

RT² Profiler™ PCR Array:

Human Atherosclerosis

Catalog Number

PAHS-038A

PAHS-038C

PAHS-038D

PAHS-038E

PAHS-038F

PAHS-038G

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 Atherosclerosis RT² Profiler PCR Array profiles the expression of 84 genes related to atherosclerosis. Genes involved in the processes of blood coagulation and circulation are included as well as genes involved in cell-adhesion and lipid transport and metabolism. Genes involved in the stress response, cell growth and proliferation, and apoptosis are represented as well. Using real-time PCR, you can easily and reliably analyze expression of a focused panel of genes related to the atherosclerosis with this array.

Functional Gene Groupings**Response to Stress:**Inflammatory Response: CCL2, CCL5, CCR1, CCR2, IL1R1, IL1R2, ITGB2, NFKB1, NOS3, SELE, SPP1, TNF.Response to Oxidative Stress: APOE, CCL5, SOD1.Response to Pests, Pathogens or Parasites: CCL2, CCR2, CSF2, FN1, IL4, ITGB2, TNF.Response to Virus: CCL5, IFNAR2, TNF.Response to Wounding: CCR1, CCR2, CTGF, FN1, PDGFB, TNF, VWF.Other Genes Related to Stress Response: IFNG, PPARG, VEGFA.**Apoptosis:**Anti-apoptosis: BCL2, BCL2A1, BCL2L1, BIRC3, CCL2, CFLAR, FAS (TNFRSF6), IL1A, IL2, NFKB1, SERPINB2, SPP1, TGFB1, TNF, TNFAIP3.Induction of Apoptosis: APOE, BAX, BID, CFLAR, FAS (TNFRSF6).Other Genes Related to Apoptosis: IL5, ITGB2.**Blood Coagulation and Circulation:**Blood Coagulation: FGA, ITGA2, LPA, SERPINE1.Circulation: APOA1, APOB, APOE, COL3A1, ELN, ENG, LPA, LPL, NPY.Platelet Activation: PDGFA, PDGFB, PDGFRB, VWF.Regulation of Blood Pressure: ACE, FGA.**Adhesion Molecules:**Cell-cell Adhesion: CD44, CDH5, ICAM1, ITGB2, SELE, SELL, TNF, VCAM1, VEGFA.Cell-matrix Adhesion: CD44, ITGA2, ITGA5, ITGAX, ITGB2, SPP1.Other Genes Involved in Adhesion: CCL2, CCL5, CCR1, CTGF, ELN, ENG, FN1, LAMA1, SELPLG, THBS4, TNC, VWF.**Continued** (next page)

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Extracellular Molecules:

ECM Protease Inhibitors: LPA, SERPINB2, SERPINE1.

ECM Proteases: ACE, MMP1, MMP3.

Extracellular Matrix (ECM) Structural Constituents: COL3A1, ELN, FN1.

Other Extracellular Molecules: ADFP, APOA1, APOB, APOE, CCL2, CCL5, CSF2, CTGF, FGA, FGF2, HBEGF (DTR), IFNAR2, IFNG, IL1A, IL2, IL3, IL4, IL5, LAMA1, LIF, LPL, NPY, PDGFA, PDGFB, SPP1, THBS4, TNC, VEGFA, VWF.

Lipid Transport and Metabolism:

Cholesterol Metabolism: ABCA1, APOA1, APOB, APOE, IL4, LDLR.

Fatty Acid Metabolism: FABP3, LPL, PPARA, PTGS1.

Lipid Transport: ABCA1, APOA1, APOB, APOE, FABP3, LDLR, LPA, LPL, MSR1.

Lipoprotein Metabolism: APOA1, APOE, LDLR, LPL.

Steroid Metabolism: NR1H3, PPARA, PPARG, RXRA.

Other Genes Related to Lipid Metabolism: ADFP, APOE, LPA.

Cell Growth and Proliferation:

Growth Factors and Receptors: CSF2, KDR, PDGFRB, SPP1.

Negative Regulation of Cell Proliferation: BCL2, FABP3, IL1A.

Positive Regulation of Cell Proliferation: CSF1, FGA, FGF2, HBEGF (DTR), IL2, IL3, IL5, IL6, IL7, LIF, VEGFA.

Regulation of the Cell Cycle: FGF2, IL1A, PDGFA, PDGFB, TGFB1, TGFB2, VEGFA.

Other Genes Involved in Cell Growth and Proliferation: CTGF, ELN, IFNG, IL4, NPY.

Transcription Regulators:

Nuclear Receptors: NR1H3, PPARA, PPARG, RXRA.

Other Transcription Regulators: EGR1, KLF2, NFKB1, TNF, TNFAIP3.

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. Laukkanen J, Yla-Herttuala S. Genes involved in atherosclerosis. *Exp Nephrol.* 2002; 10 (2): 150-63.
2. Henriksen PA, Kotelevtsev Y. Application of gene expression profiling to cardiovascular disease. *Cardiovasc Res.* 2002 Apr; 54 (1): 16-24.
3. Monajemi H, Arkenbout EK, Pannekoek H. Gene expression in atherogenesis. *Thromb Haemost.* 2001 Jul; 86 (1): 404-12.
4. Depre C, Tomlinson JE, Kudej RK, Gaussin V, Thompson E, Kim SJ, Vatner DE, Topper JN, Vatner SF. Gene program for cardiac cell survival induced by transient ischemia in conscious pigs. *Proc Natl Acad Sci U S A.* 2001 Jul 31; 98 (16): 9336-41.
5. Friddle CJ, Koga T, Rubin EM, Bristow J. Expression profiling reveals distinct sets of genes altered during induction and regression of cardiac hypertrophy. *Proc Natl Acad Sci U S A.* 2000 Jun 6; 97 (12): 6745-50.
6. Shiffman D, Porter JG. Gene expression profiling of cardiovascular disease models. *Curr Opin Biotechnol.* 2000 Dec; 11 (6): 598-601.
7. Shiffman D, Mikita T, Tai JT, Wade DP, Porter JG, Seilhamer JJ, Somogyi R, Liang S, Lawn RM. Large scale gene expression analysis of cholesterol-loaded macrophages. *J Biol Chem.* 2000 Dec 1; 275 (48): 37324-32.
8. Topper JN, Cai J, Falb D, Gimbrone MA Jr. Identification of vascular endothelial genes differentially responsive to fluid mechanical stimuli: cyclooxygenase-2, manganese superoxide dismutase, and endothelial cell nitric oxide synthase are selectively up-regulated by steady laminar shear stress. *Proc Natl Acad Sci U S A.* 1996 Sep 17; 93 (19): 10417-22.

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Array Layout: Human Atherosclerosis PCR Array

	1	2	3	4	5	6	7	8	9	10	11	12
A	ABCA1	ACE	ADFP	APOA1	APOB	APOE	BAX	BCL2	BCL2A1	BCL2L1	BID	BIRC3
B	CCL2	CCL5	CCR1	CCR2	CD44	CDH5	CFLAR	COL3A1	CSF1	CSF2	CTGF	EGR1
C	ELN	ENG	FABP3	FAS	FGA	FGF2	FN1	HBEGF	ICAM1	IFNAR2	IFNG	IL1A
D	IL1R1	IL1R2	IL2	IL3	IL4	IL5	ITGA2	ITGA5	ITGAX	ITGB2	KDR	KLF2
E	LAMA1	LDLR	LIF	LPA	LPL	MMP1	MMP3	MSR1	NFKB1	NOS3	NPY	NR1H3
F	PDGFA	PDGFB	PDGFRB	PPARA	PPARD	PPARG	PTGS1	RXRA	SELE	SELL	SELPLG	SERPINB2
G	SERPINE1	SOD1	SPP1	TGFB1	TGFB2	THBS4	TNC	TNF	TNFAIP3	VCAM1	VEGFA	VWF
H	B2M	HPRT1	RPL13A	GAPDH	ACTB	HGDC	RTC	RTC	RTC	PPC	PPC	PPC

Gene Table

Position	UniGene	GenBank	Symbol	Description
A01	Hs.429294	NM_005502	ABCA1	ATP-binding cassette, sub-family A (ABC1), member 1
A02	Hs.298469	NM_152831	ACE	Angiotensin I converting enzyme (peptidyl-dipeptidase A) 1
A03	Hs.3416	NM_001122	ADFP	Adipose differentiation-related protein
A04	Hs.633003	NM_000039	APOA1	Apolipoprotein A-I
A05	Hs.120759	NM_000384	APOB	Apolipoprotein B (including Ag(x) antigen)
A06	Hs.515465	NM_000041	APOE	Apolipoprotein E
A07	Hs.159428	NM_004324	BAX	BCL2-associated X protein
A08	Hs.150749	NM_000633	BCL2	B-cell CLL/lymphoma 2
A09	Hs.227817	NM_004049	BCL2A1	BCL2-related protein A1
A10	Hs.516966	NM_138578	BCL2L1	BCL2-like 1
A11	Hs.591054	NM_001196	BID	BH3 interacting domain death agonist
A12	Hs.127799	NM_001165	BIRC3	Baculoviral IAP repeat-containing 3
B01	Hs.303649	NM_002982	CCL2	Chemokine (C-C motif) ligand 2
B02	Hs.514821	NM_002985	CCL5	Chemokine (C-C motif) ligand 5
B03	Hs.301921	NM_001295	CCR1	Chemokine (C-C motif) receptor 1
B04	Hs.644637	NM_000648	CCR2	Chemokine (C-C motif) receptor 2
B05	Hs.502328	NM_000610	CD44	CD44 molecule (Indian blood group)
B06	Hs.76206	NM_001795	CDH5	Cadherin 5, type 2, VE-cadherin (vascular epithelium)
B07	Hs.390736	NM_003879	CFLAR	CASP8 and FADD-like apoptosis regulator
B08	Hs.443625	NM_000090	COL3A1	Collagen, type III, alpha 1 (Ehlers-Danlos syndrome type IV, autosomal dominant)
B09	Hs.591402	NM_000757	CSF1	Colony stimulating factor 1 (macrophage)
B10	Hs.1349	NM_000758	CSF2	Colony stimulating factor 2 (granulocyte-macrophage)
B11	Hs.410037	NM_001901	CTGF	Connective tissue growth factor
B12	Hs.326035	NM_001964	EGR1	Early growth response 1
C01	Hs.647061	NM_000501	ELN	Elastin (supravalvular aortic stenosis, Williams-Beuren syndrome)
C02	Hs.76753	NM_000118	ENG	Endoglin (Osler-Rendu-Weber syndrome 1)
C03	Hs.584756	NM_004102	FABP3	Fatty acid binding protein 3, muscle and heart (mammary-derived growth inhibitor)
C04	Hs.244139	NM_000043	FAS	Fas (TNF receptor superfamily, member 6)
C05	Hs.351593	NM_000508	FGA	Fibrinogen alpha chain
C06	Hs.284244	NM_002006	FGF2	Fibroblast growth factor 2 (basic)
C07	Hs.203717	NM_002026	FN1	Fibronectin 1
C08	Hs.799	NM_001945	HBEGF	Heparin-binding EGF-like growth factor
C09	Hs.643447	NM_000201	ICAM1	Intercellular adhesion molecule 1 (CD54), human rhinovirus receptor
C10	Hs.642682	NM_000874	IFNAR2	Interferon (alpha, beta and omega) receptor 2
C11	Hs.856	NM_000619	IFNG	Interferon, gamma
C12	Hs.1722	NM_000575	IL1A	Interleukin 1, alpha
D01	Hs.557403	NM_000877	IL1R1	Interleukin 1 receptor, type I
D02	Hs.25333	NM_004633	IL1R2	Interleukin 1 receptor, type II
D03	Hs.89679	NM_000586	IL2	Interleukin 2
D04	Hs.694	NM_000588	IL3	Interleukin 3 (colony-stimulating factor, multiple)
D05	Hs.73917	NM_000589	IL4	Interleukin 4
D06	Hs.2247	NM_000879	IL5	Interleukin 5 (colony-stimulating factor, eosinophil)

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Position	UniGene	GenBank	Symbol	Description
D07	Hs.482077	NM_002203	ITGA2	Integrin, alpha 2 (CD49B, alpha 2 subunit of VLA-2 receptor)
D08	Hs.505654	NM_002205	ITGA5	Integrin, alpha 5 (fibronectin receptor, alpha polypeptide)
D09	Hs.248472	NM_000887	ITGAX	Integrin, alpha X (complement component 3 receptor 4 subunit)
D10	Hs.375957	NM_000211	ITGB2	Integrin, beta 2 (complement component 3 receptor 3 and 4 subunit)
D11	Hs.479756	NM_002253	KDR	Kinase insert domain receptor (a type III receptor tyrosine kinase)
D12	Hs.107740	NM_016270	KLF2	Kruppel-like factor 2 (lung)
E01	Hs.270364	NM_005559	LAMA1	Laminin, alpha 1
E02	Hs.213289	NM_000527	LDLR	Low density lipoprotein receptor (familial hypercholesterolemia)
E03	Hs.2250	NM_002309	LIF	Leukemia inhibitory factor (cholinergic differentiation factor)
E04	Hs.520120	NM_005577	LPA	Lipoprotein, Lp(a)
E05	Hs.180878	NM_000237	LPL	Lipoprotein lipase
E06	Hs.83169	NM_002421	MMP1	Matrix metalloproteinase 1 (interstitial collagenase)
E07	Hs.375129	NM_002422	MMP3	Matrix metalloproteinase 3 (stromelysin 1, progelatinase)
E08	Hs.147635	NM_002445	MSR1	Macrophage scavenger receptor 1
E09	Hs.431926	NM_003998	NFKB1	Nuclear factor of kappa light polypeptide gene enhancer in B-cells 1 (p105)
E10	Hs.653170	NM_000603	NOS3	Nitric oxide synthase 3 (endothelial cell)
E11	Hs.1832	NM_000905	NPY	Neuropeptide Y
E12	Hs.438863	NM_005693	NR1H3	Nuclear receptor subfamily 1, group H, member 3
F01	Hs.645488	NM_002607	PDGFA	Platelet-derived growth factor alpha polypeptide
F02	Hs.1976	NM_002608	PDGFB	Platelet-derived growth factor beta polypeptide (simian sarcoma viral (v-sis) oncogene)
F03	Hs.509067	NM_002609	PDGFRB	Platelet-derived growth factor receptor, beta polypeptide
F04	Hs.103110	NM_005036	PPARA	Peroxisome proliferative activated receptor, alpha
F05	Hs.485196	NM_006238	PPARD	Peroxisome proliferator-activated receptor delta
F06	Hs.162646	NM_015869	PPARG	Peroxisome proliferator-activated receptor gamma
F07	Hs.201978	NM_000962	PTGS1	Prostaglandin-endoperoxide synthase 1 (prostaglandin G/H synthase and cyclooxygenase)
F08	Hs.590886	NM_002957	RXRA	Retinoid X receptor, alpha
F09	Hs.89546	NM_000450	SELE	Selectin E (endothelial adhesion molecule 1)
F10	Hs.82848	NM_000655	SELL	Selectin L (lymphocyte adhesion molecule 1)
F11	Hs.591014	NM_003006	SELPLG	Selectin P ligand
F12	Hs.594481	NM_002575	SERPINE2	Serpin peptidase inhibitor, clade B (ovalbumin), member 2
G01	Hs.414795	NM_000602	SERPINE1	Serpin peptidase inhibitor, clade E (nexin, plasminogen activator inhibitor type 1), member 1
G02	Hs.443914	NM_000454	SOD1	Superoxide dismutase 1, soluble (amyotrophic lateral sclerosis 1 (adult))
G03	Hs.313	NM_000582	SPP1	Secreted phosphoprotein 1 (osteopontin, bone sialoprotein I, early T-lymphocyte activation 1)
G04	Hs.645227	NM_000660	TGFB1	Transforming growth factor, beta 1
G05	Hs.133379	NM_003238	TGFB2	Transforming growth factor, beta 2
G06	Hs.211426	NM_003248	THBS4	Thrombospondin 4
G07	Hs.143250	NM_002160	TNC	Tenascin C (hexabrachion)
G08	Hs.241570	NM_000594	TNF	Tumor necrosis factor (TNF superfamily, member 2)
G09	Hs.211600	NM_006290	TNFAIP3	Tumor necrosis factor, alpha-induced protein 3
G10	Hs.109225	NM_001078	VCAM1	Vascular cell adhesion molecule 1
G11	Hs.73793	NM_003376	VEGFA	Vascular endothelial growth factor A
G12	Hs.440848	NM_000552	VWF	Von Willebrand factor
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