

RT² Profiler™ PCR Array:

Human Cell Cycle

Catalog Number

PAHS-020A

PAHS-020C

PAHS-020D

PAHS-020E

PAHS-020F

PAHS-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 Human 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: ANAPC2, CCND1, CCNE1, CDC34, CDK4, CDK6, CDKN1B, CDKN3, CUL1, CUL2, CUL3, SKP2.

S phase and DNA Replication: ABL1, MCM2, MCM3, MCM4, MCM5, PCNA, RPA3, SUMO1, UBE1.

G2 phase and G2/M Transition: ANAPC2, ANAPC4, DIRAS3, BCCIP, BIRC5, CCNB1, CCNG1, CCNH, CCNT1, CCNT2, CDK5R1, CDK5RAP1, CDK7, CDKN3, CKS1B, CKS2, DDX11, DNM2, GTF2H1, GTSE1, HERC5, KPNA2, MNAT1, SERTAD1.

M Phase: CCNB2, CCNF, CDC2, CDC16, CDC20, MRE11A, RAD51.

Cell Cycle Checkpoint and Cell Cycle Arrest: ATM, ATR, BRCA1, BRCA2, CCNG2, CDC2, CDC34, CDK2, CDKN1A, CDKN1B, CDKN2A, CDKN2B, CDKN3, CHEK1, CHEK2, CUL1, CUL2, CUL3, GADD45A, HUS1, KNTC1, MAD2L1, MAD2L2, NBN, RAD1, RAD17, RAD9A, RB1, RBBP8, TP53.

Regulation of the Cell Cycle: ABL1, ANAPC2, ANAPC4, DIRAS3, ATM, ATR, BCCIP, BCL2, BRCA2, CCNB1, CCNB2, CCNC, CCND1, CCND2, CCNE1, CCNF, CCNH, CCNT1, CCNT2, CDC16, CDC2, CDC20, CDK2, CDK4, CDK5R1, CDK6, CDK7, CDK8, CDKN1A, CDKN1B, CKS1B, DDX11, E2F4, GADD45A, KNTC1, MKI67, PCNA, RAD9A, RB1, SKP2, TFDP1, TFDP2.

Negative Regulation of the Cell Cycle: ATM, BAX, BRCA1, CDKN2B, RBL1, RBL2, TP53.

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: Human Cell Cycle PCR Array

	1	2	3	4	5	6	7	8	9	10	11	12
A	ABL1	ANAPC2	ANAPC4	DIRAS3	ATM	ATR	BAX	BCCIP	BCL2	BIRC5	BRCA1	BRCA2
B	CCNB1	CCNB2	CCNC	CCND1	CCND2	CCNE1	CCNF	CCNG1	CCNG2	CCNH	CCNT1	CCNT2
C	CDC16	CDC2	CDC20	CDC34	CDK2	CDK4	CDK5R1	CDK5RAP1	CDK6	CDK7	CDK8	CDKN1A
D	CDKN1B	CDKN2A	CDKN2B	CDKN3	CHEK1	CHEK2	CKS1B	CKS2	CUL1	CUL2	CUL3	DDX11
E	DNM2	E2F4	GADD45A	GTF2H1	GTSE1	HERC5	HUS1	KNTC1	KPNA2	MAD2L1	MAD2L2	MCM2
F	MCM3	MCM4	MCM5	MKI67	MNAT1	MRE11A	NBN	PCNA	RAD1	RAD17	RAD51	RAD9A
G	RB1	RBBP8	RBL1	RBL2	RPA3	SERTAD1	SKP2	SUMO1	TFDP1	TFDP2	TP53	UBE1
H	B2M	HPRT1	RPL13A	GAPDH	ACTB	HGDC	RTC	RTC	RTC	PPC	PPC	PPC

Gene Table

Position	UniGene	GenBank	Symbol	Description
A01	Hs.431048	NM_005157	ABL1	V-abl Abelson murine leukemia viral oncogene homolog 1
A02	Hs.533262	NM_013366	ANAPC2	Anaphase promoting complex subunit 2
A03	Hs.152173	NM_013367	ANAPC4	Anaphase promoting complex subunit 4
A04	Hs.194695	NM_004675	DIRAS3	DIRAS family, GTP-binding RAS-like 3
A05	Hs.367437	NM_000051	ATM	Ataxia telangiectasia mutated (includes complementation groups A, C and D)
A06	Hs.271791	NM_001184	ATR	Ataxia telangiectasia and Rad3 related
A07	Hs.159428	NM_004324	BAX	BCL2-associated X protein
A08	Hs.370292	NM_016567	BCCIP	BRCA2 and CDKN1A interacting protein
A09	Hs.150749	NM_000633	BCL2	B-cell CLL/lymphoma 2
A10	Hs.645371	NM_001168	BIRC5	Baculoviral IAP repeat-containing 5 (survivin)
A11	Hs.194143	NM_007294	BRCA1	Breast cancer 1, early onset
A12	Hs.34012	NM_000059	BRCA2	Breast cancer 2, early onset
B01	Hs.23960	NM_031966	CCNB1	Cyclin B1
B02	Hs.194698	NM_004701	CCNB2	Cyclin B2
B03	Hs.430646	NM_005190	CCNC	Cyclin C
B04	Hs.523852	NM_053056	CCND1	Cyclin D1
B05	Hs.376071	NM_001759	CCND2	Cyclin D2
B06	Hs.244723	NM_001238	CCNE1	Cyclin E1
B07	Hs.1973	NM_001761	CCNF	Cyclin F
B08	Hs.79101	NM_004060	CCNG1	Cyclin G1
B09	Hs.13291	NM_004354	CCNG2	Cyclin G2
B10	Hs.292524	NM_001239	CCNH	Cyclin H
B11	Hs.279906	NM_001240	CCNT1	Cyclin T1
B12	Hs.591241	NM_001241	CCNT2	Cyclin T2
C01	Hs.374127	NM_003903	CDC16	Cell division cycle 16 homolog (S. cerevisiae)
C02	Hs.334562	NM_001786	CDC2	Cell division cycle 2, G1 to S and G2 to M
C03	Hs.524947	NM_001255	CDC20	Cell division cycle 20 homolog (S. cerevisiae)
C04	Hs.514997	NM_004359	CDC34	Cell division cycle 34 homolog (S. cerevisiae)
C05	Hs.19192	NM_001798	CDK2	Cyclin-dependent kinase 2
C06	Hs.95577	NM_000075	CDK4	Cyclin-dependent kinase 4
C07	Hs.500015	NM_003885	CDK5R1	Cyclin-dependent kinase 5, regulatory subunit 1 (p35)
C08	Hs.435952	NM_016408	CDK5RAP1	CDK5 regulatory subunit associated protein 1
C09	Hs.119882	NM_001259	CDK6	Cyclin-dependent kinase 6
C10	Hs.184298	NM_001799	CDK7	Cyclin-dependent kinase 7 (MO15 homolog, Xenopus laevis, cdk-activating kinase)
C11	Hs.382306	NM_001260	CDK8	Cyclin-dependent kinase 8
C12	Hs.370771	NM_000389	CDKN1A	Cyclin-dependent kinase inhibitor 1A (p21, Cip1)
D01	Hs.238990	NM_004064	CDKN1B	Cyclin-dependent kinase inhibitor 1B (p27, Kip1)
D02	Hs.512599	NM_000077	CDKN2A	Cyclin-dependent kinase inhibitor 2A (melanoma, p16, inhibits CDK4)
D03	Hs.72901	NM_004936	CDKN2B	Cyclin-dependent kinase inhibitor 2B (p15, inhibits CDK4)
D04	Hs.84113	NM_005192	CDKN3	Cyclin-dependent kinase inhibitor 3 (CDK2-associated dual specificity phosphatase)
D05	Hs.24529	NM_001274	CHEK1	CHK1 checkpoint homolog (S. pombe)

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Position	UniGene	GenBank	Symbol	Description
D06	Hs.291363	NM_007194	CHEK2	CHK2 checkpoint homolog (S. pombe)
D07	Hs.374378	NM_001826	CKS1B	CDC28 protein kinase regulatory subunit 1B
D08	Hs.83758	NM_001827	CKS2	CDC28 protein kinase regulatory subunit 2
D09	Hs.146806	NM_003592	CUL1	Cullin 1
D10	Hs.82919	NM_003591	CUL2	Cullin 2
D11	Hs.372286	NM_003590	CUL3	Cullin 3
D12	Hs.443960	NM_004399	DDX11	DEAD/H (Asp-Glu-Ala-Asp/His) box polypeptide 11 (CHL1-like helicase homolog, S. cerevisiae)
E01	Hs.211463	NM_004945	DNM2	Dynamin 2
E02	Hs.108371	NM_001950	E2F4	E2F transcription factor 4, p107/p130-binding
E03	Hs.80409	NM_001924	GADD45A	Growth arrest and DNA-damage-inducible, alpha
E04	Hs.577202	NM_005316	GTF2H1	General transcription factor IIH, polypeptide 1, 62kDa
E05	Hs.386189	NM_016426	GTSE1	G-2 and S-phase expressed 1
E06	Hs.26663	NM_016323	HERC5	Hect domain and RLD 5
E07	Hs.152983	NM_004507	HUS1	HUS1 checkpoint homolog (S. pombe)
E08	Hs.300559	NM_014708	KNTC1	Kinetochore associated 1
E09	Hs.594238	NM_002266	KPNA2	Karyopherin alpha 2 (RAG cohort 1, importin alpha 1)
E10	Hs.591697	NM_002358	MAD2L1	MAD2 mitotic arrest deficient-like 1 (yeast)
E11	Hs.19400	NM_006341	MAD2L2	MAD2 mitotic arrest deficient-like 2 (yeast)
E12	Hs.477481	NM_004526	MCM2	MCM2 minichromosome maintenance deficient 2, mitotin (S. cerevisiae)
F01	Hs.179565	NM_002388	MCM3	MCM3 minichromosome maintenance deficient 3 (S. cerevisiae)
F02	Hs.460184	NM_005914	MCM4	MCM4 minichromosome maintenance deficient 4 (S. cerevisiae)
F03	Hs.517582	NM_006739	MCM5	MCM5 minichromosome maintenance deficient 5, cell division cycle 46 (S. cerevisiae)
F04	Hs.80976	NM_002417	MKI67	Antigen identified by monoclonal antibody Ki-67
F05	Hs.509523	NM_002431	MNAT1	Menage a trois homolog 1, cyclin H assembly factor (Xenopus laevis)
F06	Hs.192649	NM_005590	MRE11A	MRE11 meiotic recombination 11 homolog A (S. cerevisiae)
F07	Hs.492208	NM_002485	NBN	Nibrin
F08	Hs.147433	NM_182649	PCNA	Proliferating cell nuclear antigen
F09	Hs.531879	NM_002853	RAD1	RAD1 homolog (S. pombe)
F10	Hs.16184	NM_002873	RAD17	RAD17 homolog (S. pombe)
F11	Hs.631709	NM_002875	RAD51	RAD51 homolog (RecA homolog, E. coli) (S. cerevisiae)
F12	Hs.240457	NM_004584	RAD9A	RAD9 homolog A (S. pombe)
G01	Hs.408528	NM_000321	RB1	Retinoblastoma 1 (including osteosarcoma)
G02	Hs.546282	NM_002894	RBBP8	Retinoblastoma binding protein 8
G03	Hs.207745	NM_002895	RBL1	Retinoblastoma-like 1 (p107)
G04	Hs.513609	NM_005611	RBL2	Retinoblastoma-like 2 (p130)
G05	Hs.487540	NM_002947	RPA3	Replication protein A3, 14kDa
G06	Hs.269898	NM_013376	SERTAD1	SERTA domain containing 1
G07	Hs.23348	NM_005983	SKP2	S-phase kinase-associated protein 2 (p45)
G08	Hs.81424	NM_003352	SUMO1	SMT3 suppressor of mif two 3 homolog 1 (S. cerevisiae)
G09	Hs.79353	NM_007111	TFDP1	Transcription factor Dp-1
G10	Hs.379018	NM_006286	TFDP2	Transcription factor Dp-2 (E2F dimerization partner 2)
G11	Hs.408312	NM_000546	TP53	Tumor protein p53 (Li-Fraumeni syndrome)
G12	Hs.533273	NM_003334	UBE1	Ubiquitin-activating enzyme E1 (A1S9T and BN75 temperature sensitivity complementing)
H01	Hs.534255	NM_004048	B2M	Beta-2-microglobulin
H02	Hs.412707	NM_000194	HPRT1	Hypoxanthine phosphoribosyltransferase 1 (Lesch-Nyhan syndrome)
H03	Hs.546356	NM_012423	RPL13A	Ribosomal protein L13a
H04	Hs.544577	NM_002046	GAPDH	Glyceraldehyde-3-phosphate dehydrogenase
H05	Hs.520640	NM_001101	ACTB	Actin, beta
H06	N/A	N/A	HGDC	Human Genomic DNA Contamination
H07	N/A	N/A	RTC	Reverse Transcription Control
H08	N/A	N/A	RTC	Reverse Transcription Control
H09	N/A	N/A	RTC	Reverse Transcription Control
H10	N/A	N/A	PPC	Positive PCR Control
H11	N/A	N/A	PPC	Positive PCR Control
H12	N/A	N/A	PPC	Positive PCR Control