

RT² Profiler™ PCR Array:

Human Cancer Drug Resistance and Metabolism

Catalog Number

PAHS-004A

PAHS-004C

PAHS-004D

PAHS-004E

PAHS-004F

PAHS-004G

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 Cancer Drug Resistance and Metabolism RT² Profiler PCR Array profiles the expression of 84 genes involved in the body's response to chemotherapy. The genes encoding important enzymes for drug resistance (such as the P-glycoproteins), phase I metabolism (specifically the P450 family), and phase II metabolism (such as various covalent modification enzymes) are all represented on the array. Cancer-related genes involved in aspects of resistance are also included on the array such as DNA repair enzymes, cell cycle regulators, growth factor and hormone receptors, and transcription factors. Using real-time PCR, you can easily.

Functional Gene Groupings

Drug Resistance: ABCB1 (PGY1, MDR1), ABCC1 (MRP1), ABCC2 (cMOAT, MRP2), ABCC3 (MOAT-D, MRP3), ABCC5 (MRP5), ABCC6 (MRP6, CFTR), ABCG2 (BCRP), BAX, BCL2, BCL2L1 (bcl-x), MVP (LRP), RB1, TOP1, TOP2A, TOP2B, TP53 (p53).

Drug Metabolism: ARNT, BLMH, CLPTM1L (CRR9/DKFZP761M2324), CYP1A1, CYP1A2, CYP2B6, CYP2C8, CYP2C9, CYP2C19, CYP2D6, CYP2E1, CYP3A4, CYP3A5, DHFR, EPHX1, GSK3A, GSTP1, NAT2, SOD1, SULT1E1 (STE), TPMT.

DNA Repair: APC, ATM, BRCA1, BRCA2, ERCC3, MSH2, XPA, XPC.

Cell Cycle: CCND1 (cyclin D1), CCNE1 (cyclin E1), CDK2, CDK4, CDKN1A (p21Waf1, p21Cip1), CDKN1B (p27Kip1), CDKN2A (p16Ink4), CDKN2D (p19Ink4d).

Growth Factor Receptors: EGFR (ERBB1), ERBB2 (Her-2), ERBB3, ERBB4, FGF2, IGF1R, IGF2R, MET.

Hormone Receptors: AR, ESR1 (ER-alpha), ESR2 (ER-beta-cx), PPARA, PPARD, PPARG, RARA, RARB, RARG, RXRA, RXRB.

Transcription Factors: AHR, AP1S1, ELK1, FOS (c-fos), HIF1A, MYC (c-myc), NFKB1, NFKB2, NFKBIB (TRIP9), NFKBIE, RELB (I-rel), TNFRSF11A (Rank).

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. Karran P (2001). Mechanisms of tolerance to DNA damaging therapeutic drugs. *Carcinogenesis* **22**: 1931-1937.
2. Veldman RJ, *et al.* (2002) Altered sphingolipid metabolism in multidrug-resistant ovarian cancer cells is due to uncoupling of glycolipid biosynthesis in the Golgi apparatus. *FASEB J.* **16**: 1111-1113.
3. Liu YY, Han TY, Giuliano AE, and Cabot MC (2001) Ceramide glycosylation potentiates cellular multidrug resistance. *FASEB J.* **15**: 719-730.
4. Rushmore TH and Kong AN (2002) Pharmacogenomics, regulation and signaling pathways of phase I and II drug metabolizing enzymes. *Curr. Drug Metab.* **3**: 481-490.
5. Weinhofer I, Forss-Petter S, Zigman M, Berger J (2002) Cholesterol regulates ABCD2 expression: implications for the therapy of X-linked adrenoleukodystrophy. *Hum. Mol. Genet.* **11**: 2701-2708.
6. Aloyz R, *et al.* (2002) Regulation of cisplatin resistance and homologous recombinational repair by the TFIIH subunit XPD. *Cancer Res.* **62**: 5457-5462.
7. Dini G, *et al.* (2002) Overexpression of the 18 kDa and 22/24 kDa FGF-2 isoforms results in differential drug resistance and amplification potential. *J. Cell. Physiol.* **193**: 64-72.
8. Dong QG, *et al.* (2002) The function of multiple I κ B: NF- κ B complexes in the resistance of cancer cells to Taxol-induced apoptosis. *Oncogene* **21**: 6510-6519.
9. Eldar-Finkelman H. (2002) Glycogen synthase kinase 3: an emerging therapeutic target. *Trends Mol. Med.* **8**: 126-132.

Product Specification Sheet

Array Layout: Human Cancer Drug Resistance and Metabolism PCR Array

	1	2	3	4	5	6	7	8	9	10	11	12
A	ABCB1	ABCC1	ABCC2	ABCC3	ABCC5	ABCC6	ABCG2	AHR	AP1S1	APC	AR	ARNT
B	ATM	BAX	BCL2	BCL2L1	BLMH	BRCA1	BRCA2	CCND1	CCNE1	CDK2	CDK4	CDKN1A
C	CDKN1B	CDKN2A	CDKN2D	CLPTM1L	CYP1A1	CYP1A2	CYP2B6	CYP2C19	CYP2C8	CYP2C9	CYP2D6	CYP2E1
D	CYP3A4	CYP3A5	DHFR	EGFR	ELK1	EPHX1	ERBB2	ERBB3	ERBB4	ERCC3	ESR1	ESR2
E	FGF2	FOS	GSK3A	GSTP1	HIF1A	IGF1R	IGF2R	MET	MSH2	MVP	MYC	NAT2
F	NFKB1	NFKB2	NFKBIB	NFKBIE	PPARA	PPARD	PPARG	RARA	RARB	RARG	RB1	RELB
G	RXRA	RXRB	SOD1	SULT1E1	TNFRSF11A	TOP1	TOP2A	TOP2B	TP53	TPMT	XPA	XPC
H	B2M	HPRT1	RPL13A	GAPDH	ACTB	HGDC	RTC	RTC	RTC	PPC	PPC	PPC

Gene Table

Position	UniGene	GenBank	Symbol	Description
A01	Hs.489033	NM_000927	ABCB1	ATP-binding cassette, sub-family B (MDR/TAP), member 1
A02	Hs.391464	NM_004996	ABCC1	ATP-binding cassette, sub-family C (CFTR/MRP), member 1
A03	Hs.368243	NM_000392	ABCC2	ATP-binding cassette, sub-family C (CFTR/MRP), member 2
A04	Hs.463421	NM_003786	ABCC3	ATP-binding cassette, sub-family C (CFTR/MRP), member 3
A05	Hs.368563	NM_005688	ABCC5	ATP-binding cassette, sub-family C (CFTR/MRP), member 5
A06	Hs.460057	NM_001171	ABCC6	ATP-binding cassette, sub-family C (CFTR/MRP), member 6
A07	Hs.480218	NM_004827	ABCG2	ATP-binding cassette, sub-family G (WHITE), member 2
A08	Hs.171189	NM_001621	AHR	Aryl hydrocarbon receptor
A09	Hs.563509	NM_001283	AP1S1	Adaptor-related protein complex 1, sigma 1 subunit
A10	Hs.158932	NM_000038	APC	Adenomatosis polyposis coli
A11	Hs.496240	NM_000044	AR	Androgen receptor (dihydrotestosterone receptor; testicular feminization; spinal and bulbar muscular atrophy; Kennedy disease)
A12	Hs.632446	NM_001668	ARNT	Aryl hydrocarbon receptor nuclear translocator
B01	Hs.367437	NM_000051	ATM	Ataxia telangiectasia mutated (includes complementation groups A, C and D)
B02	Hs.159428	NM_004324	BAX	BCL2-associated X protein
B03	Hs.150749	NM_000633	BCL2	B-cell CLL/lymphoma 2
B04	Hs.516966	NM_138578	BCL2L1	BCL2-like 1
B05	Hs.371914	NM_000386	BLMH	Bleomycin hydrolase
B06	Hs.194143	NM_007294	BRCA1	Breast cancer 1, early onset
B07	Hs.34012	NM_000059	BRCA2	Breast cancer 2, early onset
B08	Hs.523852	NM_053056	CCND1	Cyclin D1
B09	Hs.244723	NM_001238	CCNE1	Cyclin E1
B10	Hs.19192	NM_001798	CDK2	Cyclin-dependent kinase 2
B11	Hs.95577	NM_000075	CDK4	Cyclin-dependent kinase 4
B12	Hs.370771	NM_000389	CDKN1A	Cyclin-dependent kinase inhibitor 1A (p21, Cip1)
C01	Hs.238990	NM_004064	CDKN1B	Cyclin-dependent kinase inhibitor 1B (p27, Kip1)
C02	Hs.512599	NM_000077	CDKN2A	Cyclin-dependent kinase inhibitor 2A (melanoma, p16, inhibits CDK4)
C03	Hs.435051	NM_001800	CDKN2D	Cyclin-dependent kinase inhibitor 2D (p19, inhibits CDK4)
C04	Hs.444673	NM_030782	CLPTM1L	CLPTM1-like
C05	Hs.72912	NM_000499	CYP1A1	Cytochrome P450, family 1, subfamily A, polypeptide 1
C06	Hs.1361	NM_000761	CYP1A2	Cytochrome P450, family 1, subfamily A, polypeptide 2
C07	Hs.1360	NM_000767	CYP2B6	Cytochrome P450, family 2, subfamily B, polypeptide 6
C08	Hs.282409	NM_000769	CYP2C19	Cytochrome P450, family 2, subfamily C, polypeptide 19
C09	Hs.282871	NM_000770	CYP2C8	Cytochrome P450, family 2, subfamily C, polypeptide 8
C10	Hs.282624	NM_000771	CYP2C9	Cytochrome P450, family 2, subfamily C, polypeptide 9
C11	Hs.648256	NM_000106	CYP2D6	Cytochrome P450, family 2, subfamily D, polypeptide 6
C12	Hs.12907	NM_000773	CYP2E1	Cytochrome P450, family 2, subfamily E, polypeptide 1
D01	Hs.651218	NM_017460	CYP3A4	Cytochrome P450, family 3, subfamily A, polypeptide 4
D02	Hs.150276	NM_000777	CYP3A5	Cytochrome P450, family 3, subfamily A, polypeptide 5
D03	Hs.592364	NM_000791	DHFR	Dihydrofolate reductase
D04	Hs.488293	NM_005228	EGFR	Epidermal growth factor receptor (erythroblastic leukemia viral (v-erb-b) oncogene homolog, avian)
D05	Hs.181128	NM_005229	ELK1	ELK1, member of ETS oncogene family

Product Specification Sheet

Position	UniGene	GenBank	Symbol	Description
D06	Hs.89649	NM_000120	EPHX1	Epoxide hydrolase 1, microsomal (xenobiotic)
D07	Hs.446352	NM_004448	ERBB2	V-erb-b2 erythroblastic leukemia viral oncogene homolog 2, neuro/glioblastoma derived
D08	Hs.567263	NM_001982	ERBB3	V-erb-b2 erythroblastic leukemia viral oncogene homolog 3 (avian)
D09	Hs.390729	NM_005235	ERBB4	V-erb-a erythroblastic leukemia viral oncogene homolog 4 (avian)
D10	Hs.469872	NM_000122	ERCC3	Excision repair cross-complementing rodent repair deficiency, complementation group 3 (xeroderma pigmentosum group B complementing)
D11	Hs.652547	NM_000125	ESR1	Estrogen receptor 1
D12	Hs.443150	NM_001437	ESR2	Estrogen receptor 2 (ER beta)
E01	Hs.284244	NM_002006	FGF2	Fibroblast growth factor 2 (basic)
E02	Hs.25647	NM_005252	FOS	V-fos FBJ murine osteosarcoma viral oncogene homolog
E03	Hs.466828	NM_019884	GSK3A	Glycogen synthase kinase 3 alpha
E04	Hs.523836	NM_000852	GSTP1	Glutathione S-transferase pi
E05	Hs.509554	NM_001530	HIF1A	Hypoxia-inducible factor 1, alpha subunit (basic helix-loop-helix transcription factor)
E06	Hs.643120	NM_000875	IGF1R	Insulin-like growth factor 1 receptor
E07	Hs.487062	NM_000876	IGF2R	Insulin-like growth factor 2 receptor
E08	Hs.132966	NM_000245	MET	Met proto-oncogene (hepatocyte growth factor receptor)
E09	Hs.597656	NM_000251	MSH2	MutS homolog 2, colon cancer, nonpolyposis type 1 (E. coli)
E10	Hs.632177	NM_017458	MVP	Major vault protein
E11	Hs.202453	NM_002467	MYC	V-myc myelocytomatosis viral oncogene homolog (avian)
E12	Hs.2	NM_000015	NAT2	N-acetyltransferase 2 (arylamine N-acetyltransferase)
F01	Hs.431926	NM_003998	NFKB1	Nuclear factor of kappa light polypeptide gene enhancer in B-cells 1 (p105)
F02	Hs.73090	NM_002502	NFKB2	Nuclear factor of kappa light polypeptide gene enhancer in B-cells 2 (p49/p100)
F03	Hs.9731	NM_002503	NFKBIB	Nuclear factor of kappa light polypeptide gene enhancer in B-cells inhibitor, beta
F04	Hs.458276	NM_004556	NFKBIE	Nuclear factor of kappa light polypeptide gene enhancer in B-cells inhibitor, epsilon
F05	Hs.103110	NM_005036	PPARA	Peroxisome proliferative activated receptor, alpha
F06	Hs.485196	NM_006238	PPARD	Peroxisome proliferator-activated receptor delta
F07	Hs.162646	NM_015869	PPARG	Peroxisome proliferator-activated receptor gamma
F08	Hs.137731	NM_000964	RARA	Retinoic acid receptor, alpha
F09	Hs.536687	NM_000965	RARB	Retinoic acid receptor, beta
F10	Hs.1497	NM_000966	RARG	Retinoic acid receptor, gamma
F11	Hs.408528	NM_000321	RB1	Retinoblastoma 1 (including osteosarcoma)
F12	Hs.307905	NM_006509	RELB	V-rel reticuloendotheliosis viral oncogene homolog B, nuclear factor of kappa light polypeptide gene enhancer in B-cells 3 (avian)
G01	Hs.590886	NM_002957	RXRA	Retinoid X receptor, alpha
G02	Hs.388034	NM_021976	RXRB	Retinoid X receptor, beta
G03	Hs.443914	NM_000454	SOD1	Superoxide dismutase 1, soluble (amyotrophic lateral sclerosis 1 (adult))
G04	Hs.479898	NM_005420	SULT1E1	Sulfotransferase family 1E, estrogen-preferring, member 1
G05	Hs.204044	NM_003839	TNFRSF11A	Tumor necrosis factor receptor superfamily, member 11a, NFKB activator
G06	Hs.592136	NM_003286	TOP1	Topoisomerase (DNA) I
G07	Hs.156346	NM_001067	TOP2A	Topoisomerase (DNA) II alpha 170kDa
G08	Hs.475733	NM_001068	TOP2B	Topoisomerase (DNA) II beta 180kDa
G09	Hs.408312	NM_000546	TP53	Tumor protein p53 (Li-Fraumeni syndrome)
G10	Hs.444319	NM_000367	TPMT	Thiopurine S-methyltransferase
G11	Hs.591907	NM_000380	XPA	Xeroderma pigmentosum, complementation group A
G12	Hs.475538	NM_004628	XPC	Xeroderma pigmentosum, complementation group C
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	SA_00105	HGDC	Human 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