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Product Specification Sheet

RT² Profiler™ PCR Array:

Human NFκB Signaling Pathway

Catalog Number	For Real-Time Instruments:
PAHS-025A	ABI Standard Blocks; Bio-Rad iCycler, MyiQ, and (MJ Research) Chromo 4 and Stratagene Mx3005p, Mx3000p
PAHS-025C	ABI 7500 and 7900HT FAST 96-Well Blocks, ABI StepOnePlus
PAHS-025D	Bio-Rad (MJ Research) Opticon and Opticon 2, Stratagene Mx4000
PAHS-025E	ABI 7900HT 384-Well Block
PAHS-025F	Roche LightCycler 480 96-well Block
PAHS-025G	Roche LightCycler 480 384-well Block

Description

The Human NFκB Signaling Pathway RT² Profiler PCR Array profiles the expression of 84 key genes related to NFκB-mediated signal transduction. The array includes genes that encode members of the Rel, NFκB, and IκB families, NFκB-responsive genes, extracellular ligands and receptors that activate the pathway, and kinases and transcription factors that propagate the signal. NFκB-mediated signal transduction has been implicated in the regulation of viral replication, autoimmune diseases, the inflammatory response, tumorigenesis and apoptosis. Using real-time PCR, you can easily and reliably analyze expression of a focused panel of genes involved in the NF□B signal transduction pathway with this array.

Functional Gene Groupings

Activation of NFκB Pathway
Ligands and Receptors: IL1B, IL8, MYD88, TLR1, TLR2, TLR3, TLR4, TLR6, TLR8, TNF, TNFRSF10A, TNFRSF10B.
Membrane Molecules: IRAK1, IRAK2.
Kinases: CHUK, IKBKB, IKBKG, IRAK1, IRAK2.
IκB kinase/NFκB Cascade: EDARADD, IKBKG, IRAK2, STAT1, TLR8.
Cytoplasmic Sequestering and Release of NFκB: BCL3, IL10, NLRP12, NFKBIA, CD27 (TNFRSF7), TNFSF14.
Transcription Factors: IKBKB, IKBKG, IRAK1, NFKB1, NFKBIA, RELA, STAT1, TNF.
Inflammatory Response: IL1B, IL8, IRAK2, MYD88, NFKB1, TLR1, TLR2, TLR3, TLR4, TLR6, TLR8, TNF.

Positive Regulation of IκB Kinase and the NFκB Cascade
Ligands and Receptors: CD40 (TNFRSF5), F2R, FASLG (TNFSF6), HTR2B, LTBR, SLC20A1, TICAM2, TNFRSF1A, TNFSF10, TICAM1 (TRIF).
Membrane Molecules: EDG2, GJA1, HMOX1, RHOA.
Kinases: IKBKE, RIPK1, TBK1.
Other: BCL10, BIRC2, NOD1 (CARD4), CASP1, CASP8, CFLAR, SLC44A2 (CTL2), FADD, MALT1, PPM1A, REL, TRIM13 (RFP2), TMED4 (HNLF), TRADD.

NFκB Responsive Genes
Acute Phase Response Proteins: AGT, CFB (BF).
Adhesion Molecules: ICAM1.
Extracellular Molecules: CFB (BF), CSF2, CSF3, IFNA1, IFNB1, IFNG, IL6.
Ligands and Receptors: AGT, CCL2, ICAM1, LTA.
Cytokines: CCL2, CSF2, CSF3, IFNA1, IFNB1, IFNG, IL6, IL8, LTA, TNF.
Inflammatory Response: CCL2.

Other Factors Involved in the NFκB Pathway

Extracellular Molecules: IL1A.
Ligands and Receptors: IL1R1, RAF1, TLR7, TLR9.
Kinases: AKT1, MAP3K1, RAF1.
Transcription Factors: ATF1, EGR1, ELK1, FOS, JUN, NFKB2, RELB, TNFAIP3.
Inflammatory Response: FOS, IL1A, IL1R1, TLR7, TLR9

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

1. Bauerle, P.A. and Baichwal, V.R. (1997) NFκB As A Frequent Target For Immunosuppressive And Anti-Inflammatory Molecules. *Adv. Immunol*. **65**: 111-137.
2. Ghosh S., May M.J. and Kopp E.B. (1998) NFκB and Rel Proteins: Evolutionarily Conserved Mediators Of Immune Responses. *Annu. Rev. Immunol*. **16**: 225-60.
3. Verma IM, Stevenson JK, Schwarz EM, Van Antwerp D, Miyamoto S (1995) Rel / NFκB / IκB Family: Intimate Tales Of Association And Dissociation. *Genes. Dev*. **9**: 2723-2735
4. Darnay BG, Haridas V, Ni J, Moore PA, Aggarwal BB. (1998) Characterization Of The Intracellular Domain Of Receptor Activator Of NFκB (RANK): Interaction With Tumor Necrosis Factor Receptor-Associated Factors And Activation Of NFκB and c-Jun N-Terminal Kinase. *J. Biol. Chem* **273**: 20551-20555.
5. Israel A. (2000) The IKK Complex: An Integrator Of All Signals That Activate NF□B? *Trends Cell Biol.* **10**: 129-133.
6. Shibuya H, Yamaguchi K, Shirakabe K, Tonegawa A, Gotoh Y, Ueno N, Irie K, Nishida E, Matsumoto K. (1996) TAB1: An Activator Of The TAK1 MAPKKK In TGF-β Signal Transduction. *Science* **272**: 1179-1182.
7. Pomeerantz J. L. and Baltimore D. (1999) NFκB Activation By A Signaling Complex Containing TRAF2, TANK And TBK1, A Novel IKK-Related Kinase. *EMBO J* **18**: 6694-6670.

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Array Layout: Human NFκB Signaling Pathway PCR Array

	1	2	3	4	5	6	7	8	9	10	11	12
A	AGT	AKT1	ATF1	BCL10	BCL3	CFB	BIRC2	NOD1	CASP1	CASP8	CCL2	CD40
B	CFLAR	CHUK	CSF2	CSF3	SLC44A2	EDARADD	EDG2	EGR1	ELK1	F2R	FADD	FASLG
C	FOS	GJA1	HMOX1	HTR2B	ICAM1	IFNA1	IFNB1	IFNG	IKBKB	IKBKE	IKBKG	IL10
D	IL1A	IL1B	IL1R1	IL6	IL8	IRAK1	IRAK2	JUN	LTA	LTBR	MALT1	MAP3K1
E	MYD88	NLRP12	NFKB1	NFKB2	NFKBIA	PPM1A	RAF1	REL	RELA	RELB	TRIM13	RHOA
F	RIPK1	SLC20A1	STAT1	TBK1	TICAM2	TLR1	TLR2	TLR3	TLR4	TLR6	TLR7	TLR8
G	TLR9	TMED4	TNF	TNFAIP3	TNFRSF10A	TNFRSF10B	TNFRSF1A	CD27	TNFSF10	TNFSF14	TRADD	TICAM1
H	B2M	HPRT1	RPL13A	GAPDH	ACTB	HGDC	RTC	RTC	RTC	PPC	PPC	PPC

Gene Table

Position	UniGene	GenBank	Symbol	Description
A01	Hs.19383	NM_000029	AGT	Angiotensinogen (serpin peptidase inhibitor, clade A, member 8)
A02	Hs.525622	NM_005163	AKT1	V-akt murine thymoma viral oncogene homolog 1
A03	Hs.435267	NM_005171	ATF1	Activating transcription factor 1
A04	Hs.193516	NM_003921	BCL10	B-cell CLL/lymphoma 10
A05	Hs.31210	NM_005178	BCL3	B-cell CLL/lymphoma 3
A06	Hs.69771	NM_001710	CFB	Complement factor B
A07	Hs.503704	NM_001166	BIRC2	Baculoviral IAP repeat-containing 2
A08	Hs.405153	NM_006092	NOD1	Nucleotide-binding oligomerization domain containing 1
A09	Hs.2490	NM_033292	CASP1	Caspase 1, apoptosis-related cysteine peptidase (interleukin 1, beta, convertase)
A10	Hs.591630	NM_001228	CASP8	Caspase 8, apoptosis-related cysteine peptidase
A11	Hs.303649	NM_002982	CCL2	Chemokine (C-C motif) ligand 2
A12	Hs.472860	NM_001250	CD40	CD40 molecule, TNF receptor superfamily member 5
B01	Hs.390736	NM_003879	CFLAR	CASP8 and FADD-like apoptosis regulator
B02	Hs.198998	NM_001278	CHUK	Conserved helix-loop-helix ubiquitous kinase
B03	Hs.1349	NM_000758	CSF2	Colony stimulating factor 2 (granulocyte-macrophage)
B04	Hs.2233	NM_000759	CSF3	Colony stimulating factor 3 (granulocyte)
B05	Hs.631631	NM_020428	SLC44A2	Solute carrier family 44, member 2
B06	Hs.352224	NM_080738	EDARADD	EDAR-associated death domain
B07	Hs.126667	NM_057159	EDG2	Endothelial differentiation, lysophosphatidic acid G-protein-coupled receptor, 2
B08	Hs.326035	NM_001964	EGR1	Early growth response 1
B09	Hs.181128	NM_005229	ELK1	ELK1, member of ETS oncogene family
B10	Hs.482562	NM_001992	F2R	Coagulation factor II (thrombin) receptor
B11	Hs.86131	NM_003824	FADD	Fas (TNFRSF6)-associated via death domain
B12	Hs.2007	NM_000639	FASLG	Fas ligand (TNF superfamily, member 6)
C01	Hs.25647	NM_005252	FOS	V-fos FBJ murine osteosarcoma viral oncogene homolog
C02	Hs.74471	NM_000165	GJA1	Gap junction protein, alpha 1, 43kDa
C03	Hs.517581	NM_002133	HMOX1	Heme oxygenase (decycling) 1
C04	Hs.421649	NM_000867	HTR2B	5-hydroxytryptamine (serotonin) receptor 2B
C05	Hs.643447	NM_000201	ICAM1	Intercellular adhesion molecule 1 (CD54), human rhinovirus receptor
C06	Hs.37026	NM_024013	IFNA1	Interferon, alpha 1
C07	Hs.93177	NM_002176	IFNB1	Interferon, beta 1, fibroblast
C08	Hs.856	NM_000619	IFNG	Interferon, gamma
C09	Hs.413513	NM_001556	IKBKB	Inhibitor of kappa light polypeptide gene enhancer in B-cells, kinase beta
C10	Hs.321045	NM_014002	IKBKE	Inhibitor of kappa light polypeptide gene enhancer in B-cells, kinase epsilon
C11	Hs.43505	NM_003639	IKBKG	Inhibitor of kappa light polypeptide gene enhancer in B-cells, kinase gamma
C12	Hs.193717	NM_000572	IL10	Interleukin 10
D01	Hs.1722	NM_000575	IL1A	Interleukin 1, alpha
D02	Hs.126256	NM_000576	IL1B	Interleukin 1, beta
D03	Hs.557403	NM_000877	IL1R1	Interleukin 1 receptor, type I
D04	Hs.512234	NM_000600	IL6	Interleukin 6 (interferon, beta 2)
D05	Hs.624	NM_000584	IL8	Interleukin 8

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Position	UniGene	GenBank	Symbol	Description
D06	Hs.522819	NM_001569	IRAK1	Interleukin-1 receptor-associated kinase 1
D07	Hs.449207	NM_001570	IRAK2	Interleukin-1 receptor-associated kinase 2
D08	Hs.525704	NM_002228	JUN	Jun oncogene
D09	Hs.36	NM_000595	LTA	Lymphotoxin alpha (TNF superfamily, member 1)
D10	Hs.1116	NM_002342	LTBR	Lymphotoxin beta receptor (TNFR superfamily, member 3)
D11	Hs.601217	NM_173844	MALT1	Mucosa associated lymphoid tissue lymphoma translocation gene 1
D12	Hs.634810	XM_042066	MAP3K1	Mitogen-activated protein kinase kinase kinase 1
E01	Hs.82116	NM_002468	MYD88	Myeloid differentiation primary response gene (88)
E02	Hs.631573	NM_033297	NLRP12	NLR family, pyrin domain containing 12
E03	Hs.431926	NM_003998	NFKB1	Nuclear factor of kappa light polypeptide gene enhancer in B-cells 1 (p105)
E04	Hs.73090	NM_002502	NFKB2	Nuclear factor of kappa light polypeptide gene enhancer in B-cells 2 (p49/p100)
E05	Hs.81328	NM_020529	NFKBIA	Nuclear factor of kappa light polypeptide gene enhancer in B-cells inhibitor, alpha
E06	Hs.592298	NM_177952	PPM1A	Protein phosphatase 1A (formerly 2C), magnesium-dependent, alpha isoform
E07	Hs.159130	NM_002880	RAF1	V-raf-1 murine leukemia viral oncogene homolog 1
E08	Hs.631886	NM_002908	REL	V-rel reticuloendotheliosis viral oncogene homolog (avian)
E09	Hs.502875	NM_021975	RELA	V-rel reticuloendotheliosis viral oncogene homolog A, nuclear factor of kappa light polypeptide gene enhancer in B-cells 3, p65 (avian)
E10	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)
E11	Hs.436922	NM_005798	TRIM13	Tripartite motif-containing 13
E12	Hs.247077	NM_001664	RHOA	Ras homolog gene family, member A
F01	Hs.519842	NM_003804	RIPK1	Receptor (TNFRSF)-interacting serine-threonine kinase 1
F02	Hs.187946	NM_005415	SLC20A1	Solute carrier family 20 (phosphate transporter), member 1
F03	Hs.642990	NM_007315	STAT1	Signal transducer and activator of transcription 1, 91kDa
F04	Hs.505874	NM_013254	TBK1	TANK-binding kinase 1
F05	Hs.642817	NM_021649	TICAM2	Toll-like receptor adaptor molecule 2
F06	Hs.111805	NM_003263	TLR1	Toll-like receptor 1
F07	Hs.519033	NM_003264	TLR2	Toll-like receptor 2
F08	Hs.543332	NM_003265	TLR3	Toll-like receptor 3
F09	Hs.174312	NM_138554	TLR4	Toll-like receptor 4
F10	Hs.575090	NM_006068	TLR6	Toll-like receptor 6
F11	Hs.443036	NM_016562	TLR7	Toll-like receptor 7
F12	Hs.272410	NM_016610	TLR8	Toll-like receptor 8
G01	Hs.87968	NM_017442	TLR9	Toll-like receptor 9
G02	Hs.510745	NM_182547	TMED4	Transmembrane emp24 protein transport domain containing 4
G03	Hs.241570	NM_000594	TNF	Tumor necrosis factor (TNF superfamily, member 2)
G04	Hs.211600	NM_006290	TNFAIP3	Tumor necrosis factor, alpha-induced protein 3
G05	Hs.591834	NM_003844	TNFRSF10A	Tumor necrosis factor receptor superfamily, member 10a
G06	Hs.521456	NM_003842	TNFRSF10B	Tumor necrosis factor receptor superfamily, member 10b
G07	Hs.279594	NM_001065	TNFRSF1A	Tumor necrosis factor receptor superfamily, member 1A
G08	Hs.355307	NM_001242	CD27	CD27 molecule
G09	Hs.478275	NM_003810	TNFSF10	Tumor necrosis factor (ligand) superfamily, member 10
G10	Hs.129708	NM_003807	TNFSF14	Tumor necrosis factor (ligand) superfamily, member 14
G11	Hs.460996	NM_003789	TRADD	TNFRSF1A-associated via death domain
G12	Hs.29344	NM_014261	TICAM1	Toll-like receptor adaptor molecule 1
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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