

RT² Profiler™ PCR Array:

Mouse DNA Damage Signaling

Catalog Number

PAMM-029A

PAMM-029C

PAMM-029D

PAMM-029E

PAMM-029F

PAMM-029G

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 DNA Damage Signaling Pathway RT² Profiler PCR Array profiles the expression of 84 genes involved in DNA damage signaling pathways. The genes featured are those associated with the ATR/ATM signaling network and transcriptional targets of DNA damage response. DNA damage can result in cell cycle arrest, apoptosis, and the stabilization and repair of the cellular genome. Using real-time PCR, you can easily and reliably analyze expression of a focused panel of genes related to DNA Damage Signaling with this array.

Functional Gene Groupings

Apoptosis: Atm, Brca1, Mbd4, Mgmt, Mlh1, Prkdc, Rad21, Trp53 (p53).

Cell Cycle:

Cell Cycle Arrest: Chek1, Gadd45a, Hus1, Msh2.

Cell Cycle Checkpoint: Brca2, 2610028A01Rik (Pinx1), Rad1, Rad9, Smc1a.

Other Genes Related to the Cell Cycle: Atm, Chaf1a, Smc3 (Cspg6), Rad17, Rad21, Rbbp4, Terf1, Tlk1.

DNA Repair:

Damaged DNA Binding: Brca1, Ercc1, H2afx, Msh2, Msh3, Rad1, Rad51, Rad51c, Rad51I1, Trpc2, Xpa, Xpc, Xrcc1, Xrcc2, Xrcc3.

Base-excision Repair: Parp1 (Adprt1), Parp2 (Adprt2), Mare, Mbd4, Mpg, Mutyh, Nthl1, Ogg1.

Nucleotide-excision Repair: Dclre1a, Fancs, Nthl1, Rad23a, Slk, Xpa, Xpc.

Double-strand Break Repair: Brca2, Xrcc6 (G22p1), H2afx, Mre11a, Prkdc, Rad52.

Mismatch Repair: Mlh1, Mlh3, Msh2, Msh3, Pms1, Pms2, Pold3, Trep1.

Other Genes Related to DNA Repair: Apex1, Atm, Atrx, Chaf1a, Cry2, Smc3 (Cspg6), Exo1, Fancg (XRCC9), Fen1, Gtf2h1, Gtf2h2, Lig1, Mgmt, Mif, Pold1, Pole, Polh, Poli, Polk, Pttg1, Rad17, Rad18, Rad21, Rad50, Rad9, Rad9b, Rbbp4, Rbm4, Rev1, Smc1a, Srd5a2, Sumo1, Tdg, Tnp1, Ube2a, Ung, Wrn, Wrnip1, Xrn2.

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. Tran H, Brunet A, Grenier JM, Datta SR, Fornace AJ Jr, DiStefano PS, Chiang LW, Greenberg ME. DNA repair pathway stimulated by the forkhead transcription factor FOXO3a through the Gadd45 protein. *Science* 2002 Apr 19; **296** (5567): 530-4
2. Tusher VG, Tibshirani R, Chu G. Significance analysis of microarrays applied to the ionizing radiation response. *Proc Natl Acad Sci U S A* 2001 Apr 24; **98** (9): 5116-21
3. Li Z, Li JJ. Effector genes altered in mcf-7 human breast cancer cells after exposure to fractionated ionizing radiation. *Radiat Res.* 2001 Apr; **155** (4): 543-53.
4. RoblesAI, Bemmels NA, Foraker AB, Harris CC. APAF-1 is a transcriptional target of p53 in DNA damage-induced apoptosis. *Cancer Res* 2001 Sep 15; **61** (18): 6660-4
5. Kannan K, Amariglio N, Rechavi G, Jakob-Hirsch J, Kela I, Kaminski N, Getz G, Domany E, Givol D. DNA microarrays identification of primary and secondary target genes regulated by p53. *Oncogene* 2001 Apr 26; **20** (18): 2225-34
6. Zhou BB, Elledge SJ. The DNA damage response: putting checkpoints in perspective. *Nature* 2000 Nov 23; **408** (6811): 433-9
7. Bartek J, Lukas J. Mammalian G1- and S-phase checkpoints in response to DNA damage. *Curr Opin Cell Biol* 2001 Dec; **13** (6): 738-47
8. Carr AM. Cell cycle. Piecing together the p53 puzzle. *Science* 2000 Mar 10; **287** (5459): 1765-6
9. MacLachlan TK, Somasundaram K, Sgagias M, Shifman Y, Muschel RJ, Cowan KH, El-Deiry WS. BRCA1 effects on the cell cycle and the DNA damage response are linked to altered gene expression. *J Biol Chem* 2000 Jan 28; **275** (4): 2777-85
10. Yu J, Zhang L, Hwang PM, Rago C, Kinzler KW, Vogelstein B. Identification and classification of p53-regulated genes. *Proc Natl Acad Sci U S A* 1999 Dec 7; **96** (25): 14517-22

Product Specification Sheet

Array Layout: Mouse DNA Damage Signaling Pathway PCR Array

	1	2	3	4	5	6	7	8	9	10	11	12
A	Apex1	Atm	Atrx	Brca1	Brca2	Chaf1a	Chek1	Cry2	Smc3	Dclre1a	Ercc1	Exo1
B	Fancc	Fancg	Fen1	Xrcc6	Gadd45a	Gtf2h1	Gtf2h2	H2afx	Hus1	Lig1	Mare	Mbd4
C	Mgmt	Mif	Mlh1	Mlh3	Mpg	Mre11a	Msh2	Msh3	Mutyh	Nth1	Ogg1	Parp1
D	Parp2	2610028A01Rik	Pms1	Pms2	Pold1	Pold3	Pole	Polh	Poli	Polk	Prkdc	Pttg1
E	Rad1	Rad17	Rad18	Rad21	Rad23a	Rad50	Rad51	Rad51c	Rad51l1	Rad52	Rad9	Rad9b
F	Rbbp4	Rbm4	Rev1	Slk	Smc1a	Srd5a2	Sumo1	Tdg	Terf1	Tlk1	Tnp1	Trex1
G	Trp53	Trpc2	Ube2a	Ung	Wrn	Wrip1	Xpa	Xpc	Xrcc1	Xrcc2	Xrcc3	Xrn2
H	Gusb	Hprt1	Hsp90ab1	Gapdh	Actb	MGDC	RTC	RTC	RTC	PPC	PPC	PPC

Gene Table

Position	UniGene	GenBank	Symbol	Description
A01	Mm.203	NM_009687	Apex1	Apurinic/aprimidinic endonuclease 1
A02	Mm.5088	NM_007499	Atm	Ataxia telangiectasia mutated homolog (human)
A03	Mm.10141	NM_009530	Atrx	Alpha thalassemia/mental retardation syndrome X-linked homolog (human)
A04	Mm.244975	NM_009764	Brca1	Breast cancer 1
A05	Mm.236256	NM_009765	Brca2	Breast cancer 2
A06	Mm.358656	NM_013733	Chaf1a	Chromatin assembly factor 1, subunit A (p150)
A07	Mm.16753	NM_007691	Chek1	Checkpoint kinase 1 homolog (S. pombe)
A08	Mm.254181	NM_009963	Cry2	Cryptochrome 2 (photolyase-like)
A09	Mm.14910	NM_007790	Smc3	Structural maintenance of chromosomes 3
A10	Mm.2805	NM_018831	Dclre1a	DNA cross-link repair 1A, PSO2 homolog (S. cerevisiae)
A11	Mm.280913	NM_007948	Ercc1	Excision repair cross-complementing rodent repair deficiency, complementation group 1
A12	Mm.283046	NM_012012	Exo1	Exonuclease 1
B01	Mm.126106	NM_007985	Fancc	Fanconi anemia, complementation group C
B02	Mm.23122	NM_053081	Fancg	Fanconi anemia, complementation group G
B03	Mm.2952	NM_007999	Fen1	Flap structure specific endonuclease 1
B04	Mm.288809	NM_010247	Xrcc6	X-ray repair complementing defective repair in Chinese hamster cells 6
B05	Mm.389750	NM_007836	Gadd45a	Growth arrest and DNA-damage-inducible 45 alpha
B06	Mm.22700	NM_008186	Gtf2h1	General transcription factor II H, polypeptide 1
B07	Mm.272533	NM_022011	Gtf2h2	General transcription factor II H, polypeptide 2
B08	Mm.245931	NM_010436	H2afx	H2A histone family, member X
B09	Mm.42201	NM_008316	Hus1	Hus1 homolog (S. pombe)
B10	Mm.288179	NM_010715	Lig1	Ligase I, DNA, ATP-dependent
B11	Mm.263161	NM_181569	Mare	Alpha globin regulatory element containing gene
B12	Mm.259308	NM_010774	Mbd4	Methyl-CpG binding domain protein 4
C01	Mm.71906	NM_008598	Mgmt	O-6-methylguanine-DNA methyltransferase
C02	Mm.2326	NM_010798	Mif	Macrophage migration inhibitory factor
C03	Mm.196006	NM_026810	Mlh1	MutL homolog 1 (E. coli)
C04	Mm.311981	XM_900622	Mlh3	MutL homolog 3 (E. coli)
C05	Mm.256299	NM_010822	Mpg	N-methylpurine-DNA glycosylase
C06	Mm.149071	NM_018736	Mre11a	Meiotic recombination 11 homolog A (S. cerevisiae)
C07	Mm.428585	NM_008628	Msh2	MutS homolog 2 (E. coli)
C08	Mm.343101	NM_010829	Msh3	MutS homolog 3 (E. coli)
C09	Mm.180333	NM_133250	Mutyh	MutY homolog (E. coli)
C10	Mm.148315	NM_008743	Nth1	Nth (endonuclease III)-like 1 (E. coli)
C11	Mm.43612	NM_010957	Ogg1	8-oxoguanine DNA-glycosylase 1
C12	Mm.277779	NM_007415	Parp1	Poly (ADP-ribose) polymerase family, member 1
D01	Mm.281482	NM_009632	Parp2	Poly (ADP-ribose) polymerase family, member 2
D02	Mm.379214	NM_028228	2610028A01Rik	RIKEN cDNA 2610028A01 gene
D03	Mm.60499	NM_153556	Pms1	Postmeiotic segregation increased 1 (S. cerevisiae)

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Position	UniGene	GenBank	Symbol	Description
D04	Mm.2950	NM_008886	Pms2	Postmeiotic segregation increased 2 (S. cerevisiae)
D05	Mm.16549	NM_011131	Pold1	Polymerase (DNA directed), delta 1, catalytic subunit
D06	Mm.37562	NM_133692	Pold3	Polymerase (DNA-directed), delta 3, accessory subunit
D07	Mm.35061	NM_011132	Pole	Polymerase (DNA directed), epsilon
D08	Mm.311585	NM_030715	Polh	Polymerase (DNA directed), eta (RAD 30 related)
D09	Mm.244352	NM_011972	Poli	Polymerase (DNA directed), iota
D10	Mm.89926	NM_012048	Polk	Polymerase (DNA directed), kappa
D11	Mm.71	NM_011159	Prkdc	Protein kinase, DNA activated, catalytic polypeptide
D12	Mm.6856	NM_013917	Pttg1	Pituitary tumor-transforming 1
E01	Mm.38376	NM_011232	Rad1	RAD1 homolog (S. pombe)
E02	Mm.248489	NM_011233	Rad17	RAD17 homolog (S. pombe)
E03	Mm.103812	NM_021385	Rad18	RAD18 homolog (S. cerevisiae)
E04	Mm.182628	NM_009009	Rad21	RAD21 homolog (S. pombe)
E05	Mm.255539	NM_009010	Rad23a	RAD23a homolog (S. cerevisiae)
E06	Mm.4888	NM_009012	Rad50	RAD50 homolog (S. cerevisiae)
E07	Mm.434303	NM_011234	Rad51	RAD51 homolog (S. cerevisiae)
E08	Mm.37376	NM_053269	Rad51c	Rad51 homolog c (S. cerevisiae)
E09	Mm.341756	NM_009014	Rad511	RAD51-like 1 (S. cerevisiae)
E10	Mm.149	NM_011236	Rad52	RAD52 homolog (S. cerevisiae)
E11	Mm.277629	NM_011237	Rad9	RAD9 homolog (S. pombe)
E12	Mm.320090	NM_144912	Rad9b	RAD9 homolog B (S. cerevisiae)
F01	Mm.12145	NM_009030	Rbbp4	Retinoblastoma binding protein 4
F02	Mm.426069	NM_009032	Rbm4	RNA binding motif protein 4
F03	Mm.259294	NM_019570	Rev1	REV1 homolog (S. cerevisiae)
F04	Mm.281011	NM_009289	Slk	STE20-like kinase (yeast)
F05	Mm.26412	NM_019710	Smc1a	Structural maintenance of chromosomes 1A
F06	Mm.38933	NM_053188	Srd5a2	Steroid 5 alpha-reductase 2
F07	Mm.362118	NM_009460	Sumo1	SMT3 suppressor of mif two 3 homolog 1 (yeast)
F08	Mm.284252	NM_011561	Tdg	Thymine DNA glycosylase
F09	Mm.4306	NM_009352	Terf1	Telomeric repeat binding factor 1
F10	Mm.136511	NM_172664	Tlk1	Tousled-like kinase 1
F11	Mm.425024	NM_009407	Tnp1	Transition protein 1
F12	Mm.262117	NM_011637	Trex1	Three prime repair exonuclease 1
G01	Mm.222	NM_011640	Trp53	Transformation related protein 53
G02	Mm.292904	NM_011644	Trpc2	Transient receptor potential cation channel, subfamily C, member 2
G03	Mm.395649	NM_019668	Ube2a	Ubiquitin-conjugating enzyme E2A, RAD6 homolog (S. cerevisiae)
G04	Mm.1393	NM_011677	Ung	Uracil DNA glycosylase
G05	Mm.228805	NM_011721	Wrn	Werner syndrome homolog (human)
G06	Mm.286680	NM_030215	Wrnip1	Werner helicase interacting protein 1
G07	Mm.247036	NM_011728	Xpa	Xeroderma pigmentosum, complementation group A
G08	Mm.2806	NM_009531	Xpc	Xeroderma pigmentosum, complementation group C
G09	Mm.4347	NM_009532	Xrcc1	X-ray repair complementing defective repair in Chinese hamster cells 1
G10	Mm.143767	NM_020570	Xrcc2	X-ray repair complementing defective repair in Chinese hamster cells 2
G11	Mm.19082	NM_028875	Xrcc3	X-ray repair complementing defective repair in Chinese hamster cells 3
G12	Mm.3065	NM_011917	Xrn2	5'-3' exoribonuclease 2
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