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Product Specification Sheet

RT² Profiler™ PCR Array:

Human Drug Metabolism

Catalog Number	For Real-Time Instruments:
PAHS-002A	ABI Standard Blocks; Bio-Rad iCycler, MyiQ, and (MJ Research) Chromo 4; and Stratagene Mx3005p, Mx3000p
PAHS-002C	ABI 7500 and 7900HT FAST 96-Well Blocks, ABI StepOnePlus
PAHS-002D	Bio-Rad (MJ Research) Opticon and Opticon 2, Stratagene Mx4000
PAHS-002E	ABI 7900HT 384-Well Block
PAHS-002F	Roche LightCycler 480 96-well Block
PAHS-002G	Roche LightCycler 480 384-well Block

Description

The Human Drug Metabolism RT² Profiler PCR Array contains 84 genes critical in the metabolism of drugs, toxic chemicals, hormones and micronutrients important to pharmacology, endocrinology and food science. Drug metabolism is also often implicated in many disease states including cancer, intoxification, addiction, and metabolic diseases. The genes encoding enzymes that are important for drug transport (such as metallothioneins and P-glycoproteins), phase I metabolism (specifically the P450 family), and phase II metabolism (such as transferases and hydrolases) are represented on the array. Using real-time PCR, you can easily and reliably analyze expression of a focused panel of genes related to drug metabolism with this array.

Functional Gene Groupings

Drug Transporters:
Metallothioneins: MT2A, MT3.

P-Glycoprotein Family: ABCB1 (PGY1, mdr-1), ABCC1, GPI.

Phase I Metabolizing Enzymes:
P450 Gene Family: CYP11B2, CYP17A1, CYP19A1, CYP1A1, CYP2B6, CYP2C19, CYP2C8, CYP2C9, CYP2D6, CYP2E1, CYP2F1, CYP2J2, CYP3A5.

Phase II Metabolizing Enzymes:
Carboxylesterase: CES2, CES4.

Decarboxylase: GAD1.

Dehydrogenase: ADH1B, ADH1C, ADH4, ADH5, ADH6, ALAD, ALDH1A1, HSD17B1, HSD17B2, HSD17B3.

Glutathione Peroxidases: GPX1, GPX2, GPX3, GPX4, GPX5, GSTA3, GSTA4, GSTM2, GSTM3, GSTM5, GSTP1, GSTT1, GSTZ1, LPO, MPO.

Hydrolases: EPHX1, FAAH, FBP1.

Kinases: HK2, PKLR, PKM2.

Lipoxygenase: ALOX12, ALOX15, ALOX5, APOE.

Oxidoreductases: BLVRA, BLVRB, CYB5R3 (DIA1), GPX1, GPX2, GSR, MTHFR, NOS3, NQO1, SRD5A1, SRD5A2.

Paraoxonase: PON1, PON2, PON3.

Sulfotransferases: CHST1, GSTA3, GSTA4, GSTM2, GSTM3, GSTM5, GSTP1, GSTT1, MGST1, MGST2, MGST3.

Transferases: NAT1, NAT2, COMT, GGT1.

Other Related Genes: ABP1, AHR, ARNT, ASNA1, GCKR, MARCKS, SMARCAL1, SNN.

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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 ºC for long-term storage.

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

References

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5. Nelson DR, Koymans L, Kamataki T, et al (1996). P450 Superfamily: Update On New Sequences, Gene Mapping, Accession Numbers And Nomenclature. *Pharmacogenetics* **6**:1-42.
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13. Daujat M, Pichard L, Fabre I, et al (1991) Induction Protocols For Cytochrome P450 IIIA *in vivo* and in Primary Cultures of Animal and Human Hepatocytes. *Methods Enzymol* **206**: 345-353.
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Array Layout: Human Drug Metabolism PCR Array

	1	2	3	4	5	6	7	8	9	10	11	12
A	ABCB1	ABCC1	ABP1	ADH1B	ADH1C	ADH4	ADH5	ADH6	AHR	ALAD	ALDH1A1	ALOX12
B	ALOX15	ALOX5	APOE	ARNT	ASNA1	BLVRA	BLVRB	CES2	CES4	CHST1	COMT	CYP11B2
C	CYP17A1	CYP19A1	CYP1A1	CYP2B6	CYP2C19	CYP2C8	CYP2C9	CYP2D6	CYP2E1	CYP2F1	CYP2J2	CYP3A5
D	CYB5R3	EPHX1	FAAH	FBP1	GAD1	GCKR	GGT1	GPI	GPX1	GPX2	GPX3	GPX4
E	GPX5	GSR	GSTA3	GSTA4	GSTM2	GSTM3	GSTM5	GSTP1	GSTT1	GSTZ1	HK2	HSD17B1
F	HSD17B2	HSD17B3	LPO	MARCKS	MGST1	MGST2	MGST3	MPO	MT2A	MT3	MTHFR	NAT1
G	NAT2	NOS3	NQO1	PK004CR	PKM2	PON1	PON2	PON3	SMARCAL1	SNN	SRD5A1	SRD5A2
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.647097	NM_001091	ABP1	Amiloride binding protein 1 (amine oxidase (copper-containing))
A04	Hs.4	NM_000668	ADH1B	Alcohol dehydrogenase IB (class I), beta polypeptide
A05	Hs.2523	NM_000669	ADH1C	Alcohol dehydrogenase 1C (class I), gamma polypeptide
A06	Hs.1219	NM_000670	ADH4	Alcohol dehydrogenase 4 (class II), pi polypeptide
A07	Hs.78989	NM_000671	ADH5	Alcohol dehydrogenase 5 (class III), chi polypeptide
A08	Hs.586161	NM_000672	ADH6	Alcohol dehydrogenase 6 (class V)
A09	Hs.171189	NM_001621	AHR	Aryl hydrocarbon receptor
A10	Hs.1227	NM_000031	ALAD	Aminolevulinate, delta-, dehydratase
A11	Hs.76392	NM_000689	ALDH1A1	Aldehyde dehydrogenase 1 family, member A1
A12	Hs.422967	NM_000697	ALOX12	Arachidonate 12-lipoxygenase
B01	Hs.73809	NM_001140	ALOX15	Arachidonate 15-lipoxygenase
B02	Hs.89499	NM_000698	ALOX5	Arachidonate 5-lipoxygenase
B03	Hs.515465	NM_000041	APOE	Apolipoprotein E
B04	Hs.632446	NM_001668	ARNT	Aryl hydrocarbon receptor nuclear translocator
B05	Hs.465985	NM_004317	ASNA1	ArsA arsenite transporter, ATP-binding, homolog 1 (bacterial)
B06	Hs.488143	NM_000712	BLVRA	Biliverdin reductase A
B07	Hs.515785	NM_000713	BLVRB	Biliverdin reductase B (flavin reductase (NADPH))
B08	Hs.282975	NM_198061	CES2	Carboxylesterase 2 (intestine, liver)
B09	Hs.535486	NM_016280	CES4	Carboxylesterase 4-like
B10	Hs.104576	NM_003654	CHST1	Carbohydrate (keratan sulfate Gal-6) sulfotransferase 1
B11	Hs.370408	NM_000754	COMT	Catechol-O-methyltransferase
B12	Hs.632054	NM_000498	CYP11B2	Cytochrome P450, family 11, subfamily B, polypeptide 2
C01	Hs.438016	NM_000102	CYP17A1	Cytochrome P450, family 17, subfamily A, polypeptide 1
C02	Hs.511367	NM_000103	CYP19A1	Cytochrome P450, family 19, subfamily A, polypeptide 1
C03	Hs.72912	NM_000499	CYP1A1	Cytochrome P450, family 1, subfamily A, polypeptide 1
C04	Hs.1360	NM_000767	CYP2B6	Cytochrome P450, family 2, subfamily B, polypeptide 6
C05	Hs.282409	NM_000769	CYP2C19	Cytochrome P450, family 2, subfamily C, polypeptide 19
C06	Hs.282871	NM_000770	CYP2C8	Cytochrome P450, family 2, subfamily C, polypeptide 8
C07	Hs.282624	NM_000771	CYP2C9	Cytochrome P450, family 2, subfamily C, polypeptide 9
C08	Hs.648256	NM_000106	CYP2D6	Cytochrome P450, family 2, subfamily D, polypeptide 6
C09	Hs.12907	NM_000773	CYP2E1	Cytochrome P450, family 2, subfamily E, polypeptide 1
C10	Hs.558318	NM_000774	CYP2F1	Cytochrome P450, family 2, subfamily F, polypeptide 1
C11	Hs.152096	NM_000775	CYP2J2	Cytochrome P450, family 2, subfamily J, polypeptide 2
C12	Hs.150276	NM_000777	CYP3A5	Cytochrome P450, family 3, subfamily A, polypeptide 5
D01	Hs.652402	NM_007326	CYB5R3	Cytochrome b5 reductase 3
D02	Hs.89649	NM_000120	EPHX1	Epoxide hydrolase 1, microsomal (xenobiotic)
D03	Hs.528334	NM_001441	FAAH	Fatty acid amide hydrolase
D04	Hs.494496	NM_000507	FBP1	Fructose-1,6-bisphosphatase 1
D05	Hs.420036	NM_000817	GAD1	Glutamate decarboxylase 1 (brain, 67kDa)
D06	Hs.89771	NM_001486	GCKR	Glucokinase (hexokinase 4) regulator

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Position	UniGene	GenBank	Symbol	Description
D07	Hs.595809	NM_005265	GGT1	Gamma-glutamyltransferase 1
D08	Hs.466471	NM_000175	GPI	Glucose phosphate isomerase
D09	Hs.76686	NM_000581	GPX1	Glutathione peroxidase 1
D10	Hs.2704	NM_002083	GPX2	Glutathione peroxidase 2 (gastrointestinal)
D11	Hs.386793	NM_002084	GPX3	Glutathione peroxidase 3 (plasma)
D12	Hs.433951	NM_002085	GPX4	Glutathione peroxidase 4 (phospholipid hydroperoxidase)
E01	Hs.248129	NM_001509	GPX5	Glutathione peroxidase 5 (epididymal androgen-related protein)
E02	Hs.271510	NM_000637	GSR	Glutathione reductase
E03	Hs.102484	NM_000847	GSTA3	Glutathione S-transferase A3
E04	Hs.485557	NM_001512	GSTA4	Glutathione S-transferase A4
E05	Hs.279837	NM_000848	GSTM2	Glutathione S-transferase M2 (muscle)
E06	Hs.2006	NM_000849	GSTM3	Glutathione S-transferase M3 (brain)
E07	Hs.75652	NM_000851	GSTM5	Glutathione S-transferase M5
E08	Hs.523836	NM_000852	GSTP1	Glutathione S-transferase pi
E09	Hs.268573	NM_000853	GSTT1	Glutathione S-transferase theta 1
E10	Hs.26403	NM_001513	GSTZ1	Glutathione transferase zeta 1 (maleylacetoacetate isomerase)
E11	Hs.406266	NM_000189	HK2	Hexokinase 2
E12	Hs.500159	NM_000413	HSD17B1	Hydroxysteroid (17-beta) dehydrogenase 1
F01	Hs.162795	NM_002153	HSD17B2	Hydroxysteroid (17-beta) dehydrogenase 2
F02	Hs.477	NM_000197	HSD17B3	Hydroxysteroid (17-beta) dehydrogenase 3
F03	Hs.234742	NM_006151	LPO	Lactoperoxidase
F04	Hs.519909	NM_002356	MARCKS	Myristoylated alanine-rich protein kinase C substrate
F05	Hs.389700	NM_020300	MGST1	Microsomal glutathione S-transferase 1
F06	Hs.81874	NM_002413	MGST2	Microsomal glutathione S-transferase 2
F07	Hs.191734	NM_004528	MGST3	Microsomal glutathione S-transferase 3
F08	Hs.458272	NM_000250	MPO	Myeloperoxidase
F09	Hs.418241	NM_005953	MT2A	Metallothionein 2A
F10	Hs.73133	NM_005954	MT3	Metallothionein 3
F11	Hs.214142	NM_005957	MTHFR	5,10-methylenetetrahydrofolate reductase (NADPH)
F12	Hs.591847	NM_000662	NAT1	N-acetyltransferase 1 (arylamine N-acetyltransferase)
G01	Hs.2	NM_000015	NAT2	N-acetyltransferase 2 (arylamine N-acetyltransferase)
G02	Hs.653170	NM_000603	NOS3	Nitric oxide synthase 3 (endothelial cell)
G03	Hs.406515	NM_000903	NQO1	NAD(P)H dehydrogenase, quinone 1
G04	Hs.95990	NM_000298	PKLR	Pyruvate kinase, liver and RBC
G05	Hs.534770	NM_002654	PKM2	Pyruvate kinase, muscle
G06	Hs.370995	NM_000446	PON1	Paraoxonase 1
G07	Hs.530077	NM_000305	PON2	Paraoxonase 2
G08	Hs.440967	NM_000940	PON3	Paraoxonase 3
G09	Hs.516674	NM_014140	SMARCAL1	SWI/SNF related, matrix associated, actin dependent regulator of chromatin, subfamily a-like 1
G10	Hs.618526	NM_003498	SNN	Stannin
G11	Hs.552	NM_001047	SRD5A1	Steroid-5-alpha-reductase, alpha polypeptide 1 (3-oxo-5 alpha-steroid delta 4-dehydrogenase alpha 1)
G12	Hs.458345	NM_000348	SRD5A2	Steroid-5-alpha-reductase, alpha polypeptide 2 (3-oxo-5 alpha-steroid delta 4-dehydrogenase alpha 2)
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

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