# QuantiNova® LNA® PCR Focus Panels (Rotor-Gene® Format)

# Mouse mTOR Signaling

## Cat. no. 249950 SBMM-098ZR

## For study focus gene expression analysis

### Shipping and storage

QuantiNova LNA PCR Focus Panels are shipped at ambient temperature. Immediately upon receipt, they should be stored at 2–8°C for short term storage or at –30°C to –15°C for long time storage. Under these conditions, all components are stable for at least 12 months.

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

For optimal performance, QuantiNova LNA PCR Focus Panels should be used together with the QuantiNova Reverse Transcription Kit for cDNA synthesis and the QuantiNova SYBR® Green PCR Kit (Mastermix) for PCR.

### Panel layout (Rotor-Gene): QuantiNova LNA PCR Focus Panel

The 96 real-time assays in the Rotor-Gene format are located in wells 1–96 of the Rotor-Disc® (plate A1–A12=Rotor-Disc 1–12, plate B1–B12=Rotor-Disc 13–24, etc.). To maintain data analysis compatibility, wells 97–100 do not contain real-time assays but will contain master mix to account for weight balance. Refer to the QuantiNova LNA PCR System Handbook at **www.qiagen.com** for further details.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | Akt1 | Akt1s1 | Akt2 | Akt3 | Cab39 | Cab39l | Cdc42 | Chuk | Ddit4 | Ddit4l | Deptor | Eif4b |
| B | Eif4e | Eif4ebp1 | Eif4ebp2 | Fkbp1a | Fkbp8 | Gsk3b | Hif1a | Hras | Hspa4 | Igf1 | Igfbp3 | Ikbkb |
| C | Ilk | Ins2 | Insr | Irs1 | Mapk1 | Mapk3 | Mapkap1 | Mlst8 | Mtor | Myo1c | Pdpk1 | Pik3c3 |
| D | Pik3ca | Pik3cb | Pik3cd | Pik3cg | Pld1 | Pld2 | Ppp2ca | Ppp2r2b | Ptpa | Prkaa1 | Prkaa2 | Prkab1 |
| E | Prkab2 | Prkag1 | Prkag2 | Prkag3 | Prkca | Prkcb | Prkcg | Prkce | Pten | Rheb | Rhoa | Rictor |
| F | Rps6 | Rps6ka1 | Rps6ka2 | Rps6ka5 | Rps6kb1 | Rps6kb2 | Rptor | Rraga | Rragb | Rragc | Rragd | Sgk1 |
| G | Stk11 | Stradb | Telo2 | Trp53 | Tsc1 | Tsc2 | Ulk1 | Ulk2 | Vegfa | Vegfb | Vegfc | Ywhaq |
| H | Actb | B2m | Gapdh | Gusb | Hsp90ab1 | MGDC | QIC | QIC | QIC | PPC | PPC | PPC |

# Gene table: QuantiNova LNA PCR Focus Panel

| Position | Assay | Name | Symbol | Ensembl ID | Description |
|---|---|---|---|---|---|
| A01 | SBM1020452 | ENSMUST00000144550.8 | Akt1 | ENSMUSG00000001729 | thymoma viral proto-oncogene 1 Source MGI Symbol Acc MGI 87986 |
| A02 | SBM0871889 | ENSMUST00000152091.7 | Akt1s1 | ENSMUSG00000011096 | AKT1 substrate 1 (proline-rich) Source MGI Symbol Acc MGI 1914855 |
| A03 | SBM0882867 | ENSMUST00000051356.11 | Akt2 | ENSMUSG00000004056 | thymoma viral proto-oncogene 2 Source MGI Symbol Acc MGI 104874 |
| A04 | SBM0683049 | ENSMUST00000019843.14 | Akt3 | ENSMUSG00000019699 | thymoma viral proto-oncogene 3 Source MGI Symbol Acc MGI 1345147 |
| A05 | SBM0874517 | ENSMUST00000097666.3 | Cab39 | ENSMUSG00000036707 | calcium binding protein 39 Source MGI Symbol Acc MGI 107438 |
| A06 | SBM0835882 | ENSMUST00000225595.1 | Cab39l | ENSMUSG00000021981 | calcium binding protein 39-like Source MGI Symbol Acc MGI 1914081 |
| A07 | SBM1071094 | ENSMUST00000030417.9 | Cdc42 | ENSMUSG00000006699 | cell division cycle 42 Source MGI Symbol Acc MGI 106211 |
| A08 | SBM1034080 | ENSMUST00000026217.10 | Chuk | ENSMUSG00000025199 | conserved helix-loop-helix ubiquitous kinase Source MGI Symbol Acc MGI 99484 |
| A09 | SBM1018894 | ENSMUST00000020308.4 | Ddit4 | ENSMUSG00000020108 | DNA-damage-inducible transcript 4 Source MGI Symbol Acc MGI 1921997 |
| A10 | SBM1078706 | ENSMUST00000165845.1 | Ddit4l | ENSMUSG00000046818 | DNA-damage-inducible transcript 4-like Source MGI Symbol Acc MGI 1920534 |
| A11 | SBM0948318 | ENSMUST00000096433.9 | Deptor | ENSMUSG00000022419 | DEP domain containing MTOR-interacting protein Source MGI Symbol Acc MGI 2146322 |
| A12 | SBM0850376 | ENSMUST00000229400.1 | Eif4b | ENSMUSG00000058655 | eukaryotic translation initiation factor 4B Source MGI Symbol Acc MGI 95304 |
| B01 | SBM0964655 | ENSMUST00000198252.1 | Eif4e | ENSMUSG00000028156 | eukaryotic translation initiation factor 4E Source MGI Symbol Acc MGI 95305 |
| B02 | SBM1066112 | ENSMUST00000033880.6 | Eif4ebp1 | ENSMUSG00000031490 | eukaryotic translation initiation factor 4E binding protein 1 Source MGI Symbol Acc MGI 103267 |
| B03 | SBM0686292 | ENSMUST00000167087.1 | Eif4ebp2 | ENSMUSG00000020091 | eukaryotic translation initiation factor 4E binding protein 2 Source MGI Symbol Acc MGI 109198 |
| B04 | SBM0751160 | ENSMUST00000142985.7 | Fkbp1a | ENSMUSG00000032966 | FK506 binding protein 1a Source MGI Symbol Acc MGI 95541 |
| B05 | SBM0768948 | ENSMUST00000119698.7 | Fkbp8 | ENSMUSG00000019428 | FK506 binding protein 8 Source MGI Symbol Acc MGI 1341070 |
| B06 | SBM0862470 | ENSMUST00000132057.1 | Gsk3b | ENSMUSG00000022812 | glycogen synthase kinase 3 beta Source MGI Symbol Acc MGI 1861437 |
| B07 | SBM1003614 | ENSMUST00000110464.7 | Hif1a | ENSMUSG00000021109 | hypoxia inducible factor 1, alpha subunit Source MGI Symbol Acc MGI 106918 |
| B08 | SBM0815785 | ENSMUST00000097957.10 | Hras | ENSMUSG00000025499 | Harvey rat sarcoma virus oncogene Source MGI Symbol Acc MGI 96224 |
| B09 | SBM0909157 | ENSMUST00000020630.7 | Hspa4 | ENSMUSG00000020361 | heat shock protein 4 Source MGI Symbol Acc MGI 1342292 |
| B10 | SBM1026650 | ENSMUST00000122386.7 | Igf1 | ENSMUSG00000020053 | insulin-like growth factor 1 Source MGI Symbol Acc MGI 96432 |
| B11 | SBM0693110 | ENSMUST00000020702.10 | Igfbp3 | ENSMUSG00000020427 | insulin-like growth factor binding protein 3 Source MGI Symbol Acc MGI 96438 |
| B12 | SBM0683235 | ENSMUST00000144583.7 | Ikbkb | ENSMUSG00000031537 | inhibitor of kappaB kinase beta Source MGI Symbol Acc MGI 1338071 |
| C01 | SBM0904671 | ENSMUST00000033182.9 | Ilk | ENSMUSG00000030890 | integrin linked kinase Source MGI Symbol Acc MGI 1195267 |
| C02 | SBM0867142 | ENSMUST00000125933.1 | Ins2 | ENSMUSG00000000215 | insulin II Source MGI Symbol Acc MGI 96573 |
| C03 | SBM1013137 | ENSMUST00000207100.1 | Insr | ENSMUSG00000005534 | insulin receptor Source MGI Symbol Acc MGI 96575 |
| C04 | SBM0923271 | ENSMUST00000069799.2 | Irs1 | ENSMUSG00000055980 | insulin receptor substrate 1 Source MGI Symbol Acc MGI 99454 |
| C05 | SBM0800614 | ENSMUST00000231821.1 | Mapk1 | ENSMUSG00000063358 | mitogen-activated protein kinase 1 Source MGI Symbol Acc MGI 1346858 |
| C06 | SBM0856900 | ENSMUST00000206272.1 | Mapk3 | ENSMUSG00000063065 | mitogen-activated protein kinase 3 Source MGI Symbol Acc MGI 1346859 |
| C07 | SBM0919264 | ENSMUST00000147337.7 | Mapkap1 | ENSMUSG00000038696 | mitogen-activated protein kinase associated protein 1 Source MGI Symbol Acc MGI 2444554 |
| C08 | SBM1042671 | ENSMUST00000179163.2 | Mlst8 | ENSMUSG00000024142 | MTOR associated protein, LST8 homolog (S. cerevisiae) Source MGI Symbol Acc MGI 1929514 |
| C09 | SBM1220565 | ENSMUST00000103221.9 | Mtor | ENSMUSG00000028991 | mechanistic target of rapamycin kinase Source MGI Symbol Acc MGI 1928394 |
| C10 | SBM0824732 | ENSMUST00000148659.7 | Myo1c | ENSMUSG00000017774 | myosin IC Source MGI Symbol Acc MGI 106612 |
| | | ENSMUST00000 | | ENSMUSG00 | 3-phosphoinositide dependent protein kinase 1 Source MGI Symbol Acc MGI |

| Position | Assay | Name | Symbol | Ensembl ID | Description |
|---|---|---|---|---|---|
| C11 | SBM0716432 | 115409.8 | Pdpk1 | 000024122 | 1338068 |
| C12 | SBM0993091 | ENSMUST00000 115811.7 | Pik3c3 | ENSMUSG00 000033628 | phosphatidylinositol 3-kinase catalytic subunit type 3 Source MGI Symbol Acc MGI 2445019 |
| D01 | SBM0905151 | ENSMUST00000 108243.7 | Pik3ca | ENSMUSG00 000027665 | phosphatidylinositol-4,5-bisphosphate 3-kinase catalytic subunit alpha Source MGI Symbol Acc MGI 1206581 |
| D02 | SBM1012041 | ENSMUST00000 124723.1 | Pik3cb | ENSMUSG00 000032462 | phosphatidylinositol-4,5-bisphosphate 3-kinase catalytic subunit beta Source MGI Symbol Acc MGI 1922019 |
| D03 | SBM1031925 | ENSMUST00000 105688.9 | Pik3cd | ENSMUSG00 000039936 | phosphatidylinositol-4,5-bisphosphate 3-kinase catalytic subunit delta Source MGI Symbol Acc MGI 1098211 |
| D04 | SBM0808732 | ENSMUST00000 220366.1 | Pik3cg | ENSMUSG00 000020573 | phosphatidylinositol-4,5-bisphosphate 3-kinase catalytic subunit gamma Source MGI Symbol Acc MGI 1353576 |
| D05 | SBM0696678 | ENSMUST00000 123539.7 | Pld1 | ENSMUSG00 000027695 | phospholipase D1 Source MGI Symbol Acc MGI 109585 |
| D06 | SBM0728952 | ENSMUST00000 146248.1 | Pld2 | ENSMUSG00 000020828 | phospholipase D2 Source MGI Symbol Acc MGI 892877 |
| D07 | SBM0974754 | ENSMUST00000 020608.2 | Ppp2ca | ENSMUSG00 000020349 | protein phosphatase 2 (formerly 2A), catalytic subunit, alpha isoform Source MGI Symbol Acc MGI 1321159 |
| D08 | SBM1064475 | ENSMUST00000 153737.1 | Ppp2r2b | ENSMUSG00 000024500 | protein phosphatase 2, regulatory subunit B, beta Source MGI Symbol Acc MGI 1920180 |
| D09 | SBM0993253 | ENSMUST00000 137741.1 | Ptpa | ENSMUSG00 000039515 | protein phosphatase 2 protein activator Source MGI Symbol Acc MGI 1346006 |
| D10 | SBM0905959 | ENSMUST00000 228218.1 | Prkaa1 | ENSMUSG00 000050697 | protein kinase, AMP-activated, alpha 1 catalytic subunit Source MGI Symbol Acc MGI 2145955 |
| D11 | SBM0859779 | ENSMUST00000 030243.7 | Prkaa2 | ENSMUSG00 000028518 | protein kinase, AMP-activated, alpha 2 catalytic subunit Source MGI Symbol Acc MGI 1336173 |
| D12 | SBM0933984 | ENSMUST00000 141018.1 | Prkab1 | ENSMUSG00 000029513 | protein kinase, AMP-activated, beta 1 non-catalytic subunit Source MGI Symbol Acc MGI 1336167 |
| E01 | SBM0898406 | ENSMUST00000 132719.1 | Prkab2 | ENSMUSG00 000038205 | protein kinase, AMP-activated, beta 2 non-catalytic subunit Source MGI Symbol Acc MGI 1336185 |
| E02 | SBM0922630 | ENSMUST00000 229346.1 | Prkag1 | ENSMUSG00 000067713 | protein kinase, AMP-activated, gamma 1 non-catalytic subunit Source MGI Symbol Acc MGI 108411 |
| E03 | SBM0764294 | ENSMUST00000 150135.7 | Prkag2 | ENSMUSG00 000028944 | protein kinase, AMP-activated, gamma 2 non-catalytic subunit Source MGI Symbol Acc MGI 1336153 |
| E04 | SBM1026091 | ENSMUST00000 160732.7 | Prkag3 | ENSMUSG00 000006542 | protein kinase, AMP-activated, gamma 3 non-catalytic subunit Source MGI Symbol Acc MGI 1891343 |
| E05 | SBM0890328 | ENSMUST00000 100302.3 | Prkca | ENSMUSG00 000050965 | protein kinase C, alpha Source MGI Symbol Acc MGI 97595 |
| E06 | SBM0696479 | ENSMUST00000 064921.4 | Prkcb | ENSMUSG00 000052889 | protein kinase C, beta Source MGI Symbol Acc MGI 97596 |
| E07 | SBM1062071 | ENSMUST00000 100301.10 | Prkcg | ENSMUSG00 000078816 | protein kinase C, gamma Source MGI Symbol Acc MGI 97597 |
| E08 | SBM0773765 | ENSMUST00000 150486.1 | Prkce | ENSMUSG00 000045038 | protein kinase C, epsilon Source MGI Symbol Acc MGI 97599 |
| E09 | SBM1220566 | ENSMUST00000 013807.7 | Pten | ENSMUSG00 000013663 | phosphatase and tensin homolog Source MGI Symbol Acc MGI 109583 |
| E10 | SBM1072282 | ENSMUST00000 030787.8 | Rheb | ENSMUSG00 000028945 | Ras homolog enriched in brain Source MGI Symbol Acc MGI 97912 |
| E11 | SBM0943773 | ENSMUST00000 194701.5 | Rhoa | ENSMUSG00 000007815 | ras homolog family member A Source MGI Symbol Acc MGI 1096342 |
| E12 | SBM0898334 | ENSMUST00000 061656.7 | Rictor | ENSMUSG00 000050310 | RPTOR independent companion of MTOR, complex 2 Source MGI Symbol Acc MGI 1926007 |
| F01 | SBM0697193 | ENSMUST00000 123229.7 | Rps6 | ENSMUSG00 000028495 | ribosomal protein S6 Source MGI Symbol Acc MGI 98159 |
| F02 | SBM0679686 | ENSMUST00000 105894.10 | Rps6ka1 | ENSMUSG00 000003644 | ribosomal protein S6 kinase polypeptide 1 Source MGI Symbol Acc MGI 104558 |
| F03 | SBM0942497 | ENSMUST00000 024575.7 | Rps6ka2 | ENSMUSG00 000023809 | ribosomal protein S6 kinase, polypeptide 2 Source MGI Symbol Acc MGI 1342290 |
| F04 | SBM0843054 | ENSMUST00000 221246.1 | Rps6ka5 | ENSMUSG00 000021180 | ribosomal protein S6 kinase, polypeptide 5 Source MGI Symbol Acc MGI 1920336 |
| F05 | SBM0853475 | ENSMUST00000 058286.8 | Rps6kb1 | ENSMUSG00 000020516 | ribosomal protein S6 kinase, polypeptide 1 Source MGI Symbol Acc MGI 1270849 |
| F06 | SBM0762977 | ENSMUST00000 127605.7 | Rps6kb2 | ENSMUSG00 000024830 | ribosomal protein S6 kinase, polypeptide 2 Source MGI Symbol Acc MGI 1927343 |
| F07 | SBM0780248 | ENSMUST00000 139728.7 | Rptor | ENSMUSG00 000025583 | regulatory associated protein of MTOR, complex 1 Source MGI Symbol Acc MGI 1921620 |
| F08 | SBM0971924 | ENSMUST00000 091064.7 | Rraga | ENSMUSG00 000070934 | Ras-related GTP binding A Source MGI Symbol Acc MGI 1915691 |
| F09 | SBM0878193 | ENSMUST00000 039720.10 | Rragb | ENSMUSG00 000041658 | Ras-related GTP binding B Source MGI Symbol Acc MGI 3038613 |
| F10 | SBM1063961 | ENSMUST00000 155454.1 | Rragc | ENSMUSG00 000028646 | Ras-related GTP binding C Source MGI Symbol Acc MGI 1858751 |
| | | | | | |

| Position | Assay | Name | Symbol | Ensembl ID | Description |
|---|---|---|---|---|---|
| F11 | SBM0686878 | ENSMUST00000136792.1 | Rragd | ENSMUSG00000028278 | Ras-related GTP binding D Source MGI Symbol Acc MGI 1098604 |
| F12 | SBM0909072 | ENSMUST00000126560.1 | Sgk1 | ENSMUSG00000019970 | serum/glucocorticoid regulated kinase 1 Source MGI Symbol Acc MGI 1340062 |
| G01 | SBM0873081 | ENSMUST00000213772.1 | Stk11 | ENSMUSG00000003068 | serine/threonine kinase 11 Source MGI Symbol Acc MGI 1341870 |
| G02 | SBM1040912 | ENSMUST00000147637.7 | Stradb | ENSMUSG00000026027 | STE20-related kinase adaptor beta Source MGI Symbol Acc MGI 2144047 |
| G03 | SBM1026602 | ENSMUST00000115181.8 | Telo2 | ENSMUSG00000024170 | telomere maintenance 2 Source MGI Symbol Acc MGI 1918968 |
| G04 | SBM0841427 | ENSMUST00000108657.3 | Trp53 | ENSMUSG00000059552 | transformation related protein 53 Source MGI Symbol Acc MGI 98834 |
| G05 | SBM1061191 | ENSMUST00000124507.1 | Tsc1 | ENSMUSG00000026812 | tuberous sclerosis 1 Source MGI Symbol Acc MGI 1929183 |
| G06 | SBM0757000 | ENSMUST00000228412.1 | Tsc2 | ENSMUSG00000002496 | tuberous sclerosis 2 Source MGI Symbol Acc MGI 102548 |
| G07 | SBM0718433 | ENSMUST00000198470.1 | Ulk1 | ENSMUSG00000029512 | unc-51 like kinase 1 Source MGI Symbol Acc MGI 1270126 |
| G08 | SBM1002573 | ENSMUST00000157049.1 | Ulk2 | ENSMUSG00000004798 | unc-51 like kinase 2 Source MGI Symbol Acc MGI 1352758 |
| G09 | SBM1079198 | ENSMUST00000217017.1 | Vegfa | ENSMUSG00000023951 | vascular endothelial growth factor A Source MGI Symbol Acc MGI 103178 |
| G10 | SBM0920136 | ENSMUST00000130048.7 | Vegfb | ENSMUSG00000024962 | vascular endothelial growth factor B Source MGI Symbol Acc MGI 106199 |
| G11 | SBM0863177 | ENSMUST00000209703.1 | Vegfc | ENSMUSG00000031520 | vascular endothelial growth factor C Source MGI Symbol Acc MGI 109124 |
| G12 | SBM0737251 | ENSMUST00000146206.1 | Ywhaq | ENSMUSG00000076432 | tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein theta Source MGI Symbol Acc MGI 891963 |
| H01 | SBM1220560 | ENSMUST00000100497.10 | Actb | ENSMUSG00000029580 | actin, beta Source MGI Symbol Acc MGI 87904 |
| H02 | SBM0675336 | ENSMUST00000102476.4 | B2m | ENSMUSG00000060802 | beta-2 microglobulin Source MGI Symbol Acc MGI 88127 |
| H03 | SBM1220562 | ENSMUST00000117757.8 | Gapdh | ENSMUSG00000057666 | glyceraldehyde-3-phosphate dehydrogenase Source MGI Symbol Acc MGI 95640 |
| H04 | SBM1220563 | ENSMUST00000026613.13 | Gusb | ENSMUSG00000025534 | glucuronidase, beta Source MGI Symbol Acc MGI 95872 |
| H05 | SBM1220564 | ENSMUST00000166469.7 | Hsp90ab1 | ENSMUSG00000023944 | heat shock protein 90 alpha (cytosolic), class B member 1 Source MGI Symbol Acc MGI 96247 |
| H06 | SBM1218554 | Sybr_MGDC | MGDC | Sybr_MGDC | Mouse Genomic DNA Contamination |
| H07 | SBH1218551 | Sybr_QIC | QIC | Sybr_QIC | QuantiNova Internal Control |
| H08 | SBH1218551 | Sybr_QIC | QIC | Sybr_QIC | QuantiNova Internal Control |
| H09 | SBH1218551 | Sybr_QIC | QIC | Sybr_QIC | QuantiNova Internal Control |
| H10 | SBH1218550 | Sybr_PPC | PPC | Sybr_PPC | Positive PCR Control |
| H11 | SBH1218550 | Sybr_PPC | PPC | Sybr_PPC | Positive PCR Control |
| H12 | SBH1218550 | Sybr_PPC | PPC | Sybr_PPC | Positive PCR Control |

## Related products

| Product | Contents | Cat. no. |
|---|---|---|
| QuantiNova LNA PCR QC Panel | These panels are designed to assess the quality of RNA samples before characterization using QuantiNova LNA PCR Focus Panels; available in 96-well, 384-well, and Rotor-Disc 100 formats | 249940 |
| QuantiNova Reverse Transcription Kit (10)* | For 10 x 20 µl reactions: 20 µl 8x gDNA Removal Mix, 10 µl Reverse Transcription Enzyme, 40 µl Reverse Transcription Mix (containing RT primers), 20 µl Internal Control RNA, 1.9 ml RNase-Free Water | 205410 |
| QuantiNova SYBR Green RT-PCR Kit (100)* | For 100 x 20 µl reactions: 1 ml QuantiNova SYBR Green RT-PCR Master Mix, 20 µl QuantiNova SYBR Green RT Mix, 20 µl Internal Control RNA, 500 µl Yellow Template Dilution Buffer, 250 µl ROX Reference Dye, 1.9 µl RNase-Free Water | 208152 |
| QuantiNova SYBR Green PCR Kit (100)* | For 100 x 20 µl reactions: 1 ml 2x QuantiNova SYBR Green PCR Master Mix, 500 µl QuantiNova Yellow Template Dilution Buffer, 250 µl QN ROX Reference Dye, 1.9 ml Water | 208052 |

*Larger kit sizes available.

The QuantiNova LNA PCR Focus Panels 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.