

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

## Rat Tight Junctions

Cat. no. 330231 PARN-143ZA

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 Rat Tight Junctions RT<sup>2</sup> Profiler PCR Array profiles the expression of 84 key genes encoding proteins that form impermeable barriers between epithelial cells to regulate polarity, proliferation, and differentiation. Tight junctions seal adjacent epithelial cells together, preventing the passage of most dissolved molecules as well as membrane-bound lipids and proteins between the apical and basolateral surfaces. Tight junctions maintain this separation anywhere epithelial cells form a barrier between the environment and the interior of the mammalian organism or between internal compartments. Some examples include the blood–brain barrier, blood vessels, intestines, nephrons, and skin. Tissue and organ system development requires the correct formation of tight junctions. Normal biological processes, such as immune cell extravasation/diapedesis and intestinal absorption, require the proper assembly, disassembly, and maintenance of tight junctions. Dysregulation of tight junction integrity and function plays a key role in the pathophysiology of diseases such as inflammatory bowel disease and epithelial-to-mesenchymal transition during tumor metastasis. The core components of tight junctions include the claudins, occludin, and other cell adhesion proteins. Their extracellular domains engage in homophilic and/or heterophilic interactions with other cell surface proteins, while their intracellular domains interact with adaptor proteins such as actinins, catenins, and other junction interacting proteins. These adaptors recruit protein kinases that regulate the cytoskeleton via phosphorylation cascades and G-proteins that directly recruit cytoskeleton components to the junction. Profiling the expression of tight junction components may lead to a better understanding of molecular mechanisms behind tight-junction-mediated cell biology. Using real-time PCR, research studies can easily and reliably analyze the expression of a focused panel of genes involved in tight junctions 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°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
<b>A</b>	Actn1	Actn3	Actn4	Amotl1	Arhgef2	Ash1l	Cask	Cdc42	Cdh5	Cdk4	Cldn1	Cldn10
<b>B</b>	Cldn11	Cldn12	Cldn14	Cldn15	Cldn16	Cldn17	Cldn18	Cldn19	Cldn2	Cldn3	Cldn4	Cldn5
<b>C</b>	Cldn6	Cldn7	Cldn8	Cldn9	Crb1	Crb3	Csda	Csnk2a1	Csnk2a2	Csnk2b	Ctnna2	Ctnnb1
<b>D</b>	Cttn	Epb411l	Epb4113	Esam	F11r	Gnai1	Gnai2	Gsk3a	Gsk3b	Hcls1	Icam1	Icam2
<b>E</b>	Ilk	Jam3	Lig1	Lig2	LOC304000	Magi2	Magi3	Mark2	MLB4	Mpdz	Mpp5	Mpp6
<b>F</b>	Ocln	Pard3	Pard6a	Pard6b	Pecam1	Prkci	Prkcz	Plen	Rac1	RGD1309707	Rhoa	Spta1
<b>G</b>	Sptan1	Spfb	Spfbn1	Spfbn2	Spfbn4	Sympk	Tiam1	Tjap1	Tjp1	Tjp2	Tjp3	Vapa
<b>H</b>	Actb	B2m	Hprt1	Ldha	Rplp1	RGDC	RTC	RTC	RTC	PPC	PPC	PPC

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

Position	UniGene	GenBank	Symbol	Description
A01	Rn.6401	NM_031005	Actn1	Actinin, alpha 1
A02	Rn.17592	NM_133424	Actn3	Actinin alpha 3
A03	Rn.15777	NM_031675	Actn4	Actinin alpha 4
A04	Rn.24081	NM_001108126	Amotl1	Angiomotin-like 1
A05	Rn.12255	NM_001012079	Arhgef2	Rho/rac guanine nucleotide exchange factor (GEF) 2
A06	Rn.206058	NM_001107689	Ash1l	Ash1 (absent, small, or homeotic)-like (Drosophila)
A07	Rn.72627	NM_022184	Cask	Calcium/calmodulin-dependent serine protein kinase (MAGUK family)
A08	Rn.60067	NM_171994	Cdc42	Cell division cycle 42 (GTP binding protein)
A09	Rn.164510	NM_001107407	Cdh5	Cadherin 5
A10	Rn.6115	NM_053593	Cdk4	Cyclin-dependent kinase 4
A11	Rn.24293	NM_031699	Cldn1	Claudin 1
A12	Rn.99994	NM_001106058	Cldn10	Claudin 10
B01	Rn.8282	NM_053457	Cldn11	Claudin 11
B02	Rn.18416	NM_001100813	Cldn12	Claudin 12
B03	Rn.11783	NM_001013429	Cldn14	Claudin 14
B04	Rn.202600	NM_001107135	Cldn15	Claudin 15
B05	Rn.43852	NM_131905	Cldn16	Claudin 16
B06	Rn.19782	NM_001107112	Cldn17	Claudin 17
B07	Rn.105888	NM_001014096	Cldn18	Claudin 18
B08	Rn.106342	NM_001008514	Cldn19	Claudin 19
B09	Rn.93431	NM_001106846	Cldn2	Claudin 2
B10	Rn.4513	NM_031700	Cldn3	Claudin 3
B11	Rn.6830	NM_001012022	Cldn4	Claudin 4
B12	Rn.17420	NM_031701	Cldn5	Claudin 5
C01	Rn.18647	NM_001102364	Cldn6	Claudin 6
C02	Rn.32259	NM_031702	Cldn7	Claudin 7
C03	Rn.79297	NM_001037774	Cldn8	Claudin 8
C04	Rn.113196	NM_001011889	Cldn9	Claudin 9
C05	Rn.214142	NM_001107182	Crb1	Crumbs homolog 1 (Drosophila)
C06	Rn.14560	NM_001025661	Crb3	Crumbs homolog 3 (Drosophila)
C07	Rn.3306	NM_031979	Csda	Cold shock domain protein A
C08	Rn.4231	NM_053824	Csnk2a1	Casein kinase 2, alpha 1 polypeptide
C09	Rn.24013	NM_001107409	Csnk2a2	Casein kinase 2, alpha prime polypeptide
C10	Rn.137692	NM_031021	Csnk2b	Casein kinase 2, beta polypeptide
C11	Rn.34514	NM_001106598	Ctnna2	Catenin (cadherin associated protein), alpha 2
C12	Rn.112601	NM_053357	Ctnnb1	Catenin (cadherin associated protein), beta 1
D01	Rn.107869	NM_021868	Cttn	Cortactin
D02	Rn.20361	NM_021681	Epb411l	Erythrocyte membrane protein band 4.1-like 1
D03	Rn.19026	NM_053927	Epb4113	Erythrocyte membrane protein band 4.1-like 3
D04	Rn.17089	NM_001004245	Esam	Endothelial cell adhesion molecule
D05	Rn.107273	NM_053796	F11r	F11 receptor
D06	Rn.11391	NM_013145	Gnai1	Guanine nucleotide binding protein (G protein), alpha inhibiting 1
D07	Rn.3036	NM_031035	Gnai2	Guanine nucleotide binding protein (G protein), alpha inhibiting 2
D08	Rn.36807	NM_017344	Gsk3a	Glycogen synthase kinase 3 alpha
D09	Rn.10426	NM_032080	Gsk3b	Glycogen synthase kinase 3 beta

Position	UniGene	GenBank	Symbol	Description
D10	Rn.15578	NM_001011898	Hcls1	Hematopoietic cell specific Lyn substrate 1
D11	Rn.12	NM_012967	Icam1	Intercellular adhesion molecule 1
D12	Rn.162206	NM_001007725	Icam2	Intercellular adhesion molecule 2
E01	Rn.95042	NM_133409	Ilk	Integrin-linked kinase
E02	Rn.104684	NM_001004269	Jam3	Junctional adhesion molecule 3
E03	Rn.122316	NM_152844	Llg1	Lethal giant larvae homolog 1 (Drosophila)
E04	Rn.198904	NM_001127549	Llg2	Lethal giant larvae homolog 2 (Drosophila)
E05	Rn.61796	NM_001006990	LOC304000	Cell adhesion molecule JCAM
E06	Rn.205058	NM_053621	Magi2	Membrane associated guanylate kinase, WW and PDZ domain containing 2
E07	Rn.162623	NM_139084	Magi3	Membrane associated guanylate kinase, WW and PDZ domain containing 3
E08	Rn.42926	NM_021699	Mark2	MAP/microtubule affinity-regulating kinase 2
E09	Rn.58	NM_013217	Mlt4	Myeloid/lymphoid or mixed-lineage leukemia (trithorax homolog, Drosophila); translocated to, 4
E10	Rn.6684	NM_019196	Mpdz	Multiple PDZ domain protein
E11	Rn.8181	NM_001108034	Mpp5	Membrane protein, palmitoylated 5 (MAGUK p55 subfamily member 5)
E12	Rn.49269	NM_001134982	Mpp6	Membrane protein, palmitoylated 6 (MAGUK p55 subfamily member 6)
F01	Rn.31429	NM_031329	Ocln	Occludin
F02	Rn.31803	NM_031235	Pard3	Par-3 (partitioning defective 3) homolog (C. elegans)
F03	Rn.16053	NM_001003653	Pard6a	Par-6 (partitioning defective 6,) homolog alpha (C. elegans)
F04	Rn.21123	NM_001108609	Pard6b	Par-6 (partitioning defective 6) homolog beta (C. elegans)
F05	Rn.1878	NM_031591	Pecam1	Platelet/endothelial cell adhesion molecule 1
F06	Rn.1388	NM_032059	Prkci	Protein kinase C, iota
F07	Rn.1109	NM_022507	Prkcz	Protein kinase C, zeta
F08	Rn.22158	NM_031606	Pten	Phosphatase and tensin homolog
F09	Rn.29157	NM_134366	Rac1	Ras-related C3 botulinum toxin substrate 1
F10	Rn.13503	NM_001109598	RGD130970 7	Similar to RIKEN cDNA 4930431E10
F11	Rn.107401	NM_057132	Rhoa	Ras homolog gene family, member A
F12	Rn.44157	NM_001011908	Spta1	Spectrin, alpha, erythrocytic 1 (elliptocytosis 2)
G01	Rn.5812	NM_171983	Sptan1	Spectrin, alpha, non-erythrocytic 1
G02	Rn.63940	NM_212522	Sptlb	Spectrin, beta, erythrocytic
G03	Rn.93208	NM_001013130	Sptbn1	Spectrin, beta, non-erythrocytic 1
G04	Rn.20389	NM_019167	Sptbn2	Spectrin, beta, non-erythrocytic 2
G05	Rn.63104	XM_218364	Sptbn4	Spectrin, beta, non-erythrocytic 4
G06	Rn.44851	NM_001100830	Sympk	Symplekin
G07	Rn.204561	NM_001100558	Tiam1	T-cell lymphoma invasion and metastasis 1
G08	Rn.18395	NM_001108203	Tjap1	Tight junction associated protein 1
G09	Rn.101871	NM_001106266	Tjp1	Tight junction protein 1
G10	Rn.10965	NM_053773	Tjp2	Tight junction protein 2
G11	Rn.145098	NM_001108073	Tjp3	Tight junction protein 3
G12	Rn.162275	NM_031631	Vapa	VAMP (vesicle-associated membrane protein)-associated protein A
H01	Rn.94978	NM_031144	Actb	Actin, beta
H02	Rn.1868	NM_012512	B2m	Beta-2 microglobulin
H03	Rn.47	NM_012583	Hprt1	Hypoxanthine phosphoribosyltransferase 1
H04	Rn.107896	NM_017025	Ldha	Lactate dehydrogenase A
H05	Rn.973	NM_001007604	Rplp1	Ribosomal protein, large, P1
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

## 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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