

# RT<sup>2</sup> Profiler PCR Array (96-Well Format and 384-Well [4 x 96] Format)

## Human Tyrosine Kinases

Cat. no. 330231 PAHS-161ZA

For pathway expression analysis

Format	For use with the following real-time cyclers
RT <sup>2</sup> Profiler PCR Array, Format A	Applied Biosystems® models 5700, 7000, 7300, 7500, 7700, 7900HT, ViiA™ 7 (96-well block); Bio-Rad® models iCycler®, iQ™ 5, MyiQ™, MyiQ2; Bio-Rad/MJ Research Chromo4™; Eppendorf® Mastercycler® ep realplex models 2, 2s, 4, 4s; Stratagene® models Mx3005P®, Mx3000P®; Takara TP-800
RT <sup>2</sup> Profiler PCR Array, Format C	Applied Biosystems models 7500 (Fast block), 7900HT (Fast block), StepOnePlus™, ViiA 7 (Fast block)
RT <sup>2</sup> Profiler PCR Array, Format D	Bio-Rad CFX96™; Bio-Rad/MJ Research models DNA Engine Opticon®, DNA Engine Opticon 2; Stratagene Mx4000®
RT <sup>2</sup> Profiler PCR Array, Format E	Applied Biosystems models 7900HT (384-well block), ViiA 7 (384-well block); Bio-Rad CFX384™
RT <sup>2</sup> Profiler PCR Array, Format F	Roche® LightCycler® 480 (96-well block)
RT <sup>2</sup> Profiler PCR Array, Format G	Roche LightCycler 480 (384-well block)
RT <sup>2</sup> Profiler PCR Array, Format H	Fluidigm® BioMark™



## Description

The Human Tyrosine Kinases RT<sup>2</sup> Profiler PCR Array profiles the expression of 84 receptor and non-receptor tyrosine kinase genes. The protein tyrosine kinase superfamily includes roughly 60 receptor tyrosine kinases (RTKs) and about 30 intracellular tyrosine kinases. RTKs include an extracellular domain, a transmembrane domain, and a catalytic intracellular domain. Upon activation, RTKs dimerize and autophosphorylate their intracellular domain, initiating downstream signaling that often includes non-receptor tyrosine kinases. Non-receptor tyrosine kinases include a catalytic domain and a regulatory domain, which vary for each family. For example, the SRC-family kinase regulatory domain requires autophosphorylation for kinase domain activation, while most other intracellular tyrosine kinase families use different regulatory mechanisms. Tyrosine kinases are involved in many basic biological processes, such as growth, proliferation, and differentiation. These processes are commonly dysregulated during oncogenesis, often due to mutation of key tyrosine kinases or regulators. These oncogenic processes make the tyrosine kinase superfamily members attractive drug targets, and there are several chemotherapeutics targeting tyrosine kinases already on the market (e.g., imatinib mesylate). This array includes most RTKs and non-receptor tyrosine kinases. The results of this array can yield new insights into tyrosine kinase expression and regulation in an experimental model system. Using real-time PCR, research studies can easily and reliably analyze the expression of a focused panel of tyrosine kinase genes with this array.

For further details, consult the *RT<sup>2</sup> Profiler PCR Array Handbook*.

## Shipping and storage

RT<sup>2</sup> Profiler PCR Arrays in formats A, C, D, E, F, and G are shipped at ambient temperature, on dry ice, or blue ice packs depending on destination and accompanying products. RT<sup>2</sup> Profiler PCR Arrays in format H are shipped on dry ice or blue ice packs.

For long term storage, keep plates at  $-20^{\circ}\text{C}$ .

**Note:** Ensure that you have the correct RT<sup>2</sup> Profiler PCR Array format for your real-time cycler (see table above).

**Note:** Open the package and store the products appropriately immediately on receipt.

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## Array layout (96-well)

For 384-well 4 x 96 PCR arrays, genes are present in a staggered format. Refer to the *RT<sup>2</sup> Profiler PCR Array Handbook* for layout.

	1	2	3	4	5	6	7	8	9	10	11	12
A	ABL1	ABL2	ALK	AXL	BLK	BTk	CSF1R	CSK	DDR1	DDR2	EGFR	EPHA1
B	EPHA2	EPHA3	EPHA4	EPHA5	EPHA7	EPHA8	EPHB1	EPHB2	EPHB3	EPHB4	EPHB6	ERBB2
C	ERBB3	ERBB4	FER	FES	FGFR1	FGFR2	FGFR3	FGFR4	FGR	FLT1	FLT3	FLT4
D	FRK	FYN	HCK	IGF1R	IGF2R	INSR	INSRR	ITK	JAK1	JAK2	JAK3	KDR
E	KIT	LCK	LTK	LYN	MATK	MERTK	MET	MST1R	MUSK	NTRK1	NTRK2	NTRK3
F	PDGFRA	PDGFRB	PTK2	PTK2B	PTK6	PTK7	RET	ROR1	ROR2	ROS1	RYK	SRC
G	SRMS	SYK	TEC	TEK	TIE1	TNK1	TNK2	TKK	TYK2	TYRO3	YES1	ZAP70
H	ACTB	B2M	GAPDH	HPRT1	RPLP0	HGDC	RTC	RTC	RTC	PPC	PPC	PPC

## Gene table: RT<sup>2</sup> Profiler PCR Array

Position	UniGene	GenBank	Symbol	Description
A01	Hs.431048	NM_005157	ABL1	C-abl oncogene 1, non-receptor tyrosine kinase
A02	Hs.159472	NM_005158	ABL2	V-abl Abelson murine leukemia viral oncogene homolog 2
A03	Hs.654469	NM_004304	ALK	Anaplastic lymphoma receptor tyrosine kinase
A04	Hs.590970	NM_001699	AXL	AXL receptor tyrosine kinase
A05	Hs.146591	NM_001715	BLK	B lymphoid tyrosine kinase
A06	Hs.159494	NM_000061	BTk	Bruton agammaglobulinemia tyrosine kinase
A07	Hs.654394	NM_005211	CSF1R	Colony stimulating factor 1 receptor
A08	Hs.77793	NM_004383	CSK	C-src tyrosine kinase
A09	Hs.631988	NM_001954	DDR1	Discoidin domain receptor tyrosine kinase 1
A10	Hs.275757	NM_006182	DDR2	Discoidin domain receptor tyrosine kinase 2
A11	Hs.488293	NM_005228	EGFR	Epidermal growth factor receptor
A12	Hs.89839	NM_005232	EPHA1	EPH receptor A1
B01	Hs.171596	NM_004431	EPHA2	EPH receptor A2
B02	Hs.123642	NM_005233	EPHA3	EPH receptor A3
B03	Hs.371218	NM_004438	EPHA4	EPH receptor A4
B04	Hs.654492	NM_004439	EPHA5	EPH receptor A5
B05	Hs.73962	NM_004440	EPHA7	EPH receptor A7
B06	Hs.283613	NM_020526	EPHA8	EPH receptor A8
B07	Hs.116092	NM_004441	EPHB1	EPH receptor B1
B08	Hs.523329	NM_004442	EPHB2	EPH receptor B2
B09	Hs.2913	NM_004443	EPHB3	EPH receptor B3
B10	Hs.437008	NM_004444	EPHB4	EPH receptor B4
B11	Hs.380089	NM_004445	EPHB6	EPH receptor B6
B12	Hs.446352	NM_004448	ERBB2	V-erb-b2 erythroblastic leukemia viral oncogene homolog 2, neuro/glioblastoma derived oncogene homolog (avian)
C01	Hs.118681	NM_001982	ERBB3	V-erb-b2 erythroblastic leukemia viral oncogene homolog 3 (avian)
C02	Hs.390729	NM_005235	ERBB4	V-erb-a erythroblastic leukemia viral oncogene homolog 4 (avian)
C03	Hs.221472	NM_005246	FER	Fer (fps/fes related) tyrosine kinase
C04	Hs.7636	NM_002005	FES	Feline sarcoma oncogene
C05	Hs.264887	NM_015850	FGFR1	Fibroblast growth factor receptor 1
C06	Hs.533683	NM_000141	FGFR2	Fibroblast growth factor receptor 2
C07	Hs.1420	NM_000142	FGFR3	Fibroblast growth factor receptor 3
C08	Hs.165950	NM_002011	FGFR4	Fibroblast growth factor receptor 4
C09	Hs.1422	NM_005248	FGR	Gardner-Rasheed feline sarcoma viral (v-fgr) oncogene homolog
C10	Hs.654360	NM_002019	FLT1	Fms-related tyrosine kinase 1 (vascular endothelial growth factor/vascular permeability factor receptor)
C11	Hs.507590	NM_004119	FLT3	Fms-related tyrosine kinase 3
C12	Hs.646917	NM_002020	FLT4	Fms-related tyrosine kinase 4
D01	Hs.89426	NM_002031	FRK	Fyn-related kinase
D02	Hs.390567	NM_002037	FYN	FYN oncogene related to SRC, FGR, YES
D03	Hs.655210	NM_002110	HCK	Hemopoietic cell kinase
D04	Hs.643120	NM_000875	IGF1R	Insulin-like growth factor 1 receptor
D05	Hs.487062	NM_000876	IGF2R	Insulin-like growth factor 2 receptor
D06	Hs.465744	NM_000208	INSR	Insulin receptor
D07	Hs.248138	NM_014215	INSRR	Insulin receptor-related receptor

Position	UniGene	GenBank	Symbol	Description
D08	Hs.558348	NM_005546	ITK	IL2-inducible T-cell kinase
D09	Hs.207538	NM_002227	JAK1	Janus kinase 1
D10	Hs.656213	NM_004972	JAK2	Janus kinase 2
D11	Hs.515247	NM_000215	JAK3	Janus kinase 3
D12	Hs.479756	NM_002253	KDR	Kinase insert domain receptor (a type III receptor tyrosine kinase)
E01	Hs.479754	NM_000222	KIT	V-kit Hardy-Zuckerman 4 feline sarcoma viral oncogene homolog
E02	Hs.470627	NM_005356	LCK	Lymphocyte-specific protein tyrosine kinase
E03	Hs.434481	NM_002344	LTK	Leukocyte receptor tyrosine kinase
E04	Hs.699154	NM_002350	LYN	V-yes-1 Yamaguchi sarcoma viral related oncogene homolog
E05	Hs.631845	NM_002378	MATK	Megakaryocyte-associated tyrosine kinase
E06	Hs.306178	NM_006343	MERTK	C-mer proto-oncogene tyrosine kinase
E07	Hs.132966	NM_000245	MET	Met proto-oncogene (hepatocyte growth factor receptor)
E08	Hs.517973	NM_002447	MST1R	Macrophage stimulating 1 receptor (c-met-related tyrosine kinase)
E09	Hs.521653	NM_005592	MUSK	Muscle, skeletal, receptor tyrosine kinase
E10	Hs.406293	NM_002529	NTRK1	Neurotrophic tyrosine kinase, receptor, type 1
E11	Hs.494312	NM_006180	NTRK2	Neurotrophic tyrosine kinase, receptor, type 2
E12	Hs.410969	NM_002530	NTRK3	Neurotrophic tyrosine kinase, receptor, type 3
F01	Hs.74615	NM_006206	PDGFRA	Platelet-derived growth factor receptor, alpha polypeptide
F02	Hs.509067	NM_002609	PDGFRB	Platelet-derived growth factor receptor, beta polypeptide
F03	Hs.395482	NM_005607	PTK2	PTK2 protein tyrosine kinase 2
F04	Hs.491322	NM_004103	PTK2B	PTK2B protein tyrosine kinase 2 beta
F05	Hs.51133	NM_005975	PTK6	PTK6 protein tyrosine kinase 6
F06	Hs.90572	NM_002821	PTK7	PTK7 protein tyrosine kinase 7
F07	Hs.350321	NM_020630	RET	Ret proto-oncogene
F08	Hs.654491	NM_005012	ROR1	Receptor tyrosine kinase-like orphan receptor 1
F09	Hs.98255	NM_004560	ROR2	Receptor tyrosine kinase-like orphan receptor 2
F10	Hs.1041	NM_002944	ROS1	C-ros oncogene 1, receptor tyrosine kinase
F11	Hs.654562	NM_002958	RYK	RYK receptor-like tyrosine kinase
F12	Hs.195659	NM_005417	SRC	V-src sarcoma (Schmid-Ruppin A-2) viral oncogene homolog (avian)
G01	Hs.411061	NM_080823	SRMS	Src-related kinase lacking C-terminal regulatory tyrosine and N-terminal myristylation sites
G02	Hs.371720	NM_003177	SYK	Spleen tyrosine kinase
G03	Hs.479670	NM_003215	TEC	Tec protein tyrosine kinase
G04	Hs.89640	NM_000459	TEK	TEK tyrosine kinase, endothelial
G05	Hs.78824	NM_005424	TIE1	Tyrosine kinase with immunoglobulin-like and EGF-like domains 1
G06	Hs.203420	NM_003985	TNK1	Tyrosine kinase, non-receptor, 1
G07	Hs.518513	NM_005781	TNK2	Tyrosine kinase, non-receptor, 2
G08	Hs.479669	NM_003328	TXK	TXK tyrosine kinase
G09	Hs.75516	NM_003331	TYK2	Tyrosine kinase 2
G10	Hs.381282	NM_006293	TYRO3	TYRO3 protein tyrosine kinase
G11	Hs.194148	NM_005433	YES1	V-yes-1 Yamaguchi sarcoma viral oncogene homolog 1
G12	Hs.234569	NM_001079	ZAP70	Zeta-chain (TCR) associated protein kinase 70kDa
H01	Hs.520640	NM_001101	ACTB	Actin, beta
H02	Hs.534255	NM_004048	B2M	Beta-2-microglobulin
H03	Hs.592355	NM_002046	GAPDH	Glyceraldehyde-3-phosphate dehydrogenase
H04	Hs.412707	NM_000194	HPRT1	Hypoxanthine phosphoribosyltransferase 1
H05	Hs.546285	NM_001002	RPLP0	Ribosomal protein, large, P0
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

## Related products

For optimal performance, RT<sup>2</sup> Profiler PCR Arrays should be used together with the RT<sup>2</sup> First Strand Kit for cDNA synthesis and RT<sup>2</sup> SYBR<sup>®</sup> Green qPCR Mastermixes for PCR.

Product	Contents	Cat. no.
RT <sup>2</sup> First Strand Kit (12)	Enzymes and reagents for cDNA synthesis	330401
RT <sup>2</sup> SYBR Green qPCR Mastermix (2)*	For 2 x 96 assays in 96-well plates; suitable for use with real-time cyclers that do not require a reference dye, including: Bio-Rad models CFX96, CFX384, DNA Engine Opticon 2; Bio-Rad/MJ Research Chromo4; Roche LightCycler 480 (96-well and 384-well); all other cyclers	330500
RT <sup>2</sup> SYBR Green ROX™ qPCR Mastermix (2)*	For 2 x 96 assays in 96-well plates; suitable for use with the following real-time cyclers: Applied Biosystems models 5700, 7000, 7300, 7500 [Standard and FAST], 7700, 7900HT 96-well block [Standard and FAST] and 384-well block, StepOnePlus; Eppendorf Mastercycler ep realplex models 2, 2S, 4, 4S; Stratagene models Mx3000P, Mx3005P, Mx4000; Takara TP-800	330520
RT <sup>2</sup> SYBR Green Fluor qPCR Mastermix (2)*	For 2 x 96 assays in 96-well plates; suitable for use with the following real-time cyclers: Bio-Rad models iCycler, iQ5, MyiQ, MyiQ2	330510

\* Larger kit sizes available; please inquire.

RT<sup>2</sup> Profiler PCR Array products are intended for molecular biology applications. These products are not intended for the diagnosis, prevention, or treatment of a disease.

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