

RT² Profiler PCR Array (96-Well Format and 384-Well [4 x 96] Format)

Mouse Osteoporosis

Cat. no. 330231 PAMM-170ZA

For pathway expression analysis

Format	For use with the following real-time cyclers
RT ² Profiler PCR Array, Format A	Applied Biosystems® models 5700, 7000, 7300, 7500, 7700, 7900HT, ViiA™ 7 (96-well block); Bio-Rad® models iCycler®, iQ™ 5, MyiQ™, MyiQ2; Bio-Rad/MJ Research Chromo4™; Eppendorf® Mastercycler® ep realplex models 2, 2s, 4, 4s; Stratagene® models Mx3005P®, Mx3000P®; Takara TP-800
RT ² Profiler PCR Array, Format C	Applied Biosystems models 7500 (Fast block), 7900HT (Fast block), StepOnePlus™, ViiA 7 (Fast block)
RT ² Profiler PCR Array, Format D	Bio-Rad CFX96™; Bio-Rad/MJ Research models DNA Engine Opticon®, DNA Engine Opticon 2; Stratagene Mx4000®
RT ² Profiler PCR Array, Format E	Applied Biosystems models 7900HT (384-well block), ViiA 7 (384-well block); Bio-Rad CFX384™
RT ² Profiler PCR Array, Format F	Roche® LightCycler® 480 (96-well block)
RT ² Profiler PCR Array, Format G	Roche LightCycler 480 (384-well block)
RT ² Profiler PCR Array, Format H	Fluidigm® BioMark™



Sample & Assay Technologies

Description

The Mouse Osteoporosis RT² Profiler PCR Array profiles the expression of 84 genes involved in pathogenesis of osteoporosis (OP). Advanced age, gender, and immobilization are major risk factors for developing OP, and additional contributing factors include diminished sex steroid production in post-menopausal women. OP is a metabolic disorder of the bones characterized by low bone mineral density (BMD) and increased incidence of fractures due to disruption of bone remodeling — the balance between bone resorption and bone formation. Bone remodeling is conducted by osteoclasts (cells responsible for bone resorption) and by osteoblasts (cells responsible for bone formation). Osteoblasts have a central role in bone metabolism and are responsible for bone matrix synthesis and mineralization, synthesis of growth factors and hormones, and regulation of osteoclastogenesis for bone resorption. In OP, a pathological imbalance in the bone remodeling process is typically linked to a disrupted RANKL/OPG signaling equilibrium wherein elevated RANKL levels favor resorption through osteoclast formation, function, and survival with lowered BMD. Recent evidence also suggests that inflammation plays a significant role in disrupting osteoclast–osteoblast equilibrium, which affects BMD. Enormous research efforts are underway to determine the molecular mechanisms of pathogenesis of OP with the aim of obtaining novel targets for its treatment and prevention as well as the identification of early diagnostic markers. The genes profiled with this array are associated with osteoblast and osteoclast activity including WNT and BMP signaling pathways, ECM and bone matrix remodeling, and cytokines and growth factors currently associated with OP molecular pathogenesis. A set of controls present on each array enables data analysis using the $\Delta\Delta C_T$ method of relative quantification and assessment of reverse transcription performance, genomic DNA contamination, and PCR performance. Using real-time PCR, research studies can easily and reliably analyze the expression of a focused panel of genes involved in osteoporosis with this array.

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

Shipping and storage

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

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

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

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

Array layout (96-well)

For 384-well 4 x 96 PCR arrays, genes are present in a staggered format. Refer to the *RT² Profiler PCR Array Handbook* for layout.

	1	2	3	4	5	6	7	8	9	10	11	12
A	Acp5	Adcy10	Alox12	Alox15	Alox5	Alpl	Ar	Bglap	Bmp2	Bmp7	Calca	Calcr
B	Car2	Casr	Cd40	Cln7	Cnr2	Col1a1	Col1a2	Comt	Crtap	Ctsk	Cyp17a1	Cyp19a1
C	Dbp	Dkk1	Enpp1	Esr1	Esr2	Esrra	Fgfr1	Fgfr2	Ghrh	Hsd11b1	Igf1	Igfbp2
D	Il15	Il6	Il6ra	Itga1	Itgb3	Lep	Lepre1	Lrp1	Lrp5	Lrp6	Lta	Ltbp2
E	Mab21l2	Mmp2	Mstn	Mthfr	Nfatc1	Nog	Nos3	Npy	Nr3c1	P2rx7	Plod2	Prl
F	Pth	Pth1r	Pthlh	Runx2	Sfrp1	Sfrp4	Shbg	Sost	Sparc	Spp1	Srat1	Tgfb1
G	Timp2	Tnfrsf3	Tnfrsf11a	Tnfrsf11b	Tnfrsf1b	Tnfrsf11	Tshr	Twist1	Vdr	Vegfa	Wnt10b	Wnt3a
H	Actb	B2m	Gapdh	Gusb	Hsp90ab1	MGDC	RTC	RTC	RTC	PPC	PPC	PPC

Gene table: RT² Profiler PCR Array

Position	UniGene	GenBank	Symbol	Description
A01	Mm.46354	NM_007388	Acp5	Acid phosphatase 5, tartrate resistant
A02	Mm.66952	NM_173029	Adcy10	Adenylate cyclase 10
A03	Mm.12286	NM_007440	Alox12	Arachidonate 12-lipoxygenase
A04	Mm.4584	NM_009660	Alox15	Arachidonate 15-lipoxygenase
A05	Mm.41072	NM_009662	Alox5	Arachidonate 5-lipoxygenase
A06	Mm.288186	NM_007431	Alpl	Alkaline phosphatase, liver/bone/kidney
A07	Mm.39005	NM_013476	Ar	Androgen receptor
A08	Mm.389459	NM_007541	Bglap	Bone gamma carboxyglutamate protein
A09	Mm.103205	NM_007553	Bmp2	Bone morphogenetic protein 2
A10	Mm.595	NM_007557	Bmp7	Bone morphogenetic protein 7
A11	Mm.4361	NM_007587	Calca	Calcitonin/calcitonin-related polypeptide, alpha
A12	Mm.4642	NM_007588	Calcr	Calcitonin receptor
B01	Mm.1186	NM_009801	Car2	Carbonic anhydrase 2
B02	Mm.103619	NM_013803	Casr	Calcium-sensing receptor
B03	Mm.271833	NM_011611	Cd40	CD40 antigen
B04	Mm.270587	NM_011930	Cln7	Chloride channel 7
B05	Mm.297251	NM_009924	Cnr2	Cannabinoid receptor 2 (macrophage)
B06	Mm.277735	NM_007742	Col1a1	Collagen, type I, alpha 1
B07	Mm.277792	NM_007743	Col1a2	Collagen, type I, alpha 2
B08	Mm.100940	NM_007744	Comt	Catechol-O-methyltransferase
B09	Mm.20904	NM_019922	Crtap	Cartilage associated protein
B10	Mm.272085	NM_007802	Ctsk	Cathepsin K
B11	Mm.1262	NM_007809	Cyp17a1	Cytochrome P450, family 17, subfamily a, polypeptide 1
B12	Mm.5199	NM_007810	Cyp19a1	Cytochrome P450, family 19, subfamily a, polypeptide 1
C01	Mm.378235	NM_016974	Dbp	D site albumin promoter binding protein
C02	Mm.214717	NM_010051	Dkk1	Dickkopf homolog 1 (Xenopus laevis)
C03	Mm.27254	NM_008813	Enpp1	Ectonucleotide pyrophosphatase/phosphodiesterase 1
C04	Mm.9213	NM_007956	Esr1	Estrogen receptor 1 (alpha)
C05	Mm.2561	NM_010157	Esr2	Estrogen receptor 2 (beta)
C06	Mm.386776	NM_007953	Esrra	Estrogen related receptor, alpha
C07	Mm.265716	NM_010206	Fgfr1	Fibroblast growth factor receptor 1
C08	Mm.16340	NM_010207	Fgfr2	Fibroblast growth factor receptor 2
C09	Mm.389327	NM_010285	Ghrh	Growth hormone releasing hormone
C10	Mm.28328	NM_008288	Hsd11b1	Hydroxysteroid 11-beta dehydrogenase 1
C11	Mm.268521	NM_010512	Igf1	Insulin-like growth factor 1
C12	Mm.141936	NM_008342	Igfbp2	Insulin-like growth factor binding protein 2
D01	Mm.4392	NM_008357	Il15	Interleukin 15
D02	Mm.1019	NM_031168	Il6	Interleukin 6
D03	Mm.2856	NM_010559	Il6ra	Interleukin 6 receptor, alpha
D04	Mm.482186	NM_001033228	Itga1	Integrin alpha 1
D05	Mm.87150	NM_016780	Itgb3	Integrin beta 3
D06	Mm.277072	NM_008493	Lep	Leptin
D07	Mm.27961	NM_019782	Lepre1	Leprecan 1
D08	Mm.271854	NM_008512	Lrp1	Low density lipoprotein receptor-related protein 1
D09	Mm.274581	NM_008513	Lrp5	Low density lipoprotein receptor-related protein 5

Position	UniGene	GenBank	Symbol	Description
D10	Mm.321990	NM_008514	Lrp6	Low density lipoprotein receptor-related protein 6
D11	Mm.87787	NM_010735	Lta	Lymphotoxin A
D12	Mm.3900	NM_013589	Ltbp2	Latent transforming growth factor beta binding protein 2
E01	Mm.389466	NM_011839	Mab21l2	Mab-21-like 2 (C. elegans)
E02	Mm.29564	NM_008610	Mmp2	Matrix metalloproteinase 2
E03	Mm.3514	NM_010834	Mstn	Myostatin
E04	Mm.89959	NM_010840	Mthfr	5,10-methylenetetrahydrofolate reductase
E05	Mm.329560	NM_016791	Nfatc1	Nuclear factor of activated T-cells, cytoplasmic, calcineurin-dependent 1
E06	Mm.135266	NM_008711	Nog	Noggin
E07	Mm.258415	NM_008713	Nos3	Nitric oxide synthase 3, endothelial cell
E08	Mm.154796	NM_023456	Npy	Neuropeptide Y
E09	Mm.129481	NM_008173	Nr3c1	Nuclear receptor subfamily 3, group C, member 1
E10	Mm.42026	NM_011027	P2rx7	Purinergic receptor P2X, ligand-gated ion channel, 7
E11	Mm.79983	NM_011961	Plod2	Procollagen lysine, 2-oxoglutarate 5-dioxygenase 2
E12	Mm.1270	NM_011164	Prl	Prolactin
F01	Mm.284168	NM_020623	Pth	Parathyroid hormone
F02	Mm.3542	NM_011199	Pth1r	Parathyroid hormone 1 receptor
F03	Mm.28440	NM_008970	Pthlh	Parathyroid hormone-like peptide
F04	Mm.391013	NM_009820	Runx2	Runt related transcription factor 2
F05	Mm.281691	NM_013834	Sfrp1	Secreted frizzled-related protein 1
F06	Mm.42095	NM_016687	Sfrp4	Secreted frizzled-related protein 4
F07	Mm.1431	NM_011367	Shbg	Sex hormone binding globulin
F08	Mm.265602	NM_024449	Sost	Sclerostin
F09	Mm.291442	NM_009242	Sparc	Secreted acidic cysteine rich glycoprotein
F10	Mm.288474	NM_009263	Spp1	Secreted phosphoprotein 1
F11	Mm.277406	NM_009283	Stat1	Signal transducer and activator of transcription 1
F12	Mm.248380	NM_011577	Tgfb1	Transforming growth factor, beta 1
G01	Mm.206505	NM_011594	Timp2	Tissue inhibitor of metalloproteinase 2
G02	Mm.116683	NM_009397	Tnfaip3	Tumor necrosis factor, alpha-induced protein 3
G03	Mm.6251	NM_009399	Tnfrsf11a	Tumor necrosis factor receptor superfamily, member 11a
G04	Mm.15383	NM_008764	Tnfrsf11b	Tumor necrosis factor receptor superfamily, member 11b (osteoprotegerin)
G05	Mm.235328	NM_011610	Tnfrsf1b	Tumor necrosis factor receptor superfamily, member 1b
G06	Mm.249221	NM_011613	Tnfsf11	Tumor necrosis factor (ligand) superfamily, member 11
G07	Mm.173847	NM_011648	Tshr	Thyroid stimulating hormone receptor
G08	Mm.3280	NM_011658	Twist1	Twist homolog 1 (Drosophila)
G09	Mm.245084	NM_009504	Vdr	Vitamin D receptor
G10	Mm.282184	NM_009505	Vegfa	Vascular endothelial growth factor A
G11	Mm.4709	NM_011718	Wnt10b	Wingless related MMTV integration site 10b
G12	Mm.1367	NM_009522	Wnt3a	Wingless-related MMTV integration site 3A
H01	Mm.328431	NM_007393	Actb	Actin, beta
H02	Mm.163	NM_009735	B2m	Beta-2 microglobulin
H03	Mm.343110	NM_008084	Gapdh	Glyceraldehyde-3-phosphate dehydrogenase
H04	Mm.3317	NM_010368	Gusb	Glucuronidase, beta
H05	Mm.2180	NM_008302	Hsp90ab1	Heat shock protein 90 alpha (cytosolic), class B member 1
H06	N/A	SA_00106	MGDC	Mouse Genomic DNA Contamination
H07	N/A	SA_00104	RTC	Reverse Transcription Control
H08	N/A	SA_00104	RTC	Reverse Transcription Control
H09	N/A	SA_00104	RTC	Reverse Transcription Control
H10	N/A	SA_00103	PPC	Positive PCR Control
H11	N/A	SA_00103	PPC	Positive PCR Control
H12	N/A	SA_00103	PPC	Positive PCR Control

Related products

For optimal performance, RT² Profiler PCR Arrays should be used together with the RT² First Strand Kit for cDNA synthesis and RT² SYBR[®] Green qPCR Mastermixes for PCR.

Product	Contents	Cat. no.
RT ² First Strand Kit (12)	Enzymes and reagents for cDNA synthesis	330401
RT ² SYBR Green qPCR Mastermix (2)*	For 2 x 96 assays in 96-well plates; suitable for use with real-time cyclers that do not require a reference dye, including: Bio-Rad models CFX96, CFX384, DNA Engine Opticon 2; Bio-Rad/MJ Research Chromo4; Roche LightCycler 480 (96-well and 384-well); all other cyclers	330500
RT ² SYBR Green ROX [™] qPCR Mastermix (2)*	For 2 x 96 assays in 96-well plates; suitable for use with the following real-time cyclers: Applied Biosystems models 5700, 7000, 7300, 7500 [Standard and FAST], 7700, 7900HT 96-well block [Standard and FAST] and 384-well block, StepOnePlus; Eppendorf Mastercycler ep realplex models 2, 2S, 4, 4S; Stratagene models Mx3000P, Mx3005P, Mx4000; Takara TP-800	330520
RT ² SYBR Green Fluor qPCR Mastermix (2)*	For 2 x 96 assays in 96-well plates; suitable for use with the following real-time cyclers: Bio-Rad models iCycler, iQ5, MyiQ, MyiQ2	330510

* Larger kit sizes available; please inquire.

RT² Profiler PCR Array products are intended for molecular biology applications. These products are not intended for the diagnosis, prevention, or treatment of a disease.

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