

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

## Rat Skeletal Muscle: Myogenesis & Myopathy

Cat. no. 330231 PARN-099ZA

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™                                                                                                                                                                                                                                                                    |



Sample & Assay Technologies

## Description

The Rat Skeletal Muscle Development & Disease RT<sup>2</sup> Profiler PCR Array profiles the expression of 84 key genes involved in skeletal muscle differentiation, function and disease-related processes. Skeletal muscle's role in voluntary movement contributes greatly to energy metabolism and its regulation via glucose uptake and storage by insulin. Complications from aging and metabolic diseases like diabetes and metabolic syndrome contribute to muscle wasting (atrophy). However, recent research hypothesizes that metabolic defects in skeletal muscle contribute to the etiology of diabetes and metabolic syndrome, suggesting that skeletal muscle has a larger role in these disease states than initially expected. Large heterogeneous protein complexes including titin or dystrophin facilitate muscle contraction by connecting the skeletal muscle cytoskeleton to the extracellular matrix. Muscular dystrophies arise from inherited mutations in the genes encoding components of these complexes, and gene expression changes disrupting their normal contractile function dysregulate signaling pathways that control muscle growth. Potential therapies for muscle wasting include generation of new muscle cells (myogenesis) or increasing the mass of current muscle cells (hypertrophy). Thus, muscle-specific biological and pathophysiological processes are interrelated and cannot be studied in isolation. This array includes genes important for basic skeletal muscle function, development and growth, as well as genes related to the disease processes of metabolic syndrome and muscle wasting. Using real-time PCR, you can easily and reliably analyze the expression of a focused panel of genes involved in skeletal muscle development and disease 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> | Acta1   | Actn3 | Acvr2b | Adipoq | Adrb2    | Agrn     | Akt1   | Akt2   | Atp2a1 | Bcl2   | Bmp4   | Camk2g |
| <b>B</b> | Capn2   | Capn3 | Casp3  | Cast   | Cav1     | Cav3     | Cryab  | Cs     | Ctnnb1 | Dag1   | Des    | Dmd    |
| <b>C</b> | Dmpk    | Dysf  | Emd    | Fbxo32 | Fgf2     | Foxo3    | Hdac5  | Hk2    | Igf1   | Igf2   | Igfbp3 | Igfbp5 |
| <b>D</b> | Ikbbk   | Il1b  | Il6    | Lep    | Lmna     | Mapk1    | Mapk14 | Mapk3  | Mapk8  | Mb     | Mbnl1  | Mef2c  |
| <b>E</b> | Mmp9    | Mstn  | Musk   | Myf5   | Myf6     | Myh1     | Myh2   | Myod1  | Myog   | Myot   | Neb    | Nfkb1  |
| <b>F</b> | Nos2    | Pax3  | Pdk4   | Pparg  | Ppargc1a | Ppargc1b | Ppp3ca | Prkaa1 | Prkab2 | Prkag1 | Prkag3 | Rhoa   |
| <b>G</b> | Rps6kb1 | Sgca  | Slc2a4 | Tgfb1  | Tnf      | Tnnc1    | Tnni2  | Tnnt1  | Tnnt3  | Trim63 | Tln    | Utrn   |
| <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.82732  | NM_019212    | Acta1  | Actin, alpha 1, skeletal muscle                                            |
| A02      | Rn.17592  | NM_133424    | Actn3  | Actinin alpha 3                                                            |
| A03      | Rn.24240  | NM_031554    | Acvr2b | Activin A receptor, type IIB                                               |
| A04      | Rn.24299  | NM_144744    | Adipoq | Adiponectin, C1Q and collagen domain containing                            |
| A05      | Rn.10206  | NM_012492    | Adrb2  | Adrenergic, beta-2-, receptor, surface                                     |
| A06      | Rn.2163   | NM_175754    | Agrn   | Agrin                                                                      |
| A07      | Rn.11422  | NM_033230    | Akt1   | V-akt murine thymoma viral oncogene homolog 1                              |
| A08      | Rn.87066  | NM_017093    | Akt2   | V-akt murine thymoma viral oncogene homolog 2                              |
| A09      | Rn.218029 | NM_058213    | Atp2a1 | ATPase, Ca++ transporting, cardiac muscle, fast twitch 1                   |
| A10      | Rn.9996   | NM_016993    | Bcl2   | B-cell CLL/lymphoma 2                                                      |
| A11      | Rn.10318  | NM_012827    | Bmp4   | Bone morphogenetic protein 4                                               |
| A12      | Rn.10961  | NM_133605    | Camk2g | Calcium/calmodulin-dependent protein kinase II gamma                       |
| B01      | Rn.6822   | NM_017116    | Capn2  | Calpain 2                                                                  |
| B02      | Rn.9726   | NM_017117    | Capn3  | Calpain 3                                                                  |
| B03      | Rn.10562  | NM_012922    | Casp3  | Caspase 3                                                                  |
| B04      | Rn.17481  | NM_053295    | Cast   | Calpastatin                                                                |
| B05      | Rn.22518  | NM_031556    | Cav1   | Caveolin 1, caveolae protein                                               |
| B06      | Rn.98191  | NM_019155    | Cav3   | Caveolin 3                                                                 |
| B07      | Rn.98208  | NM_012935    | Cryab  | Crystallin, alpha B                                                        |
| B08      | Rn.66581  | NM_130755    | Cs     | Citrate synthase                                                           |
| B09      | Rn.112601 | NM_053357    | Ctnnb1 | Catenin (cadherin associated protein), beta 1                              |
| B10      | Rn.36260  | XM_343483    | Dag1   | Dystroglycan 1 (dystrophin-associated glycoprotein 1)                      |
| B11      | Rn.39196  | NM_022531    | Des    | Desmin                                                                     |
| B12      | Rn.10307  | NM_012698    | Dmd    | Dystrophin                                                                 |
| C01      | Rn.130535 | NM_001107484 | Dmpk   | Dystrophia myotonica-protein kinase                                        |
| C02      | Rn.22869  | NM_001107869 | Dysf   | Dysferlin                                                                  |
| C03      | Rn.10968  | NM_012948    | Emd    | Emerin                                                                     |
| C04      | Rn.72619  | NM_133521    | Fbxo32 | F-box protein 32                                                           |
| C05      | Rn.31808  | NM_019305    | Fgf2   | Fibroblast growth factor 2                                                 |
| C06      | Rn.24593  | NM_001106395 | Foxo3  | Forkhead box O3                                                            |
| C07      | Rn.79863  | NM_053450    | Hdac5  | Histone deacetylase 5                                                      |
| C08      | Rn.91375  | NM_012735    | Hk2    | Hexokinase 2                                                               |
| C09      | Rn.6282   | NM_178866    | Igf1   | Insulin-like growth factor 1                                               |
| C10      | Rn.118681 | NM_031511    | Igf2   | Insulin-like growth factor 2                                               |
| C11      | Rn.26369  | NM_012588    | Igfbp3 | Insulin-like growth factor binding protein 3                               |
| C12      | Rn.1593   | NM_012817    | Igfbp5 | Insulin-like growth factor binding protein 5                               |
| D01      | Rn.19222  | NM_053355    | Ikbbk  | Inhibitor of kappa light polypeptide gene enhancer in B-cells, kinase beta |
| D02      | Rn.9869   | NM_031512    | Il1b   | Interleukin 1 beta                                                         |
| D03      | Rn.9873   | NM_012589    | Il6    | Interleukin 6                                                              |
| D04      | Rn.44444  | NM_013076    | Lep    | Leptin                                                                     |
| D05      | Rn.44161  | NM_001002016 | Lmna   | Lamin A                                                                    |
| D06      | Rn.34914  | NM_053842    | Mapk1  | Mitogen activated protein kinase 1                                         |
| D07      | Rn.88085  | NM_031020    | Mapk14 | Mitogen activated protein kinase 14                                        |
| D08      | Rn.2592   | NM_017347    | Mapk3  | Mitogen activated protein kinase 3                                         |
| D09      | Rn.4090   | XM_341399    | Mapk8  | Mitogen-activated protein kinase 8                                         |

| Position | UniGene   | GenBank      | Symbol   | Description                                                           |
|----------|-----------|--------------|----------|-----------------------------------------------------------------------|
| D10      | Rn.40511  | NM_021588    | Mb       | Myoglobin                                                             |
| D11      | Rn.205513 | XM_001062557 | Mbnl1    | Muscleblind-like 1 (Drosophila)                                       |
| D12      | Rn.2477   | XM_574821    | Mef2c    | Myocyte enhancer factor 2C                                            |
| E01      | Rn.10209  | NM_031055    | Mmp9     | Matrix metalloproteinase 9                                            |
| E02      | Rn.44460  | NM_019151    | Mstn     | Myostatin                                                             |
| E03      | Rn.10210  | NM_031061    | Musk     | Muscle, skeletal, receptor tyrosine kinase                            |
| E04      | Rn.218675 | NM_001106783 | Myf5     | Myogenic factor 5                                                     |
| E05      | Rn.2236   | NM_013172    | Myf6     | Myogenic factor 6                                                     |
| E06      | Rn.9692   | NM_001135158 | Myh1     | Myosin, heavy polypeptide 1, skeletal muscle, adult                   |
| E07      | Rn.10092  | NM_001135157 | Myh2     | Myosin, heavy chain 2, skeletal muscle, adult                         |
| E08      | Rn.9493   | NM_176079    | Myod1    | Myogenic differentiation 1                                            |
| E09      | Rn.9465   | NM_017115    | Myog     | Myogenin                                                              |
| E10      | Rn.163370 | NM_001106148 | Myot     | Myotilin                                                              |
| E11      | Rn.134031 | XM_229925    | Neb      | Nebulin                                                               |
| E12      | Rn.2411   | XM_342346    | Nfkb1    | Nuclear factor of kappa light polypeptide gene enhancer in B-cells 1  |
| F01      | Rn.10400  | NM_012611    | Nos2     | Nitric oxide synthase 2, inducible                                    |
| F02      | Rn.214198 | NM_053710    | Pax3     | Paired box 3                                                          |
| F03      | Rn.30070  | NM_053551    | Pdk4     | Pyruvate dehydrogenase kinase, isozyme 4                              |
| F04      | Rn.23443  | NM_013124    | Pparg    | Peroxisome proliferator-activated receptor gamma                      |
| F05      | Rn.19172  | NM_031347    | Ppargc1a | Peroxisome proliferator-activated receptor gamma, coactivator 1 alpha |
| F06      | Rn.163382 | NM_176075    | Ppargc1b | Peroxisome proliferator-activated receptor gamma, coactivator 1 beta  |
| F07      | Rn.6866   | NM_017041    | Ppp3ca   | Protein phosphatase 3, catalytic subunit, alpha isoform               |
| F08      | Rn.87789  | NM_019142    | Prkaa1   | Protein kinase, AMP-activated, alpha 1 catalytic subunit              |
| F09      | Rn.207202 | NM_022627    | Prkab2   | Protein kinase, AMP-activated, beta 2 non-catalytic subunit           |
| F10      | Rn.11089  | NM_013010    | Prkag1   | Protein kinase, AMP-activated, gamma 1 non-catalytic subunit          |
| F11      | Rn.149163 | NM_001106921 | Prkag3   | Protein kinase, AMP-activated, gamma 3 non-catalytic subunit          |
| F12      | Rn.107401 | NM_057132    | Rhoa     | Ras homolog gene family, member A                                     |
| G01      | Rn.4042   | NM_031985    | Rps6kb1  | Ribosomal protein S6 kinase, polypeptide 1                            |
| G02      | Rn.136653 | NM_001107039 | Sgca     | Sarcoglycan, alpha (dystrophin-associated glycoprotein)               |
| G03      | Rn.1314   | NM_012751    | Slc2a4   | Solute carrier family 2 (facilitated glucose transporter), member 4   |
| G04      | Rn.40136  | NM_021578    | Tgfb1    | Transforming growth factor, beta 1                                    |
| G05      | Rn.2275   | NM_012675    | Tnf      | Tumor necrosis factor (TNF superfamily, member 2)                     |
| G06      | Rn.15460  | NM_001034105 | Tnnc1    | Troponin C type 1 (slow)                                              |
| G07      | Rn.9924   | NM_017185    | Tnni2    | Troponin I type 2 (skeletal, fast)                                    |
| G08      | Rn.13846  | NM_134388    | Tnnt1    | Troponin T type 1 (skeletal, slow)                                    |
| G09      | Rn.15488  | NM_031532    | Tnnt3    | Troponin T type 3 (skeletal, fast)                                    |
| G10      | Rn.40636  | NM_080903    | Trim63   | Tripartite motif-containing 63                                        |
| G11      | Rn.199561 | XM_001065955 | Tin      | Titin                                                                 |
| G12      | Rn.9901   | NM_013070    | Utrn     | Utrophin                                                              |
| 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 <sup>™</sup> 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.

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](http://www.qiagen.com) or can be requested from QIAGEN Technical Services or your local distributor.

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