA clone MGC:26342)
GABRA3	BC028629	gamma-aminobutyric acid (GABA) A receptor, alpha 3, mRNA (cDNA clone MGC:33793)
GABRA4	BC035055	gamma-aminobutyric acid (GABA) A receptor, alpha 4, mRNA (cDNA clone MGC:41866)
GABRG1	BC031087	gamma-aminobutyric acid (GABA) A receptor, gamma 1, mRNA (cDNA clone MGC:33838)
GAD1	BC037780	glutamate decarboxylase 1 (brain, 67kDa), transcript variant GAD67, mRNA (cDNA clone MGC:41888)
GAL3ST1	BC014649	galactose-3-O-sulfotransferase 1, mRNA (cDNA clone MGC:20064)
GALK1	BC001166	galactokinase 1, mRNA (cDNA clone MGC:1746)
GALNT14	BC010659	UDP-N-acetyl-alpha-D-galactosamine:polypeptide N-acetylgalactosaminyltransferase 14 (GalNAc-T14), mRNA (cDNA clone MGC:16841)
GALNT4	BC036390	UDP-N-acetyl-alpha-D-galactosamine:polypeptide N-acetylgalactosaminyltransferase 4 (GalNAc-T4), mRNA (cDNA clone MGC:41784)
GALNT6	BC035822	UDP-N-acetyl-alpha-D-galactosamine:polypeptide N-acetylgalactosaminyltransferase 6 (GalNAc-T6), mRNA (cDNA clone MGC:46032)
GALNT7	BC047468	UDP-N-acetyl-alpha-D-galactosamine:polypeptide N-acetylgalactosaminyltransferase 7 (GalNAc-T7), mRNA (cDNA clone MGC:50994)
GALNTL4	BC037341	UDP-N-acetyl-alpha-D-galactosamine:polypeptide N-acetylgalactosaminyltransferase-like 4, mRNA (cDNA clone MGC:43305)
GALNTL5	BC022021	UDP-N-acetyl-alpha-D-galactosamine:polypeptide N-acetylgalactosaminyltransferase-like 5, mRNA (cDNA clone MGC:26636)
GAMT	BC017936	guanidinoacetate N-methyltransferase, transcript variant 1, mRNA (cDNA clone MGC:24023)
GCDH	BC002579	glutaryl-Coenzyme A dehydrogenase, transcript variant 1, mRNA (cDNA clone MGC:1743)
GCG	BC005278	glucagon, mRNA (cDNA clone MGC:12325)
GDF15	BC008962	growth differentiation factor 15, mRNA (cDNA clone MGC:4145)
GDF3	BC030959	growth differentiation factor 3, mRNA (cDNA clone MGC:32558)
GDPD1	BC034432	glycerophosphodiester phosphodiesterase domain containing 1, mRNA (cDNA clone MGC:35046)
GEM	BC022010	GTP binding protein overexpressed in skeletal muscle, transcript variant 2, mRNA (cDNA clone MGC:26294)
GFRA1	BC014962	GNDF family receptor alpha 1, transcript variant 2, mRNA (cDNA clone MGC:23045)

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GGA3	BC070044	golgi associated, gamma adaptin ear containing, ARF binding protein 3, transcript variant short, mRNA (cDNA clone MGC:87095)
GGPS1	BC067768	geranylgeranyl diphosphate synthase 1, mRNA (cDNA clone MGC:87077)
GGTLA1	BC011362	gamma-glutamyltransferase-like activity 1, mRNA (cDNA clone MGC:17034)
GHITM	BC010354	growth hormone inducible transmembrane protein, mRNA (cDNA clone MGC:13359)
GIMAP1	BC040736	GTPase, IMAP family member 1, mRNA (cDNA clone MGC:50754)
GIMAP5	BC011732	GTPase, IMAP family member 5, mRNA (cDNA clone MGC:19505)
GJA1	BC026329	gap junction protein, alpha 1, 43kDa (connexin 43), mRNA (cDNA clone MGC:26323)
GJA10	BC051675	gap junction protein, alpha 10, 59kDa, mRNA (cDNA clone MGC:50985)
GJB1	BC022426	gap junction protein, beta 1, 32kDa (connexin 32, Charcot-Marie-Tooth neuropathy, X-linked), mRNA (cDNA clone MGC:24660)
GJB5	BC004379	gap junction protein, beta 5 (connexin 31.1), mRNA (cDNA clone MGC:10657)
GJB6	BC038934	gap junction protein, beta 6 (connexin 30), mRNA (cDNA clone MGC:45195)
GLO1	BC011365	glyoxalase I, mRNA (cDNA clone MGC:17245)
GLRA3	BC036086	glycine receptor, alpha 3, mRNA (cDNA clone MGC:33772)
GLYAT	BC009785	glycine-N-acyltransferase, transcript variant 2, mRNA (cDNA clone MGC:13540)
GM2A	BC009273	GM2 ganglioside activator, mRNA (cDNA clone MGC:10462)
GMCL1	BC007420	germ cell-less homolog 1 (Drosophila), mRNA (cDNA clone MGC:2912)
GMNN	BC005185	geminin, DNA replication inhibitor, mRNA (cDNA clone MGC:12176)
GMPPA	BC007456	GDP-mannose pyrophosphorylase A, transcript variant 2, mRNA (cDNA clone MGC:995)
GNA15	BC013585	guanine nucleotide binding protein (G protein), alpha 15 (Gq class), mRNA (cDNA clone MGC:9574)
GNAO1	BC030027	guanine nucleotide binding protein (G protein), alpha activating activity polypeptide O, mRNA (cDNA clone MGC:33450)
GNAZ	BC037333	guanine nucleotide binding protein (G protein), alpha z polypeptide, mRNA (cDNA clone MGC:43258)
GNB1	BC008991	guanine nucleotide binding protein (G protein), beta polypeptide 1, mRNA (cDNA clone MGC:18208)
GNB3	BC000115	guanine nucleotide binding protein (G protein), beta polypeptide 3, mRNA (cDNA clone MGC:3116)
GNG4	BC022485	guanine nucleotide binding protein (G protein), gamma 4, mRNA (cDNA clone MGC:26316)
GNL1	BC013959	guanine nucleotide binding protein-like 1, mRNA (cDNA clone MGC:4131)
GNPDA1	BC020769	glucosamine-6-phosphate deaminase 1, mRNA (cDNA clone MGC:22665)
GNPNAT1	BC012179	glucosamine-phosphate N-acetyltransferase 1, mRNA (cDNA clone MGC:20441)
GNPTG	BC014592	N-acetylglucosamine-1-phosphate transferase, gamma subunit, mRNA (cDNA clone MGC:26282)
GOLGA7	BC001227	golgi autoantigen, golgin subfamily a, 7, mRNA (cDNA clone MGC:4876)
GOLPH2	BC001740	golgi phosphoprotein 2, transcript variant 1, mRNA (cDNA clone MGC:850)
GOLT1A	BC058832	golgi transport 1 homolog A (S. cerevisiae), mRNA (cDNA clone MGC:62027)

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GOSR1	BC012620	golgi SNAP receptor complex member 1, mRNA (cDNA clone MGC:13657)
GOSR2	BC009710	golgi SNAP receptor complex member 2, mRNA (cDNA clone MGC:9419)
GOT2	BC000525	glutamic-oxaloacetic transaminase 2, mitochondrial (aspartate aminotransferase 2), mRNA (cDNA clone MGC:8599)
GPAA1	BC004129	glycosylphosphatidylinositol anchor attachment protein 1 homolog (yeast), mRNA (cDNA clone MGC:1312)
GPAM	BC030783	glycerol-3-phosphate acyltransferase, mitochondrial, mRNA (cDNA clone MGC:26846)
GPHN	BC030016	gephyrin, transcript variant 1, mRNA (cDNA clone MGC:32983)
GPIAP1	BC001731	GPI-anchored membrane protein 1, transcript variant 1, mRNA (cDNA clone MGC:1378)
GPM6A	BC044612	glycoprotein M6A, transcript variant 2, mRNA (cDNA clone MGC:57374)
GPM6B	BC047295	glycoprotein M6B, transcript variant 2, mRNA (cDNA clone MGC:54284)
GPR1	BC058005	G protein-coupled receptor 1, mRNA (cDNA clone MGC:61955)
GPR114	BC032401	G protein-coupled receptor 114, mRNA (cDNA clone MGC:40549)
GPR135	BC032831	G protein-coupled receptor 135, mRNA (cDNA clone MGC:26730)
GPR146	BC014241	G protein-coupled receptor 146, mRNA (cDNA clone MGC:20737)
GPR160	BC000181	G protein-coupled receptor 160, mRNA (cDNA clone MGC:5003)
GPR17	BC031653	G protein-coupled receptor 17, mRNA (cDNA clone MGC:35264)
GPR172A	BC002917	G protein-coupled receptor 172A, mRNA (cDNA clone MGC:10628)
GPR176	BC067106	G protein-coupled receptor 176, mRNA (cDNA clone MGC:71222)
GPR21	BC067532	G protein-coupled receptor 21, mRNA (cDNA clone MGC:79438)
GPR23	BC069996	G protein-coupled receptor 23, mRNA (cDNA clone MGC:79281)
GPR32	BC067454	G protein-coupled receptor 32, mRNA (cDNA clone MGC:79285)
GPR34	BC020678	G protein-coupled receptor 34, mRNA (cDNA clone MGC:22389)
GPR4	BC067536	G protein-coupled receptor 4, mRNA (cDNA clone MGC:79443)
GPR45	BC066880	G protein-coupled receptor 45, mRNA (cDNA clone MGC:79288)
GPR52	BC067460	G protein-coupled receptor 52, mRNA (cDNA clone MGC:79293)
GPR61	BC067464	G protein-coupled receptor 61, mRNA (cDNA clone MGC:79297)
GPR62	BC026357	G protein-coupled receptor 62, mRNA (cDNA clone MGC:26943)
GPR63	BC067467	G protein-coupled receptor 63, mRNA (cDNA clone MGC:79300)
GPR65	BC035633	G protein-coupled receptor 65, mRNA (cDNA clone MGC:45304)
GPR75	BC067476	G protein-coupled receptor 75, mRNA (cDNA clone MGC:79310)
GPR77	BC067480	G protein-coupled receptor 77, mRNA (cDNA clone MGC:79314)
GPR81	BC066882	G protein-coupled receptor 81, mRNA (cDNA clone MGC:79320)
GPR83	BC067474	G protein-coupled receptor 83, mRNA (cDNA clone MGC:79308)
GPR84	BC020614	G protein-coupled receptor 84, mRNA (cDNA clone MGC:22224)

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GPR85	BC030577	G protein-coupled receptor 85, mRNA (cDNA clone MGC:26047)
GPRASP2	BC013576	G protein-coupled receptor associated sorting protein 2, transcript variant 1, mRNA (cDNA clone MGC:9231)
GPRC5B	BC034467	G protein-coupled receptor, family C, group 5, member B, mRNA (cDNA clone MGC:26103)
GPSN2	BC005952	glycoprotein, synaptic 2, mRNA (cDNA clone MGC:14589)
GPT	BC018207	glutamic-pyruvate transaminase (alanine aminotransferase), mRNA (cDNA clone MGC:17068)
GRAMD1C	BC035040	GRAM domain containing 1C, mRNA (cDNA clone MGC:34039)
GREM2	BC046632	gremlin 2, cysteine knot superfamily, homolog (Xenopus laevis), mRNA (cDNA clone MGC:44218)
GRIA2	BC010574	glutamate receptor, ionotropic, AMPA 2, mRNA (cDNA clone MGC:17079)
GRID1	BC039263	glutamate receptor, ionotropic, delta 1, mRNA (cDNA clone MGC:33869)
GRK5	BC064506	G protein-coupled receptor kinase 5, mRNA (cDNA clone MGC:71228)
GRP	BC004488	gastrin-releasing peptide, mRNA (cDNA clone MGC:10712)
GSK3B	BC000251	glycogen synthase kinase 3 beta, mRNA (cDNA clone MGC:1736)
GSPT1	BC009503	G1 to S phase transition 1, mRNA (cDNA clone MGC:1735)
GSTM1	BC024005	glutathione S-transferase M1, transcript variant 2, mRNA (cDNA clone MGC:26563)
GSTM3	BC008790	glutathione S-transferase M3 (brain), mRNA (cDNA clone MGC:3704)
GSTM4	BC015513	glutathione S-transferase M4, transcript variant 1, mRNA (cDNA clone MGC:9247)
GSTM5	BC058881	glutathione S-transferase M5, mRNA (cDNA clone MGC:64821)
GTF2F1	BC000120	general transcription factor IIF, polypeptide 1, 74kDa, mRNA (cDNA clone MGC:1732)
GTF2H1	BC004452	general transcription factor IIH, polypeptide 1, 62kDa, mRNA (cDNA clone MGC:4300)
GTF2H5	BC060317	general transcription factor IIH, polypeptide 5, mRNA (cDNA clone MGC:75182)
GULP1	BC001103	GULP, engulfment adaptor PTB domain containing 1, mRNA (cDNA clone MGC:742)
GUP1	BC022529	GUP1, glycerol uptake/transporter homolog (yeast), mRNA (cDNA clone MGC:26672)
H1FX	BC010435	H1 histone family, member X, mRNA (cDNA clone MGC:15959)
H2AFJ	BC003602	H2A histone family, member J, transcript variant 2, mRNA (cDNA clone MGC:921)
H2AFY	BC013331	H2A histone family, member Y, mRNA (cDNA clone MGC:13692)
H2AFZ	BC020936	H2A histone family, member Z, mRNA (cDNA clone MGC:24740)
H3F3B	BC001124	H3 histone, family 3B (H3.3B), mRNA (cDNA clone MGC:2161)
H6PD	BC081559	hexose-6-phosphate dehydrogenase (glucose 1-dehydrogenase), mRNA (cDNA clone MGC:87643)
HADHSC	BC000306	L-3-hydroxyacyl-Coenzyme A dehydrogenase, short chain, mRNA (cDNA clone MGC:8392)
HAGH	BC002627	hydroxyacylglutathione hydrolase, mRNA (cDNA clone MGC:3589)
HAO2	BC020863	hydroxyacid oxidase 2 (long chain), transcript variant 2, mRNA (cDNA clone MGC:24062)
HAPLN3	BC062320	hyaluronan and proteoglycan link protein 3, mRNA (cDNA clone MGC:71328)
HARS2	BC045167	histidyl-tRNA synthetase 2, mRNA (cDNA clone MGC:41905)
HAS1	BC035837	hyaluronan synthase 1, mRNA (cDNA clone MGC:46218)

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HAT1	BC063003	histone acetyltransferase 1, transcript variant 2, mRNA (cDNA clone MGC:75156)
HAVCR1	BC013325	hepatitis A virus cellular receptor 1, mRNA (cDNA clone MGC:13455)
HAX1	BC016730	HCLS1 associated protein X-1, transcript variant 1, mRNA (cDNA clone MGC:24467)
HBA2	BC032122	hemoglobin, alpha 2, mRNA (cDNA clone MGC:29691)
HBB	BC007075	hemoglobin, beta, mRNA (cDNA clone MGC:14540)
HBG1	BC020719	hemoglobin, gamma A, mRNA (cDNA clone MGC:22503)
HBQ1	BC056686	hemoglobin, theta 1, mRNA (cDNA clone MGC:61857)
HCFC1R1	BC064026	host cell factor C1 regulator 1 (XPO1 dependent), transcript variant 1, mRNA (cDNA clone MGC:70711)
HCST	BC065224	hematopoietic cell signal transducer, mRNA (cDNA clone MGC:70592)
HDAC1	BC000301	histone deacetylase 1, mRNA (cDNA clone MGC:8378)
HDAC3	BC000614	histone deacetylase 3, mRNA (cDNA clone MGC:2041)
HDHD2	BC038100	haloacid dehalogenase-like hydrolase domain containing 2, mRNA (cDNA clone MGC:32937)
HDLBP	BC001179	high density lipoprotein binding protein (vigilin), mRNA (cDNA clone MGC:2301)
HEPH	BC011561	hephaestin, transcript variant 1, mRNA (cDNA clone MGC:20135)
HES6	BC007939	hairy and enhancer of split 6 (Drosophila), mRNA (cDNA clone MGC:14279)
HGD	BC020792	homogentisate 1,2-dioxygenase (homogentisate oxidase), mRNA (cDNA clone MGC:23690)
HGS	BC003565	hepatocyte growth factor-regulated tyrosine kinase substrate, mRNA (cDNA clone MGC:2045)
HIGD1B	BC020667	HIG1 domain family, member 1B, mRNA (cDNA clone MGC:22352)
HIGD2A	BC007502	HIG1 domain family, member 2A, mRNA (cDNA clone MGC:3907)
HINT1	BC007090	histidine triad nucleotide binding protein 1, mRNA (cDNA clone MGC:14708)
HIRIP3	BC000588	HIRA interacting protein 3, mRNA (cDNA clone MGC:1814)
HIST1H1C	BC002649	histone 1, H1c, mRNA (cDNA clone MGC:3992)
HIST1H2AA	BC062211	histone 1, H2aa, mRNA (cDNA clone MGC:71871)
HIST1H2AC	BC017379	histone 1, H2ac, mRNA (cDNA clone MGC:1730)
HIST1H2BD	BC002842	histone 1, H2bd, transcript variant 2, mRNA (cDNA clone MGC:3802)
HIST1H2BJ	BC014312	histone 1, H2bj, mRNA (cDNA clone MGC:22655)
HIST1H2BK	BC064959	histone 1, H2bk, mRNA (cDNA clone MGC:74942)
HIST1H4C	BC054014	cDNA clone MGC:61831 complete cds
HIST1H4E	BC012587	histone 1, H4e, mRNA (cDNA clone MGC:13511)
HIST1H4H	BC010926	histone 1, H4h, mRNA (cDNA clone MGC:13512)
HIST1H4I	BC075806	histone 1, H4i, mRNA (cDNA clone MGC:87855)
HIST2H2AA	BC001629	histone 2, H2aa, mRNA (cDNA clone MGC:2238)
HIST2H2AC	BC060324	histone 2, H2ac, mRNA (cDNA clone MGC:74460)
HIST4H4	BC020884	histone 4, H4, mRNA (cDNA clone MGC:24116)

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HK1	BC008730	hexokinase 1, transcript variant 1, mRNA (cDNA clone MGC:1724)
HK2	BC064369	hexokinase 2, mRNA (cDNA clone MGC:74789)
HKR3	BC013573	GLI-Kruppel family member HKR3, mRNA (cDNA clone MGC:9174)
HLA-C	BC008457	major histocompatibility complex, class I, C, mRNA (cDNA clone MGC:14707)
HLA-DMA	BC026279	major histocompatibility complex, class II, DM alpha, mRNA (cDNA clone MGC:23886)
HLA-DPA1	BC009956	major histocompatibility complex, class II, DP alpha 1, mRNA (cDNA clone MGC:14114)
HLA-DPB2	BC017967	major histocompatibility complex, class II, DP beta 2 (pseudogene), mRNA (cDNA clone MGC:24119)
HLA-DRB3	BC008987	major histocompatibility complex, class II, DR beta 3, mRNA (cDNA clone MGC:17049)
HLA-DRB4	BC005312	major histocompatibility complex, class II, DR beta 4, mRNA (cDNA clone MGC:12387)
HLA-DRB5	BC009234	major histocompatibility complex, class II, DR beta 5, mRNA (cDNA clone MGC:16550)
HLA-E	BC002578	major histocompatibility complex, class I, E, mRNA (cDNA clone MGC:1408)
HLA-G	BC021708	HLA-G histocompatibility antigen, class I, G, mRNA (cDNA clone MGC:26146)
HLRC1	BC009863	HEAT-like (PBS lyase) repeat containing 1, mRNA (cDNA clone MGC:16388)
HM13	BC062595	histocompatibility (minor) 13, transcript variant 1, mRNA (cDNA clone MGC:74542)
HMG20B	BC003505	high-mobility group 20B, mRNA (cDNA clone MGC:10419)
HMGCL	BC010570	3-hydroxymethyl-3-methylglutaryl-Coenzyme A lyase (hydroxymethylglutaricaciduria), mRNA (cDNA clone MGC:17215)
HMGN1	BC071643	high-mobility group nucleosome binding domain 1, mRNA (cDNA clone MGC:87800)
HMGN2	BC071707	high-mobility group nucleosomal binding domain 2, mRNA (cDNA clone MGC:87991)
HMGN4	BC001282	high mobility group nucleosomal binding domain 4, mRNA (cDNA clone MGC:5145)
HN1	BC001420	hematological and neurological expressed 1, mRNA (cDNA clone MGC:696)
HNRPA0	BC007271	heterogeneous nuclear ribonucleoprotein A0, mRNA (cDNA clone MGC:15589)
HNRPA2B1	BC000506	heterogeneous nuclear ribonucleoprotein A2/B1, mRNA (cDNA clone MGC:8493)
HNRPR	BC001449	heterogeneous nuclear ribonucleoprotein R, mRNA (cDNA clone MGC:2039)
HOMER1	BC015502	homer homolog 1 (Drosophila), mRNA (cDNA clone MGC:9092)
HORMAD1	BC047406	HORMA domain containing 1, mRNA (cDNA clone MGC:48336)
HOXA9	BC006537	homeobox A9, mRNA (cDNA clone MGC:1934)
HOXD3	BC005124	homeobox D3, mRNA (cDNA clone MGC:10470)
HOXD4	BC016763	homeobox D4, mRNA (cDNA clone MGC:22628)
HPX	BC005395	hemopexin, mRNA (cDNA clone MGC:12533)
HRAS	BC006499	v-Ha-ras Harvey rat sarcoma viral oncogene homolog, transcript variant 2, mRNA (cDNA clone MGC:2359)
HRASLS	BC048095	HRAS-like suppressor, mRNA (cDNA clone MGC:57150)
HRB	BC030592	HIV-1 Rev binding protein, mRNA (cDNA clone MGC:26523)
HRH2	BC054510	histamine receptor H2, mRNA (cDNA clone MGC:60198)

Gene symbol	GenBank accession number	Function
HSD17B2	BC059170	hydroxysteroid (17-beta) dehydrogenase 2, mRNA (cDNA clone MGC:14632)
HSD17B8	BC008185	hydroxysteroid (17-beta) dehydrogenase 8, mRNA (cDNA clone MGC:17181)
HSD3B2	BC038419	hydroxy-delta-5-steroid dehydrogenase, 3 beta- and steroid delta-isomerase 2, mRNA (cDNA clone MGC:34587)
HSF2BP	BC000153	heat shock transcription factor 2 binding protein, mRNA (cDNA clone MGC:5123)
HSPA1A	BC018740	heat shock 70kDa protein 1A, mRNA (cDNA clone MGC:31885)
HSPA1L	BC034483	heat shock 70kDa protein 1-like, mRNA (cDNA clone MGC:26463)
HSPA9B	BC024034	heat shock 70kDa protein 9B (mortalin-2), mRNA (cDNA clone MGC:4500)
HSPB7	BC006319	heat shock 27kDa protein family, member 7 (cardiovascular), mRNA (cDNA clone MGC:12642)
HSPE1	BC023518	heat shock 10kDa protein 1 (chaperonin 10), mRNA (cDNA clone MGC:12734)
HTR2B	BC063123	5-hydroxytryptamine (serotonin) receptor 2B, mRNA (cDNA clone MGC:71977)
HTRA2	BC000096	HtrA serine peptidase 2, transcript variant 1, mRNA (cDNA clone MGC:1083)
HYAL2	BC000692	hyaluronoglucosaminidase 2, transcript variant 2, mRNA (cDNA clone MGC:1922)
ICA1	BC008640	islet cell autoantigen 1, 69kDa, mRNA (cDNA clone MGC:9360)
ICAM4	BC000046	intercellular adhesion molecule 4 (LW blood group), mRNA (cDNA clone MGC:2108)
ID3	BC003107	inhibitor of DNA binding 3, dominant negative helix-loop-helix protein, mRNA (cDNA clone MGC:1988)
IER2	BC072432	immediate early response 2, mRNA (cDNA clone MGC:87997)
IER3IP1	BC010888	immediate early response 3 interacting protein 1, mRNA (cDNA clone MGC:13332)
IFI30	BC021136	interferon, gamma-inducible protein 30, mRNA (cDNA clone MGC:32056)
IFIT2	BC032839	interferon-induced protein with tetratricopeptide repeats 2, mRNA (cDNA clone MGC:27037)
IFIT3	BC001383	interferon-induced protein with tetratricopeptide repeats 3, mRNA (cDNA clone MGC:2046)
IFITM1	BC000897	interferon induced transmembrane protein 1 (9-27), mRNA (cDNA clone MGC:5195)
IFITM2	BC009696	interferon induced transmembrane protein 2 (1-8D), mRNA (cDNA clone MGC:9196)
IFITM3	BC022439	interferon induced transmembrane protein 3 (1-8U), mRNA (cDNA clone MGC:24755)
IFNAR1	BC021825	interferon (alpha, beta and omega) receptor 1, mRNA (cDNA clone MGC:24928)
IFNGR1	BC005333	interferon gamma receptor 1, mRNA (cDNA clone MGC:12420)
IGF2	BC000531	insulin-like growth factor 2 (somatomedin A), mRNA (cDNA clone MGC:8683)
IGHG1	BC019046	immunoglobulin heavy constant gamma 1 (G1m marker), mRNA (cDNA clone MGC:20691)
IGSF11	BC034411	immunoglobulin superfamily, member 11, mRNA (cDNA clone MGC:35227)
IGSF21	BC007618	immunoglobulin superfamily, member 21, mRNA (cDNA clone MGC:15730)
IGSF4	BC047021	mRNA similar to immunoglobulin superfamily, member 4 (cDNA clone MGC:51880)
IGSF6	BC017844	immunoglobulin superfamily, member 6, mRNA (cDNA clone MGC:22530)
IL11RA	BC003110	interleukin 11 receptor, alpha, transcript variant 1, mRNA (cDNA clone MGC:2146)

Gene symbol	GenBank accession number	Function
IL12B	BC067501	interleukin 12B (natural killer cell stimulatory factor 2, cytotoxic lymphocyte maturation factor 2, p40), mRNA (cDNA clone MGC:79359)
IL12RB1	BC029121	interleukin 12 receptor, beta 1, transcript variant 2, mRNA (cDNA clone MGC:34454)
IL13RA1	BC015768	interleukin 13 receptor, alpha 1, mRNA (cDNA clone MGC:23204)
IL13RA2	BC020739	interleukin 13 receptor, alpha 2, mRNA (cDNA clone MGC:22566)
IL17	BC066251	interleukin 17 (cytotoxic T-lymphocyte-associated serine esterase 8), mRNA (cDNA clone MGC:79361)
IL17D	BC036243	interleukin 17D, mRNA (cDNA clone MGC:39828)
IL18	BC007007	interleukin 18 (interferon-gamma-inducing factor), mRNA (cDNA clone MGC:12321)
IL18BP	BC044215	interleukin 18 binding protein, mRNA (cDNA clone MGC:49873)
IL1B	BC008678	interleukin 1, beta, mRNA (cDNA clone MGC:9216)
IL1F7	BC020637	interleukin 1 family, member 7 (zeta), transcript variant 1, mRNA (cDNA clone MGC:22276)
IL1R2	BC039031	interleukin 1 receptor, type II, transcript variant 1, mRNA (cDNA clone MGC:47725)
IL1RAP	BC053621	interleukin 1 receptor accessory protein, transcript variant 2, mRNA (cDNA clone MGC:61532)
IL2	BC066256	interleukin 2, mRNA (cDNA clone MGC:79374)
IL21	BC066261	interleukin 21, mRNA (cDNA clone MGC:79379)
IL22	BC066265	interleukin 22, mRNA (cDNA clone MGC:79384)
IL23A	BC066268	interleukin 23, alpha subunit p19, mRNA (cDNA clone MGC:79389)
IL24	BC009681	interleukin 24, transcript variant 1, mRNA (cDNA clone MGC:8926)
IL27	BC062422	interleukin 27, mRNA (cDNA clone MGC:71873)
IL27RA	BC028003	interleukin 27 receptor, alpha, mRNA (cDNA clone MGC:39984)
IL2RG	BC014972	interleukin 2 receptor, gamma (severe combined immunodeficiency), mRNA (cDNA clone MGC:23116)
IL3	BC066273	interleukin 3 (colony-stimulating factor, multiple), mRNA (cDNA clone MGC:79397)
IL4	BC067515	interleukin 4, transcript variant 1, mRNA (cDNA clone MGC:79405)
IL5	BC066282	interleukin 5 (colony-stimulating factor, eosinophil), mRNA (cDNA clone MGC:79409)
IL5RA	BC027599	interleukin 5 receptor, alpha, transcript variant 6, mRNA (cDNA clone MGC:26560)
IL6	BC015511	interleukin 6 (interferon, beta 2), mRNA (cDNA clone MGC:9215)
IL7	BC047698	interleukin 7, mRNA (cDNA clone MGC:51943)
IL7R	BC067538	interleukin 7 receptor, mRNA (cDNA clone MGC:79447)
IL8	BC013615	interleukin 8, mRNA (cDNA clone MGC:9211)
IL9	BC066284	interleukin 9, mRNA (cDNA clone MGC:79412)
IMMP2L	BC008497	IMP2 inner mitochondrial membrane peptidase-like (S. cerevisiae), mRNA (cDNA clone MGC:14829)
IMPACT	BC034016	Impact homolog (mouse), mRNA (cDNA clone MGC:22261)
ING4	BC007781	inhibitor of growth family, member 4, transcript variant 1, mRNA (cDNA clone MGC:12557)
ING5	BC005370	inhibitor of growth family, member 5, mRNA (cDNA clone MGC:12485)

Gene symbol	GenBank accession number	Function
INHA	BC006391	inhibin, alpha, mRNA (cDNA clone MGC:12547)
INS	BC005255	insulin, mRNA (cDNA clone MGC:12292)
INSIG1	BC001880	insulin induced gene 1, transcript variant 1, mRNA (cDNA clone MGC:1405)
INSL3	BC071706	insulin-like 3 (Leydig cell), mRNA (cDNA clone MGC:87990)
IQCB1	BC005806	IQ motif containing B1, transcript variant 3, mRNA (cDNA clone MGC:10258)
ITGB1BP1	BC012264	integrin beta 1 binding protein 1, transcript variant 1, mRNA (cDNA clone MGC:8986)
ITGB8	BC002630	integrin, beta 8, mRNA (cDNA clone MGC:3946)
ITLN1	BC020664	intelectin 1 (galactofuranose binding), mRNA (cDNA clone MGC:22348)
ITM2A	BC040437	integral membrane protein 2A, mRNA (cDNA clone MGC:48842)
ITM2B	BC016148	integral membrane protein 2B, mRNA (cDNA clone MGC:10219)
ITPA	BC010138	inosine triphosphatase (nucleoside triphosphate pyrophosphatase), transcript variant 1, mRNA (cDNA clone MGC:19624)
JAKMIP1	BC047075	multiple coiled-coil GABABR1-binding protein, mRNA (cDNA clone MGC:48339)
JAM2	BC017779	junctional adhesion molecule 2, mRNA (cDNA clone MGC:22264)
JPH3	BC036533	junctophilin 3, mRNA (cDNA clone MGC:33713)
JSRP1	BC021201	junctional sarcoplasmic reticulum protein 1, mRNA (cDNA clone MGC:13120)
JTB	BC000996	jumping translocation breakpoint, mRNA (cDNA clone MGC:5120)
JUNB	BC004250	jun B proto-oncogene, mRNA (cDNA clone MGC:10557)
JUP	BC011865	junction plakoglobin, mRNA (cDNA clone MGC:20213)
KATNAL2	BC034999	katanin p60 subunit A-like 2, mRNA (cDNA clone MGC:33211)
KATNB1	BC001353	katanin p80 (WD repeat containing) subunit B 1, mRNA (cDNA clone MGC:8689)
KCNAB1	BC043166	potassium voltage-gated channel, shaker-related subfamily, beta member 1, transcript variant 3, mRNA (cDNA clone MGC:44147)
KCND1	BC045659	potassium voltage-gated channel, Shal-related subfamily, member 1, mRNA (cDNA clone MGC:43677)
KCNE1	BC036452	potassium voltage-gated channel, Isk-related family, member 1, mRNA (cDNA clone MGC:33114)
KCNJ12	BC027982	potassium inwardly-rectifying channel, subfamily J, member 12, mRNA (cDNA clone MGC:40138)
KCNJ13	BC037290	potassium inwardly-rectifying channel, subfamily J, member 13, mRNA (cDNA clone MGC:33328)
KCNJ15	BC013327	potassium inwardly-rectifying channel, subfamily J, member 15, transcript variant 2, mRNA (cDNA clone MGC:13584)
KCNJ16	BC033038	potassium inwardly-rectifying channel, subfamily J, member 16, transcript variant 3, mRNA (cDNA clone MGC:33717)
KCNJ3	BC022495	potassium inwardly-rectifying channel, subfamily J, member 3, mRNA (cDNA clone MGC:26385)
KCNJ8	BC000544	potassium inwardly-rectifying channel, subfamily J, member 8, mRNA (cDNA clone MGC:1462)
KCNK1	BC018051	potassium channel, subfamily K, member 1, mRNA (cDNA clone MGC:26384)

Gene symbol	GenBank accession number	Function
KCNK12	BC047749	potassium channel, subfamily K, member 12, mRNA (cDNA clone MGC:54139)
KCNK6	BC004367	potassium channel, subfamily K, member 6, mRNA (cDNA clone MGC:10363)
KCNMB2	BC017825	potassium large conductance calcium-activated channel, subfamily M, beta member 2, mRNA (cDNA clone MGC:22431)
KCNMB4	BC050621	potassium large conductance calcium-activated channel, subfamily M, beta member 4, mRNA (cDNA clone MGC:60089)
KCNV1	BC028739	potassium channel, subfamily V, member 1, mRNA (cDNA clone MGC:33756)
KCTD13	BC036228	potassium channel tetramerisation domain containing 13, mRNA (cDNA clone MGC:39734)
KCTD14	BC001929	potassium channel tetramerisation domain containing 14, mRNA (cDNA clone MGC:3993)
KCTD17	BC031038	potassium channel tetramerisation domain containing 17, mRNA (cDNA clone MGC:32954)
KCTD18	BC067755	potassium channel tetramerisation domain containing 18, mRNA (cDNA clone MGC:87030)
KCTD4	BC018063	potassium channel tetramerisation domain containing 4, mRNA (cDNA clone MGC:26571)
KCTD6	BC022893	potassium channel tetramerisation domain containing 6, mRNA (cDNA clone MGC:27385)
KCTD7	BC042482	potassium channel tetramerisation domain containing 7, mRNA (cDNA clone MGC:34731)
KCTD9	BC068518	potassium channel tetramerisation domain containing 9, mRNA (cDNA clone MGC:87312)
KDEL3	BC001277	KDEL (Lys-Asp-Glu-Leu) endoplasmic reticulum protein retention receptor 3, transcript variant 1, mRNA (cDNA clone MGC:5099)
KEAP1	BC002930	kelch-like ECH-associated protein 1, transcript variant 2, mRNA (cDNA clone MGC:10630)
KERA	BC032667	keratocan, mRNA (cDNA clone MGC:45082)
KIAA0090	BC034589	KIAA0090, mRNA (cDNA clone MGC:41898)
KIAA0141	BC007855	KIAA0141, mRNA (cDNA clone MGC:14335)
KIAA0179	BC028386	KIAA0179, mRNA (cDNA clone MGC:33175)
KIAA0274	BC041338	KIAA0274, mRNA (cDNA clone MGC:41828)
KIAA0317	BC032944	KIAA0317, mRNA (cDNA clone MGC:33039)
KIAA0409	BC001071	KIAA0409, mRNA (cDNA clone MGC:2638)
KIAA1383	BC036663	KIAA1383 protein, mRNA (cDNA clone MGC:33261)
KIAA2013	BC035033	KIAA2013, mRNA (cDNA clone MGC:33867)
KIF19	BC026362	kinesin family member 19, mRNA (cDNA clone MGC:27137)
KIF20A	BC012999	kinesin family member 20A, mRNA (cDNA clone MGC:3571)
KIFAP3	BC028679	kinesin-associated protein 3, mRNA (cDNA clone MGC:26126)
KIFC3	BC001211	kinesin family member C3, mRNA (cDNA clone MGC:3226)
KIT	BC071593	v-kit Hardy-Zuckerman 4 feline sarcoma viral oncogene homolog, mRNA (cDNA clone MGC:87427)
KLF1	BC033580	Kruppel-like factor 1 (erythroid), mRNA (cDNA clone MGC:34237)
KLHDC3	BC009460	kelch domain containing 3, mRNA (cDNA clone MGC:15936)

Gene symbol	GenBank accession number	Function
KLHL12	BC004175	kelch-like 12 (Drosophila), mRNA (cDNA clone MGC:2770)
KLHL14	BC021267	kelch-like 14 (Drosophila), mRNA (cDNA clone MGC:29780)
KLHL26	BC026319	kelch-like 26 (Drosophila), mRNA (cDNA clone MGC:26163)
KLHL3	BC034035	kelch-like 3 (Drosophila), mRNA (cDNA clone MGC:26234)
KLRC4	BC017784	killer cell lectin-like receptor subfamily C, member 4, mRNA (cDNA clone MGC:22279)
KLRD1	BC028009	killer cell lectin-like receptor subfamily D, member 1, transcript variant 1, mRNA (cDNA clone MGC:39933)
KLRG1	BC012621	killer cell lectin-like receptor subfamily G, member 1, mRNA (cDNA clone MGC:13660)
KMO	BC005297	kynurenine 3-monooxygenase (kynurenine 3-hydroxylase), mRNA (cDNA clone MGC:12362)
KNG1	BC060039	kininogen 1, mRNA (cDNA clone MGC:61989)
KPNA1	BC003009	karyopherin alpha 1 (importin alpha 5), mRNA (cDNA clone MGC:4009)
LAMP2	BC002965	lysosomal-associated membrane protein 2, mRNA (cDNA clone MGC:1710)
LAMP3	BC032940	lysosomal-associated membrane protein 3, mRNA (cDNA clone MGC:26448)
LANCL1	BC028685	LanC lantibiotic synthetase component C-like 1 (bacterial), mRNA (cDNA clone MGC:26280)
LAPTM4B	BC031021	lysosomal associated protein transmembrane 4 beta, mRNA (cDNA clone MGC:32802)
LBR	BC020079	lamin B receptor, transcript variant 1, mRNA (cDNA clone MGC:9041)
LDHA	BC067223	lactate dehydrogenase A, mRNA (cDNA clone MGC:72033)
LDHAL6A	BC014340	lactate dehydrogenase A-like 6A, mRNA (cDNA clone MGC:23940)
LDHB	BC015122	lactate dehydrogenase B, mRNA (cDNA clone MGC:24208)
LENG4	BC003164	leukocyte receptor cluster (LRC) member 4, mRNA (cDNA clone MGC:4221)
LEPR	BC056250	leptin receptor overlapping transcript, mRNA (cDNA clone MGC:61988)
LEPROTL1	BC000642	leptin receptor overlapping transcript-like 1, mRNA (cDNA clone MGC:1879)
LETM1	BC014500	leucine zipper-EF-hand containing transmembrane protein 1, mRNA (cDNA clone MGC:23613)
LGALS3	BC053667	lectin, galactoside-binding, soluble, 3 (galectin 3), mRNA (cDNA clone MGC:61529)
LGALS8	BC015818	lectin, galactoside-binding, soluble, 8 (galectin 8), transcript variant 1, mRNA (cDNA clone MGC:13507)
LGR4	BC033039	leucine-rich repeat-containing G protein-coupled receptor 4, mRNA (cDNA clone MGC:33719)
LGTN	BC039134	ligatin, mRNA (cDNA clone MGC:16958)
LHFPL5	BC028630	lipoma HMGIC fusion partner-like 5, mRNA (cDNA clone MGC:33835)
LIG4	BC037491	ligase IV, DNA, ATP-dependent, mRNA (cDNA clone MGC:33819)
LILRB4	BC026309	leukocyte immunoglobulin-like receptor, subfamily B (with TM and ITIM domains), member 4, mRNA (cDNA clone MGC:26060)
LIN7B	BC027618	lin-7 homolog B (C. elegans), mRNA (cDNA clone MGC:27097)
LINS1	BC010363	lines homolog 1 (Drosophila), transcript variant 2, mRNA (cDNA clone MGC:13409)
LMAN2	BC017263	lectin, mannose-binding 2, mRNA (cDNA clone MGC:29645)
LMBRD1	BC047073	LMBR1 domain containing 1, mRNA (cDNA clone MGC:48309)

Gene symbol	GenBank accession number	Function
LMNB2	BC006551	lamin B2, mRNA (cDNA clone MGC:2538)
LMO3	BC026311	LIM domain only 3 (rhombotin-like 2), transcript variant 1, mRNA (cDNA clone MGC:26081)
LOXHD1	BC041860	lipoxygenase homology domains 1, mRNA (cDNA clone MGC:43678)
LPGAT1	BC034621	lysophosphatidylglycerol acyltransferase 1, mRNA (cDNA clone MGC:43049)
LPL	BC011353	lipoprotein lipase, mRNA (cDNA clone MGC:17090)
LRAT	BC031053	lecithin retinol acyltransferase (phosphatidylcholine--retinol O-acyltransferase), mRNA (cDNA clone MGC:33103)
LRFN3	BC003578	leucine rich repeat and fibronectin type III domain containing 3, mRNA (cDNA clone MGC:2656)
LRFN4	BC015581	leucine rich repeat and fibronectin type III domain containing 4, mRNA (cDNA clone MGC:23278)
LRFN5	BC043165	leucine rich repeat and fibronectin type III domain containing 5, mRNA (cDNA clone MGC:44144)
LRP11	BC043141	low density lipoprotein receptor-related protein 11, mRNA (cDNA clone MGC:41767)
LRP3	BC007408	low density lipoprotein receptor-related protein 3, mRNA (cDNA clone MGC:2428)
LRRC1	BC003193	leucine rich repeat containing 1, mRNA (cDNA clone MGC:936)
LRRC14	BC011377	leucine rich repeat containing 14, mRNA (cDNA clone MGC:9269)
LRRC20	BC024001	leucine rich repeat containing 20, transcript variant 1, mRNA (cDNA clone MGC:26171)
LRRC23	BC029858	leucine rich repeat containing 23, mRNA (cDNA clone MGC:34414)
LRRC27	BC050097	leucine rich repeat containing 27, mRNA (cDNA clone MGC:48601)
LRRC34	BC032841	leucine rich repeat containing 34, mRNA (cDNA clone MGC:27085)
LRRC36	BC026156	cDNA clone partial cds
LRRC39	BC009613	leucine rich repeat containing 39, mRNA (cDNA clone MGC:14816)
LRRC3B	BC067784	leucine rich repeat containing 3B, mRNA (cDNA clone MGC:87183)
LRRC44	BC062795	leucine rich repeat containing 44, mRNA (cDNA clone MGC:72249)
LRRC48	BC047873	leucine rich repeat containing 48, mRNA (cDNA clone MGC:57559)
LRRC49	BC037982	leucine rich repeat containing 49, mRNA (cDNA clone MGC:46072)
LRRC4C	BC041374	leucine rich repeat containing 4C, mRNA (cDNA clone MGC:43884)
LRRC50	BC024009	leucine rich repeat containing 50, mRNA (cDNA clone MGC:26709)
LRRC56	BC035937	leucine rich repeat containing 56, mRNA (cDNA clone MGC:25996)
LRRC6	BC047286	leucine rich repeat containing 6, mRNA (cDNA clone MGC:51885)
LRRC61	BC001354	leucine rich repeat containing 61, mRNA (cDNA clone MGC:3036)
LRRC8B	BC030607	leucine rich repeat containing 8 family, member B, mRNA (cDNA clone MGC:26970)
LRRC1	BC070092	leucine rich repeat and coiled-coil domain containing 1, mRNA (cDNA clone MGC:87502)
LRRN1	BC034947	leucine rich repeat neuronal 1, mRNA (cDNA clone MGC:26098)
LRTM1	BC040732	leucine-rich repeats and transmembrane domains 1, mRNA (cDNA clone MGC:50257)
LSAMP	BC033803	limbic system-associated membrane protein, mRNA (cDNA clone MGC:45341)

Gene symbol	GenBank accession number	Function
LSM2	BC009192	LSM2 homolog, U6 small nuclear RNA associated (<i>S. cerevisiae</i>), mRNA (cDNA clone MGC:15227)
LSM4	BC022198	LSM4 homolog, U6 small nuclear RNA associated (<i>S. cerevisiae</i>), mRNA (cDNA clone MGC:4705)
LSM7	BC018621	LSM7 homolog, U6 small nuclear RNA associated (<i>S. cerevisiae</i>), mRNA (cDNA clone MGC:31849)
LSP1	BC001785	lymphocyte-specific protein 1, mRNA (cDNA clone MGC:2290)
LTBR	BC026262	lymphotoxin beta receptor (TNFR superfamily, member 3), mRNA (cDNA clone MGC:22593)
LTF	BC015823	lactotransferrin, mRNA (cDNA clone MGC:13619)
LUM	BC035997	lumican, mRNA (cDNA clone MGC:32797)
LUZP1	BC051733	leucine zipper protein 1, mRNA (cDNA clone MGC:51018)
LY86	BC038846	lymphocyte antigen 86, mRNA (cDNA clone MGC:47723)
LY96	BC020690	lymphocyte antigen 96, mRNA (cDNA clone MGC:22424)
LYNX1	BC032306	Ly6/neurotoxin 1, transcript variant 1, mRNA (cDNA clone MGC:40364)
LYSMD1	BC031649	LysM, putative peptidoglycan-binding, domain containing 1, mRNA (cDNA clone MGC:35223)
LZIC	BC063443	leucine zipper and CTNNBIP1 domain containing, mRNA (cDNA clone MGC:74624)
M6PRBP1	BC007566	mannose-6-phosphate receptor binding protein 1, mRNA (cDNA clone MGC:15516)
MAD2L1BP	BC002904	MAD2L1 binding protein, transcript variant 2, mRNA (cDNA clone MGC:11282)
MAG	BC053347	myelin associated glycoprotein, transcript variant 1, mRNA (cDNA clone MGC:61434)
MAL	BC003006	mal, T-cell differentiation protein, transcript variant a, mRNA (cDNA clone MGC:4006)
MALL	BC003179	mal, T-cell differentiation protein-like, mRNA (cDNA clone MGC:4419)
MANSC1	BC032998	MANSC domain containing 1, mRNA (cDNA clone MGC:26021)
MAOA	BC008064	monoamine oxidase A, mRNA (cDNA clone MGC:2288)
MAOB	BC022494	monoamine oxidase B, mRNA (cDNA clone MGC:26382)
MAP1LC3B	BC067797	microtubule-associated protein 1 light chain 3 beta, mRNA (cDNA clone MGC:87244)
MAP2K1IP1	BC026245	mitogen-activated protein kinase kinase 1 interacting protein 1, mRNA (cDNA clone MGC:22370)
MAP2K2	BC018645	mitogen-activated protein kinase kinase 2, mRNA (cDNA clone MGC:16530)
MAP2K7	BC038295	mitogen-activated protein kinase kinase 7, mRNA (cDNA clone MGC:33283)
MAP4K5	BC036013	mitogen-activated protein kinase kinase kinase 5, transcript variant 2, mRNA (cDNA clone MGC:32909)
MAPK13	BC004428	mitogen-activated protein kinase 13, mRNA (cDNA clone MGC:3830)
MAPKAP1	BC003044	mitogen-activated protein kinase associated protein 1, mRNA (cDNA clone MGC:4372)
MARCH3	BC047569	membrane-associated ring finger (C3HC4) 3, mRNA (cDNA clone MGC:48332)
MARCH8	BC025394	membrane-associated ring finger (C3HC4) 8, transcript variant 3, mRNA (cDNA clone MGC:26766)
MARCO	BC016004	macrophage receptor with collagenous structure, mRNA (cDNA clone MGC:27263)
MAST2	BC065499	microtubule associated testis specific serine/threonine protein kinase, mRNA (cDNA clone MGC:74852)
MATK	BC003109	megakaryocyte-associated tyrosine kinase, transcript variant 1, mRNA (cDNA clone MGC:2101)
MBP	BC065248	myelin basic protein, transcript variant 8, mRNA (cDNA clone MGC:70813)

Gene symbol	GenBank accession number	Function
MBTPS2	BC036465	membrane-bound transcription factor peptidase, site 2, mRNA (cDNA clone MGC:33733)
MCART1	BC008500	mitochondrial carrier triple repeat 1, mRNA (cDNA clone MGC:14836)
MCM2	BC017258	MCM2 minichromosome maintenance deficient 2, mitotin (<i>S. cerevisiae</i>), mRNA (cDNA clone MGC:29681)
MDFI	BC007836	MyoD family inhibitor, mRNA (cDNA clone MGC:14090)
MED28	BC011936	mediator of RNA polymerase II transcription, subunit 28 homolog (yeast), mRNA (cDNA clone MGC:20562)
METTL1	BC000550	methyltransferase like 1, transcript variant 1, mRNA (cDNA clone MGC:1853)
MFAP1	BC050742	microfibrillar-associated protein 1, mRNA (cDNA clone MGC:60394)
MFAP2	BC015039	microfibrillar-associated protein 2, transcript variant 2, mRNA (cDNA clone MGC:9450)
MFAP3	BC026244	microfibrillar-associated protein 3, mRNA (cDNA clone MGC:22342)
MFAP5	BC005901	microfibrillar associated protein 5, mRNA (cDNA clone MGC:14490)
MFN1	BC040557	mitofusin 1, transcript variant 1, mRNA (cDNA clone MGC:41806)
MFSD1	BC042197	major facilitator superfamily domain containing 1, mRNA (cDNA clone MGC:47590)
MFSD2	BC011587	major facilitator superfamily domain containing 2, mRNA (cDNA clone MGC:20425)
MGAT1	BC003575	mannosyl (alpha-1,3-)-glycoprotein beta-1,2-N-acetylglucosaminyltransferase, mRNA (cDNA clone MGC:2304)
MGLL	BC006230	monoglyceride lipase, transcript variant 1, mRNA (cDNA clone MGC:10338)
MGST1	BC005923	microsomal glutathione S-transferase 1, transcript variant 1b, mRNA (cDNA clone MGC:14525)
MGST3	BC003034	microsomal glutathione S-transferase 3, mRNA (cDNA clone MGC:4345)
MLC1	BC070042	megalencephalic leukoencephalopathy with subcortical cysts 1, transcript variant 2, mRNA (cDNA clone MGC:87083)
MLF2	BC000898	myeloid leukemia factor 2, mRNA (cDNA clone MGC:5310)
MLPH	BC001653	melanophilin, mRNA (cDNA clone MGC:2771)
MLSTD2	BC017377	male sterility domain containing 2, mRNA (cDNA clone MGC:16299)
MMD	BC026324	monocyte to macrophage differentiation-associated, mRNA (cDNA clone MGC:26202)
MMD2	BC067905	monocyte to macrophage differentiation-associated 2, mRNA (cDNA clone MGC:87704)
MMP15	BC055428	matrix metalloproteinase 15 (membrane-inserted), mRNA (cDNA clone MGC:51077)
MMP19	BC050368	matrix metalloproteinase 19, transcript variant rasi-1, mRNA (cDNA clone MGC:51823)
MMP23B	BC025719	matrix metalloproteinase 23B, mRNA (cDNA clone MGC:34412)
MMP28	BC002631	matrix metalloproteinase 28, mRNA (cDNA clone MGC:4164)
MMP7	BC003635	matrix metalloproteinase 7 (matrilysin, uterine), mRNA (cDNA clone MGC:3913)
MNS1	BC031046	meiosis-specific nuclear structural 1, mRNA (cDNA clone MGC:33009)
MOG	BC035938	myelin oligodendrocyte glycoprotein, mRNA (cDNA clone MGC:26137)
MORN1	BC021704	MORN repeat containing 1, mRNA (cDNA clone MGC:26016)
MPDU1	BC001898	mannose-P-dolichol utilization defect 1, mRNA (cDNA clone MGC:1967)

Gene symbol	GenBank accession number	Function
MRAP	BC062721	melanocortin 2 receptor accessory protein, mRNA (cDNA clone MGC:72030)
MRGPRX2	BC063450	MAS-related GPR, member X2, mRNA (cDNA clone MGC:70635)
MRPL12	BC002344	mitochondrial ribosomal protein L12, mRNA (cDNA clone MGC:8610)
MRPL14	BC065005	mitochondrial ribosomal protein L14, mRNA (cDNA clone MGC:70566)
MRPL18	BC001623	mitochondrial ribosomal protein L18, mRNA (cDNA clone MGC:777)
MRPL2	BC020212	mitochondrial ribosomal protein L2, mRNA (cDNA clone MGC:31853)
MRPL20	BC014316	mitochondrial ribosomal protein L20, mRNA (cDNA clone MGC:22703)
MRPL23	BC027710	mitochondrial ribosomal protein L23, mRNA (cDNA clone MGC:12795)
MRPL24	BC016700	mitochondrial ribosomal protein L24, transcript variant 1, mRNA (cDNA clone MGC:22737)
MRPL28	BC000990	mitochondrial ribosomal protein L28, mRNA (cDNA clone MGC:5323)
MRPL3	BC003375	mitochondrial ribosomal protein L3, mRNA (cDNA clone MGC:5219)
MRPL38	BC013311	mitochondrial ribosomal protein L38, mRNA (cDNA clone MGC:4810)
MRPL4	BC009858	mitochondrial ribosomal protein L4, transcript variant 1, mRNA (cDNA clone MGC:16367)
MRPL51	BC014329	mitochondrial ribosomal protein L51, mRNA (cDNA clone MGC:22862)
MRPL54	BC065273	mitochondrial ribosomal protein L54, mRNA (cDNA clone MGC:70382)
MRPL9	BC004517	mitochondrial ribosomal protein L9, mRNA (cDNA clone MGC:11226)
MRPS18A	BC010364	mitochondrial ribosomal protein S18A, mRNA (cDNA clone MGC:13413)
MRPS18B	BC005373	mitochondrial ribosomal protein S18B, mRNA (cDNA clone MGC:12489)
MRPS21	BC004566	mitochondrial ribosomal protein S21, transcript variant 1, mRNA (cDNA clone MGC:14148)
MRPS23	BC000242	mitochondrial ribosomal protein S23, mRNA (cDNA clone MGC:676)
MRPS26	BC013018	mitochondrial ribosomal protein S26, mRNA (cDNA clone MGC:4583)
MRPS31	BC022045	mitochondrial ribosomal protein S31, mRNA (cDNA clone MGC:27154)
MRPS34	BC001182	mitochondrial ribosomal protein S34, mRNA (cDNA clone MGC:2616)
MRPS6	BC000547	mitochondrial ribosomal protein S6, mRNA (cDNA clone MGC:2037)
MRVI1	BC028123	cDNA clone MGC:40177 complete cds
MS4A1	BC002807	membrane-spanning 4-domains, subfamily A, member 1, transcript variant 3, mRNA (cDNA clone MGC:3969)
MS4A3	BC008487	membrane-spanning 4-domains, subfamily A, member 3 (hematopoietic cell-specific), mRNA (cDNA clone MGC:14809)
MS4A4A	BC020648	membrane-spanning 4-domains, subfamily A, member 4, transcript variant 2, mRNA (cDNA clone MGC:22311)
MS4A6A	BC022854	membrane-spanning 4-domains, subfamily A, member 6A, transcript variant 1, mRNA (cDNA clone MGC:22650)
MS4A7	BC020673	membrane-spanning 4-domains, subfamily A, member 7, mRNA (cDNA clone MGC:22368)
MS4A8B	BC022895	membrane-spanning 4-domains, subfamily A, member 8B, mRNA (cDNA clone MGC:27396)

Gene symbol	GenBank accession number	Function
MSH4	BC033030	mutS homolog 4 (E. coli), mRNA (cDNA clone MGC:33143)
MSH6	BC004246	mutS homolog 6 (E. coli), mRNA (cDNA clone MGC:10498)
MSL3L1	BC031210	male-specific lethal 3-like 1 (Drosophila), transcript variant 1, mRNA (cDNA clone MGC:39484)
MSMB	BC005257	microseminoprotein, beta-, transcript variant PSP94, mRNA (cDNA clone MGC:12295)
MSRA	BC054033	methionine sulfoxide reductase A, mRNA (cDNA clone MGC:64957)
MSRB3	BC040053	methionine sulfoxide reductase B3, mRNA (cDNA clone MGC:50900)
MT1A	BC029475	metallothionein 1A (functional), mRNA (cDNA clone MGC:32848)
MT1F	BC029453	metallothionein 1F (functional), mRNA (cDNA clone MGC:32732)
MT1G	BC020757	metallothionein 1G, mRNA (cDNA clone MGC:22610)
MT1H	BC059780	metallothionein 1H, mRNA (cDNA clone MGC:70702)
MT1L	BC070351	metallothionein 1L, mRNA (cDNA clone MGC:88357)
MTCH2	BC000875	mitochondrial carrier homolog 2 (C. elegans), mRNA (cDNA clone MGC:4903)
MTDH	BC045642	metadherin, mRNA (cDNA clone MGC:41931)
MTMR1	BC032947	myotubularin related protein 1, mRNA (cDNA clone MGC:33194)
MTX2	BC067831	metaxin 2, transcript variant 1, mRNA (cDNA clone MGC:87378)
MUC15	BC020912	mucin 15, mRNA (cDNA clone MGC:24172)
MUC20	BC029267	mucin 20, mRNA (cDNA clone MGC:34717)
MYADM	BC013995	myeloid-associated differentiation marker, mRNA (cDNA clone MGC:20205)
MYD88	BC013589	myeloid differentiation primary response gene (88), mRNA (cDNA clone MGC:9601)
MYL9	BC002648	myosin, light polypeptide 9, regulatory, transcript variant 2, mRNA (cDNA clone MGC:3505)
MYLIP	BC002860	myosin regulatory light chain interacting protein, mRNA (cDNA clone MGC:4180)
MYOT	BC005376	myotilin, mRNA (cDNA clone MGC:12492)
MYST1	BC037773	MYST histone acetyltransferase 1, mRNA (cDNA clone MGC:41769)
NADK	BC001709	NAD kinase, mRNA (cDNA clone MGC:1900)
NANP	BC022552	N-acetylneuraminic acid phosphatase, mRNA (cDNA clone MGC:26833)
NAP1L1	BC002387	nucleosome assembly protein 1-like 1, transcript variant 1, mRNA (cDNA clone MGC:8688)
NAP1L2	BC026325	nucleosome assembly protein 1-like 2, mRNA (cDNA clone MGC:26243)
NAP1L4	BC022090	nucleosome assembly protein 1-like 4, mRNA (cDNA clone MGC:4565)
NARF	BC000438	nuclear prelamin A recognition factor, transcript variant 2, mRNA (cDNA clone MGC:8398)
NARS	BC001687	asparaginyl-tRNA synthetase, mRNA (cDNA clone MGC:855)
NAT5	BC008446	N-acetyltransferase 5 (ARD1 homolog, S. cerevisiae), mRNA (cDNA clone MGC:14667)
NAT9	BC004195	N-acetyltransferase 9, mRNA (cDNA clone MGC:3586)
NBPF3	BC024011	neuroblastoma breakpoint family, member 3, mRNA (cDNA clone MGC:26742)
NCAM1	BC047244	neural cell adhesion molecule 1, mRNA (cDNA clone MGC:47611)

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NCAM2	BC052946	neural cell adhesion molecule 2, mRNA (cDNA clone MGC:51008)
NCL	BC006494	nucleolin, mRNA (cDNA clone MGC:1440)
NCR1	BC064806	natural cytotoxicity triggering receptor 1, mRNA (cDNA clone MGC:65100)
NCSTN	BC047621	nicastatin, mRNA (cDNA clone MGC:51016)
NDE1	BC001421	nudE nuclear distribution gene E homolog 1 (A. nidulans), mRNA (cDNA clone MGC:1075)
NDFIP2	BC021988	Nedd4 family interacting protein 2, mRNA (cDNA clone MGC:23729)
NDRG4	BC011795	NDRG family member 4, mRNA (cDNA clone MGC:19632)
NDST1	BC012888	N-deacetylase/N-sulfotransferase (heparan glucosaminyl) 1, mRNA (cDNA clone MGC:9410)
NDST2	BC035711	N-deacetylase/N-sulfotransferase (heparan glucosaminyl) 2, mRNA (cDNA clone MGC:46209)
NDUFA1	BC000266	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 1, 7.5kDa, mRNA (cDNA clone MGC:2066)
NDUFA12	BC005936	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 12, mRNA (cDNA clone MGC:14554)
NDUFA2	BC003674	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 2, 8kDa, mRNA (cDNA clone MGC:12315)
NDUFA3	BC061644	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 3, 9kDa, mRNA (cDNA clone MGC:70789)
NDUFA5	BC070237	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 5, 13kDa, mRNA (cDNA clone MGC:88219)
NDUFA6	BC002772	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 6, 14kDa, mRNA (cDNA clone MGC:3686)
NDUFA8	BC001016	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 8, 19kDa, mRNA (cDNA clone MGC:793)
NDUFA9	BC015837	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 9, 39kDa, mRNA (cDNA clone MGC:27198)
NDUFAF1	BC000780	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, assembly factor 1, mRNA (cDNA clone MGC:707)
NDUFB11	BC010665	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 11, 17.3kDa, mRNA (cDNA clone MGC:8855)
NDUFB2	BC063026	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 2, 8kDa, mRNA (cDNA clone MGC:70788)
NDUFB3	BC018183	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 3, 12kDa, mRNA (cDNA clone MGC:9039)
NDUFB4	BC000855	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 4, 15kDa, mRNA (cDNA clone MGC:5105)
NDUFB5	BC009796	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 5, 16kDa, mRNA (cDNA clone MGC:13617)
NDUFB9	BC007672	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 9, 22kDa, mRNA (cDNA clone MGC:1186)
NDUFC2	BC007323	NADH dehydrogenase (ubiquinone) 1, subcomplex unknown, 2, 14.5kDa, mRNA (cDNA clone MGC:1432)
NDUFS1	BC030833	NADH dehydrogenase (ubiquinone) Fe-S protein 1, 75kDa (NADH-coenzyme Q reductase), mRNA (cDNA clone MGC:26839)
NDUFS3	BC000617	NADH dehydrogenase (ubiquinone) Fe-S protein 3, 30kDa (NADH-coenzyme Q reductase), mRNA (cDNA clone MGC:1958)
NDUFS4	BC005270	NADH dehydrogenase (ubiquinone) Fe-S protein 4, 18kDa (NADH-coenzyme Q reductase), mRNA (cDNA clone MGC:12313)
NDUFS5	BC001884	NADH dehydrogenase (ubiquinone) Fe-S protein 5, 15kDa (NADH-coenzyme Q reductase), mRNA (cDNA clone MGC:1496)

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NDUFS6	BC046155	NADH dehydrogenase (ubiquinone) Fe-S protein 6, 13kDa (NADH-coenzyme Q reductase), mRNA (cDNA clone MGC:57685)
NDUFS7	BC005954	NADH dehydrogenase (ubiquinone) Fe-S protein 7, 20kDa (NADH-coenzyme Q reductase), mRNA (cDNA clone MGC:14592)
NDUFV1	BC015645	NADH dehydrogenase (ubiquinone) flavoprotein 1, 51kDa, mRNA (cDNA clone MGC:23367)
NEK11	BC028587	NIMA (never in mitosis gene a)- related kinase 11, mRNA (cDNA clone MGC:27011)
NETO1	BC050329	neuropilin (NRP) and tolloid (TLL)-like 1, mRNA (cDNA clone MGC:48642)
NEURL	BC026336	neuralized-like (Drosophila), mRNA (cDNA clone MGC:26482)
NFYA	BC039244	nuclear transcription factor Y, alpha, mRNA (cDNA clone MGC:32974)
NGFR	BC050309	nerve growth factor receptor (TNFR superfamily, member 16), mRNA (cDNA clone MGC:48326)
NHP2L1	BC005358	NHP2 non-histone chromosome protein 2-like 1 (S. cerevisiae), mRNA (cDNA clone MGC:12461)
NID2	BC035608	nidogen 2 (osteonidogen), mRNA (cDNA clone MGC:45169)
NIF3L1	BC007654	NIF3 NGG1 interacting factor 3-like 1 (S. pombe), mRNA (cDNA clone MGC:2595)
NKG7	BC015759	natural killer cell group 7 sequence, mRNA (cDNA clone MGC:23111)
NLGN3	BC051715	neuroligin 3, mRNA (cDNA clone MGC:48305)
NME3	BC000250	non-metastatic cells 3, protein expressed in, mRNA (cDNA clone MGC:1695)
NME5	BC026182	non-metastatic cells 5, protein expressed in (nucleoside-diphosphate kinase), mRNA (cDNA clone MGC:33140)
NOC2L	BC003555	nucleolar complex associated 2 homolog (S. cerevisiae), mRNA (cDNA clone MGC:1451)
NOL1	BC000656	nucleolar protein 1, 120kDa, mRNA (cDNA clone MGC:3093)
NOL3	BC012798	nucleolar protein 3 (apoptosis repressor with CARD domain), mRNA (cDNA clone MGC:2009)
NOL4	BC000313	nucleolar protein 4, mRNA (cDNA clone MGC:8430)
NOX4	BC040105	NADPH oxidase 4, mRNA (cDNA clone MGC:48663)
NPDC1	BC004217	neural proliferation, differentiation and control, 1, mRNA (cDNA clone MGC:4597)
NPM1	BC014349	nucleophosmin (nucleolar phosphoprotein B23, numatrin), mRNA (cDNA clone MGC:24185)
NPM3	BC054868	nucleophosmin/nucleoplasmin, 3, mRNA (cDNA clone MGC:61940)
NPPA	BC005893	natriuretic peptide precursor A, mRNA (cDNA clone MGC:14467)
NPY1R	BC036657	neuropeptide Y receptor Y1, mRNA (cDNA clone MGC:33139)
NQO1	BC007659	NAD(P)H dehydrogenase, quinone 1, mRNA (cDNA clone MGC:2073)
NRAS	BC005219	neuroblastoma RAS viral (v-ras) oncogene homolog, mRNA (cDNA clone MGC:12238)
NRG4	BC017568	neuregulin 4, mRNA (cDNA clone MGC:22713)
NRIP3	BC008835	nuclear receptor interacting protein 3, mRNA (cDNA clone MGC:12847)
NSBP1	BC005342	nucleosomal binding protein 1, mRNA (cDNA clone MGC:12433)
NSFL1C	BC002801	NSFL1 (p97) cofactor (p47), transcript variant 1, mRNA (cDNA clone MGC:3347)
NSMCE1	BC018938	non-SMC element 1 homolog (S. cerevisiae), mRNA (cDNA clone MGC:14150)

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NT5C	BC022334	5', 3'-nucleotidase, cytosolic, mRNA (cDNA clone MGC:22779)
NTHL1	BC003014	nth endonuclease III-like 1 (E. coli), mRNA (cDNA clone MGC:4044)
NTSR2	BC022501	neurotensin receptor 2, mRNA (cDNA clone MGC:26447)
NUBP2	BC002768	nucleotide binding protein 2 (MinD homolog, E. coli), mRNA (cDNA clone MGC:3473)
NUDT16	BC031215	nudix (nucleoside diphosphate linked moiety X)-type motif 16, mRNA (cDNA clone MGC:39499)
NUMB	BC068476	numb homolog (Drosophila), transcript variant 4, mRNA (cDNA clone MGC:87117)
NUP155	BC039257	nucleoporin 155kDa, transcript variant 1, mRNA (cDNA clone MGC:33787)
NUP35	BC047029	nucleoporin 35kDa, mRNA (cDNA clone MGC:51954)
NUP37	BC000861	nucleoporin 37kDa, mRNA (cDNA clone MGC:5585)
NUP85	BC000697	nucleoporin 85kDa, mRNA (cDNA clone MGC:3092)
NUPL2	BC005327	nucleoporin like 2, mRNA (cDNA clone MGC:12413)
NXT1	BC003029	NTF2-like export factor 1, mRNA (cDNA clone MGC:4329)
OACT2	BC016005	O-acyltransferase (membrane bound) domain containing 2, mRNA (cDNA clone MGC:27266)
OAZ3	BC073949	cDNA clone MGC:90468 complete cds
OBSL1	BC061909	cDNA clone MGC:71026 complete cds
OCA2	BC012097	oculocutaneous albinism II (pink-eye dilution homolog, mouse), mRNA (cDNA clone MGC:20070)
OGDH	BC004964	oxoglutarate (alpha-ketoglutarate) dehydrogenase (lipoamide), transcript variant 1, mRNA (cDNA clone MGC:1693)
OGFOD1	BC032919	2-oxoglutarate and iron-dependent oxygenase domain containing 1, transcript variant 1, mRNA (cDNA clone MGC:39165)
OGFR	BC014137	opioid growth factor receptor, mRNA (cDNA clone MGC:20786)
OLFML3	BC009920	olfactomedin-like 3, mRNA (cDNA clone MGC:2896)
OLR1	BC022295	oxidised low density lipoprotein (lectin-like) receptor 1, mRNA (cDNA clone MGC:22491)
OMD	BC046356	osteomodulin, mRNA (cDNA clone MGC:49916)
OMG	BC018050	oligodendrocyte myelin glycoprotein, mRNA (cDNA clone MGC:26380)
OPRS1	BC004899	opioid receptor, sigma 1, transcript variant 1, mRNA (cDNA clone MGC:3851)
OR51E1	BC022401	olfactory receptor, family 51, subfamily E, member 1, mRNA (cDNA clone MGC:24137)
OR51E2	BC020768	olfactory receptor, family 51, subfamily E, member 2, mRNA (cDNA clone MGC:22638)
ORC6L	BC063565	origin recognition complex, subunit 6 homolog-like (yeast), mRNA (cDNA clone MGC:70742)
ORMDL1	BC005200	ORM1-like 1 (S. cerevisiae), mRNA (cDNA clone MGC:12207)
OSTM1	BC068581	osteopetrosis associated transmembrane protein 1, mRNA (cDNA clone MGC:87572)
P2RX1	BC044657	purinergic receptor P2X, ligand-gated ion channel, 1, mRNA (cDNA clone MGC:47756)
P2RX4	BC033826	purinergic receptor P2X, ligand-gated ion channel, 4, transcript variant 1, mRNA (cDNA clone MGC:45331)
P2RX5	BC039015	purinergic receptor P2X, ligand-gated ion channel, 5, transcript variant 1, mRNA (cDNA clone MGC:47755)

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P2RX7	BC011913	purinergic receptor P2X, ligand-gated ion channel, 7, transcript variant 1, mRNA (cDNA clone MGC:20089)
P2RY10	BC051875	purinergic receptor P2Y, G-protein coupled, 10, transcript variant 1, mRNA (cDNA clone MGC:60256)
P2RY12	BC017898	purinergic receptor P2Y, G-protein coupled, 12, transcript variant 1, mRNA (cDNA clone MGC:23802)
P2RY14	BC034989	purinergic receptor P2Y, G-protein coupled, 14, mRNA (cDNA clone MGC:33042)
PAIP2	BC062718	poly(A) binding protein interacting protein 2, mRNA (cDNA clone MGC:72018)
PAK7	BC024179	p21(CDKN1A)-activated kinase 7, transcript variant 2, mRNA (cDNA clone MGC:26232)
PANK2	BC008667	cDNA clone MGC:17708 complete cds
PANX1	BC016931	pannexin 1, mRNA (cDNA clone MGC:21309)
PAPSS2	BC009894	3'-phosphoadenosine 5'-phosphosulfate synthase 2, mRNA (cDNA clone MGC:1916)
PAQR3	BC031256	progesterin and adipoQ receptor family member III, mRNA (cDNA clone MGC:39698)
PAQR6	BC058509	progesterin and adipoQ receptor family member VI, transcript variant 2, mRNA (cDNA clone MGC:49853)
PAQR8	BC030664	progesterin and adipoQ receptor family member VIII, mRNA (cDNA clone MGC:33833)
PARD6A	BC015626	par-6 partitioning defective 6 homolog alpha (C.elegans), transcript variant 2, mRNA (cDNA clone MGC:22974)
PARK2	BC022014	Parkinson disease (autosomal recessive, juvenile) 2, parkin, mRNA (cDNA clone MGC:26491)
PARK7	BC008188	Parkinson disease (autosomal recessive, early onset) 7, mRNA (cDNA clone MGC:5243)
PARN	BC050029	poly(A)-specific ribonuclease (deadenylation nuclease), mRNA (cDNA clone MGC:41881)
PARP11	BC017569	poly (ADP-ribose) polymerase family, member 11, mRNA (cDNA clone MGC:22721)
PARP16	BC031074	poly (ADP-ribose) polymerase family, member 16, mRNA (cDNA clone MGC:33721)
PARP8	BC075801	poly (ADP-ribose) polymerase family, member 8, mRNA (cDNA clone MGC:87748)
PARVA	BC014535	parvin, alpha, mRNA (cDNA clone MGC:13400)
PCBD2	BC054021	pterin-4 alpha-carbinolamine dehydratase/dimerization cofactor of hepatocyte nuclear factor 1 alpha (TCF1) 2, mRNA (cDNA clone MGC:61862)
PCDH21	BC038799	protocadherin 21, mRNA (cDNA clone MGC:46603)
PCDH8	BC036025	protocadherin 8, transcript variant 1, mRNA (cDNA clone MGC:33061)
PCDHA6	BC036674	protocadherin alpha 6, mRNA (cDNA clone MGC:33675)
PCDHB12	BC045637	protocadherin beta 12, mRNA (cDNA clone MGC:41768)
PCDHB16	BC036062	protocadherin beta 16, mRNA (cDNA clone MGC:33674)
PCNA	BC062439	proliferating cell nuclear antigen, transcript variant 2, mRNA (cDNA clone MGC:72035)
PCNXL2	BC008300	pecanex-like 2 (Drosophila), mRNA (cDNA clone MGC:15062)
PCOLCE2	BC006265	procollagen C-endopeptidase enhancer 2, mRNA (cDNA clone MGC:10312)
PCP2	BC038715	Purkinje cell protein 2, mRNA (cDNA clone MGC:41903)
PCSK2	BC005815	proprotein convertase subtilisin/kexin type 2, mRNA (cDNA clone MGC:10713)
PCSK5	BC012064	proprotein convertase subtilisin/kexin type 5, mRNA (cDNA clone MGC:19910)

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PDE2A	BC040974	phosphodiesterase 2A, cGMP-stimulated, mRNA (cDNA clone MGC:41880)
PDE6B	BC000249	phosphodiesterase 6B, cGMP-specific, rod, beta (congenital stationary night blindness 3, autosomal dominant), mRNA (cDNA clone MGC:1689)
PDE6D	BC007831	phosphodiesterase 6D, cGMP-specific, rod, delta, mRNA (cDNA clone MGC:14096)
PDE9A	BC009047	phosphodiesterase 9A, transcript variant 2, mRNA (cDNA clone MGC:9130)
PDGFRL	BC010927	platelet-derived growth factor receptor-like, mRNA (cDNA clone MGC:13519)
PDIA5	BC001625	protein disulfide isomerase family A, member 5, mRNA (cDNA clone MGC:1259)
PDLIM1	BC018755	PDZ and LIM domain 1 (elfin), mRNA (cDNA clone MGC:31954)
PDXK	BC000123	pyridoxal (pyridoxine, vitamin B6) kinase, mRNA (cDNA clone MGC:3128)
PDZK1	BC006518	PDZ domain containing 1, mRNA (cDNA clone MGC:3680)
PEA15	BC022554	phosphoprotein enriched in astrocytes 15, mRNA (cDNA clone MGC:26842)
PEX11A	BC009697	peroxisomal biogenesis factor 11A, mRNA (cDNA clone MGC:9244)
PEX11B	BC011963	peroxisomal biogenesis factor 11B, mRNA (cDNA clone MGC:9103)
PEX12	BC031085	peroxisomal biogenesis factor 12, mRNA (cDNA clone MGC:33813)
PEX13	BC067090	peroxisome biogenesis factor 13, mRNA (cDNA clone MGC:71242)
PEX26	BC047320	peroxisome biogenesis factor 26, mRNA (cDNA clone MGC:54167)
PEX3	BC014551	peroxisomal biogenesis factor 3, mRNA (cDNA clone MGC:13693)
PEX5	BC010621	peroxisomal biogenesis factor 5, mRNA (cDNA clone MGC:9180)
PFKL	BC006422	phosphofructokinase, liver, transcript variant 1, mRNA (cDNA clone MGC:12724)
PGAM1	BC011678	phosphoglycerate mutase 1 (brain), mRNA (cDNA clone MGC:15086)
PGAM2	BC001904	phosphoglycerate mutase 2 (muscle), mRNA (cDNA clone MGC:2269)
PGD	BC000368	phosphogluconate dehydrogenase, mRNA (cDNA clone MGC:8331)
PHC1	BC073964	polyhomeotic-like 1 (Drosophila), mRNA (cDNA clone MGC:87926)
PHF1	BC008834	PHD finger protein 1, transcript variant 2, mRNA (cDNA clone MGC:12771)
PHF13	BC038516	PHD finger protein 13, mRNA (cDNA clone MGC:43399)
PHF22	BC014442	PHD finger protein 22, mRNA (cDNA clone MGC:22964)
PHKG2	BC002541	phosphorylase kinase, gamma 2 (testis), mRNA (cDNA clone MGC:2028)
PHLDA2	BC005034	pleckstrin homology-like domain, family A, member 2, mRNA (cDNA clone MGC:12714)
PHYHIPL	BC011268	phytanoyl-CoA 2-hydroxylase interacting protein-like, mRNA (cDNA clone MGC:18231)
PIAS2	BC015190	protein inhibitor of activated STAT, 2, transcript variant alpha, mRNA (cDNA clone MGC:14633)
PIGA	BC038236	phosphatidylinositol glycan, class A (paroxysmal nocturnal hemoglobinuria), transcript variant 1, mRNA (cDNA clone MGC:46038)
PIGF	BC029408	phosphatidylinositol glycan, class F, transcript variant 1, mRNA (cDNA clone MGC:32646)
PIGH	BC004100	phosphatidylinositol glycan, class H, mRNA (cDNA clone MGC:10360)

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PIGK	BC020737	phosphatidylinositol glycan, class K, mRNA (cDNA clone MGC:22559)
PIGL	BC068197	phosphatidylinositol glycan, class L, mRNA (cDNA clone MGC:71885)
PIGN	BC028363	phosphatidylinositol glycan, class N, transcript variant 1, mRNA (cDNA clone MGC:26427)
PIGX	BC022542	phosphatidylinositol glycan, class X, mRNA (cDNA clone MGC:26804)
PIK3C3	BC053651	phosphoinositide-3-kinase, class 3, mRNA (cDNA clone MGC:61518)
PIK4CB	BC040300	phosphatidylinositol 4-kinase, catalytic, beta polypeptide, mRNA (cDNA clone MGC:42391)
PIN1	BC002899	protein (peptidylprolyl cis/trans isomerase) NIMA-interacting 1, mRNA (cDNA clone MGC:10717)
PIP5K2B	BC027459	phosphatidylinositol-4-phosphate 5-kinase, type II, beta, transcript variant 2, mRNA (cDNA clone MGC:34571)
PKD2L2	BC044581	polycystic kidney disease 2-like 2, mRNA (cDNA clone MGC:57172)
PKP3	BC000081	plakophilin 3, mRNA (cDNA clone MGC:3235)
PKP4	BC050308	plakophilin 4, transcript variant 2, mRNA (cDNA clone MGC:48319)
PLA2G2A	BC005919	phospholipase A2, group IIA (platelets, synovial fluid), mRNA (cDNA clone MGC:14516)
PLAUR	BC002788	plasminogen activator, urokinase receptor, transcript variant 1, mRNA (cDNA clone MGC:3905)
PLEK2	BC001226	pleckstrin 2, mRNA (cDNA clone MGC:4867)
PLEKHA1	BC042458	pleckstrin homology domain containing, family A (phosphoinositide binding specific) member 1, transcript variant 1, mRNA (cDNA clone MGC:42747)
PLEKHB1	BC008075	pleckstrin homology domain containing, family B (evectins) member 1, mRNA (cDNA clone MGC:2933)
PLEKHJ1	BC003084	pleckstrin homology domain containing, family J member 1, mRNA (cDNA clone MGC:985)
PLK1	BC014846	polo-like kinase 1 (Drosophila), mRNA (cDNA clone MGC:9748)
PLN	BC005269	phospholamban, mRNA (cDNA clone MGC:12311)
PLP1	BC002665	proteolipid protein 1 (Pelizaeus-Merzbacher disease, spastic paraplegia 2, uncomplicated), transcript variant 2, mRNA (cDNA clone MGC:3940)
PLSCR1	BC032718	phospholipid scramblase 1, mRNA (cDNA clone MGC:45015)
PLSCR3	BC011735	phospholipid scramblase 3, mRNA (cDNA clone MGC:19480)
PLXDC1	BC036059	plexin domain containing 1, mRNA (cDNA clone MGC:33667)
PLXDC2	BC012885	plexin domain containing 2, mRNA (cDNA clone MGC:17681)
PMM2	BC008310	phosphomannomutase 2, mRNA (cDNA clone MGC:15274)
PMP22	BC019040	peripheral myelin protein 22, transcript variant 2, mRNA (cDNA clone MGC:20769)
PMVK	BC007694	phosphomevalonate kinase, mRNA (cDNA clone MGC:11362)
PNMA2	BC062301	paraneoplastic antigen MA2, mRNA (cDNA clone MGC:71104)
PNRC2	BC001959	proline-rich nuclear receptor coactivator 2, mRNA (cDNA clone MGC:885)
POLH	BC015742	polymerase (DNA directed), eta, mRNA (cDNA clone MGC:23030)
POLL	BC068529	polymerase (DNA directed), lambda, mRNA (cDNA clone MGC:87359)
POLR1C	BC008863	polymerase (RNA) I polypeptide C, 30kDa, transcript variant 1, mRNA (cDNA clone MGC:15323)

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POLR2E	BC034144	polymerase (RNA) II (DNA directed) polypeptide E, 25kDa, mRNA (cDNA clone MGC:32760)
POLR2L	BC005903	polymerase (RNA) II (DNA directed) polypeptide L, 7.6kDa, mRNA (cDNA clone MGC:14494)
POLR3C	BC002586	polymerase (RNA) III (DNA directed) polypeptide C (62kD), mRNA (cDNA clone MGC:1325)
POLR3E	BC000285	polymerase (RNA) III (DNA directed) polypeptide E (80kD), mRNA (cDNA clone MGC:957)
POLR3GL	BC004355	polymerase (RNA) III (DNA directed) polypeptide G (32kD) like, mRNA (cDNA clone MGC:3200)
PON2	BC046160	paraoxonase 2, mRNA (cDNA clone MGC:57708)
POPDC3	BC022323	popeye domain containing 3, mRNA (cDNA clone MGC:22671)
PPAPDC2	BC038108	phosphatidic acid phosphatase type 2 domain containing 2, mRNA (cDNA clone MGC:33278)
PPBP	BC028217	pro-platelet basic protein (chemokine (C-X-C motif) ligand 7), mRNA (cDNA clone MGC:40008)
PPFIBP2	BC021714	PTPRF interacting protein, binding protein 2 (liprin beta 2), mRNA (cDNA clone MGC:26737)
PPIF	BC005020	peptidylprolyl isomerase F (cyclophilin F), mRNA (cDNA clone MGC:11022)
PPM1J	BC073828	protein phosphatase 1J (PP2C domain containing), mRNA (cDNA clone MGC:90149)
PPP1CC	BC014073	protein phosphatase 1, catalytic subunit, gamma isoform, mRNA (cDNA clone MGC:20085)
PPP1R3C	BC012625	protein phosphatase 1, regulatory (inhibitor) subunit 3C, mRNA (cDNA clone MGC:13673)
PPP1R7	BC000910	protein phosphatase 1, regulatory subunit 7, mRNA (cDNA clone MGC:5224)
PPP4C	BC001416	protein phosphatase 4 (formerly X), catalytic subunit, mRNA (cDNA clone MGC:1882)
PRDX2	BC003022	peroxiredoxin 2, transcript variant 1, mRNA (cDNA clone MGC:4104)
PREI3	BC005237	preimplantation protein 3, transcript variant 1, mRNA (cDNA clone MGC:12264)
PRELP	BC032498	proline/arginine-rich end leucine-rich repeat protein, mRNA (cDNA clone MGC:45323)
PRG2	BC005929	proteoglycan 2, bone marrow (natural killer cell activator, eosinophil granule major basic protein), mRNA (cDNA clone MGC:14537)
PRH1	BC064553	cDNA clone MGC:74956 complete cds
PRKACB	BC035058	protein kinase, cAMP-dependent, catalytic, beta, transcript variant 2, mRNA (cDNA clone MGC:41879)
PRKCB1	BC036472	protein kinase C, beta 1, transcript variant 2, mRNA (cDNA clone MGC:41878)
PRKCZ	BC014270	protein kinase C, zeta, mRNA (cDNA clone MGC:10512)
PRM1	BC003673	protamine 1, mRNA (cDNA clone MGC:12307)
PRM2	BC005303	protamine 2, mRNA (cDNA clone MGC:12373)
PRMT2	BC000727	protein arginine methyltransferase 2, transcript variant 1, mRNA (cDNA clone MGC:1721)
PRMT3	BC064831	protein arginine methyltransferase 3, mRNA (cDNA clone MGC:72048)
PRMT6	BC073866	protein arginine methyltransferase 6, mRNA (cDNA clone MGC:90294)
PRMT8	BC022458	protein arginine methyltransferase 8, mRNA (cDNA clone MGC:26069)
PRND	BC043644	prion protein 2 (dublet), mRNA (cDNA clone MGC:41841)
PRNP	BC022532	prion protein (p27-30) (Creutzfeld-Jakob disease, Gerstmann-Strausler-Scheinker syndrome, fatal familial insomnia), transcript variant 2, mRNA (cDNA clone MGC:26679)

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PROCR	BC014451	protein C receptor, endothelial (EPCR), mRNA (cDNA clone MGC:23024)
PROM1	BC012089	prominin 1, mRNA (cDNA clone MGC:20041)
PRPF3	BC000184	PRP3 pre-mRNA processing factor 3 homolog (yeast), mRNA (cDNA clone MGC:2026)
PRPSAP1	BC009012	phosphoribosyl pyrophosphate synthetase-associated protein 1, mRNA (cDNA clone MGC:17110)
PRRG4	BC063393	proline rich Gla (G-carboxyglutamic acid) 4 (transmembrane), mRNA (cDNA clone MGC:74683)
PRUNE	BC025304	prune homolog (Drosophila), mRNA (cDNA clone MGC:39274)
PSAP1	#N/A	
PSCA	BC065183	prostate stem cell antigen, mRNA (cDNA clone MGC:71224)
PSCD2	BC038713	pleckstrin homology, Sec7 and coiled-coil domains 2 (cytohesin-2), transcript variant 1, mRNA (cDNA clone MGC:41793)
PSCD3	BC028717	pleckstrin homology, Sec7 and coiled-coil domains 3, mRNA (cDNA clone MGC:33020)
PSENEN	BC009575	presenilin enhancer 2 homolog (C. elegans), mRNA (cDNA clone MGC:14572)
PSMA1	BC008472	proteasome (prosome, macropain) subunit, alpha type, 1, transcript variant 2, mRNA (cDNA clone MGC:14751)
PSMB4	BC008314	proteasome (prosome, macropain) subunit, beta type, 4, mRNA (cDNA clone MGC:15583)
PSMB8	BC001114	proteasome (prosome, macropain) subunit, beta type, 8 (large multifunctional peptidase 7), transcript variant 1, mRNA (cDNA clone MGC:1491)
PSMB9	BC065513	proteasome (prosome, macropain) subunit, beta type, 9 (large multifunctional peptidase 2), transcript variant 1, mRNA (cDNA clone MGC:70470)
PSMC2	BC002589	proteasome (prosome, macropain) 26S subunit, ATPase, 2, mRNA (cDNA clone MGC:3004)
PSMC5	BC002367	proteasome (prosome, macropain) 26S subunit, ATPase, 5, mRNA (cDNA clone MGC:8452)
PSMD13	BC001747	proteasome (prosome, macropain) 26S subunit, non-ATPase, 13, transcript variant 1, mRNA (cDNA clone MGC:672)
PSMD4	BC002365	proteasome (prosome, macropain) 26S subunit, non-ATPase, 4, transcript variant 1, mRNA (cDNA clone MGC:8410)
PSMD4P2	BC068549	proteasome (prosome, macropain) 26S subunit, non-ATPase, 4, pseudogene 2, mRNA (cDNA clone MGC:87444)
PSRC1	BC056909	proline/serine-rich coiled-coil 1, mRNA (cDNA clone MGC:65164)
PTAFR	BC063000	platelet-activating factor receptor, mRNA (cDNA clone MGC:74702)
PTDSS1	BC004390	phosphatidylserine synthase 1, mRNA (cDNA clone MGC:10968)
PTEN	BC005821	phosphatase and tensin homolog (mutated in multiple advanced cancers 1), mRNA (cDNA clone MGC:11227)
PTGDS	BC005939	prostaglandin D2 synthase 21kDa (brain), mRNA (cDNA clone MGC:14559)
PTGER3	BC024229	prostaglandin E receptor 3 (subtype EP3), transcript variant 6, mRNA (cDNA clone MGC:27302)
PTH1H	BC005961	parathyroid hormone-like hormone, transcript variant 2, mRNA (cDNA clone MGC:14611)

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PTN	BC005916	pleiotrophin (heparin binding growth factor 8, neurite growth-promoting factor 1), mRNA (cDNA clone MGC:14512)
PTPLA	BC010353	protein tyrosine phosphatase-like (proline instead of catalytic arginine), member a, mRNA (cDNA clone MGC:13358)
PTPN1	BC015660	protein tyrosine phosphatase, non-receptor type 1, mRNA (cDNA clone MGC:23121)
PTPN11	BC008692	protein tyrosine phosphatase, non-receptor type 11 (Noonan syndrome 1), mRNA (cDNA clone MGC:17206)
PTPN12	BC050008	protein tyrosine phosphatase, non-receptor type 12, mRNA (cDNA clone MGC:48282)
PTPN7	BC001746	protein tyrosine phosphatase, non-receptor type 7, transcript variant 2, mRNA (cDNA clone MGC:2258)
PTPRE	BC050062	protein tyrosine phosphatase, receptor type, E, mRNA (cDNA clone MGC:48280)
PTPRM	BC051651	protein tyrosine phosphatase, receptor type, M, mRNA (cDNA clone MGC:51345)
PTPRN	BC070053	protein tyrosine phosphatase, receptor type, N, mRNA (cDNA clone MGC:87161)
PTPRN2	BC034040	protein tyrosine phosphatase, receptor type, N polypeptide 2, transcript variant 3, mRNA (cDNA clone MGC:26506)
PVRL2	BC003091	poliovirus receptor-related 2 (herpesvirus entry mediator B), mRNA (cDNA clone MGC:1349)
PVRL3	BC067808	poliovirus receptor-related 3, mRNA (cDNA clone MGC:87277)
PWP2H	BC014988	PWP2 periodic tryptophan protein homolog (yeast), mRNA (cDNA clone MGC:23222)
PXMP3	BC005375	peroxisomal membrane protein 3, 35kDa (Zellweger syndrome), mRNA (cDNA clone MGC:12491)
PXMP4	BC001147	peroxisomal membrane protein 4, 24kDa, mRNA (cDNA clone MGC:1213)
PYCARD	BC004470	PYD and CARD domain containing, transcript variant 3, mRNA (cDNA clone MGC:10332)
PYCR1	BC001504	pyrroline-5-carboxylate reductase 1, transcript variant 1, mRNA (cDNA clone MGC:2273)
QPCTL	BC011553	glutaminy-peptide cyclotransferase-like, mRNA (cDNA clone MGC:19993)
QPRT	BC010033	quinolinate phosphoribosyltransferase (nicotinate-nucleotide pyrophosphorylase (carboxylating)), mRNA (cDNA clone MGC:19694)
QTRTD1	BC039265	queuine tRNA-ribosyltransferase domain containing 1, mRNA (cDNA clone MGC:33882)
RAB20	BC026025	RAB20, member RAS oncogene family, mRNA (cDNA clone MGC:39156)
RAB40B	BC018039	RAB40B, member RAS oncogene family, mRNA (cDNA clone MGC:26251)
RAB40C	BC028696	RAB40C, member RAS oncogene family, mRNA (cDNA clone MGC:26738)
RAB43	BC082988	RAB43, member RAS oncogene family, mRNA (cDNA clone MGC:90481)
RAB4A	BC004309	RAB4A, member RAS oncogene family, mRNA (cDNA clone MGC:10912)
RAB5A	BC001267	RAB5A, member RAS oncogene family, mRNA (cDNA clone MGC:5048)
RAB8A	BC002977	RAB8A, member RAS oncogene family, mRNA (cDNA clone MGC:2196)
RABAC1	BC008950	Rab acceptor 1 (prenylated), mRNA (cDNA clone MGC:3593)
RABL3	BC020832	RAB, member of RAS oncogene family-like 3, mRNA (cDNA clone MGC:23920)
RAD51AP1	BC016330	RAD51 associated protein 1, mRNA (cDNA clone MGC:23756)

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RAG1AP1	BC005943	recombination activating gene 1 activating protein 1, mRNA (cDNA clone MGC:14566)
RANBP3	BC004349	RAN binding protein 3, mRNA (cDNA clone MGC:1177)
RAP1GDS1	BC001851	RAP1, GTP-GDP dissociation stimulator 1, mRNA (cDNA clone MGC:4525)
RAP2A	BC041333	RAP2A, member of RAS oncogene family, mRNA (cDNA clone MGC:41795)
RAPSN	BC004196	receptor-associated protein of the synapse, 43kD, transcript variant 2, mRNA (cDNA clone MGC:3597)
RASSF8	BC030021	Ras association (RalGDS/AF-6) domain family 8, mRNA (cDNA clone MGC:33262)
RAXL1	BC018709	retina and anterior neural fold homeobox like 1, mRNA (cDNA clone MGC:31769)
RBBP4	BC053904	retinoblastoma binding protein 4, mRNA (cDNA clone MGC:61456)
RBBP9	BC015938	retinoblastoma binding protein 9, transcript variant 1, mRNA (cDNA clone MGC:9236)
RBL2	BC034490	retinoblastoma-like 2 (p130), mRNA (cDNA clone MGC:26535)
RBM16	BC070071	RNA binding motif protein 16, mRNA (cDNA clone MGC:87340)
RBM34	BC029451	RNA binding motif protein 34, mRNA (cDNA clone MGC:32727)
RBP4	BC020633	retinol binding protein 4, plasma, mRNA (cDNA clone MGC:22269)
RBP5	BC029355	retinol binding protein 5, cellular, mRNA (cDNA clone MGC:32522)
RBP7	BC063013	retinol binding protein 7, cellular, mRNA (cDNA clone MGC:70641)
RCC1	BC010067	regulator of chromosome condensation 1, mRNA (cDNA clone MGC:19564)
RCC2	BC053908	regulator of chromosome condensation 2, mRNA (cDNA clone MGC:61610)
RDX	BC047109	radixin, mRNA (cDNA clone MGC:48283)
RECQL	BC001052	RecQ protein-like (DNA helicase Q1-like), transcript variant 2, mRNA (cDNA clone MGC:1648)
REEP2	BC006218	receptor accessory protein 2, mRNA (cDNA clone MGC:10610)
REEP4	BC013048	receptor accessory protein 4, mRNA (cDNA clone MGC:9377)
REEP5	BC000232	receptor accessory protein 5, mRNA (cDNA clone MGC:2267)
REEP6	BC008201	receptor accessory protein 6, mRNA (cDNA clone MGC:9381)
REERG	BC007997	RAS-like, estrogen-regulated, growth inhibitor, mRNA (cDNA clone MGC:15754)
RET	BC004257	ret proto-oncogene (multiple endocrine neoplasia and medullary thyroid carcinoma 1, Hirschsprung disease), transcript variant 4, mRNA (cDNA clone MGC:10752)
RFP2	BC063407	ret finger protein 2, mRNA (cDNA clone MGC:74780)
RFX2	BC071571	regulatory factor X, 2 (influences HLA class II expression), mRNA (cDNA clone MGC:87156)
RFX5	BC017471	regulatory factor X, 5 (influences HLA class II expression), transcript variant 1, mRNA (cDNA clone MGC:10188)
RG9MTD2	BC028373	RNA (guanine-9-) methyltransferase domain containing 2, mRNA (cDNA clone MGC:27034)
RGR	BC011349	retinal G protein coupled receptor, mRNA (cDNA clone MGC:17107)
RGS1	BC015510	regulator of G-protein signalling 1, mRNA (cDNA clone MGC:9198)
RGS13	BC056866	regulator of G-protein signalling 13, transcript variant 1, mRNA (cDNA clone MGC:64842)

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RGS14	BC014094	regulator of G-protein signalling 14, mRNA (cDNA clone MGC:20032)
RGS17	BC013117	regulator of G-protein signalling 17, mRNA (cDNA clone MGC:8711)
RGS18	BC020632	regulator of G-protein signalling 18, mRNA (cDNA clone MGC:22266)
RGS19	BC063010	regulator of G-protein signalling 19, mRNA (cDNA clone MGC:70851)
RGS2	BC007049	regulator of G-protein signalling 2, 24kDa, mRNA (cDNA clone MGC:12460)
RGS20	BC063490	regulator of G-protein signalling 20, mRNA (cDNA clone MGC:74877)
RGS3	BC042555	regulator of G-protein signalling 3, transcript variant 1, mRNA (cDNA clone MGC:34286)
RGS7	BC022009	regulator of G-protein signalling 7, mRNA (cDNA clone MGC:26289)
RHAG	BC012605	Rhesus blood group-associated glycoprotein, mRNA (cDNA clone MGC:13605)
RHCG	BC030965	Rhesus blood group, C glycoprotein, mRNA (cDNA clone MGC:32584)
RHOA	BC005976	ras homolog gene family, member A, mRNA (cDNA clone MGC:14663)
RIC3	BC022455	resistance to inhibitors of cholinesterase 3 homolog (C. elegans), mRNA (cDNA clone MGC:26042)
RIF1	BC008115	chromosome 1 open reading frame 103, mRNA (cDNA clone MGC:16981)
RIT2	BC018060	Ras-like without CAAX 2, mRNA (cDNA clone MGC:26503)
RNASEH2A	BC011748	ribonuclease H2, large subunit, mRNA (cDNA clone MGC:19659)
RND1	BC026356	Rho family GTPase 1, mRNA (cDNA clone MGC:26932)
RNF10	BC031596	ring finger protein 10, mRNA (cDNA clone MGC:35311)
RNF103	BC035053	ring finger protein 103, mRNA (cDNA clone MGC:41857)
RNF11	BC047654	ring finger protein 11, mRNA (cDNA clone MGC:51169)
RNF113A	BC000832	ring finger protein 113A, mRNA (cDNA clone MGC:4999)
RNF128	BC063404	ring finger protein 128, mRNA (cDNA clone MGC:74626)
RNF13	BC009803	ring finger protein 13, transcript variant 1, mRNA (cDNA clone MGC:13689)
RNF133	BC022038	ring finger protein 133, mRNA (cDNA clone MGC:27072)
RNF141	BC018104	ring finger protein 141, mRNA (cDNA clone MGC:8715)
RNF144	BC050373	ring finger protein 144, mRNA (cDNA clone MGC:51874)
RNF146	BC008235	ring finger protein 146, mRNA (cDNA clone MGC:9892)
RNF149	BC032328	ring finger protein 149, mRNA (cDNA clone MGC:40400)
RNF168	BC033791	ring finger protein 168, mRNA (cDNA clone MGC:45398)
RNF182	BC050030	ring finger protein 182, mRNA (cDNA clone MGC:48604)
RNF190	BC035021	ring finger protein 190, mRNA (cDNA clone MGC:33596)
RNF2	BC012583	ring finger protein 2, mRNA (cDNA clone MGC:13490)
RNF25	BC015612	ring finger protein 25, mRNA (cDNA clone MGC:22940)
RNF36	BC033314	ring finger protein 36, mRNA (cDNA clone MGC:35082)
RNF38	BC033786	ring finger protein 38, mRNA (cDNA clone MGC:44972)

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RNF41	BC032637	ring finger protein 41, transcript variant 3, mRNA (cDNA clone MGC:45228)
RNF7	BC008627	ring finger protein 7, transcript variant 1, mRNA (cDNA clone MGC:17274)
RNH1	BC024037	ribonuclease/angiogenin inhibitor 1, transcript variant 3, mRNA (cDNA clone MGC:10747)
RNPEP	BC012166	arginyl aminopeptidase (aminopeptidase B), mRNA (cDNA clone MGC:20408)
RNPS1	BC001838	RNA binding protein S1, serine-rich domain, transcript variant 2, mRNA (cDNA clone MGC:4450)
RPA3	BC009868	replication protein A3, 14kDa, mRNA (cDNA clone MGC:16404)
RPE	BC016764	ribulose-5-phosphate-3-epimerase, transcript variant 1, mRNA (cDNA clone MGC:22637)
RPL10A	BC006791	ribosomal protein L10a, mRNA (cDNA clone MGC:5203)
RPL17	BC017831	ribosomal protein L17, transcript variant 2, mRNA (cDNA clone MGC:22482)
RPL18A	BC066319	ribosomal protein L18a, mRNA (cDNA clone MGC:87208)
RPL27A	BC005326	ribosomal protein L27a, mRNA (cDNA clone MGC:12412)
RPL36	BC003052	ribosomal protein L36, transcript variant 2, mRNA (cDNA clone MGC:781)
RPL37A	BC016748	ribosomal protein L37a, mRNA (cDNA clone MGC:26772)
RPL37A	BC016748	ribosomal protein L37a, mRNA (cDNA clone MGC:26772)
RPL38	BC000603	ribosomal protein L38, mRNA (cDNA clone MGC:1637)
RPL7L1	BC058020	ribosomal protein L7-like 1, mRNA (cDNA clone MGC:62004)
RPLP2	BC005920	ribosomal protein, large, P2, mRNA (cDNA clone MGC:14517)
RPP30	BC006991	ribonuclease P/MRP 30kDa subunit, mRNA (cDNA clone MGC:12256)
RPS10	BC001032	ribosomal protein S10, mRNA (cDNA clone MGC:1633)
RPS13	BC000475	ribosomal protein S13, mRNA (cDNA clone MGC:8648)
RPS14	BC003401	ribosomal protein S14, mRNA (cDNA clone MGC:5429)
RPS15	BC064908	ribosomal protein S15, mRNA (cDNA clone MGC:70657)
RPS2	BC001795	ribosomal protein S2, mRNA (cDNA clone MGC:3141)
RRM1	BC006498	ribonucleotide reductase M1 polypeptide, mRNA (cDNA clone MGC:2326)
RSBN1	BC026155	round spermatid basic protein 1, mRNA (cDNA clone MGC:26157)
RSPO3	BC022367	R-spondin 3 homolog (Xenopus laevis), mRNA (cDNA clone MGC:23895)
RSRC1	BC006982	arginine/serine-rich coiled-coil 1, mRNA (cDNA clone MGC:12197)
RTCD1	BC012604	RNA terminal phosphate cyclase domain 1, mRNA (cDNA clone MGC:13604)
RTP4	BC013161	receptor transporter protein 4, mRNA (cDNA clone MGC:21535)
RXRB	BC001167	retinoid X receptor, beta, mRNA (cDNA clone MGC:1831)
S100A1	BC014392	S100 calcium binding protein A1, mRNA (cDNA clone MGC:1324)
S100A10	BC015973	S100 calcium binding protein A10 (annexin II ligand, calpactin I, light polypeptide (p11)), mRNA (cDNA clone MGC:23737)
S100A11	BC014354	S100 calcium binding protein A11 (calgizzarin), mRNA (cDNA clone MGC:24205)

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S100A13	BC000632	S100 calcium binding protein A13, transcript variant 3, mRNA (cDNA clone MGC:1368)
S100A14	BC005019	S100 calcium binding protein A14, mRNA (cDNA clone MGC:11012)
S100A16	BC019099	S100 calcium binding protein A16, mRNA (cDNA clone MGC:29661)
S100A2	BC002829	S100 calcium binding protein A2, mRNA (cDNA clone MGC:3847)
S100A4	BC016300	S100 calcium binding protein A4 (calcium protein, calvasculin, metastasin, murine placental homolog), transcript variant 1, mRNA (cDNA clone MGC:13315)
S100A6	BC009017	S100 calcium binding protein A6 (calcyclin), mRNA (cDNA clone MGC:18233)
S100A8	BC005928	S100 calcium binding protein A8 (calgranulin A), mRNA (cDNA clone MGC:14536)
S100B	BC001766	S100 calcium binding protein, beta (neural), mRNA (cDNA clone MGC:1323)
SAA1	BC007022	serum amyloid A1, mRNA (cDNA clone MGC:12369)
SAA2	BC020795	serum amyloid A2, mRNA (cDNA clone MGC:23693)
SAA4	BC007026	serum amyloid A4, constitutive, mRNA (cDNA clone MGC:12381)
SAFB2	BC025279	scaffold attachment factor B2, mRNA (cDNA clone MGC:39189)
SAMHD1	BC036450	SAM domain and HD domain 1, mRNA (cDNA clone MGC:33043)
SAP30BP	BC063793	SAP30 binding protein, mRNA (cDNA clone MGC:70553)
SARS	BC009390	seryl-tRNA synthetase, mRNA (cDNA clone MGC:16732)
SART2	BC039245	squamous cell carcinoma antigen recognized by T cells 2, mRNA (cDNA clone MGC:33055)
SC4MOL	BC010653	sterol-C4-methyl oxidase-like, mRNA (cDNA clone MGC:8923)
SCAMP1	BC034048	secretory carrier membrane protein 1, transcript variant 1, mRNA (cDNA clone MGC:26822)
SCAMP2	BC004385	secretory carrier membrane protein 2, mRNA (cDNA clone MGC:10855)
SCAP2	BC036044	src family associated phosphoprotein 2, mRNA (cDNA clone MGC:33304)
SCARB2	BC021892	scavenger receptor class B, member 2, mRNA (cDNA clone MGC:9392)
SCG2	BC022509	secretogranin II (chromogranin C), mRNA (cDNA clone MGC:26541)
SCLY	BC007891	selenocysteine lyase, mRNA (cDNA clone MGC:14083)
SCN1B	BC067122	sodium channel, voltage-gated, type I, beta, transcript variant a, mRNA (cDNA clone MGC:75137)
SCNM1	BC000264	sodium channel modifier 1, mRNA (cDNA clone MGC:3180)
SCNN1D	BC071784	cDNA clone MGC:88427 complete cds
SCTR	BC035757	secretin receptor, mRNA (cDNA clone MGC:46199)
SDC1	BC008765	syndecan 1, mRNA (cDNA clone MGC:1622)
SDC2	BC049836	syndecan 2 (heparan sulfate proteoglycan 1, cell surface-associated, fibroglycan), mRNA (cDNA clone MGC:51965)
SDC4	BC030805	syndecan 4 (amphiglycan, ryudocan), mRNA (cDNA clone MGC:22217)
SDHB	BC007840	succinate dehydrogenase complex, subunit B, iron sulfur (Ip), mRNA (cDNA clone MGC:14116)
SDHD	BC009574	succinate dehydrogenase complex, subunit D, integral membrane protein, mRNA (cDNA clone MGC:14562)

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SEC11L1	BC014508	SEC11-like 1 (<i>S. cerevisiae</i>), mRNA (cDNA clone MGC:23652)
SEC11L3	BC009703	SEC11-like 3 (<i>S. cerevisiae</i>), mRNA (cDNA clone MGC:9299)
SEC22L2	BC007122	SEC22 vesicle trafficking protein-like 2 (<i>S. cerevisiae</i>), mRNA (cDNA clone MGC:4981)
SEC23A	BC036649	Sec23 homolog A (<i>S. cerevisiae</i>), mRNA (cDNA clone MGC:26267)
SEC23B	BC005032	Sec23 homolog B (<i>S. cerevisiae</i>), transcript variant 2, mRNA (cDNA clone MGC:12666)
SEC24A	BC019341	SEC24 related gene family, member A (<i>S. cerevisiae</i>), mRNA (cDNA clone MGC:12985)
SEC61A2	BC026179	Sec61 alpha 2 subunit (<i>S. cerevisiae</i>), mRNA (cDNA clone MGC:32910)
SEC61B	BC001734	Sec61 beta subunit, mRNA (cDNA clone MGC:1255)
SELENBP1	BC009084	selenium binding protein 1, mRNA (cDNA clone MGC:9270)
SELL	BC020758	selectin L (lymphocyte adhesion molecule 1), mRNA (cDNA clone MGC:22611)
SEMA3C	BC030690	sema domain, immunoglobulin domain (Ig), short basic domain, secreted, (semaphorin) 3C, mRNA (cDNA clone MGC:26266)
SEMA3D	BC029590	sema domain, immunoglobulin domain (Ig), short basic domain, secreted, (semaphorin) 3D, mRNA (cDNA clone MGC:39708)
SEMA4F	BC038411	sema domain, immunoglobulin domain (Ig), transmembrane domain (TM) and short cytoplasmic domain, (semaphorin) 4F, mRNA (cDNA clone MGC:34479)
SEPT9	BC021192	septin 9, mRNA (cDNA clone MGC:1292)
SEPX1	BC003127	selenoprotein X, 1, mRNA (cDNA clone MGC:3344)
SERINC1	BC033029	serine incorporator 1, mRNA (cDNA clone MGC:33018)
SERPINB2	BC012609	serpin peptidase inhibitor, clade B (ovalbumin), member 2, mRNA (cDNA clone MGC:13616)
SERPINB3	BC005224	serpin peptidase inhibitor, clade B (ovalbumin), member 3, mRNA (cDNA clone MGC:12244)
SERPINB4	BC017401	serpin peptidase inhibitor, clade B (ovalbumin), member 4, mRNA (cDNA clone MGC:27150)
SERPINB5	BC020713	serpin peptidase inhibitor, clade B (ovalbumin), member 5, mRNA (cDNA clone MGC:22489)
SETD4	BC036556	SET domain containing 4, transcript variant 2, mRNA (cDNA clone MGC:43390)
SETD6	BC022451	SET domain containing 6, mRNA (cDNA clone MGC:26010)
SF3A2	BC009903	splicing factor 3a, subunit 2, 66kDa, mRNA (cDNA clone MGC:2362)
SFN	BC002995	stratifin, mRNA (cDNA clone MGC:3828)
SFRP2	BC008666	secreted frizzled-related protein 2, mRNA (cDNA clone MGC:9395)
SFRS2	BC070086	splicing factor, arginine/serine-rich 2, mRNA (cDNA clone MGC:87441)
SFRS3	BC000914	splicing factor, arginine/serine-rich 3, mRNA (cDNA clone MGC:5205)
SFXN1	BC063241	sideroflexin 1, mRNA (cDNA clone MGC:60019)
SFXN3	BC000124	sideroflexin 3, mRNA (cDNA clone MGC:3122)
SFXN4	BC063562	sideroflexin 4, transcript variant 3, mRNA (cDNA clone MGC:70957)

Gene symbol	GenBank accession number	Function
SGCD	BC020740	sarcoglycan, delta (35kDa dystrophin-associated glycoprotein), transcript variant 1, mRNA (cDNA clone MGC:22567)
SGCE	BC021709	sarcoglycan, epsilon, mRNA (cDNA clone MGC:26495)
SGTA	BC002989	small glutamine-rich tetratricopeptide repeat (TPR)-containing, alpha, mRNA (cDNA clone MGC:3636)
SH3BGR	BC006371	SH3 domain binding glutamic acid-rich protein, transcript variant 1, mRNA (cDNA clone MGC:12640)
SH3GLB1	BC007455	SH3-domain GRB2-like endophilin B1, mRNA (cDNA clone MGC:901)
SHCBP1	BC030699	SHC SH2-domain binding protein 1, mRNA (cDNA clone MGC:26900)
SHD	BC007206	Src homology 2 domain containing transforming protein D, mRNA (cDNA clone MGC:13052)
SIRPG	BC064532	signal-regulatory protein gamma, mRNA (cDNA clone MGC:74754)
SIRT6	BC005026	sirtuin (silent mating type information regulation 2 homolog) 6 (S. cerevisiae), mRNA (cDNA clone MGC:12574)
SIRT7	BC017305	sirtuin (silent mating type information regulation 2 homolog) 7 (S. cerevisiae), mRNA (cDNA clone MGC:29505)
SLA2	BC042041	Src-like-adaptor 2, transcript variant 1, mRNA (cDNA clone MGC:49845)
SLC10A3	BC004966	solute carrier family 10 (sodium/bile acid cotransporter family), member 3, mRNA (cDNA clone MGC:2336)
SLC12A2	BC033003	solute carrier family 12 (sodium/potassium/chloride transporters), member 2, mRNA (cDNA clone MGC:26366)
SLC13A3	BC035966	solute carrier family 13 (sodium-dependent dicarboxylate transporter), member 3, mRNA (cDNA clone MGC:32545)
SLC13A4	BC030689	solute carrier family 13 (sodium/sulfate symporters), member 4, mRNA (cDNA clone MGC:26200)
SLC16A1	BC026317	solute carrier family 16 (monocarboxylic acid transporters), member 1, mRNA (cDNA clone MGC:26141)
SLC16A4	BC021664	solute carrier family 16 (monocarboxylic acid transporters), member 4, mRNA (cDNA clone MGC:22448)
SLC16A7	BC030693	solute carrier family 16 (monocarboxylic acid transporters), member 7, mRNA (cDNA clone MGC:26492)
SLC17A3	BC017952	solute carrier family 17 (sodium phosphate), member 3, mRNA (cDNA clone MGC:24061)
SLC19A2	BC018514	solute carrier family 19 (thiamine transporter), member 2, mRNA (cDNA clone MGC:17044)
SLC1A1	BC033040	solute carrier family 1 (neuronal/epithelial high affinity glutamate transporter, system Xag), member 1, mRNA (cDNA clone MGC:33786)
SLC1A3	BC037310	solute carrier family 1 (glial high affinity glutamate transporter), member 3, mRNA (cDNA clone MGC:41861)
SLC1A5	BC000062	solute carrier family 1 (neutral amino acid transporter), member 5, mRNA (cDNA clone MGC:1387)
SLC1A6	BC028721	solute carrier family 1 (high affinity aspartate/glutamate transporter), member 6, mRNA (cDNA clone MGC:33092)
SLC1A7	BC017242	solute carrier family 1 (glutamate transporter), member 7, mRNA (cDNA clone MGC:23343)
SLC20A2	BC028600	solute carrier family 20 (phosphate transporter), member 2, mRNA (cDNA clone MGC:33076)
SLC22A13	BC035973	solute carrier family 22 (organic cation transporter), member 13, mRNA (cDNA clone MGC:32613)

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SLC22A15	BC026358	solute carrier family 22 (organic cation transporter), member 15, mRNA (cDNA clone MGC:26945)
SLC22A16	BC047565	solute carrier family 22 (organic cation transporter), member 16, mRNA (cDNA clone MGC:48287)
SLC22A4	BC028313	solute carrier family 22 (organic cation transporter), member 4, mRNA (cDNA clone MGC:34546)
SLC22A6	BC033682	solute carrier family 22 (organic anion transporter), member 6, transcript variant 2, mRNA (cDNA clone MGC:45260)
SLC22A8	BC022387	solute carrier family 22 (organic anion transporter), member 8, mRNA (cDNA clone MGC:24086)
SLC23A2	BC013112	solute carrier family 23 (nucleobase transporters), member 2, mRNA (cDNA clone MGC:9492)
SLC23A3	BC030243	solute carrier family 23 (nucleobase transporters), member 3, mRNA (cDNA clone MGC:40184)
SLC25A1	BC008061	solute carrier family 25 (mitochondrial carrier; citrate transporter), member 1, mRNA (cDNA clone MGC:2151)
SLC25A10	BC015797	solute carrier family 25 (mitochondrial carrier; dicarboxylate transporter), member 10, mRNA (cDNA clone MGC:8903)
SLC25A11	BC017170	solute carrier family 25 (mitochondrial carrier; oxoglutarate carrier), member 11, mRNA (cDNA clone MGC:8575)
SLC25A12	BC016932	solute carrier family 25 (mitochondrial carrier, Aralar), member 12, mRNA (cDNA clone MGC:21311)
SLC25A15	BC002702	solute carrier family 25 (mitochondrial carrier; ornithine transporter) member 15, mRNA (cDNA clone MGC:3378)
SLC25A17	BC005957	solute carrier family 25 (mitochondrial carrier; peroxisomal membrane protein, 34kDa), member 17, mRNA (cDNA clone MGC:14604)
SLC25A24	BC068561	solute carrier family 25 (mitochondrial carrier; phosphate carrier), member 24, transcript variant 1, mRNA (cDNA clone MGC:87498)
SLC25A26	BC012852	solute carrier family 25, member 26, mRNA (cDNA clone MGC:9811)
SLC25A3	BC006455	solute carrier family 25 (mitochondrial carrier; phosphate carrier), member 3, transcript variant 3, mRNA (cDNA clone MGC:1389)
SLC25A31	BC022032	solute carrier family 25 (mitochondrial carrier; adenine nucleotide translocator), member 31, mRNA (cDNA clone MGC:26955)
SLC25A36	BC014064	solute carrier family 25, member 36, mRNA (cDNA clone MGC:19966)
SLC25A4	BC063643	solute carrier family 25 (mitochondrial carrier; adenine nucleotide translocator), member 4, mRNA (cDNA clone MGC:70914)
SLC25A5	BC056160	solute carrier family 25 (mitochondrial carrier; adenine nucleotide translocator), member 5, mRNA (cDNA clone MGC:65136)
SLC25A6	BC014775	solute carrier family 25 (mitochondrial carrier; adenine nucleotide translocator), member 6, mRNA (cDNA clone MGC:17525)
SLC26A8	BC025408	solute carrier family 26, member 8, transcript variant 2, mRNA (cDNA clone MGC:33565)

Gene symbol	GenBank accession number	Function
SLC27A6	BC041945	solute carrier family 27 (fatty acid transporter), member 6, transcript variant 2, mRNA (cDNA clone MGC:44620)
SLC29A2	BC011387	solute carrier family 29 (nucleoside transporters), member 2, mRNA (cDNA clone MGC:9150)
SLC29A4	BC047592	solute carrier family 29 (nucleoside transporters), member 4, mRNA (cDNA clone MGC:48638)
SLC2A13	BC047507	solute carrier family 2 (facilitated glucose transporter), member 13, mRNA (cDNA clone MGC:48624)
SLC2A2	BC060041	solute carrier family 2 (facilitated glucose transporter), member 2, mRNA (cDNA clone MGC:61963)
SLC2A8	BC019043	solute carrier family 2, (facilitated glucose transporter) member 8, mRNA (cDNA clone MGC:20634)
SLC30A3	BC028358	solute carrier family 30 (zinc transporter), member 3, mRNA (cDNA clone MGC:26355)
SLC30A4	BC026089	solute carrier family 30 (zinc transporter), member 4, mRNA (cDNA clone MGC:27012)
SLC31A1	BC013611	solute carrier family 31 (copper transporters), member 1, mRNA (cDNA clone MGC:9021)
SLC31A2	BC026252	solute carrier family 31 (copper transporters), member 2, mRNA (cDNA clone MGC:22480)
SLC33A1	BC014416	solute carrier family 33 (acetyl-CoA transporter), member 1, mRNA (cDNA clone MGC:20012)
SLC35A1	BC017807	solute carrier family 35 (CMP-sialic acid transporter), member A1, mRNA (cDNA clone MGC:22375)
SLC35A3	BC005136	solute carrier family 35 (UDP-N-acetylglucosamine (UDP-GlcNAc) transporter), member A3, mRNA (cDNA clone MGC:1421)
SLC35B1	BC011888	solute carrier family 35, member B1, mRNA (cDNA clone MGC:20043)
SLC35B3	BC006973	solute carrier family 35, member B3, mRNA (cDNA clone MGC:12179)
SLC35B4	BC008413	solute carrier family 35, member B4, mRNA (cDNA clone MGC:14552)
SLC35F3	BC037878	solute carrier family 35, member F3, mRNA (cDNA clone MGC:43868)
SLC36A4	BC047374	solute carrier family 36 (proton/amino acid symporter), member 4, mRNA (cDNA clone MGC:48630)
SLC37A3	BC028380	solute carrier family 37 (glycerol-3-phosphate transporter), member 3, transcript variant 1, mRNA (cDNA clone MGC:32929)
SLC37A4	BC015650	solute carrier family 37 (glycerol-6-phosphate transporter), member 4, mRNA (cDNA clone MGC:23429)
SLC38A1	BC010620	solute carrier family 38, member 1, mRNA (cDNA clone MGC:17722)
SLC39A11	BC035631	solute carrier family 39 (metal ion transporter), member 11, mRNA (cDNA clone MGC:45399)
SLC39A14	BC015770	solute carrier family 39 (zinc transporter), member 14, mRNA (cDNA clone MGC:23235)
SLC39A4	BC062625	solute carrier family 39 (zinc transporter), member 4, transcript variant 2, mRNA (cDNA clone MGC:74741)
SLC39A9	BC047682	solute carrier family 39 (zinc transporter), member 9, mRNA (cDNA clone MGC:51849)
SLC3A1	BC022386	solute carrier family 3 (cystine, dibasic and neutral amino acid transporters, activator of cystine, dibasic and neutral amino acid transport), member 1, mRNA (cDNA clone MGC:24059)
SLC3A2	BC001061	solute carrier family 3 (activators of dibasic and neutral amino acid transport), member 2, transcript variant 3, mRNA (cDNA clone MGC:2307)
SLC40A1	BC035893	solute carrier family 40 (iron-regulated transporter), member 1, mRNA (cDNA clone MGC:46472)
SLC41A2	BC036734	solute carrier family 41, member 2, mRNA (cDNA clone MGC:44905)

Gene symbol	GenBank accession number	Function
SLC41A3	BC009039	solute carrier family 41, member 3, transcript variant 1, mRNA (cDNA clone MGC:9731)
SLC43A3	BC003163	solute carrier family 43, member 3, mRNA (cDNA clone MGC:4220)
SLC44A1	BC049203	solute carrier family 44, member 1, mRNA (cDNA clone MGC:51770)
SLC44A2	BC040556	solute carrier family 44, member 2, mRNA (cDNA clone MGC:41799)
SLC44A5	BC028743	solute carrier family 44, member 5, mRNA (cDNA clone MGC:34032)
SLC45A2	BC064405	solute carrier family 45, member 2, transcript variant 2, mRNA (cDNA clone MGC:74426)
SLC4A4	BC030977	solute carrier family 4, sodium bicarbonate cotransporter, member 4, mRNA (cDNA clone MGC:32627)
SLC4A8	BC025994	solute carrier family 4, sodium bicarbonate cotransporter, member 8, mRNA (cDNA clone MGC:26446)
SLC5A10	BC039868	solute carrier family 5 (sodium/glucose cotransporter), member 10, mRNA (cDNA clone MGC:49034)
SLC5A6	BC015631	solute carrier family 5 (sodium-dependent vitamin transporter), member 6, mRNA (cDNA clone MGC:23042)
SLC6A1	BC033904	solute carrier family 6 (neurotransmitter transporter, GABA), member 1, mRNA (cDNA clone MGC:33804)
SLC6A13	BC022392	solute carrier family 6 (neurotransmitter transporter, GABA), member 13, mRNA (cDNA clone MGC:24098)
SLC6A16	BC034948	solute carrier family 6, member 16, mRNA (cDNA clone MGC:26112)
SLC6A18	BC056757	solute carrier family 6, member 18, mRNA (cDNA clone MGC:50843)
SLC6A8	BC081558	solute carrier family 6 (neurotransmitter transporter, creatine), member 8, mRNA (cDNA clone MGC:87396)
SLC7A10	BC035627	solute carrier family 7, (neutral amino acid transporter, y ⁺ system) member 10, mRNA (cDNA clone MGC:45039)
SLC7A11	BC012087	solute carrier family 7, (cationic amino acid transporter, y ⁺ system) member 11, mRNA (cDNA clone MGC:20026)
SLC7A3	BC033816	solute carrier family 7 (cationic amino acid transporter, y ⁺ system), member 3, mRNA (cDNA clone MGC:44839)
SLC7A6OS	BC013778	solute carrier family 7, member 6 opposite strand, mRNA (cDNA clone MGC:16850)
SLC7A9	BC017962	solute carrier family 7 (cationic amino acid transporter, y ⁺ system), member 9, mRNA (cDNA clone MGC:24085)
SLC9A11	BC042592	solute carrier family 9, member 11, mRNA (cDNA clone MGC:43026)
SLCO1C1	BC022461	solute carrier organic anion transporter family, member 1C1, mRNA (cDNA clone MGC:26093)
SLCO3A1	BC000585	solute carrier organic anion transporter family, member 3A1, mRNA (cDNA clone MGC:659)
SLCO4A1	BC015727	solute carrier organic anion transporter family, member 4A1, mRNA (cDNA clone MGC:22943)
SLCO6A1	BC034976	solute carrier organic anion transporter family, member 6A1, mRNA (cDNA clone MGC:26949)
SLITRK4	BC040986	SLIT and NTRK-like family, member 4, mRNA (cDNA clone MGC:42210)
SLPI	BC020708	secretory leukocyte peptidase inhibitor, mRNA (cDNA clone MGC:22479)
SMAD4	BC002379	SMAD, mothers against DPP homolog 4 (Drosophila), mRNA (cDNA clone MGC:8602)
SMAD5	BC009682	SMAD, mothers against DPP homolog 5 (Drosophila), transcript variant 2, mRNA (cDNA clone MGC:8960)
SMAP1	BC036123	stromal membrane-associated protein 1, mRNA (cDNA clone MGC:33992)

Gene symbol	GenBank accession number	Function
SMCP	BC016744	sperm mitochondria-associated cysteine-rich protein, mRNA (cDNA clone MGC:26519)
SMG5	BC038296	Smg-5 homolog, nonsense mediated mRNA decay factor (C. elegans), mRNA (cDNA clone MGC:33341)
SMOC1	BC011548	SPARC related modular calcium binding 1, transcript variant 1, mRNA (cDNA clone MGC:19895)
SMOX	BC000669	spermine oxidase, transcript variant 2, mRNA (cDNA clone MGC:1010)
SMPD2	BC000038	sphingomyelin phosphodiesterase 2, neutral membrane (neutral sphingomyelinase), mRNA (cDNA clone MGC:1617)
SNAP23	BC022890	synaptosomal-associated protein, 23kDa, transcript variant 1, mRNA (cDNA clone MGC:27295)
SNAP25	BC010647	synaptosomal-associated protein, 25kDa, transcript variant 1, mRNA (cDNA clone MGC:9197)
SNAP29	BC009715	synaptosomal-associated protein, 29kDa, mRNA (cDNA clone MGC:9432)
SNF1LK	BC038504	SNF1-like kinase, mRNA (cDNA clone MGC:33415)
SNN	BC036100	stannin, mRNA (cDNA clone MGC:33874)
SNRPD1	BC001721	small nuclear ribonucleoprotein D1 polypeptide 16kDa, mRNA (cDNA clone MGC:2222)
SNRPD2	BC001930	small nuclear ribonucleoprotein D2 polypeptide 16.5kDa, transcript variant 1, mRNA (cDNA clone MGC:3995)
SNRPD3	BC003150	small nuclear ribonucleoprotein D3 polypeptide 18kDa, mRNA (cDNA clone MGC:4005)
SNRPE	BC002639	small nuclear ribonucleoprotein polypeptide E, mRNA (cDNA clone MGC:3652)
SNRPG	BC022432	small nuclear ribonucleoprotein polypeptide G, mRNA (cDNA clone MGC:24706)
SNX14	BC068589	sorting nexin 14, transcript variant 1, mRNA (cDNA clone MGC:87608)
SNX4	BC018762	sorting nexin 4, mRNA (cDNA clone MGC:31982)
SNX9	BC005022	sorting nexin 9, mRNA (cDNA clone MGC:12550)
SOD1	BC001034	superoxide dismutase 1, soluble (amyotrophic lateral sclerosis 1 (adult)), mRNA (cDNA clone MGC:2325)
SORBS2	BC011883	sorbin and SH3 domain containing 2, mRNA (cDNA clone MGC:20120)
SOX6	BC047064	SRY (sex determining region Y)-box 6, mRNA (cDNA clone MGC:48285)
SP110	BC019059	SP110 nuclear body protein, transcript variant b, mRNA (cDNA clone MGC:29475)
SPA17	BC032457	sperm autoantigenic protein 17, mRNA (cDNA clone MGC:40233)
SPAM1	BC026163	sperm adhesion molecule 1 (PH-20 hyaluronidase, zona pellucida binding), transcript variant 1, mRNA (cDNA clone MGC:26532)
SPATA5	BC048217	spermatogenesis associated 5, mRNA (cDNA clone MGC:47791)
SPCS1	BC000884	signal peptidase complex subunit 1 homolog (S. cerevisiae), mRNA (cDNA clone MGC:4899)
SPCS2	BC064957	signal peptidase complex subunit 2 homolog (S. cerevisiae), mRNA (cDNA clone MGC:75029)
SPCS3	BC047290	signal peptidase complex subunit 3 homolog (S. cerevisiae), mRNA (cDNA clone MGC:54142)
SPDEF	BC021299	SAM pointed domain containing ets transcription factor, mRNA (cDNA clone MGC:29592)
SPINT2	BC011951	serine peptidase inhibitor, Kunitz type, 2, mRNA (cDNA clone MGC:17171)
SPOCK1	BC030691	sparc/osteonectin, cwcv and kazal-like domains proteoglycan (testican) 1, mRNA (cDNA clone MGC:26308)
SPOCK3	BC013983	sparc/osteonectin, cwcv and kazal-like domains proteoglycan (testican) 3, mRNA (cDNA clone MGC:20285)

Gene symbol	GenBank accession number	Function
SPRR1B	BC056240	small proline-rich protein 1B (cornifin), mRNA (cDNA clone MGC:61901)
SPRR3	BC017802	small proline-rich protein 3, mRNA (cDNA clone MGC:22360)
SPSB2	BC002983	splA/ryanodine receptor domain and SOCS box containing 2, mRNA (cDNA clone MGC:2519)
SPSB3	BC024244	splA/ryanodine receptor domain and SOCS box containing 3, mRNA (cDNA clone MGC:33319)
SPTLC1	BC068537	serine palmitoyltransferase, long chain base subunit 1, mRNA (cDNA clone MGC:87384)
SPTLC2	BC005123	serine palmitoyltransferase, long chain base subunit 2, mRNA (cDNA clone MGC:10362)
SPTY2D1	BC056261	SPT2, Suppressor of Ty, domain containing 1 (S. cerevisiae), mRNA (cDNA clone MGC:62001)
SRA1	BC067895	cDNA clone MGC:87674 complete cds
SREBF2	BC056158	sterol regulatory element binding transcription factor 2, mRNA (cDNA clone MGC:65097)
SRP19	BC010947	signal recognition particle 19kDa, mRNA (cDNA clone MGC:13596)
SRP68	BC020238	signal recognition particle 68kDa, mRNA (cDNA clone MGC:31966)
SRP9	BC022415	signal recognition particle 9kDa, mRNA (cDNA clone MGC:24591)
SRPK1	BC038292	SFRS protein kinase 1, mRNA (cDNA clone MGC:26364)
SRPK2	BC068547	SFRS protein kinase 2, mRNA (cDNA clone MGC:87435)
SRPR	BC001162	signal recognition particle receptor ('docking protein'), mRNA (cDNA clone MGC:1609)
SSR4	BC003371	signal sequence receptor, delta (translocon-associated protein delta), mRNA (cDNA clone MGC:5151)
SSU72	BC008070	Ssu72 RNA polymerase II CTD phosphatase homolog (yeast), mRNA (cDNA clone MGC:2805)
ST5	BC036655	suppression of tumorigenicity 5, transcript variant 1, mRNA (cDNA clone MGC:33090)
ST6GALNAC1	BC022462	ST6 (alpha-N-acetyl-neuraminyl-2,3-beta-galactosyl-1, 3)-N-acetylgalactosaminide alpha-2,6-sialyltransferase 1, mRNA (cDNA clone MGC:26135)
ST6GALNAC2	BC040455	ST6 (alpha-N-acetyl-neuraminyl-2,3-beta-galactosyl-1, 3)-N-acetylgalactosaminide alpha-2,6-sialyltransferase 2, mRNA (cDNA clone MGC:22667)
ST6GALNAC5	BC001201	ST6 (alpha-N-acetyl-neuraminyl-2,3-beta-galactosyl-1, 3)-N-acetylgalactosaminide alpha-2,6-sialyltransferase 5, mRNA (cDNA clone MGC:3184)
STAM2	BC028740	signal transducing adaptor molecule (SH3 domain and ITAM motif) 2, mRNA (cDNA clone MGC:33781)
STARD3NL	BC005959	STARD3 N-terminal like, mRNA (cDNA clone MGC:14607)
STAT3	BC014482	signal transducer and activator of transcription 3 (acute-phase response factor), transcript variant 1, mRNA (cDNA clone MGC:23173)
STEAP4	BC020600	STEAP family member 4, mRNA (cDNA clone MGC:22167)
STK11IP	BC034051	serine/threonine kinase 11 interacting protein, mRNA (cDNA clone MGC:26835)
STK33	BC031231	serine/threonine kinase 33, mRNA (cDNA clone MGC:39551)
STOM	BC010703	stomatin, transcript variant 1, mRNA (cDNA clone MGC:9177)
STOML1	BC065249	stomatin (EPB72)-like 1, mRNA (cDNA clone MGC:74688)
STRA13	BC009571	stimulated by retinoic acid 13 homolog (mouse), mRNA (cDNA clone MGC:14480)

Gene symbol	GenBank accession number	Function
STUB1	BC017178	STIP1 homology and U-box containing protein 1, mRNA (cDNA clone MGC:1397)
STX12	BC046999	syntaxin 12, mRNA (cDNA clone MGC:51957)
STX1A	BC064644	syntaxin 1A (brain), mRNA (cDNA clone MGC:70785)
STX3A	BC007429	syntaxin 3A, mRNA (cDNA clone MGC:3877)
STX4A	BC002436	syntaxin 4A (placental), mRNA (cDNA clone MGC:1480)
STX5A	BC012137	syntaxin 5A, mRNA (cDNA clone MGC:20229)
STX7	BC011975	syntaxin 7, mRNA (cDNA clone MGC:9017)
STX8	BC009713	syntaxin 8, mRNA (cDNA clone MGC:9427)
STXBP1	BC015749	syntaxin binding protein 1, mRNA (cDNA clone MGC:23061)
SUCNR1	BC030948	succinate receptor 1, mRNA (cDNA clone MGC:32514)
SULT1A1	BC000923	sulfotransferase family, cytosolic, 1A, phenol-preferring, member 1, transcript variant 1, mRNA (cDNA clone MGC:5163)
SULT1A3	BC078144	sulfotransferase family, cytosolic, 1A, phenol-preferring, member 3, mRNA (cDNA clone MGC:87931)
SUMO1	BC006462	SMT3 suppressor of mif two 3 homolog 1 (yeast), transcript variant 1, mRNA (cDNA clone MGC:2095)
SUMO2	BC008450	SMT3 suppressor of mif two 3 homolog 2 (yeast), mRNA (cDNA clone MGC:14687)
SUMO3	BC008420	SMT3 suppressor of mif two 3 homolog 3 (yeast), mRNA (cDNA clone MGC:14569)
SURB7	BC008380	SRB7 suppressor of RNA polymerase B homolog (yeast), mRNA (cDNA clone MGC:12425)
SV2B	BC030011	synaptic vesicle glycoprotein 2B, mRNA (cDNA clone MGC:26452)
SYF2	BC010862	SYF2 homolog, RNA splicing factor (S. cerevisiae), transcript variant 1, mRNA (cDNA clone MGC:9401)
SYK	BC002962	spleen tyrosine kinase, mRNA (cDNA clone MGC:1604)
SYNGR1	BC000731	synaptogyrin 1, mRNA (cDNA clone MGC:1939)
SYNJ2	BC043277	synaptojanin 2, mRNA (cDNA clone MGC:44422)
SYNPR	BC022518	synaptoporin, mRNA (cDNA clone MGC:26651)
SYP	BC064550	synaptophysin, mRNA (cDNA clone MGC:70359)
SYT1	BC058917	synaptotagmin I, mRNA (cDNA clone MGC:65084)
SYT11	BC039205	synaptotagmin XI, mRNA (cDNA clone MGC:26698)
SYT3	BC031067	synaptotagmin III, mRNA (cDNA clone MGC:33677)
SYT4	BC036538	synaptotagmin IV, mRNA (cDNA clone MGC:33834)
TACSTD1	BC014785	tumor-associated calcium signal transducer 1, mRNA (cDNA clone MGC:9040)
TAF11	BC021972	TAF11 RNA polymerase II, TATA box binding protein (TBP)-associated factor, 28kDa, mRNA (cDNA clone MGC:15243)
TAGLN2	BC009357	transgelin 2, mRNA (cDNA clone MGC:15279)
TALDO1	BC010103	transaldolase 1, mRNA (cDNA clone MGC:19718)
TAPBPL	BC015017	TAP binding protein-like, mRNA (cDNA clone MGC:8836)

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TARDBP	BC071657	TAR DNA binding protein, mRNA (cDNA clone MGC:87845)
TARS	BC000517	threonyl-tRNA synthetase, mRNA (cDNA clone MGC:8553)
TARSL1	BC009997	threonyl-tRNA synthetase-like 1, mRNA (cDNA clone MGC:15034)
TASP1	BC025266	taspace, threonine aspartase, 1, mRNA (cDNA clone MGC:39159)
TBCC	BC020170	tubulin-specific chaperone c, mRNA (cDNA clone MGC:1601)
TBCD	BC003094	tubulin-specific chaperone d, mRNA (cDNA clone MGC:1538)
TBCE	BC008654	tubulin-specific chaperone e, mRNA (cDNA clone MGC:8912)
TBXAS1	BC041157	thromboxane A synthase 1 (platelet, cytochrome P450, family 5, subfamily A), transcript variant TXS-I, mRNA (cDNA clone MGC:48726)
TCEB2	BC065000	transcription elongation factor B (SIII), polypeptide 2 (18kDa, elongin B), transcript variant 1, mRNA (cDNA clone MGC:70758)
TCEB3B	BC036022	transcription elongation factor B polypeptide 3B (elongin A2), mRNA (cDNA clone MGC:33026)
TCP1	BC000665	t-complex 1, transcript variant 1, mRNA (cDNA clone MGC:2234)
TDGF1	BC067844	teratocarcinoma-derived growth factor 1, mRNA (cDNA clone MGC:87434)
TEGT	BC036203	testis enhanced gene transcript (BAX inhibitor 1), mRNA (cDNA clone MGC:39582)
TEKT4	BC021716	tektin 4, mRNA (cDNA clone MGC:27019)
TFB1M	BC017788	transcription factor B1, mitochondrial, mRNA (cDNA clone MGC:22289)
TFF3	BC017859	trefoil factor 3 (intestinal), mRNA (cDNA clone MGC:22588)
TFRC	BC001188	transferrin receptor (p90, CD71), mRNA (cDNA clone MGC:3151)
TGFA	BC005308	transforming growth factor, alpha, mRNA (cDNA clone MGC:12380)
TGFB1	BC001180	transforming growth factor, beta 1 (Camurati-Engelmann disease), mRNA (cDNA clone MGC:2323)
TGFBR1	BC071181	transforming growth factor, beta receptor I (activin A receptor type II-like kinase, 53kDa), mRNA (cDNA clone MGC:71700)
TGM2	BC003551	transglutaminase 2 (C polypeptide, protein-glutamine-gamma-glutamyltransferase), transcript variant 2, mRNA (cDNA clone MGC:1193)
THEG	BC028574	Theg homolog (mouse), transcript variant 1, mRNA (cDNA clone MGC:26138)
THEM4	BC065277	thioesterase superfamily member 4, transcript variant 1, mRNA (cDNA clone MGC:74423)
THOP1	BC013878	thimet oligopeptidase 1, mRNA (cDNA clone MGC:10587)
THUMPD1	BC000448	THUMP domain containing 1, mRNA (cDNA clone MGC:8446)
TIGD1	BC035143	cDNA clone MGC:43254 complete cds
TIMD4	BC008988	T-cell immunoglobulin and mucin domain containing 4, mRNA (cDNA clone MGC:17333)
TIMM13	BC008607	translocase of inner mitochondrial membrane 13 homolog (yeast), mRNA (cDNA clone MGC:9652)
TIMM17A	BC009784	translocase of inner mitochondrial membrane 17 homolog A (yeast), mRNA (cDNA clone MGC:13516)
TIMM23	BC062707	translocase of inner mitochondrial membrane 23 homolog (yeast), mRNA (cDNA clone MGC:71995)

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TIMM8A	BC006994	translocase of inner mitochondrial membrane 8 homolog A (yeast), mRNA (cDNA clone MGC:12263)
TIMM9	BC054875	translocase of inner mitochondrial membrane 9 homolog (yeast), mRNA (cDNA clone MGC:61829)
TIMP1	BC000866	TIMP metalloproteinase inhibitor 1, mRNA (cDNA clone MGC:5065)
TIMP4	BC010553	TIMP metalloproteinase inhibitor 4, mRNA (cDNA clone MGC:17099)
TIRAP	BC032474	toll-interleukin 1 receptor (TIR) domain containing adaptor protein, mRNA (cDNA clone MGC:40573)
TK1	BC007986	thymidine kinase 1, soluble, mRNA (cDNA clone MGC:3644)
TLE2	BC017364	transducin-like enhancer of split 2 (E(sp1) homolog, Drosophila), mRNA (cDNA clone MGC:10518)
TLE6	BC020206	transducin-like enhancer of split 6 (E(sp1) homolog, Drosophila), mRNA (cDNA clone MGC:31806)
TLR7	BC033651	toll-like receptor 7, mRNA (cDNA clone MGC:45096)
TM2D1	BC029486	TM2 domain containing 1, mRNA (cDNA clone MGC:32941)
TM2D2	BC004878	BBP-like protein 1, mRNA (cDNA clone), partial cds
TM4SF1	BC034145	transmembrane 4 superfamily member 1, mRNA (cDNA clone MGC:32762)
TM4SF18	BC014339	transmembrane 4 L six family member 18, mRNA (cDNA clone MGC:23935)
TM4SF19	BC013113	transmembrane 4 L six family member 19, mRNA (cDNA clone MGC:18031)
TM6SF1	BC063487	transmembrane 6 superfamily member 1, mRNA (cDNA clone MGC:74918)
TM7SF3	BC005176	transmembrane 7 superfamily member 3, mRNA (cDNA clone MGC:847)
TMBIM1	BC026348	transmembrane BAX inhibitor motif containing 1, mRNA (cDNA clone MGC:26792)
TMC5	BC027602	transmembrane channel-like 5, mRNA (cDNA clone MGC:26648)
TMCO3	BC068515	transmembrane and coiled-coil domains 3, mRNA (cDNA clone MGC:87307)
TMED10	BC001825	transmembrane emp24-like trafficking protein 10 (yeast), mRNA (cDNA clone MGC:3798)
TMED3	BC017495	transmembrane emp24 protein transport domain containing 3, mRNA (cDNA clone MGC:17995)
TMED4	BC052641	transmembrane emp24 protein transport domain containing 4, mRNA (cDNA clone MGC:61684)
TMED5	BC016365	transmembrane emp24 protein transport domain containing 5, mRNA (cDNA clone MGC:24580)
TMED6	BC020827	transmembrane emp24 protein transport domain containing 6, mRNA (cDNA clone MGC:23911)
TMEFF2	BC008973	transmembrane protein with EGF-like and two follistatin-like domains 2, mRNA (cDNA clone MGC:17007)
TMEM101	BC007438	transmembrane protein 101, mRNA (cDNA clone MGC:4251)
TMEM103	BC014204	transmembrane protein 103, transcript variant 1, mRNA (cDNA clone MGC:20645)
TMEM106A	BC012139	transmembrane protein 106A, mRNA (cDNA clone MGC:20235)
TMEM106C	BC000854	transmembrane protein 106C, mRNA (cDNA clone MGC:5576)
TMEM109	BC001309	transmembrane protein 109, mRNA (cDNA clone MGC:5508)
TMEM11	BC020815	transmembrane protein 11, mRNA (cDNA clone MGC:23860)
TMEM110	BC047015	transmembrane protein 110, mRNA (cDNA clone MGC:52022)
TMEM118	BC011878	transmembrane protein 118, mRNA (cDNA clone MGC:20447)
TMEM12	BC029478	transmembrane protein 12, mRNA (cDNA clone MGC:32871)

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TMEM122	BC036256	transmembrane protein 122, mRNA (cDNA clone MGC:43628)
TMEM126B	BC012065	transmembrane protein 126B, mRNA (cDNA clone MGC:19920)
TMEM130	BC030793	hypothetical protein DKFZp761L1417, mRNA (cDNA clone MGC:33998)
TMEM14A	BC015097	transmembrane protein 14A, mRNA (cDNA clone MGC:22819)
TMEM14B	BC007080	transmembrane protein 14B, mRNA (cDNA clone MGC:14614)
TMEM15	BC035556	transmembrane protein 15, mRNA (cDNA clone MGC:40301)
TMEM16A	BC033036	transmembrane protein 16A, mRNA (cDNA clone MGC:33580)
TMEM16K	BC038855	hypothetical protein FLJ10375, mRNA (cDNA clone MGC:47890)
TMEM17	BC047439	transmembrane protein 17, mRNA (cDNA clone MGC:51350)
TMEM18	BC032379	transmembrane protein 18, mRNA (cDNA clone MGC:40460)
TMEM22	BC022557	transmembrane protein 22, mRNA (cDNA clone MGC:26936)
TMEM26	BC042872	transmembrane protein 26, mRNA (cDNA clone MGC:35010)
TMEM27	BC050606	transmembrane protein 27, mRNA (cDNA clone MGC:60059)
TMEM29	BC067819	transmembrane protein 29, mRNA (cDNA clone MGC:87339)
TMEM31	BC029575	transmembrane protein 31, mRNA (cDNA clone MGC:39655)
TMEM33	BC000948	transmembrane protein 33, mRNA (cDNA clone MGC:4934)
TMEM34	BC046128	transmembrane protein 34, mRNA (cDNA clone MGC:57601)
TMEM35	BC078658	transmembrane protein 35, mRNA (cDNA clone MGC:87281)
TMEM37	BC046362	transmembrane protein 37, mRNA (cDNA clone MGC:50757)
TMEM38B	BC000049	transmembrane protein 38B, mRNA (cDNA clone MGC:960)
TMEM39B	BC004364	transmembrane protein 39B, mRNA (cDNA clone MGC:10293)
TMEM40	BC020658	transmembrane protein 40, mRNA (cDNA clone MGC:22330)
TMEM47	BC039242	transmembrane protein 47, mRNA (cDNA clone MGC:32949)
TMEM48	BC003082	transmembrane protein 48, mRNA (cDNA clone MGC:970)
TMEM5	BC013152	transmembrane protein 5, mRNA (cDNA clone MGC:17085)
TMEM53	BC064520	transmembrane protein 53, mRNA (cDNA clone MGC:74910)
TMEM55A	BC033892	transmembrane protein 55A, mRNA (cDNA clone MGC:33207)
TMEM55B	BC020947	transmembrane protein 55B, mRNA (cDNA clone MGC:26684)
TMEM63A	BC030245	transmembrane protein 63A, mRNA (cDNA clone MGC:39936)
TMEM65	BC041379	transmembrane protein 65, mRNA (cDNA clone MGC:43912)
TMEM66	BC015012	transmembrane protein 66, mRNA (cDNA clone MGC:8721)
TMEM74	BC030710	transmembrane protein 74, mRNA (cDNA clone MGC:33522)
TMEM80	BC008671	transmembrane protein 80, mRNA (cDNA clone MGC:9743)
TMEM85	BC002583	transmembrane protein 85, mRNA (cDNA clone MGC:893)

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TMEM9	BC001106	transmembrane protein 9, mRNA (cDNA clone MGC:891)
TMEM97	BC045655	transmembrane protein 97, mRNA (cDNA clone MGC:43599)
TMEM99	BC015365	transmembrane protein 99, mRNA (cDNA clone MGC:21518)
TMPO	BC053675	thymopoietin, transcript variant 2, mRNA (cDNA clone MGC:61508)
TMPRSS12	BC048112	transmembrane protease, serine 12, mRNA (cDNA clone MGC:57341)
TMPRSS6	BC039082	transmembrane protease, serine 6, mRNA (cDNA clone MGC:35027)
TMTC4	BC018707	transmembrane and tetratricopeptide repeat containing 4, mRNA (cDNA clone MGC:31765)
TNFAIP1	BC001949	tumor necrosis factor, alpha-induced protein 1 (endothelial), mRNA (cDNA clone MGC:4375)
TNFAIP8L2	BC063014	tumor necrosis factor, alpha-induced protein 8-like 2, mRNA (cDNA clone MGC:74911)
TNFRSF10B	BC001281	tumor necrosis factor receptor superfamily, member 10b, transcript variant 1, mRNA (cDNA clone MGC:5144)
TNFRSF14	BC002794	tumor necrosis factor receptor superfamily, member 14 (herpesvirus entry mediator), mRNA (cDNA clone MGC:3753)
TNFRSF17	BC058291	tumor necrosis factor receptor superfamily, member 17, mRNA (cDNA clone MGC:61811)
TNFRSF19L	BC051810	tumor necrosis factor receptor superfamily, member 19-like, mRNA (cDNA clone MGC:60026)
TNFSF10	BC032722	tumor necrosis factor (ligand) superfamily, member 10, mRNA (cDNA clone MGC:45300)
TNFSF13B	BC020674	tumor necrosis factor (ligand) superfamily, member 13b, mRNA (cDNA clone MGC:22381)
TNMD	BC034030	tenomodulin, mRNA (cDNA clone MGC:24046)
TNNI2	BC032148	troponin I type 2 (skeletal, fast), mRNA (cDNA clone MGC:29564)
TNP1	BC029516	transition protein 1 (during histone to protamine replacement), mRNA (cDNA clone MGC:33798)
TOM1	BC046151	target of myb1 (chicken), mRNA (cDNA clone MGC:57674)
TOM1L1	BC029396	target of myb1-like 1 (chicken), mRNA (cDNA clone MGC:32609)
TOMM34	BC001763	translocase of outer mitochondrial membrane 34, mRNA (cDNA clone MGC:1252)
TOMM40L	BC014946	translocase of outer mitochondrial membrane 40 homolog-like (yeast), mRNA (cDNA clone MGC:22951)
TOMM7	BC001732	translocase of outer mitochondrial membrane 7 homolog (yeast), mRNA (cDNA clone MGC:1816)
TOP3B	BC002432	topoisomerase (DNA) III beta, mRNA (cDNA clone MGC:1867)
TP53	BC003596	tumor protein p53 (Li-Fraumeni syndrome), mRNA (cDNA clone MGC:646)
TPCN2	BC063008	two pore segment channel 2, mRNA (cDNA clone MGC:70581)
TPI1	BC011611	triosephosphate isomerase 1, mRNA (cDNA clone MGC:11372)
TPM3	BC008425	tropomyosin 3, mRNA (cDNA clone MGC:14582)
TPM4	BC067225	tropomyosin 4, mRNA (cDNA clone MGC:72041)
TPMT	BC009596	thiopurine S-methyltransferase, mRNA (cDNA clone MGC:14685)
TPO	BC063107	cDNA clone MGC:71872 complete cds
TPSB2	BC065923	tryptase beta 2, mRNA (cDNA clone MGC:74871)
TPST1	BC013188	tyrosylprotein sulfotransferase 1, mRNA (cDNA clone MGC:9140)

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TPST2	BC017509	tyrosylprotein sulfotransferase 2, mRNA (cDNA clone MGC:23597)
TRAK2	BC041330	trafficking protein, kinesin binding 2, mRNA (cDNA clone MGC:41785)
TRAM1	BC037738	translocation associated membrane protein 1, mRNA (cDNA clone MGC:33851)
TRAM1L1	BC030831	translocation associated membrane protein 1-like 1, mRNA (cDNA clone MGC:26568)
TRAM2	BC028121	translocation associated membrane protein 2, mRNA (cDNA clone MGC:39954)
TRAP1	BC023585	TNF receptor-associated protein 1, mRNA (cDNA clone MGC:23363)
TREM1	BC017773	triggering receptor expressed on myeloid cells 1, mRNA (cDNA clone MGC:22242)
TRIM21	BC010861	tripartite motif-containing 21, mRNA (cDNA clone MGC:9233)
TRIM39	BC034985	tripartite motif-containing 39, transcript variant 2, mRNA (cDNA clone MGC:32984)
TRIM45	BC034943	tripartite motif-containing 45, mRNA (cDNA clone MGC:26026)
TRIM47	BC017299	tripartite motif-containing 47, mRNA (cDNA clone MGC:29809)
TRIP10	BC013002	thyroid hormone receptor interactor 10, mRNA (cDNA clone MGC:3839)
TRPT1	BC005133	tRNA phosphotransferase 1, transcript variant 2, mRNA (cDNA clone MGC:11134)
TSG101	BC002487	tumor susceptibility gene 101, mRNA (cDNA clone MGC:1317)
TSNAX	BC010376	translin-associated factor X, mRNA (cDNA clone MGC:13527)
TSPAN12	BC031265	tetraspanin 12, mRNA (cDNA clone MGC:39733)
TSPAN13	BC033863	tetraspanin 13, mRNA (cDNA clone MGC:45139)
TSPAN15	BC004161	tetraspanin 15, mRNA (cDNA clone MGC:2447)
TSPAN16	BC029908	tetraspanin 16, mRNA (cDNA clone MGC:34382)
TSPAN17	BC067105	tetraspanin 17, transcript variant 2, mRNA (cDNA clone MGC:71255)
TSPAN2	BC021675	tetraspanin 2, mRNA (cDNA clone MGC:22863)
TSPAN3	BC011206	tetraspanin 3, transcript variant 1, mRNA (cDNA clone MGC:17513)
TSPAN32	BC016693	tetraspanin 32, mRNA (cDNA clone MGC:22455)
TSPAN5	BC009704	tetraspanin 5, mRNA (cDNA clone MGC:9300)
TSPAN8	BC005246	tetraspanin 8, mRNA (cDNA clone MGC:12279)
TSSC1	BC002485	tumor suppressing subtransferable candidate 1, mRNA (cDNA clone MGC:1596)
TSSC4	BC006091	tumor suppressing subtransferable candidate 4, mRNA (cDNA clone MGC:12673)
TTR	BC020791	transthyretin (prealbumin, amyloidosis type I), mRNA (cDNA clone MGC:23689)
TUBA1	BC009238	tubulin, alpha 1 (testis specific), mRNA (cDNA clone MGC:2379)
TUBB	BC005838	tubulin, beta, mRNA (cDNA clone MGC:2440)
TUBB2C	BC001911	tubulin, beta 2C, mRNA (cDNA clone MGC:2666)
TUBB4	BC006570	tubulin, beta 4, mRNA (cDNA clone MGC:4270)
TUBGCP3	BC046634	tubulin, gamma complex associated protein 3, mRNA (cDNA clone MGC:44333)
TUFM	BC010041	Tu translation elongation factor, mitochondrial, mRNA (cDNA clone MGC:19753)

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TUFT1	BC008301	tuftelin 1, mRNA (cDNA clone MGC:15088)
TULP1	BC065261	tubby like protein 1, mRNA (cDNA clone MGC:70753)
TUSC3	BC010370	tumor suppressor candidate 3, transcript variant 2, mRNA (cDNA clone MGC:13453)
TWIST2	BC033168	twist homolog 2 (Drosophila), mRNA (cDNA clone MGC:45796)
TXNDC	BC036460	thioredoxin domain containing, mRNA (cDNA clone MGC:33494)
TXNDC14	BC000666	thioredoxin domain containing 14, mRNA (cDNA clone MGC:713)
TXNL1	BC001156	thioredoxin-like 1, mRNA (cDNA clone MGC:1475)
TXNL4A	BC019272	thioredoxin-like 4A, mRNA (cDNA clone MGC:3529)
TYROBP	BC011175	TYRO protein tyrosine kinase binding protein, transcript variant 1, mRNA (cDNA clone MGC:17097)
U2AF1	BC001177	U2(RNU2) small nuclear RNA auxiliary factor 1, mRNA (cDNA clone MGC:2223)
UBAP2L	BC003170	ubiquitin associated protein 2-like, mRNA (cDNA clone MGC:4404)
UBE2B	BC008470	ubiquitin-conjugating enzyme E2B (RAD6 homolog), mRNA (cDNA clone MGC:14743)
UBE2D3	BC037894	ubiquitin-conjugating enzyme E2D 3 (UBC4/5 homolog, yeast), transcript variant 1, mRNA (cDNA clone MGC:43926)
UBE2G2	BC001738	ubiquitin-conjugating enzyme E2G 2 (UBC7 homolog, yeast), transcript variant 1, mRNA (cDNA clone MGC:1589)
UBL5	BC007053	ubiquitin-like 5, mRNA (cDNA clone MGC:12473)
UBOX5	BC007413	hypothetical protein FLJ13149, mRNA (cDNA clone MGC:2564)
UBXD1	BC008288	UBX domain containing 1, mRNA (cDNA clone MGC:11025)
UBXD3	BC047428	UBX domain containing 3, mRNA (cDNA clone MGC:51306)
UBXD5	BC038106	UBX domain containing 5, mRNA (cDNA clone MGC:33232)
UBXD6	BC020694	UBX domain containing 6, mRNA (cDNA clone MGC:22435)
UCP3	BC008392	uncoupling protein 3 (mitochondrial, proton carrier), mRNA (cDNA clone MGC:14479)
UNC50	BC025992	unc-50 homolog (C. elegans), mRNA (cDNA clone MGC:26277)
UPK3B	BC004304	uroplakin 3B, transcript variant 1, mRNA (cDNA clone MGC:10902)
UQCRB	BC005230	ubiquinol-cytochrome c reductase binding protein, mRNA (cDNA clone MGC:12253)
UQCRC1	BC009586	ubiquinol-cytochrome c reductase core protein I, mRNA (cDNA clone MGC:14649)
UQCRC2	BC003136	ubiquinol-cytochrome c reductase core protein II, mRNA (cDNA clone MGC:3638)
USP10	BC000263	ubiquitin specific peptidase 10, mRNA (cDNA clone MGC:2621)
USP16	BC030777	ubiquitin specific peptidase 16, transcript variant 2, mRNA (cDNA clone MGC:26265)
USP5	BC005139	ubiquitin specific peptidase 5 (isopeptidase T), mRNA (cDNA clone MGC:1586)
VAMP2	BC033870	vesicle-associated membrane protein 2 (synaptobrevin 2), mRNA (cDNA clone MGC:45137)
VAMP3	BC007050	vesicle-associated membrane protein 3 (cellubrevin), mRNA (cDNA clone MGC:12463)
VAMP4	BC031264	vesicle-associated membrane protein 4, transcript variant 1, mRNA (cDNA clone MGC:39731)

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VAMP5	BC017891	vesicle-associated membrane protein 5 (myobrevin), mRNA (cDNA clone MGC:23683)
VAMP8	BC001634	vesicle-associated membrane protein 8 (endobrevin), mRNA (cDNA clone MGC:1585)
VAPA	BC002992	VAMP (vesicle-associated membrane protein)-associated protein A, 33kDa, mRNA (cDNA clone MGC:3745)
VAPB	BC001712	VAMP (vesicle-associated membrane protein)-associated protein B and C, mRNA (cDNA clone MGC:1832)
VDAC2	BC012883	voltage-dependent anion channel 2, mRNA (cDNA clone MGC:21498)
VDAC3	BC056870	voltage-dependent anion channel 3, mRNA (cDNA clone MGC:64870)
VIL1	BC017303	villin 1, mRNA (cDNA clone MGC:29534)
VIL2	BC068458	villin 2 (ezrin), mRNA (cDNA clone MGC:87052)
VIP	BC009794	vasoactive intestinal peptide, transcript variant 2, mRNA (cDNA clone MGC:13587)
VIPR1	BC064424	vasoactive intestinal peptide receptor 1, mRNA (cDNA clone MGC:70647)
VPREB1	BC017922	pre-B lymphocyte gene 1, mRNA (cDNA clone MGC:23878)
VPS24	BC004419	vacuolar protein sorting 24 (yeast), mRNA (cDNA clone MGC:11028)
VPS26A	BC022505	vacuolar protein sorting 26 homolog A (yeast), mRNA (cDNA clone MGC:26471)
VPS26B	BC014128	vacuolar protein sorting 26 homolog B (yeast), mRNA (cDNA clone MGC:20744)
VPS28	BC050713	vacuolar protein sorting 28 (yeast), transcript variant 2, mRNA (cDNA clone MGC:60323)
VPS35	BC010362	vacuolar protein sorting 35 (yeast), mRNA (cDNA clone MGC:13402)
VPS37A	BC067754	vacuolar protein sorting 37A (yeast), mRNA (cDNA clone MGC:87029)
VPS37B	BC005882	vacuolar protein sorting 37B (yeast), mRNA (cDNA clone MGC:4691)
VPS39	BC068559	vacuolar protein sorting 39 (yeast), mRNA (cDNA clone MGC:87483)
VPS41	BC044851	vacuolar protein sorting 41 (yeast), transcript variant 1, mRNA (cDNA clone MGC:42423)
VPS45A	BC028382	vacuolar protein sorting 45A (yeast), mRNA (cDNA clone MGC:33071)
VPS4A	BC047932	vacuolar protein sorting 4A (yeast), mRNA (cDNA clone MGC:49835)
VSIG2	BC007313	V-set and immunoglobulin domain containing 2, mRNA (cDNA clone MGC:1041)
VTI1A	BC017052	vesicle transport through interaction with t-SNAREs homolog 1A (yeast), mRNA (cDNA clone MGC:9292)
VTI1B	BC003142	vesicle transport through interaction with t-SNAREs homolog 1B (yeast), mRNA (cDNA clone MGC:3767)
VTN	BC005046	vitronectin, mRNA (cDNA clone MGC:12819)
WBP1	BC064482	WW domain binding protein 1, mRNA (cDNA clone MGC:71353)
WDR24	BC008025	WD repeat domain 24, mRNA (cDNA clone MGC:15992)
WDR3	BC058836	cDNA clone MGC:61946 complete cds
WDR31	BC012352	WD repeat domain 31, mRNA (cDNA clone MGC:20244)
WDR4	BC006341	WD repeat domain 4, transcript variant 1, mRNA (cDNA clone MGC:12826)
WDR45L	BC007838	WDR45-like, mRNA (cDNA clone MGC:14168)
WDR47	BC034964	WD repeat domain 47, mRNA (cDNA clone MGC:26714)
WDR69	BC036377	WD repeat domain 69, mRNA (cDNA clone MGC:26723)

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WDR77	BC006477	WD repeat domain 77, mRNA (cDNA clone MGC:4346)
WNT6	BC004329	wingless-type MMTV integration site family, member 6, mRNA (cDNA clone MGC:10938)
WRB	BC012415	tryptophan rich basic protein, mRNA (cDNA clone MGC:9135)
XAB2	BC007208	XPA binding protein 2, mRNA (cDNA clone MGC:14854)
XK	BC036019	XK, Kell blood group complex subunit (McLeod syndrome), mRNA (cDNA clone MGC:32986)
XLKD1	BC026231	extracellular link domain containing 1, mRNA (cDNA clone MGC:22159)
YIF1A	BC001299	Yip1 interacting factor homolog A (S. cerevisiae), mRNA (cDNA clone MGC:5467)
YIF1B	BC014974	Yip1 interacting factor homolog B (S. cerevisiae), transcript variant 1, mRNA (cDNA clone MGC:23132)
YIPF1	BC064590	Yip1 domain family, member 1, mRNA (cDNA clone MGC:74637)
YIPF4	BC004875	Yip1 domain family, member 4, mRNA (cDNA clone MGC:11061)
ZADH2	BC078661	zinc binding alcohol dehydrogenase, domain containing 2, mRNA (cDNA clone MGC:88091)
ZCCHC10	BC022443	zinc finger, CCHC domain containing 10, mRNA (cDNA clone MGC:24789)
ZDHHC12	BC048251	zinc finger, DHHC-type containing 12, mRNA (cDNA clone MGC:54050)
ZDHHC17	BC050324	zinc finger, DHHC-type containing 17, mRNA (cDNA clone MGC:48450)
ZDHHC19	BC022078	zinc finger, DHHC-type containing 19, mRNA (cDNA clone MGC:33345)
ZDHHC2	BC039253	zinc finger, DHHC-type containing 2, mRNA (cDNA clone MGC:33737)
ZDHHC21	BC042558	zinc finger, DHHC-type containing 21, mRNA (cDNA clone MGC:42917)
ZDHHC23	BC035230	zinc finger, DHHC-type containing 23, mRNA (cDNA clone MGC:42530)
ZDHHC3	BC015467	zinc finger, DHHC-type containing 3, mRNA (cDNA clone MGC:8765)
ZDHHC4	BC001239	zinc finger, DHHC-type containing 4, mRNA (cDNA clone MGC:4935)
ZDHHC9	BC000035	zinc finger, DHHC-type containing 9, transcript variant 2, mRNA (cDNA clone MGC:845)
ZFYVE16	BC030808	zinc finger, FYVE domain containing 16, mRNA (cDNA clone MGC:22300)
ZFYVE27	BC030621	zinc finger, FYVE domain containing 27, transcript variant 2, mRNA (cDNA clone MGC:33516)
ZKSCAN1	BC022378	zinc finger with KRAB and SCAN domains 1, mRNA (cDNA clone MGC:23963)
ZMAT2	BC056668	zinc finger, matrin type 2, mRNA (cDNA clone MGC:61999)
ZMPSTE24	BC037283	zinc metallopeptidase (STE24 homolog, yeast), mRNA (cDNA clone MGC:33086)
ZNF133	BC001887	zinc finger protein 133 (clone pHZ-13), mRNA (cDNA clone MGC:1579)
ZNF136	BC006421	zinc finger protein 136 (clone pHZ-20), mRNA (cDNA clone MGC:12711)
ZNF143	BC020219	zinc finger protein 143 (clone pHZ-1), mRNA (cDNA clone MGC:31910)
ZNF165	BC037779	zinc finger protein 165, mRNA (cDNA clone MGC:41869)
ZNF174	BC001161	zinc finger protein 174, transcript variant 2, mRNA (cDNA clone MGC:1578)
ZNF193	BC010374	zinc finger protein 193, mRNA (cDNA clone MGC:13514)
ZNF200	BC054005	zinc finger protein 200, transcript variant 2, mRNA (cDNA clone MGC:61503)
ZNF205	BC002810	zinc finger protein 205, mRNA (cDNA clone MGC:3772)

Gene symbol	GenBank accession number	Function
ZNF207	BC002372	zinc finger protein 207, transcript variant 2, mRNA (cDNA clone MGC:8548)
ZNF213	BC007287	zinc finger protein 213, mRNA (cDNA clone MGC:15660)
ZNF215	BC014538	zinc finger protein 215, mRNA (cDNA clone MGC:13447)
ZNF24	BC016801	zinc finger protein 24 (KOX 17), mRNA (cDNA clone MGC:24422)
ZNF253	BC065572	zinc finger protein 253, mRNA (cDNA clone MGC:75229)
ZNF257	BC036446	zinc finger protein 257, mRNA (cDNA clone MGC:26419)
ZNF32	BC022842	zinc finger protein 32 (KOX 30), mRNA (cDNA clone MGC:39461)
ZNF414	BC007310	zinc finger protein 414, mRNA (cDNA clone MGC:15716)
ZNF426	BC001791	zinc finger protein 426, mRNA (cDNA clone MGC:2663)
ZNF433	BC047412	zinc finger protein 433, mRNA (cDNA clone MGC:48500)
ZNF434	BC002859	zinc finger protein 434, mRNA (cDNA clone MGC:4179)
ZNF435	BC004255	zinc finger protein 435, mRNA (cDNA clone MGC:10653)
ZNF439	BC032857	zinc finger protein 439, mRNA (cDNA clone MGC:33275)
ZNF493	BC006408	similar to hypothetical protein FLJ13659, mRNA (cDNA clone MGC:10544)
ZNF555	BC022022	zinc finger protein 555, mRNA (cDNA clone MGC:26707)
ZNF556	BC009374	zinc finger protein 556, mRNA (cDNA clone MGC:15056)
ZNF558	BC064356	zinc finger protein 558, mRNA (cDNA clone MGC:70527)
ZNF559	BC006436	zinc finger protein 559, mRNA (cDNA clone MGC:13105)
ZNF563	BC022523	zinc finger protein 563, mRNA (cDNA clone MGC:26658)
ZNF625	BC007868	zinc finger protein 625, mRNA (cDNA clone MGC:14429)
ZNF626	BC007116	zinc finger protein 626, mRNA (cDNA clone MGC:14780)
ZNF668	BC021997	zinc finger protein 668, mRNA (cDNA clone MGC:2552)
ZNF678	BC042500	zinc finger protein 678, mRNA (cDNA clone MGC:42493)
ZNF683	BC029505	zinc finger protein 683, mRNA (cDNA clone MGC:33381)
ZNF76	BC002549	zinc finger protein 76 (expressed in testis), mRNA (cDNA clone MGC:1577)
ZNF9	BC014911	zinc finger protein 9 (a cellular retroviral nucleic acid binding protein), mRNA (cDNA clone MGC:17190)
ZNF92	BC040594	zinc finger protein 92 (HTF12), transcript variant 2, mRNA (cDNA clone MGC:43604)
ZNRF4	BC017592	zinc and ring finger 4, mRNA (cDNA clone MGC:27006)