

RT² Profiler™ PCR Array:

Mouse cAMP / Ca²⁺ Signaling Pathway PathwayFinder™

Catalog Number

PAMM-066A

PAMM-066C

PAMM-066D

PAMM-066E

PAMM-066F

PAMM-066G

For Real-Time Instruments:

ABI Standard Blocks; Bio-Rad iCycler, MyiQ, and (MJ Research) Chromo 4; and Stratagene Mx3005p, Mx3000p

ABI 7500 and 7900HT FAST 96-Well Blocks, ABI StepOnePlus

Bio-Rad (MJ Research) Opticon and Opticon 2, Stratagene Mx4000

ABI 7900HT 384-Well Block

Roche LightCycler 480 96-well Block

Roche LightCycler 480 384-well Block

Description

The Mouse cAMP/Ca²⁺ PathwayFinder RT² Profiler PCR Array contains 84 target genes that are responsive to cAMP or calcium ion (Ca²⁺). This array contains genes whose promoters contain SRE or SRE-like enhancer sequences, the CRE enhancer sequence, and other Ca²⁺ responsive elements. Using real-time PCR, you can easily and reliably analyze expression of a focused panel of genes involved in cAMP/Ca²⁺ signaling with this array.

Functional Gene Groupings

Genes whose promoters contain SRE or SRE-like enhancer sequences:

Cnn1 (calponin), Cyr61, Egr1, Egr2, Fos, Fosb, Hspa4 (hsp70), Junb, Scg2 (secretogranin II), Srf, Thbs1 (TSP-1), Vcl.

Genes whose promoters contain the CRE enhancer sequence:

Neuropeptides/Neurotransmitters: Adrb1 (b1 adrenergic receptor), Cga (Chorionic gonadotropin A), Chga (Chromogranin), Gcg (Glucagon), Inhba (Inhibin A), Kcna5 (KV1.5), Krtap14, Nos2 (Inducible nitric oxide synthase), Penk1 (Enkephalin), Plf, Prl, S100a8, S100a9, S100g, Scg2, Slc18a1 (Vesicular monoamine transporter), Sst (Somatostatin), Sstr2 (Somatostatin receptor 2), Tacr1 (Substance P receptor), Th (Tyrosine hydroxylase), Vip.

Cell Cycle, Cell Survival, and DNA Repair: Bcl2, Brca1, Ccna1 (CyclinA), Ccnd1 (CyclinD1), Cdk5, Cdkn2b (p15IND4b), Gem, Nf1, Pcna, Pmaip1 (NoxA), Rb1.

Growth Factors: Areg (Amphiregulin), Bdnf, Crh, Fgf6, Tgfb3, Tnf.

Signaling: Dusp1 (Ptpn16), Hspa5 (Grp78), Pln (Phospholamban), Ppp2ca (Protein phosphatase 2A alpha), Prkar1a (Protein kinase A regulatory subunit), Sgk.

Transcription: Atf3, Creb1, Crem, Egr1, Egr2, Fos, Junb, Maf, Per1, Pou1f1 (Pit1), Pou2af1 (OCA-B), Stat3.

Metabolism: Ahr, Amd1, Eno2, Hk2, Ldha, Pck2, Sod2.

Immune Regulation: Il2, Il6, Mif, Ptgs2 (Cox-2).

Genes whose promoters contain other Ca²⁺ responsive elements:

Actb (b-actin), Calb1 (calbindin 1), Calb2 (calbindin 2), Calcr, Calm1 (Calmodulin 1), Calr (Calreticulin), Ddit3 (GADD153), Ncam1, Npy, Plat (tPA).

Storage Conditions

Please check the kit components immediately after you receive this package. We are only responsible for missing items reported within two (2) business days of receipt.

Storage Conditions: PCR Arrays are shipped at ambient temperature. Keep plates at -20 °C for long-term storage.

NOTE: Be sure that you have the correct PCR Array format for your instrument before starting the experiment.

References

1. Mayr B, Montminy M. 2001. Transcriptional regulation by the phosphorylation-dependent factor CREB, *Nat Rev Mol Cell Biol* **2** (8):599-609.
2. Vaidya VA, Duman RS. 2001. Depression--emerging insights from neurobiology, *Br Med Bull* **57**: 61-79.
3. Muller FU, Neumann J, Schmitz W. 2000. Transcriptional regulation by cAMP in the heart, *Mol Cell Biochem* **212** (1-2): 11-7.
4. Hardingham GE, Bading H. 1999. Calcium as a versatile second messenger in the control of gene expression, *Microsc Res Tech* **46** (6): 348-55.
5. Finkbeiner S, Greenberg ME. 1998. Ca²⁺ channel-regulated neuronal gene expression, *J Neurobiol* **37** (1): 171-89.
6. Bito H, Deisseroth K, Tsien RW. 1997. Ca²⁺-dependent regulation in neuronal gene expression, *Curr Opin Neurobiol* **7** (3): 419-29.
7. Tsuda M. 1996. Cascade of gene expression induced by Ca²⁺ signals in neurons, *Neurochem Int* **29** (5): 443-51.
8. Bading H, Segal MM, Sucher NJ, Dudek H, Lipton SA, Greenberg ME. 1995. N-methyl-D-aspartate receptors are critical for mediating the effects of glutamate on intracellular calcium concentration and immediate early gene expression in cultured hippocampal neurons, *Neuroscience* **64** (3): 653-64.
9. Roche E, Prentki M. 1994. Calcium regulation of immediate-early response genes, *Cell Calcium* **16** (4): 331-8.
10. Herschman HR. 1991. Primary response genes induced by growth factors and tumor promoters, *Annu Rev Biochem* **60**: 281-319.
11. Sheng M, Greenberg ME. 1990. The regulation and function of c-fos and other immediate early genes in the nervous system, *Neuron*. **4** (4): 477-85.

Product Specification Sheet

Array Layout

Mouse cAMP / Ca²⁺ Signaling Pathway PathwayFinder™ PCR Array

	1	2	3	4	5	6	7	8	9	10	11	12
A	Adrb1	Ahr	Amd1	Areg	Atf3	Bcl2	Bdnf	Brca1	Calb1	Calb2	Calcr1	Calm1
B	Calr	Ccna1	Ccnd1	Cdk5	Cdkn2b	Cga	Chga	Cnn1	Creb1	Crem	Crh	Cyr61
C	Ddit3	Dusp1	Egr1	Egr2	Eno2	Fgf6	Fos	Fosb	Gcg	Gem	Hk2	Hspa4
D	Hspa5	Il2	Il6	Inhba	Junb	Jund1	Kcna5	Krtap14	Ldha	Maf	Mif	Ncam1
E	Nf1	Nos2	Npy	Pck2	Pcna	Penk1	Per1	Pou1f1	Plat	Plf	Pln	Pmaip1
F	Pou2af1	Ppp2ca	Prkar1a	Pri	Ptgs2	Rb1	S100a8	S100a9	S100g	Scg2	Sgk	Slc18a1
G	Sod2	Srf	Sst	Sstr2	Stat3	Tacr1	Tgfb3	Th	Thbs1	Tnf	Vcl	Vip
H	Gusb	Hprt1	Hsp90ab1	Gapdh	Actb	MGDC	RTC	RTC	RTC	PPC	PPC	PPC

Gene Table

Position	UniGene	GenBank	Symbol	Description
A01	Mm.46797	NM_007419	Adrb1	Adrenergic receptor, beta 1
A02	Mm.341377	NM_013464	Ahr	Aryl-hydrocarbon receptor
A03	Mm.253533	NM_009665	Amd1	S-adenosylmethionine decarboxylase 1
A04	Mm.8039	NM_009704	Areg	Amphiregulin
A05	Mm.2706	NM_007498	Atf3	Activating transcription factor 3
A06	Mm.257460	NM_009741	Bcl2	B-cell leukemia/lymphoma 2
A07	Mm.1442	NM_007540	Bdnf	Brain derived neurotrophic factor
A08	Mm.244975	NM_009764	Brca1	Breast cancer 1
A09	Mm.277665	NM_009788	Calb1	Calbindin-28K
A10	Mm.2755	NM_007586	Calb2	Calbindin 2
A11	Mm.75467	NM_018782	Calcr1	Calcitonin receptor-like
A12	Mm.285993	NM_009790	Calm1	Calmodulin 1
B01	Mm.1971	NM_007591	Calr	Calreticulin
B02	Mm.4815	NM_007628	Ccna1	Cyclin A1
B03	Mm.273049	NM_007631	Ccnd1	Cyclin D1
B04	Mm.298798	NM_007668	Cdk5	Cyclin-dependent kinase 5
B05	Mm.423094	NM_007670	Cdkn2b	Cyclin-dependent kinase inhibitor 2B (p15, inhibits CDK4)
B06	Mm.1361	NM_009889	Cga	Glycoprotein hormones, alpha subunit
B07	Mm.4137	NM_007693	Chga	Chromogranin A
B08	Mm.4356	NM_009922	Cnn1	Calponin 1
B09	Mm.435437	NM_133828	Creb1	CAMP responsive element binding protein 1
B10	Mm.5244	NM_013498	Crem	CAMP responsive element modulator
B11	Mm.290689	NM_205769	Crh	Corticotropin releasing hormone
B12	Mm.1231	NM_010516	Cyr61	Cysteine rich protein 61
C01	Mm.110220	NM_007837	Ddit3	DNA-damage inducible transcript 3
C02	Mm.239041	NM_013642	Dusp1	Dual specificity phosphatase 1
C03	Mm.181959	NM_007913	Egr1	Early growth response 1
C04	Mm.290421	NM_010118	Egr2	Early growth response 2
C05	Mm.3913	NM_013509	Eno2	Enolase 2, gamma neuronal
C06	Mm.3403	XM_485825	Fgf6	Fibroblast growth factor 6
C07	Mm.246513	NM_010234	Fos	FBJ osteosarcoma oncogene
C08	Mm.248335	NM_008036	Fosb	FBJ osteosarcoma oncogene B
C09	Mm.45494	NM_008100	Gcg	Glucagon
C10	Mm.247486	NM_010276	Gem	GTP binding protein (gene overexpressed in skeletal muscle)
C11	Mm.255848	NM_013820	Hk2	Hexokinase 2
C12	Mm.239865	NM_008300	Hspa4	Heat shock protein 4
D01	Mm.430829	NM_022310	Hspa5	Heat shock 70kD protein 5 (glucose-regulated protein)
D02	Mm.14190	NM_008366	Il2	Interleukin 2

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Position	UniGene	GenBank	Symbol	Description
D03	Mm.1019	NM_031168	Il6	Interleukin 6
D04	Mm.8042	NM_008380	Inhba	Inhibin beta-A
D05	Mm.1167	NM_008416	Junb	Jun-B oncogene
D06	Mm.324321	NM_010592	Jund1	Jun proto-oncogene related gene d1
D07	Mm.222831	NM_145983	Kcna5	Potassium voltage-gated channel, shaker-related subfamily, member 5
D08	Mm.3502	NM_013707	Krtap14	Keratin associated protein 14
D09	Mm.29324	NM_010699	Ldha	Lactate dehydrogenase A
D10	Mm.275549	NM_001025577	Maf	Avian musculoaponeurotic fibrosarcoma (v-maf) AS42 oncogene homolog
D11	Mm.2326	NM_010798	Mif	Macrophage migration inhibitory factor
D12	Mm.4974	NM_010875	Ncam1	Neural cell adhesion molecule 1
E01	Mm.255596	NM_010897	Nf1	Neurofibromatosis 1
E02	Mm.2893	NM_010927	Nos2	Nitric oxide synthase 2, inducible, macrophage
E03	Mm.154796	NM_023456	Npy	Neuropeptide Y
E04	Mm.29856	NM_028994	Pck2	Phosphoenolpyruvate carboxykinase 2 (mitochondrial)
E05	Mm.7141	NM_011045	Pcna	Proliferating cell nuclear antigen
E06	Mm.2899	NM_001002927	Penk1	Preproenkephalin 1
E07	Mm.7373	NM_011065	Per1	Period homolog 1 (Drosophila)
E08	Mm.355440	NM_008849	Pou1f1	POU domain, class 1, transcription factor 1 (Pit1, growth hormone factor 1)
E09	Mm.154660	NM_008872	Plat	Plasminogen activator, tissue
E10	Mm.305393	NM_031191	Plf	Proliferin
E11	Mm.34145	NM_023129	Pln	Phospholamban
E12	Mm.271878	NM_021451	Pmaip1	Phorbol-12-myristate-13-acetate-induced protein 1
F01	Mm.897	NM_011136	Pou2af1	POU domain, class 2, associating factor 1
F02	Mm.260288	NM_019411	Ppp2ca	Protein phosphatase 2 (formerly 2A), catalytic subunit, alpha isoform
F03	Mm.30039	NM_021880	Pkar1a	Protein kinase, cAMP dependent regulatory, type I, alpha
F04	Mm.1270	NM_011164	Prl	Prolactin
F05	Mm.292547	NM_011198	Ptgs2	Prostaglandin-endoperoxide synthase 2
F06	Mm.273862	NM_009029	Rb1	Retinoblastoma 1
F07	Mm.21567	NM_013650	S100a8	S100 calcium binding protein A8 (calgranulin A)
F08	Mm.2128	NM_009114	S100a9	S100 calcium binding protein A9 (calgranulin B)
F09	Mm.6891	NM_009789	S100g	S100 calcium binding protein G
F10	Mm.5038	NM_009129	Scg2	Secretogranin II
F11	Mm.28405	NM_011361	Sgk	Serum/glucocorticoid regulated kinase
F12	Mm.19301	NM_153054	Slc18a1	Solute carrier family 18 (vesicular monoamine), member 1
G01	Mm.290876	NM_013671	Sod2	Superoxide dismutase 2, mitochondrial
G02	Mm.45044	NM_020493	Srf	Serum response factor
G03	Mm.2453	NM_009215	Sst	Somatostatin
G04	Mm.308647	NM_009217	Sstr2	Somatostatin receptor 2
G05	Mm.249934	NM_011486	Stat3	Signal transducer and activator of transcription 3
G06	Mm.8055	NM_009313	Tacr1	Tachykinin receptor 1
G07	Mm.3992	NM_009368	Tgfb3	Transforming growth factor, beta 3
G08	Mm.1292	NM_009377	Th	Tyrosine hydroxylase
G09	Mm.4159	NM_011580	Thbs1	Thrombospondin 1
G10	Mm.1293	NM_013693	Tnf	Tumor necrosis factor
G11	Mm.279361	NM_009502	Vcl	Vinculin
G12	Mm.98916	NM_011702	Vip	Vasoactive intestinal polypeptide
H01	Mm.3317	NM_010368	Gusb	Glucuronidase, beta
H02	Mm.299381	NM_013556	Hprt1	Hypoxanthine guanine phosphoribosyl transferase 1
H03	Mm.2180	NM_008302	Hsp90ab1	Heat shock protein 90kDa alpha (cytosolic), class B member 1
H04	Mm.343110	NM_008084	Gapdh	Glyceraldehyde-3-phosphate dehydrogenase
H05	Mm.328431	NM_007393	Actb	Actin, beta, cytoplasmic
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