

RT² Profiler™ PCR Array:

Rat Cell Cycle

Catalog Number

PARN-020A

PARN-020C

PARN-020D

PARN-020E

PARN-020F

PARN-020G

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 Rat Cell Cycle RT² Profiler PCR Array profiles the expression of 84 genes key to cell cycle regulation. This array contains genes that both positively and negatively regulate the cell cycle, the transitions between the each of the phases, DNA replication, checkpoints and arrest. Using real-time PCR, you can easily and reliably analyze expression of a focused panel of genes related to the cell cycle with this array.

Functional Gene Groupings

G1 Phase and G1/S Transition: Camk2a, Camk2b, Gpr132, Itgb1, LOC307231 (Nfatc1), RGD1562436 (Myb), LOC688900 (Slfn1), Ppp3ca, RGD1562456 (Skp2), Taf10.

S Phase and DNA Replication: Dnajc2 (Zrf2), LOC367976 (Mcm3), Mcm2, Mcm4, Mki67, Mre11a, Msh2, Pcna, Rad17, Rad51, Sumo1.

G2 Phase and G2/M Transition: Chek1, Dnajc2 (Zrf2), Ppm1d.

M Phase: Brca2, Ccna1 (Cyclin A1), Ccnb1, Cdc25a, Cdc25b, Cdk2, LOC289740 (Pes1), MGC116373 (Rad21), Nek2, Npm2, Prm1, Ran, Shc1, Smc111, Stag1, Terf1, Tnfsf5ip1, Wee1.

Cell Cycle Checkpoint and Cell Cycle Arrest: Ak1, Apbb1, Brca2, Casp3, Cdk5rap1, Cdkn1a, Cdkn1b, Cdkn2a, Cdkn2b, Chek1, Ddit3 (CHOP), Dst, Gadd45a, Inha, LOC498411 (Hus1), LOC688900 (Slfn1), Mad211, Mdm2, Msh2, Notch2, Pkd1, Pmp22, Ppm1d (WIP1), Rad9, RGD1566319 (Sestrin 2), Sfn (Stratifin), Smc111, Tsg101.

Regulation of the Cell Cycle: Abl1, Bcl2, Brca2, Ccna1, Ccna2, Ccnb1, Ccnb2, Ccnc, Ccnd1, Ccnd2, Ccne1, Ccnf, Cdk4, Cdkn1a, E2f1, E2f4, Gadd45a, Itgb1, RGD1561600 (E2f3), Rad9, Ran, RGD1562456 (Skp2), Sfn (Stratifin), Shc1, Tcfdp2 (Tfdp2), Tnfsf5ip1.

Negative Regulation of the Cell Cycle: Apbb1, Atm, Brca1, Casp3, Cdkn2a, Inha, LOC680111 (Rbl1), Rbl2, Tp53, Trp63.

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. Nurse, P. (2000) A Long Twentieth Century Of The Cell Cycle And Beyond. *Cell* **100**: 71-80.
2. Sherr, C. J. and Roberts, J. M. (1999) CDK Inhibitors: Positive And Negative Regulators Of G1-Phase Progression. *Genes & Development* **13**: 1501-12.
3. Harbour, J. W. and Dean, D. C. (2000) Rb Function In Cell-Cycle Regulation And Apoptosis. *Nature Cell Biology* **2**: E65-7.
4. Deshaies, R. J. (1995) The Self-Destructive Personality Of A Cell Cycle In Transition. *Current Biology* **7**: 781-789.
5. Gardner R. D. and Burke D. J. (2000) The Spindle Checkpoint: Two Transition, Two Pathways. *Trends in Cell Biology* **10**: 154-8.
6. Dasika, G. K., Lin, S. C., Zhao, S., Sung, P., Tomkinson, A., and Lee, E. Y. (1999) DNA Damage-Induced Cell Cycle Checkpoints And DNA Strand Break Repair In Development And Tumorigenesis. *Oncogene* **18**: 7883-99.
7. Amati, B. and Vlach, J. (1999) Kip1 Meets SKP2: New Links in Cell-Cycle Control. *Nature Cell Biology* **1**: E91-3.
8. Muller, H. and Helin, K. (2000) The E2F Transcription Factors: Key Regulators of Cell Proliferation. *Biochim. Biophys. Acta* **1470**: M1-12.
9. Bottazzi, M. E. and Assoian, R. K. (1997) The Extracellular Matrix And Mitogenic Growth Factors Control G1 Phase Cyclins And Cyclin-Dependent Kinase Inhibitors. *Trends in Cell Biology* **7**: 348-352.
10. Sherr C. J. and Weber J. D. (2000) The ARF/p53 Pathway. *Curr Opin Genet. Dev* **10**: 94-99.

Product Specification Sheet

Array Layout: Rat Cell Cycle RT²Profiler™ PCR Array

	1	2	3	4	5	6	7	8	9	10	11	12
A	Abl1	Ak1	Apbb1	Atm	Brca1	Brca2	Camk2a	Camk2b	Casp3	Ccna1	Ccna2	Ccnb1
B	Ccnb2	Ccnc	Ccnd1	Ccnd2	Ccne1	Ccnf	Cdc25a	Cdc25b	Cdk2	Cdk4	Cdk5rap1	Cdkn1a
C	Cdkn1b	Cdkn2a	Cdkn2b	Chek1	Ddit3	Dnajc2	Dst	E2f1	E2f4	Gadd45a	Gpr132	Inha
D	Itgb1	LOC289740	RGD1561600	LOC307231	RGD1562436	LOC367976	LOC498411	BCL2	LOC688900	Mad21l	Mcm2	Mcm4
E	Mdm2	MGC116373	Mki67	Mre11a	Msh2	Nek2	Notch2	Npm2	Pcna	Pkd1	Pmp22	Ppm1d
F	Ppp2r3a	Ppp3ca	Prm1	Rad17	Rad51	Rad9	Ran	LOC680111	Rbl2	RGD1562456	RGD1566319	Sfn
G	Shc1	Smc1l1	Stag1	Sumo1	Taf10	Terf1	Tcfdp2	Tnfsf5ip1	Tp53	Trp63	Tsg101	Wee1
H	Rplp1	Hprt	Rpl13a	Ldha	Actb	RGDC	RTC	RTC	RTC	PPC	PPC	PPC

Gene Table

Position	UniGene	GenBank	Symbol	Description
A01	Rn.3105	XM_231137	Abl1	V-abl Abelson murine leukemia viral oncogene homolog 1 (mapped)
A02	Rn.79537	NM_024349	Ak1	Adenylate kinase 1
A03	Rn.19953	NM_080478	Apbb1	Amyloid beta (A4) precursor protein-binding, family B, member 1
A04	Rn.98962	XM_236275	Atm	Ataxia telangiectasia mutated homolog (human) (mapped)
A05	Rn.48840	NM_012514	Brca1	Breast cancer 1
A06	Rn.103225	NM_031542	Brca2	Breast cancer 2
A07	Rn.107499	NM_012920	Camk2a	Calcium/calmodulin-dependent protein kinase II, alpha
A08	Rn.9743	NM_021739	Camk2b	Calcium/calmodulin-dependent protein kinase II, beta
A09	Rn.10562	NM_012922	Casp3	Caspase 3, apoptosis related cysteine protease
A10	Rn.102823	NM_001011949	Ccna1	Cyclin A1
A11	Rn.13094	NM_053702	Ccna2	Cyclin A2
A12	Rn.9232	NM_171991	Ccnb1	Cyclin B1
B01	Rn.124802	NM_001009470	Ccnb2	Cyclin B2
B02	Rn.106758	XM_342812	Ccnc	Cyclin C
B03	Rn.22279	NM_171992	Ccnd1	Cyclin D1
B04	Rn.96083	NM_022267	Ccnd2	Cyclin D2
B05	Rn.15455	XM_574426	Ccne1	Cyclin E
B06	Rn.15126	XM_340763	Ccnf	Cyclin F
B07	Rn.11390	NM_133571	Cdc25a	Cell division cycle 25 homolog A (S. cerevisiae)
B08	Rn.11312	NM_133572	Cdc25b	Cell division cycle 25 homolog B (S. cerevisiae)
B09	Rn.104460	NM_199501	Cdk2	Cyclin dependent kinase 2
B10	Rn.6115	NM_053593	Cdk4	Cyclin-dependent kinase 4
B11	Rn.12997	NM_145721	Cdk5rap1	CDK5 regulatory subunit associated protein 1
B12	Rn.10089	NM_080782	Cdkn1a	Cyclin-dependent kinase inhibitor 1A
C01	Rn.29897	NM_031762	Cdkn1b	Cyclin-dependent kinase inhibitor 1B
C02	Rn.48717	NM_031550	Cdkn2a	Cyclin-dependent kinase inhibitor 2A
C03	Rn.105626	NM_130812	Cdkn2b	Cyclin-dependent kinase inhibitor 2B (p15, inhibits CDK4)
C04	Rn.33267	NM_080400	Chek1	Checkpoint kinase 1 homolog (S. pombe)
C05	Rn.11183	NM_024134	Ddit3	DNA-damage inducible transcript 3
C06	Rn.11908	NM_053776	Dnajc2	DnaJ (Hsp40) homolog, subfamily C, member 2
C07	Rn.79807	XM_237042	Dst_predicted	Dystonin (predicted)
C08	Rn.72471	XM_230765	E2f1	E2F transcription factor 1
C09	Rn.154586	XM_226441	E2f4_predicted	E2F transcription factor 4 (predicted)
C10	Rn.10250	NM_024127	Gadd45a	Growth arrest and DNA-damage-inducible 45 alpha
C11	Rn.145095	XM_234574	Gpr132_predicted	G protein-coupled receptor 132 (predicted)
C12	Rn.8831	NM_012590	Inha	Inhibin alpha
D01	Rn.25733	NM_017022	Itgb1	Integrin beta 1 (fibronectin receptor beta)
D02	Rn.9521	XM_214069	LOC289740	Similar to PES1 protein
D03	Rn.73967	XM_214476	RGD1561600_predicted	Similar to E2f3 protein (predicted)

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Position	UniGene	GenBank	Symbol	Description
D04	Rn.8800	XM_225713	LOC307231	Similar to nuclear factor of activated T-cells, cytoplasmic, calcineurin-dependent 1
D05	Rn.63885	XM_344868	RGD1562436_predicted	Similar to Nanos2 (predicted)
D06	Rn.154788	XM_346381	LOC367976	Similar to DNA replication licensing factor MCM3 (DNA polymerase alpha holoenzyme-associated protein P1) (P1-MCM3)
D07	Rn.64290	XM_573658	LOC498411	Similar to Hus1 homolog
D08	Rn.9996	NM_016993	Bcl2	B-cell leukemia/lymphoma 2
D09	Rn.198889	XM_001068751	LOC688900	Similar to schlafen 1
D10	Rn.19771	XM_216161	Mad2l1_predicted	MAD2 (mitotic arrest deficient, homolog)-like 1 (yeast) (predicted)
D11	Rn.110839	XM_232168	Mcm2_predicted	Minichromosome maintenance deficient 2 mitotin (S. cerevisiae) (predicted)
D12	Rn.8341	XM_344048	Mcm4	Minichromosome maintenance deficient 4 homolog (S. cerevisiae)
E01	Rn.91829	XM_235169	Mdm2	Transformed mouse 3T3 cell double minute 2
E02	Rn.92781	NM_001025701	MGC116373	Similar to HR21spA
E03	Rn.73551	XM_225460	Mki67_predicted	Antigen identified by monoclonal antibody Ki-67 (predicted)
E04	Rn.54477	NM_022279	Mre11a	Meiotic recombination 11 homolog A (S. cerevisiae)
E05	Rn.3174	NM_031058	Msh2	MutS homolog 2 (E. coli)
E06	Rn.144627	XM_001055166	Nek2	NIMA (never in mitosis gene a)-related expressed kinase 2
E07	Rn.65930	NM_024358	Notch2	Notch gene homolog 2 (Drosophila)
E08	Rn.156727	NM_203340	Npm2	Nucleophosmin/nucleoplasmin 2
E09	Rn.223	NM_022381	Pcna	Proliferating cell nuclear antigen
E10	Rn.127770	XM_340765	Pkd1	Polycystic kidney disease 1 homolog
E11	Rn.1476	NM_017037	Pmp22	Peripheral myelin protein 22
E12	Rn.15540	XM_213418	Ppm1d_predicted	Protein phosphatase 1D magnesium-dependent, delta isoform (predicted)
F01	Rn.93024	XM_576459	Ppp2r3a	Protein phosphatase 2 (formerly 2A), regulatory subunit B', alpha
F02	Rn.6866	NM_017041	Ppp3ca	Protein phosphatase 3, catalytic subunit, alpha isoform
F03	Rn.27657	NM_001002850	Prm1	Protamine 1 (mapped)
F04	Rn.154275	NM_001024778	Rad17	RAD17 homolog (S. pombe)
F05	Rn.103858	XM_230465	Rad51_predicted	RAD51 homolog (S. cerevisiae) (predicted)
F06	Rn.145016	XM_219684	Rad9_predicted	RAD9 homolog (S. pombe) (predicted)
F07	Rn.107698	NM_053439	Ran	RAN, member RAS oncogene family
F08	Rn.133791	XM_001055763	LOC680111	Similar to Retinoblastoma-like protein 1 (107 kDa retinoblastoma-associated protein) (PRB1) (P107)
F09	Rn.11020	NM_031094	Rbl2	Retinoblastoma-like 2
F10	Rn.161788	XM_226817	RGD1562456_predicted	Similar to S-phase kinase-associated protein 2 (F-box protein Skp2) (F-box/WD-40 protein 1) (predicted)
F11	Rn.37672	XM_578496	RGD1566319_predicted	Similar to Sestrin 2 (Hi95) (predicted)
F12	Rn.145079	XM_232745	Sfn_predicted	Stratifin (predicted)
G01	Rn.138818	NM_053517	Shc1	Src homology 2 domain-containing transforming protein C1
G02	Rn.11763	NM_031683	Smc1l1	Structural maintenance of chromosomes 1 like 1 (S. cerevisiae)
G03	Rn.11715	XM_236609	Stag1_predicted	Stromal antigen 1 (predicted)
G04	Rn.1221	NM_001009672	Sumo1	SMT3 suppressor of mif two 3 homolog 1 (yeast)
G05	Rn.144795	XM_215028	Taf10_predicted	TAF10 RNA polymerase II, TATA box binding protein (TBP)-associated factor (predicted)
G06	Rn.33853	NM_001012464	Terf1	Telomeric repeat binding factor 1
G07	Rn.29088	XM_217232	Tcfdp2_predicted	Transcription factor Dp 2 (predicted)
G08	Rn.144759	XM_214550	Tnfsf5ip1_predicted	Tumor necrosis factor superfamily, member 5-induced protein 1 (predicted)
G09	Rn.54443	NM_030989	Tp53	Tumor protein p53
G10	Rn.42907	NM_019221	Trp63	Transformation related protein 63
G11	Rn.7410	NM_181628	Tsg101	Tumor susceptibility gene 101
G12	Rn.52281	NM_001012742	Wee1	Wee 1 homolog (S. pombe)
H01	Rn.973	NM_001007604	Rplp1	Ribosomal protein, large, P1
H02	Rn.47	NM_012583	Hprt	Hypoxanthine guanine phosphoribosyl transferase
H03	Rn.92211	NM_173340	Rpl13a	Ribosomal protein L13A
H04	Rn.107896	NM_017025	Ldha	Lactate dehydrogenase A
H05	Rn.94978	NM_031144	Actb	Actin, beta
H06	N/A	U26919	RGDC	Rat 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

