# RT² Profiler PCR Array (96-Well Format and 384-Well [4 x 96] Format)

# Human Cystic Fibrosis

### Cat. no. 330231 PAHS-167ZA

### For pathway expression analysis

| Format | For use with the following real-time cyclers |
|---|---|
| RT² 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 |
| RT² Profiler PCR Array, Format C | Applied Biosystems models 7500 (Fast block), 7900HT (Fast block), StepOnePlus™, ViiA 7 (Fast block) |
| RT² Profiler PCR Array, Format D | Bio-Rad CFX96™; Bio-Rad/MJ Research models DNA Engine Opticon®, DNA Engine Opticon 2; Stratagene Mx4000® |
| RT² Profiler PCR Array, Format E | Applied Biosystems models 7900HT (384-well block), ViiA 7 (384-well block); Bio-Rad CFX384™ |
| RT² Profiler PCR Array, Format F | Roche® LightCycler® 480 (96-well block) |
| RT² Profiler PCR Array, Format G | Roche LightCycler 480 (384-well block) |
| RT² Profiler PCR Array, Format H | Fluidigm® BioMark™ |

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## Description

The Human Cystic Fibrosis RT² Profiler PCR Array profiles the expression of 84 key genes that are either differentially expressed during cystic fibrosis (CF) or that interact with the cystic fibrosis transmembrane conductance regulator (CFTR). CF is an autosomal recessive disease caused by genetic mutations in CFTR, a chloride channel expressed in epithelial cells. CFTR mutations cause dysregulation of the digestive system and respiratory system. Current medical therapies successfully treat CF patients' digestive system ailments. Therefore, most research focuses on CF lung pathology, which progressively deteriorates during the life of the patient. Proactive medical treatments have extended the average lifespan of CF patients to 40 years. CF patients present with varying degrees of thickened bronchial mucus and neutrophil activation, although the exact molecular mechanisms causing these phenotypes are unknown. These patients also suffer from chronic lung inflammation, which can lead to fibrosis and reduced lung function. This inflammation may be due to the multiple infections CF patients suffer from, although some studies suggest that the inflammation occurs even in the absence of lung infection. The varying CFTR mutations have different functional consequences, such as reduced activity or protein misfolding. However, the full spectrum of CF patient phenotypes is thought to occur via additional modifying genes that may vary from patient to patient and play a part in the molecular mechanisms of CFTR function. The modifying genes represented by this array include ion transporters, genes involved in the immune or inflammatory response, and genes whose exact relationship to CFTR function is unknown. Some of these genes were identified in microarray gene expression studies that compared CF patients with a known common CFTR mutation that have either a mild or a severe CF phenotype. A set of controls present on each array enables data analysis using the ΔΔCT method of relative quantification, assessment of reverse transcription performance, genomic DNA contamination, and PCR performance. Using real-time PCR, research studies can easily and reliably analyze the expression of a focused panel of genes involved in CFTR molecular mechanisms with this array.

For further details, consult the *RT² Profiler PCR Array Handbook*.

## Shipping and storage

RT² 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. RT² 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 RT² Profiler PCR Array format for your real-time cycler (see table above).

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

## Array layout (96-well)

For 384-well 4 x 96 PCR arrays, genes are present in a staggered format. Refer to the *RT² Profiler PCR Array Handbook* for layout.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | ACE | ADIPOR2 | ADK | ADRB2 | AHSA1 | ALOX12B | CALR | CANX | CCL2 | CFTR | CLU | CXCL1 |
| B | CXCL2 | CXCR2 | DEFB1 | DNAJA1 | DNAJC5 | DUSP1 | EDN1 | EDNRA | EPSTI1 | EZR | FAS | GCLC |
| C | GOPC | GSTM1 | HSP90AA1 | HSPA1A | HSPA4 | HSPA8 | HSPH1 | ICAM1 | IFRD1 | IGFBP5 | IL10 | IL1B |
| D | IL6 | IL7R | IL8 | ITGA2 | ITGB2 | KCNE1 | KIT | LCN2 | MAPK1 | MBL2 | MET | MSRA |
| E | NFKB1 | NFKBIA | NME1 | NOS3 | NR4A2 | PDZK1 | PLA2G5 | PPP2R4 | PRKAA1 | PRKAA2 | PRKCE | PRTN3 |
| F | PTGS2 | S100A8 | SCNN1B | SCNN1G | SERPINA1 | SFTPB | SLC26A3 | SLC9A3R1 | SLC9A3R2 | SLPI | SNAP23 | STX1A |
| G | STX8 | TCF7L2 | TGFB1 | TJP1 | TLR2 | TLR4 | TLR5 | TNF | TNFRSF11A | TNFRSF1A | TNFSF10 | VCP |
| H | ACTB | B2M | GAPDH | HPRT1 | RPLP0 | HGDC | RTC | RTC | RTC | PPC | PPC | PPC |

## Gene table: RT² Profiler PCR Array

| Position | UniGene | GenBank | Symbol | Description |
|---|---|---|---|---|
| A01 | Hs.654434 | NM_000789 | ACE | Angiotensin I converting enzyme (peptidyl-dipeptidase A) 1 |
| A02 | Hs.371642 | NM_024551 | ADIPOR2 | Adiponectin receptor 2 |
| A03 | Hs.656586 | NM_001123 | ADK | Adenosine kinase |
| A04 | Hs.591251 | NM_000024 | ADRB2 | Adrenergic, beta-2-, receptor, surface |
| A05 | Hs.204041 | NM_012111 | AHSA1 | AHA1, activator of heat shock 90kDa protein ATPase homolog 1 (yeast) |
| A06 | Hs.136574 | NM_001139 | ALOX12B | Arachidonate 12-lipoxygenase, 12R type |
| A07 | Hs.515162 | NM_004343 | CALR | Calreticulin |
| A08 | Hs.699155 | NM_001746 | CANX | Calnexin |
| A09 | Hs.303649 | NM_002982 | CCL2 | Chemokine (C-C motif) ligand 2 |
| A10 | Hs.489786 | NM_000492 | CFTR | Cystic fibrosis transmembrane conductance regulator (ATP-binding cassette sub-family C, member 7) |
| A11 | Hs.436657 | NM_001831 | CLU | Clusterin |
| A12 | Hs.789 | NM_001511 | CXCL1 | Chemokine (C-X-C motif) ligand 1 (melanoma growth stimulating activity, alpha) |
| B01 | Hs.590921 | NM_002089 | CXCL2 | Chemokine (C-X-C motif) ligand 2 |
| B02 | Hs.846 | NM_001557 | CXCR2 | Chemokine (C-X-C motif) receptor 2 |
| B03 | Hs.32949 | NM_005218 | DEFB1 | Defensin, beta 1 |
| B04 | Hs.445203 | NM_001539 | DNAJA1 | DnaJ (Hsp40) homolog, subfamily A, member 1 |
| B05 | Hs.164419 | NM_025219 | DNAJC5 | DnaJ (Hsp40) homolog, subfamily C, member 5 |
| B06 | Hs.171695 | NM_004417 | DUSP1 | Dual specificity phosphatase 1 |
| B07 | Hs.511899 | NM_001955 | EDN1 | Endothelin 1 |
| B08 | Hs.183713 | NM_001957 | EDNRA | Endothelin receptor type A |
| B09 | Hs.546467 | NM_033255 | EPSTI1 | Epithelial stromal interaction 1 (breast) |
| B10 | Hs.487027 | NM_003379 | EZR | Ezrin |
| B11 | Hs.244139 | NM_000043 | FAS | Fas (TNF receptor superfamily, member 6) |
| B12 | Hs.654465 | NM_001498 | GCLC | Glutamate-cysteine ligase, catalytic subunit |
| C01 | Hs.191539 | NM_020399 | GOPC | Golgi-associated PDZ and coiled-coil motif containing |
| C02 | Hs.301961 | NM_000561 | GSTM1 | Glutathione S-transferase mu 1 |
| C03 | Hs.525600 | NM_001017963 | HSP90AA1 | Heat shock protein 90kDa alpha (cytosolic), class A member 1 |
| C04 | Hs.728810 | NM_005345 | HSPA1A | Heat shock 70kDa protein 1A |
| C05 | Hs.90093 | NM_002154 | HSPA4 | Heat shock 70kDa protein 4 |
| C06 | Hs.702021 | NM_006597 | HSPA8 | Heat shock 70kDa protein 8 |
| C07 | Hs.36927 | NM_006644 | HSPH1 | Heat shock 105kDa/110kDa protein 1 |
| C08 | Hs.643447 | NM_000201 | ICAM1 | Intercellular adhesion molecule 1 |
| C09 | Hs.7879 | NM_001550 | IFRD1 | Interferon-related developmental regulator 1 |
| C10 | Hs.607212 | NM_000599 | IGFBP5 | Insulin-like growth factor binding protein 5 |
| C11 | Hs.193717 | NM_000572 | IL10 | Interleukin 10 |
| C12 | Hs.126256 | NM_000576 | IL1B | Interleukin 1, beta |
| D01 | Hs.654458 | NM_000600 | IL6 | Interleukin 6 (interferon, beta 2) |
| D02 | Hs.591742 | NM_002185 | IL7R | Interleukin 7 receptor |
| D03 | Hs.624 | NM_000584 | IL8 | Interleukin 8 |
| D04 | Hs.482077 | NM_002203 | ITGA2 | Integrin, alpha 2 (CD49B, alpha 2 subunit of VLA-2 receptor) |
| D05 | Hs.375957 | NM_000211 | ITGB2 | Integrin, beta 2 (complement component 3 receptor 3 and 4 subunit) |
| D06 | Hs.121495 | NM_000219 | KCNE1 | Potassium voltage-gated channel, Isk-related family, member 1 |
| D07 | Hs.479754 | NM_000222 | KIT | V-kit Hardy-Zuckerman 4 feline sarcoma viral oncogene homolog |
| D08 | Hs.204238 | NM_005564 | LCN2 | Lipocalin 2 |

| Position | UniGene | GenBank | Symbol | Description |
|---|---|---|---|---|
| D09 | Hs.431850 | NM_002745 | MAPK1 | Mitogen-activated protein kinase 1 |
| D10 | Hs.499674 | NM_000242 | MBL2 | Mannose-binding lectin (protein C) 2, soluble |
| D11 | Hs.132966 | NM_000245 | MET | Met proto-oncogene (hepatocyte growth factor receptor) |
| D12 | Hs.490981 | NM_012331 | MSRA | Methionine sulfoxide reductase A |
| E01 | Hs.654408 | NM_003998 | NFKB1 | Nuclear factor of kappa light polypeptide gene enhancer in B-cells 1 |
| E02 | Hs.81328 | NM_020529 | NFKBIA | Nuclear factor of kappa light polypeptide gene enhancer in B-cells inhibitor, alpha |
| E03 | Hs.118638 | NM_000269 | NME1 | Non-metastatic cells 1, protein (NM23A) expressed in |
| E04 | Hs.707978 | NM_000603 | NOS3 | Nitric oxide synthase 3 (endothelial cell) |
| E05 | Hs.563344 | NM_006186 | NR4A2 | Nuclear receptor subfamily 4, group A, member 2 |
| E06 | Hs.444751 | NM_002614 | PDZK1 | PDZ domain containing 1 |
| E07 | Hs.319438 | NM_000929 | PLA2G5 | Phospholipase A2, group V |
| E08 | Hs.400740 | NM_021131 | PPP2R4 | Protein phosphatase 2A activator, regulatory subunit 4 |
| E09 | Hs.43322 | NM_006251 | PRKAA1 | Protein kinase, AMP-activated, alpha 1 catalytic subunit |
| E10 | Hs.437039 | NM_006252 | PRKAA2 | Protein kinase, AMP-activated, alpha 2 catalytic subunit |
| E11 | Hs.580351 | NM_005400 | PRKCE | Protein kinase C, epsilon |
| E12 | Hs.928 | NM_002777 | PRTN3 | Proteinase 3 |
| F01 | Hs.196384 | NM_000963 | PTGS2 | Prostaglandin-endoperoxide synthase 2 (prostaglandin G/H synthase and cyclooxygenase) |
| F02 | Hs.416073 | NM_002964 | S100A8 | S100 calcium binding protein A8 |
| F03 | Hs.414614 | NM_000336 | SCNN1B | Sodium channel, nonvoltage-gated 1, beta |
| F04 | Hs.371727 | NM_001039 | SCNN1G | Sodium channel, nonvoltage-gated 1, gamma |
| F05 | Hs.525557 | NM_000295 | SERPINA1 | Serpin peptidase inhibitor, clade A (alpha-1 antiproteinase, antitrypsin), member 1 |
| F06 | Hs.512690 | NM_000542 | SFTPB | Surfactant protein B |
| F07 | Hs.1650 | NM_000111 | SLC26A3 | Solute carrier family 26, member 3 |
| F08 | Hs.728760 | NM_004252 | SLC9A3R1 | Solute carrier family 9 (sodium/hydrogen exchanger), member 3 regulator 1 |
| F09 | Hs.440896 | NM_004785 | SLC9A3R2 | Solute carrier family 9 (sodium/hydrogen exchanger), member 3 regulator 2 |
| F10 | Hs.517070 | NM_003064 | SLPI | Secretory leukocyte peptidase inhibitor |
| F11 | Hs.511149 | NM_003825 | SNAP23 | Synaptosomal-associated protein, 23kDa |
| F12 | Hs.647024 | NM_004603 | STX1A | Syntaxin 1A (brain) |
| G01 | Hs.431109 | NM_004853 | STX8 | Syntaxin 8 |
| G02 | Hs.593995 | NM_030756 | TCF7L2 | Transcription factor 7-like 2 (T-cell specific, HMG-box) |
| G03 | Hs.645227 | NM_000660 | TGFB1 | Transforming growth factor, beta 1 |
| G04 | Hs.510833 | NM_175610 | TJP1 | Tight junction protein 1 (zona occludens 1) |
| G05 | Hs.519033 | NM_003264 | TLR2 | Toll-like receptor 2 |
| G06 | Hs.174312 | NM_138554 | TLR4 | Toll-like receptor 4 |
| G07 | Hs.604542 | NM_003268 | TLR5 | Toll-like receptor 5 |
| G08 | Hs.241570 | NM_000594 | TNF | Tumor necrosis factor |
| G09 | Hs.204044 | NM_003839 | TNFRSF11A | Tumor necrosis factor receptor superfamily, member 11a, NFKB activator |
| G10 | Hs.279594 | NM_001065 | TNFRSF1A | Tumor necrosis factor receptor superfamily, member 1A |
| G11 | Hs.478275 | NM_003810 | TNFSF10 | Tumor necrosis factor (ligand) superfamily, member 10 |
| G12 | Hs.529782 | NM_007126 | VCP | Valosin containing protein |
| 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, RT² Profiler PCR Arrays should be used together with the RT² First Strand Kit for cDNA synthesis and RT2 SYBR® Green qPCR Mastermixes for PCR.

| Product | Contents | Cat. no. |
|---|---|---|
| RT² First Strand Kit (12) | Enzymes and reagents for cDNA synthesis | 330401 |
| RT² 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 |
| RT² 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 |
| RT² 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.

RT² Profiler PCR Array products are intended for molecular biology applications. These products are not intended for the diagnosis, prevention, or treatment of a disease.

For up-to-date licensing information and product-specific disclaimers, see the respective QIAGEN kit handbook or user manual. QIAGEN kit handbooks and user manuals are available at www.qiagen.com or can be requested from QIAGEN Technical Services or your local distributor.



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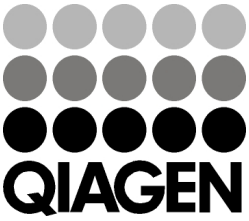


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