

RT² Profiler™ PCR Array:

Rat Endothelial Cell Biology

Catalog Number

PARN-015A

PARN-015C

PARN-015D

PARN-015E

PARN-015F

PARN-015G

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 Endothelial Cell Biology RT² Profiler PCR Array profiles the expression of 84 genes related to endothelial cell biology. Endothelial cells play a critical role in the progression of disease processes including inflammation, atherosclerosis, and tumor angiogenesis. This array includes genes involved in permissibility and vessel tone, angiogenesis, endothelial cell activation and endothelial cell injury. 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**Permissibility and Vessel Tone:**Angiotensin System: Agt, Agtr1b, Blr1.NO System: Nos2, Nos3.Prostacyclin System: Ptgis.Endothelin System: Ednra.Oxidoreductase Activity: Nos2, Nos3, Sod1, Xdh.Regulation of Blood Pressure: Agtr1b, Edn1, Edn2, Ednra, Npr1.Regulation of Vasoconstriction: Edn1, Edn2.**Angiogenesis:**Negative Regulation of Angiogenesis: Cxcl4 (P4), Plg, Thbs1.Positive Regulation of Angiogenesis: Rhob.Other Genes Involved in Angiogenesis: Angpt1, Col18a1, Fgf1, Fgf2, Flt1, Itgav, Kdr, Pgf, Serpine1, Tek, Vegfa.**Endothelial Cell Activation:**Adhesion Molecules: Cdh5, Col18a1, Cx3cl1, Fn1, Icam1, Itga5, Itgav, Itgb1, Itgb3, Pecam, Rhob, Sele, Sell, Selp, Tek, Thbs1, Ocln (Tpmt), Vcam1.Extracellular Matrix (ECM) Molecules: Ace, Adam17, Agt, Angpt1, Casp1, Ccl2, Ccl5, Cdh5, Col18a1, Cpb2, Csf2, Cx3cl1, Cxcl1, Cxcl2, Edn1, Edn2, Flt1, Fn1, Ifnb1, Il11, Il1b, Il3, Il6, Il7, Itga5, Itgb1, Kdr, Mmp1a, Mmp2, Mmp9, Nppb, Npr1, Pdgfra, Pecam, Cxcl4 (P4), Pgf, Plat, Plau, Plg, Ptgis, Sele, Sell, Selp, Serpine1, Tek, Tfp1, Tgfb1, Thbd, Thbs1, Timp1, Tnfsf10, Faslg (Tnfsf6), Ocln (Tpmt), Vcam1, Vegfa, Vwf.Cytokine Activity: Ccl2, Ccl5, Csf2, Cx3cl1, Cxcl1, Cxcl2, Ifnb1, Il11, Il1b, Il3, Il6, Il7, Cxcl4 (P4), Tnf, Tnfsf10, Faslg (Tnfsf6).Thrombin Activity: Anxa5, Ecgf1, Plat, Plau, Plg, Serpine1.Vascular Endothelial Growth Factor (VEGF) Receptor Activity: Angpt1, Flt1, Kdr, Pdgfra.Other Genes Involved in Cell Growth: Bax, Blr1, Casp3, Col18a1, Csf2, Cxcl1, Ednra, Fgf1, Il11, Il1b, Il3, Il6, Il7, Itgav, Itgb1, Itgb3, Kit, Nos2, Pecam, Cxcl4 (P4), Pgf, Rhob, Tek, Tgfb1, Vegfa, Xdh.

Product Specification Sheet

Endothelial Cell Injury:

Response to Stress: Bax, Bcl2l1, Casp1, Casp3, Ccl2, Ccl5, Csf2, Cx3cl1, Cxcl1, Cxcl2, Cxcl4, Fn1, Tnfrsf6, Fasl (Tnfsf6), Ifnb1, Il1b, Il3, Il6, Il7, Kit, Nos2, Pecam, Selp, Sod1, Tgfb1, Tnf, Tnfsf10.

Anti-Apoptosis: Bcl2, Bcl2l1, Birc1b, Vegfa.

Caspase Activation: Bax, Casp1, Casp3, Casp6, Cflar.

Induction of Apoptosis: Bax, Casp1, Casp3, Plg, Tnfrsf6.

Other Apoptosis Genes: Bcl2l1, Col18a1, Cradd, Il6, Ippk (RGD1311271), Rhob, Tnfsf10, Faslg (Tnfsf6), Tnip2 (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. Geimonen E, Neff S, Raymond T, Kocer SS, Gavrilovskaya IN, Mackow ER. Pathogenic and nonpathogenic hantaviruses differentially regulate endothelial cell responses. *Proc Natl Acad Sci U S A*. 2002 Oct 15; **99** (21): 13837-42.
2. Maragoudakis ME, Tsopanoglou NE, Andriopoulou P. Mechanism of thrombin-induced angiogenesis. *Biochem Soc Trans*. 2002 Apr; **30** (2): 173-177.
3. Choy JC, Granville DJ, Hunt DW, McManus BM. Endothelial cell apoptosis: biochemical characteristics and potential implications for atherosclerosis. *J Mol Cell Cardiol*. 2001 Sep; **33** (9): 1673-90.
4. Kim J, Wu H, Hawthorne L, Rafii S, Laurence J. Endothelial cell apoptotic genes associated with the pathogenesis of thrombotic microangiopathies: an application of oligonucleotide genechip technology. *Microvasc Res*. 2001 Sep; **62** (2): 83-93.
5. Biedermann BC. Vascular endothelium: checkpoint for inflammation and immunity. *News Physiol Sci*. 2001 Apr; **16**: 84-8.
6. Malyszko J, Malyszko JS, Mysliwiec M. Markers of endothelial cell injury and thrombin activatable fibrinolysis inhibitor in nephrotic syndrome. *Blood Coagul Fibrinolysis*. 2002 Oct; **13** (7): 615-21.
7. Takehana K, Konishi A, Oonuki A, Noguchi M, Fujita K, Iino Y, Kobayashi T. APC0576, a novel inhibitor of NF-kappaB-dependent gene activation, prevents pro-inflammatory cytokine-induced chemokine production in human endothelial cells. *Biochem Biophys Res Commun*. 2002 May 10; **293** (3): 945-52.
8. Hunt BJ. The endothelium in atherogenesis. *Lupus*. 2000; **9** (3): 189-93.
9. Pearson JD. Normal endothelial cell function. *Lupus*. 2000; **9** (3): 183-8.
10. Toborek M, Kaiser S. Endothelial cell functions. Relationship to atherogenesis. *Basic Res Cardiol*. 1999 Oct; **94** (5): 295-314.

Product Specification Sheet

Array Layout: Rat Endothelial Cell Biology RT² Profiler™ PCR Array

	1	2	3	4	5	6	7	8	9	10	11	12
A	Ace	Adam17	Agt	Agtr1b	Angpt1	Anxa5	Bax	Bcl2	Bcl2l1	Birc1b	Blr1	Casp1
B	Casp3	Casp6	Ccl2	Ccl5	Cdh5	Cflar	Col18a1	Cpb2	Cradd	Csf2	Cx3cl1	Cxcl1
C	Cxcl2	Ecgf1	Edn1	Edn2	Ednra	Fgf1	Fgf2	Flt1	Fn1	Icam1	lfnb1	Il11
D	Il1b	Il3	Il6	Il7	Itga5	Itgav	Itgb1	Itgb3	Kdr	Kit	Mmp1a	Mmp2
E	Mmp9	Nos2	Nos3	Nppb	Npr1	Pdgfra	Pecam	Cxcl4	Pgf	Plat	Plau	Plg
F	Ptgis	IPPK	Rhob	Sele	Sell	Selp	Serpine1	Sod1	Tek	Tfpi	Tgfb1	Thbd
G	Thbs1	Timp1	Tnf	Tnfrsf6	Tnfrsf10	Faslg	Tnfrsf2	Ocln	Vcam1	Vegfa	Vwf	Xdh
H	Rplp1	Hprt	Rpl13a	Ldha	Actb	RGDC	RTC	RTC	RTC	PPC	PPC	PPC

Gene Table

Position	UniGene	GenBank	Symbol	Description
A01	Rn.10149	NM_012544	Ace	Angiotensin I converting enzyme (peptidyl-dipeptidase A) 1
A02	Rn.144585	NM_020306	Adam17	A disintegrin and metalloproteinase domain 17 (tumor necrosis factor, alpha, converting enzyme)
A03	Rn.6319	NM_134432	Agt	Angiotensinogen (serpin peptidase inhibitor, clade A, member 8)
A04	Rn.9815	NM_031009	Agtr1b	Angiotensin receptor 1b
A05	Rn.161953	NM_053546	Angpt1	Angiopietin 1
A06	Rn.3318	NM_013132	Anxa5	Annexin A5
A07	Rn.10668	NM_017059	Bax	Bcl2-associated X protein
A08	Rn.9996	NM_016993	Bcl2	B-cell leukemia/lymphoma 2
A09	Rn.10323	NM_031535	Bcl2l1	Bcl2-like 1
A10	Rn.92423	XM_226742	Birc1b	Baculoviral IAP repeat-containing 1b
A11	Rn.127121	NM_053303	Blr1	Burkitt lymphoma receptor 1
A12	Rn.37508	NM_012762	Casp1	Caspase 1
B01	Rn.10562	NM_012922	Casp3	Caspase 3, apoptosis related cysteine protease
B02	Rn.88160	NM_031775	Casp6	Caspase 6
B03	Rn.4772	NM_031530	Ccl2	Chemokine (C-C motif) ligand 2
B04	Rn.8019	NM_031116	Ccl5	Chemokine (C-C motif) ligand 5
B05	Rn.164510	XM_226213	Cdh5_predicted	Cadherin 5 (predicted)
B06	Rn.55946	NM_057138	Cflar	CASP8 and FADD-like apoptosis regulator
B07	Rn.12030	XM_241632	Col18a1	Procollagen, type XVIII, alpha 1
B08	Rn.12572	NM_053617	Cpb2	Carboxypeptidase B2 (plasma)
B09	Rn.85739	XM_235061	Cradd	CASP2 and RIPK1 domain containing adaptor with death domain (predicted)
B10	Rn.44285	XM_340799	Csf2	Colony stimulating factor 2 (granulocyte-macrophage)
B11	Rn.107266	NM_134455	Cx3cl1	Chemokine (C-X3-C motif) ligand 1
B12	Rn.10907	NM_030845	Cxcl1	Chemokine (C-X-C motif) ligand 1
C01	Rn.10230	NM_053647	Cxcl2	Chemokine (C-X-C motif) ligand 2
C02	Rn.202370	NM_001012122	Ecgf1	Endothelial cell growth factor 1 (platelet-derived)
C03	Rn.10918	NM_012548	Edn1	Endothelin 1
C04	Rn.10642	NM_012549	Edn2	Endothelin 2
C05	Rn.10915	NM_012550	Ednra	Endothelin receptor type A
C06	Rn.88013	NM_012846	Fgf1	Fibroblast growth factor 1
C07	Rn.31808	NM_019305	Fgf2	Fibroblast growth factor 2
C08	Rn.10239	NM_019306	Flt1	FMS-like tyrosine kinase 1
C09	Rn.1604	NM_019143	Fn1	Fibronectin 1
C10	Rn.12	NM_012967	Icam1	Intercellular adhesion molecule 1
C11	Rn.138105	NM_019127	lfnb1	Interferon beta 1, fibroblast
C12	Rn.198483	NM_133519	Il11	Interleukin 11
D01	Rn.9869	NM_031512	Il1b	Interleukin 1 beta
D02	Rn.10652	NM_031513	Il3	Interleukin 3
D03	Rn.9873	NM_012589	Il6	Interleukin 6
D04	Rn.10793	NM_013110	Il7	Interleukin 7
D05	Rn.100796	XM_235707	Itga5	Integrin alpha 5 (mapped)
D06	Rn.23339	XM_230950	Itgav_predicted	Integrin alpha V (predicted)

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Position	UniGene	GenBank	Symbol	Description
D07	Rn.25733	NM_017022	Itgb1	Integrin beta 1 (fibronectin receptor beta)
D08	Rn.162202	NM_153720	Itgb3	Integrin beta 3
D09	Rn.88869	NM_013062	Kdr	Kinase insert domain protein receptor
D10	Rn.54004	NM_022264	Kit	V-kit Hardy-Zuckerman 4 feline sarcoma viral oncogene homolog
D11	Rn.79007	XM_235794	Mmp1a_predicted	Matrix metalloproteinase 1a (interstitial collagenase) (predicted)
D12	Rn.6422	NM_031054	Mmp2	Matrix metalloproteinase 2
E01	Rn.10209	NM_031055	Mmp9	Matrix metalloproteinase 9
E02	Rn.10400	NM_012611	Nos2	Nitric oxide synthase 2, inducible
E03	Rn.44265	NM_021838	Nos3	Nitric oxide synthase 3, endothelial cell
E04	Rn.3835	NM_031545	Nppb	Natriuretic peptide precursor type B
E05	Rn.10463	NM_012613	Npr1	Natriuretic peptide receptor 1
E06	Rn.55127	XM_214030	Pdgfra	Platelet derived growth factor receptor, alpha polypeptide
E07	Rn.1878	NM_031591	Pecam	Platelet/endothelial cell adhesion molecule
E08	Rn.6800	NM_001007729	Cxcl4	Chemokine (C-X-C motif) ligand 4
E09	Rn.6960	NM_053595	Pgf	Placental growth factor
E10	Rn.107102	NM_013151	Plat	Plasminogen activator, tissue
E11	Rn.6064	NM_013085	Plau	Plasminogen activator, urokinase
E12	Rn.20178	NM_053491	Plg	Plasminogen
F01	Rn.73051	NM_031557	Ptgis	Prostaglandin I2 (prostacyclin) synthase
F02	Rn.73677	NM_001008556	Ippk	Inositol 1,3,4,5,6-pentakisphosphate 2-kinase
F03	Rn.2042	NM_022542	Rhob	Ras homolog gene family, member B
F04	Rn.10359	NM_138879	Sele	Selectin, endothelial cell
F05	Rn.10461	NM_019177	Sell	Selectin, lymphocyte
F06	Rn.10012	NM_013114	Selp	Selectin, platelet
F07	Rn.29367	NM_012620	Serpine1	Serine (or cysteine) peptidase inhibitor, clade E, member 1
F08	Rn.6059	NM_017050	Sod1	Superoxide dismutase 1
F09	Rn.9159	XM_342863	Tek	Endothelial-specific receptor tyrosine kinase
F10	Rn.15795	NM_017200	Tfpi	Tissue factor pathway inhibitor
F11	Rn.40136	NM_021578	Tgfb1	Transforming growth factor, beta 1
F12	Rn.88295	NM_031771	Thbd	Thrombomodulin
G01	Rn.185771	NM_001013062	Thbs1	Thrombospondin 1
G02	Rn.25754	NM_053819	Timp1	Tissue inhibitor of metalloproteinase 1
G03	Rn.2275	NM_012675	Tnf	Tumor necrosis factor (TNF superfamily, member 2)
G04	Rn.162521	NM_139194	Tnfrsf6	Tumor necrosis factor receptor superfamily, member 6
G05	Rn.83627	NM_145681	Tnfsf10	Tumor necrosis factor (ligand) superfamily, member 10
G06	Rn.9725	NM_012908	Faslg	Fas ligand (TNF superfamily, member 6)
G07	Rn.17607	NM_001024771	Tnip2	TNFAIP3 interacting protein 2
G08	Rn.31429	NM_031329	Ocln	Occludin
G09	Rn.11267	NM_012889	Vcam1	Vascular cell adhesion molecule 1
G10	Rn.1923	NM_031836	Vegfa	Vascular endothelial growth factor A
G11	Rn.35561	XM_342759	Vwf	Von Willebrand factor
G12	Rn.202951	NM_017154	Xdh	Xanthine dehydrogenase
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