

# RealTime ready

## Human Apoptosis Panel, 384

Ready-to-use panel for the gene expression profiling of apoptosis-related genes

**Cat. No. 05 339 316 001**

2 plates, each containing 384 assays

**Version November 2008**

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⚠ Store protected from light!

### Plate Layout

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|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| <b>A</b> | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  | 24  |
| <b>B</b> | 25  | 26  | 27  | 28  | 29  | 30  | 31  | 32  | 33  | 34  | 35  | 36  | 37  | 38  | 39  | 40  | 41  | 42  | 43  | 44  | 45  | 46  | 47  | 48  |
| <b>C</b> | 49  | 50  | 51  | 52  | 53  | 54  | 55  | 56  | 57  | 58  | 59  | 60  | 61  | 62  | 63  | 64  | 65  | 66  | 67  | 68  | 69  | 70  | 71  | 72  |
| <b>D</b> | 73  | 74  | 75  | 76  | 77  | 78  | 79  | 80  | 81  | 82  | 83  | 84  | 85  | 86  | 87  | 88  | 89  | 90  | 91  | 92  | 93  | 94  | 95  | 96  |
| <b>E</b> | 97  | 98  | 99  | 100 | 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | 110 | 111 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 |
| <b>F</b> | 121 | 122 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 132 | 133 | 134 | 135 | 136 | 137 | 138 | 139 | 140 | 141 | 142 | 143 | 144 |
| <b>G</b> | 145 | 146 | 147 | 148 | 149 | 150 | 151 | 152 | 153 | 154 | 155 | 156 | 157 | 158 | 159 | 160 | 161 | 162 | 163 | 164 | 165 | 166 | 167 | 168 |
| <b>H</b> | 169 | 170 | 171 | 172 | 173 | 174 | 175 | 176 | 177 | 178 | 179 | 180 | 181 | 182 | 183 | 184 | 185 | 186 | 187 | 188 | 189 | 190 | 191 | 192 |
| <b>I</b> | 193 | 194 | 195 | 196 | 197 | 198 | 199 | 200 | 201 | 202 | 203 | 204 | 205 | 206 | 207 | 208 | 209 | 210 | 211 | 212 | 213 | 214 | 215 | 216 |
| <b>J</b> | 217 | 218 | 219 | 220 | 221 | 222 | 223 | 224 | 225 | 226 | 227 | 228 | 229 | 230 | 231 | 232 | 233 | 234 | 235 | 236 | 237 | 238 | 239 | 240 |
| <b>K</b> | 241 | 242 | 243 | 244 | 245 | 246 | 247 | 248 | 249 | 250 | 251 | 252 | 253 | 254 | 255 | 256 | 257 | 258 | 259 | 260 | 261 | 262 | 263 | 264 |
| <b>L</b> | 265 | 266 | 267 | 268 | 269 | 270 | 271 | 272 | 273 | 274 | 275 | 276 | 277 | 278 | 279 | 280 | 281 | 282 | 283 | 284 | 285 | 286 | 287 | 288 |
| <b>M</b> | 289 | 290 | 291 | 292 | 293 | 294 | 295 | 296 | 297 | 298 | 299 | 300 | 301 | 302 | 303 | 304 | 305 | 306 | 307 | 308 | 309 | 310 | 311 | 312 |
| <b>N</b> | 313 | 314 | 315 | 316 | 317 | 318 | 319 | 320 | 321 | 322 | 323 | 324 | 325 | 326 | 327 | 328 | 329 | 330 | 331 | 332 | 333 | 334 | 335 | 336 |
| <b>O</b> | 337 | 338 | 339 | 340 | 341 | 342 | 343 | 344 | 345 | 346 | 347 | 348 | 349 | 350 | 351 | 352 | 353 | 354 | 355 | 356 | 357 | 358 | 359 | 360 |
| <b>P</b> | 361 | 362 | 363 | 364 | 365 | 366 | 367 | 368 | 369 | 370 | 371 | 372 | 373 | 374 | 375 | 376 | 377 | 378 | 379 | 380 | 381 | 382 | 383 | 384 |

P13 – P19: Reference genes  
P20 – P22: RT positive control  
P23 – P24: RT minus control

### Sample Details

| No. | Pos  | HGNC-Symbol | Description  |
|-----|------|-------------|--|
| 1   | A 01 | AATF        | Protein AATF   |
| 2   | A 02 | ABL1        | Proto-oncogene tyrosine-protein kinase ABL1          |
| 3   | A 03 | ACVR1B      | Activin receptor type-1B precursor                   |
| 4   | A 04 | ADORA1      | Adenosine receptor A1.                               |
| 5   | A 05 | AIFM1       | Apoptosis-inducing factor 1, mitochondrial precursor |
| 6   | A 06 | AIFM2       | Apoptosis-inducing factor 2                          |
| 7   | A 07 | AIFM3       | Apoptosis-inducing factor 3                          |
| 8   | A 08 | AKT1        | Proline-rich AKT1 substrate 1                        |
| 9   | A 09 | ALOX15B     | Arachidonate 15-lipoxygenase type II                 |
| 10  | A 10 | ANXA1       | Annexin A1   |
| 11  | A 11 | ANXA4       | Annexin A4   |
| 12  | A 12 | APAF1       | Apoptotic protease-activating factor 1               |
| 13  | A 13 | API5        | Apoptosis inhibitor 5                                |
| 14  | A 14 | APOE        | Apolipoprotein E precursor                           |
| 15  | A 15 | ATF5        | Cyclic AMP-dependent transcription factor ATF-5      |

| No. | Pos  | HGNC-Symbol | Description                                |
|-----|------|-------------|--|
| 16  | A 16 | AVEN        | Cell death regulator Aven.                 |
| 17  | A 17 | AZU1        | Azurocidin precursor                       |
| 18  | A 18 | BAD         | Bcl2 antagonist of cell death              |
| 19  | A 19 | BAG1        | BAG family molecular chaperone regulator 1 |
| 20  | A 20 | BAG3        | BAG family molecular chaperone regulator 3 |
| 21  | A 21 | BAG4        | BAG family molecular chaperone regulator 4 |
| 22  | A 22 | BAK1        | Bcl-2 homologous antagonist/killer         |
| 23  | A 23 | BAX         | Apoptosis regulator BAX.                   |
| 24  | A 24 | BBC3        | Bcl-2-binding component 3                  |
| 25  | B 01 | BCAP31      | B-cell receptor-associated protein 31      |
| 26  | B 02 | BCL10       | B-cell lymphoma/leukemia 10                |
| 27  | B 03 | BCL2        | Apoptosis regulator Bcl-2.                 |
| 28  | B 04 | BCL2A1      | Bcl-2-related protein A1                   |
| 29  | B 05 | BCL2L1      | Apoptosis regulator Bcl-X                  |
| 30  | B 06 | BCL2L10     | Apoptosis regulator Bcl-B                  |

| No. | Pos  | HGNC-Symbol | Description  |
|-----|------|-------------|--|
| 31  | B 07 | BCL2L11     | Bcl-2-like protein 11  |
| 32  | B 08 | BCL2L13     | Bcl-2-like 13 protein  |
| 33  | B 09 | BCL2L2      | Apoptosis regulator Bcl-W                                      |
| 34  | B 10 | BCL3        | B-cell lymphoma 3-encoded protein                              |
| 35  | B 11 | BCL6        | B-cell lymphoma 6 protein                                      |
| 36  | B 12 | BCLAF1      | Bcl-2-associated transcription factor 1                        |
| 37  | B 13 | BDNF        | Brain-derived neurotrophic factor precursor                    |
| 38  | B 14 | BECN1       | Beclin-1   |
| 39  | B 15 | BFAR        | Bifunctional apoptosis regulator                               |
| 40  | B 16 | BID         | BH3-interacting domain death agonist                           |
| 41  | B 17 | BIK         | Bcl-2-interacting killer                                       |
| 42  | B 18 | BIRC2       | Baculoviral IAP repeat-containing protein 2                    |
| 43  | B 19 | BIRC3       | Baculoviral IAP repeat-containing protein 3                    |
| 44  | B 20 | BIRC5       | Baculoviral IAP repeat-containing protein 5                    |
| 45  | B 21 | BIRC6       | Baculoviral IAP repeat-containing protein 6                    |
| 46  | B 22 | BIRC7       | Baculoviral IAP repeat-containing protein 7                    |
| 47  | B 23 | BIRC8       | Baculoviral IAP repeat-containing protein 8                    |
| 48  | B 24 | BMF         | Bcl-2-modifying factor.  |
| 49  | C 01 | BNIP1       | Vesicle transport protein SEC20                                |
| 50  | C 02 | BNIP2       | BCL2/adenovirus E1B 19 kDa protein-interacting protein 2.      |
| 51  | C 03 | BNIP3       | BCL2/adenovirus E1B 19 kDa protein-interacting protein 3.      |
| 52  | C 04 | BNIP3L      | BCL2/adenovirus E1B 19kDa interacting protein 3-like           |
| 53  | C 05 | BOK         | Bcl-2-related ovarian killer protein                           |
| 54  | C 06 | BRAF        | B-Raf proto-oncogene serine/threonine-protein kinase           |
| 55  | C 07 | BRCA1       | Breast cancer type 1 susceptibility protein                    |
| 56  | C 08 | BRE         | Protein BRE  |
| 57  | C 09 | BTK         | Tyrosine-protein kinase BTK                                    |
| 58  | C 10 | CAD         | CAD protein  |
| 59  | C 11 | CARD10      | Caspase recruitment domain-containing protein 10               |
| 60  | C 12 | CARD11      | Caspase recruitment domain-containing protein 11               |
| 61  | C 13 | CARD14      | Caspase recruitment domain-containing protein 14               |
| 62  | C 14 | CARD4       | Nucleotide-binding oligomerization domain-containing protein 1 |
| 63  | C 15 | CARD6       | Caspase recruitment domain-containing protein 6.               |
| 64  | C 16 | CARD8       | Caspase recruitment domain-containing protein 8                |
| 65  | C 17 | CARD9       | Caspase recruitment domain-containing protein 9                |
| 66  | C 18 | CASP1       | Caspase-1 precursor  |
| 67  | C 19 | CASP10      | Caspase-10 precursor   |
| 68  | C 20 | CASP12      | Inactive caspase-12  |
| 69  | C 21 | CASP14      | Caspase-14 precursor   |
| 70  | C 22 | CASP2       | Caspase-2 precursor  |
| 71  | C 23 | CASP3       | Caspase-3 precursor  |
| 72  | C 24 | CASP4       | Caspase-4 precursor  |
| 73  | D 01 | CASP5       | Caspase-5 precursor  |
| 74  | D 02 | CASP6       | Caspase-6 precursor  |
| 75  | D 03 | CASP7       | Caspase-7 precursor  |
| 76  | D 04 | CASP8       | Caspase-8 precursor  |
| 77  | D 05 | CASP8AP2    | CASP8-associated protein 2                                     |
| 78  | D 06 | CASP9       | Caspase-9 precursor  |
| 79  | D 07 | CBX4        | E3 SUMO-protein ligase CBX4                                    |
| 80  | D 08 | CCL2        | C-C motif chemokine 2 precursor                                |
| 81  | D 09 | CD2         | CD2 molecule   |
| 82  | D 10 | CD27        | CD27 antigen precursor   |
| 83  | D 11 | CD28        | T-cell-specific surface glycoprotein CD28 precursor            |

| No. | Pos  | HGNC-Symbol | Description  |
|-----|------|-------------|--|
| 84  | D 12 | CD38        | ADP-ribosyl cyclase 1  |
| 85  | D 13 | CD40        | Tumor necrosis factor receptor superfamily member 5 precursor                |
| 86  | D 14 | CD40LG      | CD40 ligand  |
| 87  | D 15 | CD5         | T-cell surface glycoprotein CD5 precursor                                    |
| 88  | D 16 | CD70        | CD70 antigen   |
| 89  | D 17 | CDKN1A      | Cyclin-dependent kinase inhibitor 1 (p21)                                    |
| 90  | D 18 | CEBPB       | CCAAT/enhancer-binding protein beta  |
| 91  | D 19 | CEBPG       | CCAAT/enhancer-binding protein gamma   |
| 92  | D 20 | CFDP1       | Craniofacial development protein 1   |
| 93  | D 21 | CFL1        | Cofilin-1  |
| 94  | D 22 | CFLAR       | CASP8 and FADD-like apoptosis regulator precursor                            |
| 95  | D 23 | CHEK2       | Serine/threonine-protein kinase Chk2   |
| 96  | D 24 | CHUK        | Inhibitor of nuclear factor kappa-B kinase subunit alpha                     |
| 97  | E 01 | CIDEA       | Cell death activator CIDE-A  |
| 98  | E 02 | CIDEB       | Cell death activator CIDE-B  |
| 99  | E 03 | CIDEC       | Cell death activator CIDE-3  |
| 100 | E 04 | COL4A3      | Collagen alpha-3   |
| 101 | E 05 | CRADD       | Death domain-containing protein CRADD  |
| 102 | E 06 | CRYAA       | Alpha-crystallin A chain   |
| 103 | E 07 | CRYAB       | Alpha-crystallin B chain   |
| 104 | E 08 | CUL1        | Cullin-1   |
| 105 | E 09 | CUL2        | Cullin-2   |
| 106 | E 10 | CUL3        | Cullin-3   |
| 107 | E 11 | CUL4A       | Cullin-4A  |
| 108 | E 12 | CUL5        | Cullin-5   |
| 109 | E 13 | CYCS        | Cytochrome c   |
| 110 | E 14 | DAD1        | Dolichyl-diphosphooligosaccharide--protein glycosyl-transferase subunit DAD1 |
| 111 | E 15 | DAP         | Death-associated protein 1   |
| 112 | E 16 | DAP3        | Death associated protein 3   |
| 113 | E 17 | DAPK1       | Death-associated protein kinase 1.   |
| 114 | E 18 | DAPK2       | Death-associated protein kinase 2  |
| 115 | E 19 | DAPK3       | Death-associated protein kinase 3  |
| 116 | E 20 | DAXX        | Death domain-associated protein 6  |
| 117 | E 21 | DBP         | D site-binding protein   |
| 118 | E 22 | DCC         | Netrin receptor DCC precursor  |
| 119 | E 23 | DDAH2       | dimethylarginine dimethylaminohydrolase 2                                    |
| 120 | E 24 | DDIT3       | DNA damage-inducible transcript 3  |
| 121 | F 01 | DDX20       | Probable ATP-dependent RNA helicase DDX20                                    |
| 122 | F 02 | DEDD        | Death effector domain-containing protein                                     |
| 123 | F 03 | DEDD2       | DNA-binding death effector domain-containing protein 2                       |
| 124 | F 04 | DFFA        | DNA fragmentation factor subunit alpha                                       |
| 125 | F 05 | DHCR24      | 24-dehydrocholesterol reductase precursor                                    |
| 126 | F 06 | DIABLO      | Diablo homolog, mitochondrial precursor                                      |
| 127 | F 07 | DPF2        | Zinc finger protein ubi-d4   |
| 128 | F 08 | DYRK2       | Dual specificity tyrosine-phosphorylation-regulated kinase 1A                |
| 129 | F 09 | EDA         | Ectodysplasin A  |
| 130 | F 10 | EDAR        | Ectodysplasin A receptor   |
| 131 | F 11 | EEF1A2      | Elongation factor 1-alpha 2  |
| 132 | F 12 | EIF2AK3     | Eukaryotic translation initiation factor 2-alpha kinase 3 precursor          |
| 133 | F 13 | endoG       | Endonuclease G, mitochondrial precursor                                      |
| 134 | F 14 | ERC1        | ELKS/RAB6-interacting/CAST family member 1                                   |

| No. | Pos  | HGNC-Symbol | Description   |
|-----|------|-------------|---|
| 135 | F 15 | ERCC2       | TFIIH basal transcription factor complex helicase subunit         |
| 136 | F 16 | ERCC3       | TFIIH basal transcription factor complex helicase XPB subunit     |
| 137 | F 17 | ERN1        | Serine/threonine-protein kinase/endoribonuclease IRE1 precursor   |
| 138 | F 18 | ERN2        | Serine/threonine-protein kinase/endoribonuclease IRE2 precursor   |
| 139 | F 19 | F2          | Prothrombin precursor   |
| 140 | F 20 | F2R         | Proteinase-activated receptor 1 precursor                         |
| 141 | F 21 | FADD        | Protein FADD  |
| 142 | F 22 | FAIM        | Fas apoptotic inhibitory molecule 1.                              |
| 143 | F 23 | FAIM2       | Fas apoptotic inhibitory molecule 2                               |
| 144 | F 24 | FAM96A      | UPF0195 protein FAM96A.   |
| 145 | G 01 | FAM96B      | UPF0195 protein FAM96B.   |
| 146 | G 02 | FAS         | Tumor necrosis factor receptor superfamily member 6 precursor     |
| 147 | G 03 | FASLG       | Tumor necrosis factor ligand superfamily member 6                 |
| 148 | G 04 | FASTK       | Fas-activated serine/threonine kinase                             |
| 149 | G 05 | FEM1B       | Protein fem-1 homolog B   |
| 150 | G 06 | FOXL2       | Forkhead box protein L2.  |
| 151 | G 07 | FOXO3       | Forkhead box protein O3   |
| 152 | G 08 | GDNF        | Glial cell line-derived neurotrophic factor precursor             |
| 153 | G 09 | GFRAL       | GDNF family receptor alpha-like precursor.                        |
| 154 | G 10 | GLO1        | Lactoylglutathione lyase  |
| 155 | G 11 | GPX1        | Glutathione peroxidase 1  |
| 156 | G 12 | GSPT1       | Eukaryotic peptide chain release factor GTP-binding subunit ERF3A |
| 157 | G 13 | HBXIP       | Hepatitis B virus X-interacting protein                           |
| 158 | G 14 | HD          | Huntingtin  |
| 159 | G 15 | HDAC1       | Histone deacetylase 1   |
| 160 | G 16 | HDAC3       | Histone deacetylase 3   |
| 161 | G 17 | HIP1        | Huntingtin-interacting protein 1                                  |
| 162 | G 18 | HIPK2       | Homeodomain-interacting protein kinase 2                          |
| 163 | G 19 | HIPK3       | Homeodomain-interacting protein kinase 3                          |
| 164 | G 20 | HMGB1       | High mobility group protein B1                                    |
| 165 | G 21 | HRK         | Activator of apoptosis harakiri                                   |
| 166 | G 22 | HSP90B1     | Endoplasmic precursor   |
| 167 | G 23 | HSPA1B      | Heat shock 70 kDa protein 1                                       |
| 168 | G 24 | HSPA9       | Stress-70 protein, mitochondrial precursor                        |
| 169 | H 01 | HSPB1       | Heat shock protein beta-1   |
| 170 | H 02 | HSPE1       | 10 kDa heat shock protein, mitochondrial                          |
| 171 | H 03 | HTATIP2     | Oxidoreductase HTATIP2  |
| 172 | H 04 | HTRA2       | Serine protease HTRA2, mitochondrial precursor                    |
| 173 | H 05 | HUWE1       | E3 ubiquitin-protein ligase HUWE1                                 |
| 174 | H 06 | IFI16       | Gamma-interferon-inducible protein Ifi-16                         |
| 175 | H 07 | IFI6        | Interferon alpha-inducible protein 6 precursor                    |
| 176 | H 08 | IFNA2       | Interferon alpha-2 precursor                                      |
| 177 | H 09 | IFNB1       | Interferon beta precursor   |
| 178 | H 10 | IGF1R       | Insulin-like growth factor 1 receptor precursor                   |
| 179 | H 11 | IKBKB       | Inhibitor of nuclear factor kappa-B kinase subunit beta           |
| 180 | H 12 | IKBKE       | Inhibitor of nuclear factor kappa-B kinase subunit epsilon        |
| 181 | H 13 | IKBKG       | NF-kappa-B essential modulator                                    |
| 182 | H 14 | IL18        | Interleukin-18 precursor  |
| 183 | H 15 | IL1A        | Interleukin-1 alpha precursor                                     |
| 184 | H 16 | IL31RA      | Interleukin-31 receptor A precursor                               |
| 185 | H 17 | INHBA       | Inhibin alpha chain precursor.                                    |

| No. | Pos  | HGNC-Symbol | Description  |
|-----|------|-------------|--|
| 186 | H 18 | INHBA       | Inhibin beta A chain precursor                                     |
| 187 | H 19 | IRAK1       | Interleukin-1 receptor-associated kinase 1                         |
| 188 | H 20 | IFT57       | Intraflagellar transport protein 57 homolog                        |
| 189 | H 21 | JMY         | Junction-mediating and -regulatory protein.                        |
| 190 | H 22 | LCK         | Proto-oncogene tyrosine-protein kinase LCK                         |
| 191 | H 23 | LGALS1      | Galectin-1   |
| 192 | H 24 | LGALS3      | Galectin-3   |
| 193 | I 01 | LRDD        | Leucine-rich repeat and death domain-containing protein            |
| 194 | I 02 | LTBR        | Tumor necrosis factor receptor superfamily member 3 precursor      |
| 195 | I 03 | MADD        | MAP kinase-activating death domain protein                         |
| 196 | I 04 | MAL         | Myelin and lymphocyte protein                                      |
| 197 | I 05 | MALT1       | Mucosa-associated lymphoid tissue lymphoma translocation protein 1 |
| 198 | I 06 | MAP3K10     | Mitogen-activated protein kinase kinase kinase 10                  |
| 199 | I 07 | MAP3K5      | Mitogen-activated protein kinase kinase kinase 5                   |
| 200 | I 08 | MAPK1       | Mitogen-activated protein kinase 1                                 |
| 201 | I 09 | MAPK8       | Mitogen-activated protein kinase 8                                 |
| 202 | I 10 | MAPK8IP2    | C-jun-amino-terminal kinase-interacting protein 2                  |
| 203 | I 11 | MBD4        | Methyl-CpG-binding domain protein 4                                |
| 204 | I 12 | MCL1        | Induced myeloid leukemia cell differentiation protein Mcl-1        |
| 205 | I 13 | MKL1        | MKL/myocardin-like protein 1                                       |
| 206 | I 14 | MOAP1       | Modulator of apoptosis 1   |
| 207 | I 15 | MPO         | Myeloperoxidase precursor  |
| 208 | I 16 | MSH6        | DNA mismatch repair protein Msh6                                   |
| 209 | I 17 | MTCH1       | Mitochondrial carrier homolog 1                                    |
| 210 | I 18 | MTL5        | Tesmin   |
| 211 | I 19 | MX1         | Interferon-induced GTP-binding protein Mx1                         |
| 212 | I 20 | MYBL2       | Myb-related protein B  |
| 213 | I 21 | MYO18A      | Myosin-XVIIIa  |
| 214 | I 22 | NAIP        | Baculoviral IAP repeat-containing protein 1                        |
| 215 | I 23 | NDUFA13     | NADH dehydrogenase   |
| 216 | I 24 | NDUFS3      | NADH dehydrogenase   |
| 217 | J 01 | NFKB1       | Nuclear factor NF-kappa-B p105 subunit                             |
| 218 | J 02 | NFKB2       | Nuclear factor NF-kappa-B p100 subunit                             |
| 219 | J 03 | NFKBIA      | NF-kappa-B inhibitor alpha   |
| 220 | J 04 | NFKBIB      | NF-kappa-B inhibitor beta  |
| 221 | J 05 | NFKBID      | Protein I kappaBNS   |
| 222 | J 06 | NFKBIE      | NF-kappa-B inhibitor epsilon                                       |
| 223 | J 07 | NGFR        | Tumor necrosis factor receptor superfamily member 16 precursor     |
| 224 | J 08 | NKX3-2      | Homeobox protein Nkx-3.2   |
| 225 | J 09 | NLR4        | NLR family CARD domain-containing protein 4                        |
| 226 | J 10 | NLRP1       | NACHT, LRR and PYD domains-containing protein 1                    |
| 227 | J 11 | NLRP2       | NACHT, LRR and PYD domains-containing protein 2                    |
| 228 | J 12 | NLRP3       | NACHT, LRR and PYD domains-containing protein 3                    |
| 229 | J 13 | NME3        | Nucleoside diphosphate kinase 3                                    |
| 230 | J 14 | NME5        | Nucleoside diphosphate kinase homolog 5                            |
| 231 | J 15 | NOD2        | Nucleotide-binding oligomerization domain-containing protein 2     |
| 232 | J 16 | NOL3        | nucleolar protein 3  |
| 233 | J 17 | NOTCH2      | Neurogenic locus notch homolog protein 2 precursor                 |
| 234 | J 18 | NOX5        | NADPH oxidase, EF-hand calcium binding domain 5                    |
| 235 | J 19 | NPM1        | Nucleophosmin  |
| 236 | J 20 | NRG2        | Pro-neuregulin-2, membrane-bound isoform precursor                 |

| No. | Pos  | HGNC-Symbol | Description  |
|-----|------|-------------|--|
| 237 | J 21 | NTF3        | Neurotrophin-3 precursor   |
| 238 | J 22 | NUDT2       | Bis(5'phospho-nucleosyl)-tetrphosphatase   |
| 239 | J 23 | NUPR1       | Nuclear protein 1  |
| 240 | J 24 | OPA1        | Dynamin-like 120 kDa protein, mitochondrial precursor  |
| 241 | K 01 | PAK7        | Serine/threonine-protein kinase PAK 7  |
| 242 | K 02 | PCBP4       | Poly(rC)-binding protein 4   |
| 243 | K 03 | PDCD5       | Programmed cell death protein 5  |
| 244 | K 04 | PDCD6       | Programmed cell death protein 6  |
| 245 | K 05 | PEA15       | Astrocytic phosphoprotein PEA-15   |
| 246 | K 06 | PIK3CA      | Phosphatidylinositol-4,5-bisphosphate 3-kinase catalytic subunit alpha isoform                       |
| 247 | K 07 | PIK3R2      | Phosphatidylinositol 3-kinase regulatory subunit beta  |
| 248 | K 08 | PIM2        | Serine/threonine-protein kinase Pim-2  |
| 249 | K 09 | PLAGL1      | Zinc finger protein PLAGL1   |
| 250 | K 10 | PLAGL2      | Zinc finger protein PLAGL2   |
| 251 | K 11 | PLEKHF1     | Pleckstrin homology domain-containing family F member 1  |
| 252 | K 12 | PLG         | Plasminogen precursor  |
| 253 | K 13 | PMAIP1      | Phorbol-12-myristate-13-acetate-induced protein 1  |
| 254 | K 14 | PML         | Probable transcription factor PML  |
| 255 | K 15 | POGK        | Pogo transposable element with KRAB domain.  |
| 256 | K 16 | POLB        | DNA polymerase beta  |
| 257 | K 17 | POU4F1      | POU domain, class 4, transcription factor 1  |
| 258 | K 18 | PPP1R13B    | Apoptosis-stimulating of p53 protein 1   |
| 259 | K 19 | PPP2CA      | Serine/threonine-protein phosphatase 2A catalytic subunit alpha isoform                              |
| 260 | K 20 | PPP2R1A     | Serine/threonine-protein phosphatase 2A 65 kDa regulatory subunit A alpha isoform                    |
| 261 | K 21 | PPP2R1B     | Serine/threonine-protein phosphatase 2A 65 kDa regulatory subunit A beta isoform                     |
| 262 | K 22 | PRDX2       | Peroxioredoxin-2   |
| 263 | K 23 | PRKAA1      | 5'-AMP-activated protein kinase catalytic subunit alpha-1  |
| 264 | K 24 | PRKCE       | Protein kinase C epsilon type  |
| 265 | L 01 | PRKCZ       | Protein kinase C zeta type   |
| 266 | L 02 | PRKRA       | Interferon-inducible double stranded RNA-dependent protein kinase activator A                        |
| 267 | L 03 | PRLR        | Prolactin receptor precursor   |
| 268 | L 04 | PRODH       | Proline oxidase, mitochondrial precursor   |
| 269 | L 05 | PROP1       | Homeobox protein prophet of Pit-1  |
| 270 | L 06 | PRUNE2      | Prune homolog 2.   |
| 271 | L 07 | PSEN1       | Presenilin-1   |
| 272 | L 08 | PTEN        | Phosphatidylinositol-3,4,5-trisphosphate 3-phosphatase and dual-specificity protein phosphatase PTEN |
| 273 | L 09 | PYCARD      | Apoptosis-associated speck-like protein containing a CARD  |
| 274 | L 10 | RALBP1      | RalA-binding protein 1   |
| 275 | L 11 | RARG        | Retinoic acid receptor gamma   |
| 276 | L 12 | RASA1       | Ras GTPase-activating protein 1  |
| 277 | L 13 | REL         | C-Rel proto-oncogene protein   |
| 278 | L 14 | RELA        | Transcription factor p65   |
| 279 | L 15 | RELB        | Transcription factor RelB  |
| 280 | L 16 | RFWD2       | E3 ubiquitin-protein ligase RFWD2  |
| 281 | L 17 | RIPK1       | Receptor-interacting serine/threonine-protein kinase 1   |
| 282 | L 18 | RIPK2       | Receptor-interacting serine/threonine-protein kinase 2   |
| 283 | L 19 | RIPK3       | Receptor-interacting serine/threonine-protein kinase 3   |
| 284 | L 20 | RNF7        | RING-box protein 2   |
| 285 | L 21 | RPS3A       | 40S ribosomal protein S3a.   |

| No. | Pos  | HGNC-Symbol | Description   |
|-----|------|-------------|---|
| 286 | L 22 | RTN4        | Reticulon-4   |
| 287 | L 23 | RUNX3       | Runt-related transcription factor 3                             |
| 288 | L 24 | S100B       | Protein S100-B  |
| 289 | M 01 | SAP30BP     | SAP30-binding protein   |
| 290 | M 02 | SART1       | U4/U6.U5 tri-snRNP-associated protein 1                         |
| 291 | M 03 | SEMA4D      | Semaphorin-4D precursor   |
| 292 | M 04 | SERINC3     | Serine incorporator 3   |
| 293 | M 05 | SERPINB2    | Plasminogen activator inhibitor 2 precursor                     |
| 294 | M 06 | SERPINB9    | Serpin B9   |
| 295 | M 07 | SFN         | 14-3-3 protein sigma  |
| 296 | M 08 | SFRP1       | Secreted frizzled-related protein 1 precursor                   |
| 297 | M 09 | SH3GLB1     | Endophilin-B1   |
| 298 | M 10 | SIPA1       | Signal-induced proliferation-associated protein 1               |
| 299 | M 11 | SIVA1       | Apoptosis regulatory protein Siva                               |
| 300 | M 12 | SMNDC1      | Survival of motor neuron-related-splicing factor 30             |
| 301 | M 13 | SOCS2       | Suppressor of cytokine signaling 2                              |
| 302 | M 14 | SOCS3       | Suppressor of cytokine signaling 3                              |
| 303 | M 15 | SON         | SON protein   |
| 304 | M 16 | SPHK1       | Sphingosine kinase 1  |
| 305 | M 17 | SPN         | Leukosialin precursor   |
| 306 | M 18 | SPP1        | Osteopontin precursor   |
| 307 | M 19 | SST         | Somatostatin precursor  |
| 308 | M 20 | SSTR3       | Somatostatin receptor type 3                                    |
| 309 | M 21 | STAMPB      | STAM-binding protein  |
| 310 | M 22 | STAT1       | Signal transducer and activator of transcription 1-alpha/beta   |
| 311 | M 23 | STAT5A      | Signal transducer and activator of transcription 5A.            |
| 312 | M 24 | STAT5B      | Signal transducer and activator of transcription 5B.            |
| 313 | N 01 | STK17A      | Serine/threonine-protein kinase 17A                             |
| 314 | N 02 | STK17B      | Serine/threonine-protein kinase 17B                             |
| 315 | N 03 | TAX1BP1     | Tax1-binding protein 1  |
| 316 | N 04 | TBK1        | Serine/threonine-protein kinase TBK1                            |
| 317 | N 05 | TBX3        | T-box transcription factor TBX3                                 |
| 318 | N 06 | TBX5        | T-box transcription factor TBX5                                 |
| 319 | N 07 | TGDF1       | Teratocarcinoma-derived growth factor 1 precursor               |
| 320 | N 08 | TGFB1       | Transforming growth factor beta-1 precursor                     |
| 321 | N 09 | TIA1        | Nucleolysin TIA-1 isoform p40                                   |
| 322 | N 10 | TIAF1       | Myosin-XVIIIa   |
| 323 | N 11 | TIAL1       | Nucleolysin TIAR  |
| 324 | N 12 | TIMP3       | Metalloproteinase inhibitor 3 precursor                         |
| 325 | N 13 | TLR2        | Toll-like receptor 2 precursor                                  |
| 326 | N 14 | TNF         | Tumor necrosis factor precursor                                 |
| 327 | N 15 | TNFAIP3     | Tumor necrosis factor, alpha-induced protein 3                  |
| 328 | N 16 | TNFAIP8     | Tumor necrosis factor, alpha-induced protein 8                  |
| 329 | N 17 | TNFRSF10A   | Tumor necrosis factor receptor superfamily member 10A precursor |
| 330 | N 18 | TNFRSF10B   | Tumor necrosis factor receptor superfamily member 10B precursor |
| 331 | N 19 | TNFRSF10C   | Tumor necrosis factor receptor superfamily member 10C precursor |
| 332 | N 20 | TNFRSF10D   | Tumor necrosis factor receptor superfamily member 10D precursor |
| 333 | N 21 | TNFRSF11B   | Tumor necrosis factor receptor superfamily member 11B precursor |
| 334 | N 22 | TNFRSF18    | Tumor necrosis factor receptor superfamily member 18 precursor  |
| 335 | N 23 | TNFRSF19    | Tumor necrosis factor receptor superfamily member 19 precursor  |

| No. | Pos  | HGNC-Symbol | Description  |
|-----|------|-------------|--|
| 336 | N 24 | TNFRSF1A    | Tumor necrosis factor receptor superfamily member 1A precursor |
| 337 | O 01 | TNFRSF1B    | Tumor necrosis factor receptor superfamily member 1B precursor |
| 338 | O 02 | TNFRSF21    | Tumor necrosis factor receptor superfamily member 21 precursor |
| 339 | O 03 | TNFRSF25    | Tumor necrosis factor receptor superfamily member 25 precursor |
| 340 | O 04 | TNFRSF8     | Tumor necrosis factor receptor superfamily member 8 precursor  |
| 341 | O 05 | TNFRSF9     | Tumor necrosis factor receptor superfamily member 9 precursor  |
| 342 | O 06 | TNFSF10     | Tumor necrosis factor ligand superfamily member 10             |
| 343 | O 07 | TNFSF11     | Tumor necrosis factor ligand superfamily member 11             |
| 344 | O 08 | TNFSF14     | Tumor necrosis factor ligand superfamily member 14             |
| 345 | O 09 | TNFSF15     | Tumor necrosis factor ligand superfamily member 15             |
| 346 | O 10 | TNFSF18     | Tumor necrosis factor ligand superfamily member 18             |
| 347 | O 11 | TNFSF4      | Tumor necrosis factor ligand superfamily member 4              |
| 348 | O 12 | TNFSF8      | Tumor necrosis factor ligand superfamily member 8              |
| 349 | O 13 | TP53        | Cellular tumor antigen p53                                     |
| 350 | O 14 | TP53BP2     | Apoptosis-stimulating of p53 protein 2                         |
| 351 | O 15 | TP53I3      | Putative quinone oxidoreductase                                |
| 352 | O 16 | TP73        | Tumor protein p73  |
| 353 | O 17 | TPD52L1     | Tumor protein D53  |
| 354 | O 18 | TPT1        | Translationally-controlled tumor protein                       |
| 355 | O 19 | TRAF1       | TNF receptor-associated factor 1                               |
| 356 | O 20 | TRAF2       | TNF receptor-associated factor 2                               |
| 357 | O 21 | TRAF3       | TNF receptor-associated factor 3                               |
| 358 | O 22 | TRAF5       | TNF receptor-associated factor 5                               |
| 359 | O 23 | TRAF6       | TNF receptor-associated factor 6                               |
| 360 | O 24 | TRAF7       | E3 ubiquitin-protein ligase TRAF7                              |

| No. | Pos  | HGNC-Symbol | Description   |
|-----|------|-------------|---|
| 361 | P 01 | TRAIIP      | TRAF-interacting protein  |
| 362 | P 02 | TRIAP1      | TP53-regulated inhibitor of apoptosis 1                           |
| 363 | P 03 | TSC22D3     | TSC22 domain family protein 3                                     |
| 364 | P 04 | TXNDC1      | Thioredoxin domain-containing protein 1 precursor                 |
| 365 | P 05 | UNC13B      | Protein unc-13 homolog B  |
| 366 | P 06 | UTP11L      | Probable U3 small nucleolar RNA-associated protein 11             |
| 367 | P 07 | VCP         | Transitional endoplasmic reticulum ATPase                         |
| 368 | P 08 | VHL         | Von Hippel-Lindau disease tumor suppressor                        |
| 369 | P 09 | XIAP        | XIAP-associated factor 1  |
| 370 | P 10 | ZAK         | Mitogen-activated protein kinase kinase kinase MLT                |
| 371 | P 11 | ZC3HC1      | Nuclear-interacting partner of ALK                                |
| 372 | P 12 | ZNF443      | Zinc finger protein 443   |
| 373 | P 13 | ACTB        | Reference Gene:<br>Actin, cytoplasmic 1 (Beta-actin)              |
| 374 | P 14 | B2M         | Reference Gene:<br>Beta-2-microglobulin precursor                 |
| 375 | P 15 | GAPDH       | Reference Gene:<br>Glyceraldehyde-3-phosphate dehydrogenase       |
| 376 | P 16 | HPRT1       | Reference Gene:<br>Hypoxanthine-guanine phosphoribosyltransferase |
| 377 | P 17 | RPL13A      | Reference Gene:<br>60S ribosomal protein L13a                     |
| 378 | P 18 | 18S         | Reference Gene:<br>18S ribosomal RNA                              |
| 379 | P 19 | YWHAZ       | Reference Gene:<br>14-3-3 protein zeta/delta                      |
| 380 | P 20 | RT+         | RT-positive control 5'  |
| 381 | P 21 | RT+         | RT-positive control middle  |
| 382 | P 22 | RT+         | RT-positive control 3'  |
| 383 | P 23 | RT-         | RT-minus control 1 cDNA   |
| 384 | P 24 | RT-         | RT-minus control 2 RNA  |

## Contact and Support

To ask questions, solve problems, suggest enhancements or report new applications, please visit our **Online Technical Support Site** at:

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