

nCounter® Human Fibrosis V2 Panel - Gene Details

| Gene    | Accession      | Synonyms   | Full Name   | Other Targets and Isoform Information |
|---------|----------------|--|---|---------------------------------------|
| ABCA1   | NM_005502.3    | ABC1,HDLDT1;ATP-binding cassette, sub-family A (ABC1), member 1  | ATP binding cassette subfamily A member 1             |                                       |
| ABCB11  | NM_003742.2    | BSEP,PFIC2;progressive familial intrahepatic cholestasis 2,bile salt export pump,ATP-binding cassette, sub-family B (MDR/TAP), member 11                           | ATP binding cassette subfamily B member 11            |                                       |
| ACAA2   | NM_006111.2    | acetyl-Coenzyme A acyltransferase 2  | acetyl-CoA acyltransferase 2                          |                                       |
| ACACA   | NM_198834.1    | ACAC,ACC;acetyl-Coenzyme A carboxylase alpha   | acetyl-CoA carboxylase alpha                          |                                       |
| ACACB   | NM_001093.3    | acetyl-Coenzyme A carboxylase beta   | acetyl-CoA carboxylase beta                           |                                       |
| ACOX2   | NM_003500.3    | acyl-Coenzyme A oxidase 2, branched chain,acyl-CoA oxidase 2, branched chain   | acyl-CoA oxidase 2                                    |                                       |
| ACSL4   | NM_004458.2    | FAcL4,MRX63,MRX68;fatty-acid-Coenzyme A ligase, long-chain 4,mental retardation, X-linked 63,mental retardation, X-linked 68                                       | acyl-CoA synthetase long chain family member 4        |                                       |
| ACSM3   | NM_005622.3    | SAH;SA (rat hypertension-associated) homolog,SA hypertension-associated homolog (rat)  | acyl-CoA synthetase medium chain family member 3      |                                       |
| ACTA2   | NM_001613.1    | actin, alpha 2, smooth muscle, aorta   | actin alpha 2, smooth muscle                          |                                       |
| ACTR1A  | NM_005736.3    | ARP1 (actin-related protein 1, yeast) homolog A (centractin alpha),ARP1 actin-related protein 1 homolog A, centractin alpha,ARP1 actin related protein 1 homolog A | actin related protein 1A                              |                                       |
| ACVRL1  | NM_000020.1    | ACVRLK1,ORW2;activin A receptor type II-like 1,activin A receptor type II  | activin A receptor like type 1                        |                                       |
| ADA2    | NM_001282229.1 | IDGFL,CECR1;cat eye syndrome chromosome region, candidate 1  | adenosine deaminase 2                                 |                                       |
| ADAM17  | NM_003183.4    | TACE;tumor necrosis factor, alpha, converting enzyme   | ADAM metallopeptidase domain 17                       |                                       |
| ADAM9   | NM_001005845.1 | COR9;a disintegrin and metalloproteinase domain 9 (meltrin gamma),cone rod dystrophy 9   | ADAM metallopeptidase domain 9                        |                                       |
| ADCY7   | NM_001114.4    |  | adenylate cyclase 7                                   |                                       |
| ADH1B   | NM_000668.4    | ADH2   | alcohol dehydrogenase 1B (class I), beta polypeptide  |                                       |
| ADH1C   | NM_000669.3    | ADH3   | alcohol dehydrogenase 1C (class I), gamma polypeptide |                                       |
| ADH4    | NM_000670.3    |  | alcohol dehydrogenase 4 (class II), pi polypeptide    |                                       |
| ADH6    | NM_000672.3    |  | alcohol dehydrogenase 6 (class V)                     |                                       |
| ADIPOQ  | NM_004797.2    | ACDC;adipocyte, C1Q and collagen domain containing   | adiponectin, C1Q and collagen domain containing       |                                       |
| ADIPOR1 | NM_015999.3    |  | adiponectin receptor 1                                |                                       |
| ADPGK   | NR_023318.1    |  | ADP dependent glucokinase                             |                                       |
| AIM2    | NM_004833.1    |  | absent in melanoma 2                                  |                                       |
| AKR1B10 | NM_020299.3    | AKR1B11;aldo-keto reductase family 1, member B10 (aldose reductase)  | aldo-keto reductase family 1 member B10               |                                       |
| AKT1    | NM_001014432.1 | v-akt murine thymoma viral oncogene homolog 1  | AKT serine/threonine kinase 1                         |                                       |
| ALAD    | NM_000031.5    | aminolevulinatase, delta-, dehydratase   | aminolevulinatase dehydratase                         |                                       |
| ALDH3A2 | NM_001031806.1 | SLS,ALDH10;aldehyde dehydrogenase 3 family, member A2  | aldehyde dehydrogenase 3 family member A2             |                                       |
| ALDH7A1 | NM_001182.3    | ATQ1;aldehyde dehydrogenase 7 family, member A1  | aldehyde dehydrogenase 7 family member A1             |                                       |
| ALDH9A1 | NM_000696.3    | ALDH7,ALDH4,ALDH9;aldehyde dehydrogenase 9 family, member A1   | aldehyde dehydrogenase 9 family member A1             |                                       |
| ALDOB   | NM_000035.3    | aldolase B, fructose-bisphosphate  | aldolase, fructose-bisphosphate B                     |                                       |
| AMOTL1  | NM_001301007.1 |  | angiominin like 1                                     |                                       |
| AMOTL2  | NM_016201.2    |  | angiominin like 2                                     |                                       |
| ANAPC1  | NM_022662.2    |  | anaphase promoting complex subunit 1                  |                                       |
| ANAPC10 | NM_001256710.1 |  | anaphase promoting complex subunit 10                 |                                       |
| ANAPC7  | NM_016238.2    |  | anaphase promoting complex subunit 7                  |                                       |
| ANGPTL4 | NR_104213.1    | angiopoietin-like 4  | angiopoietin like 4                                   |                                       |
| AP1G1   | NM_001030007.1 | CLAPG1,ADTG;adaptor-related protein complex 1, gamma 1 subunit,adaptor related protein complex 1 gamma 1 subunit   | adaptor related protein complex 1 subunit gamma 1     |                                       |
| AP1S1   | NM_001283.3    | CLAPS1,EKV3;erythrokeratoderma variabilis 3 (Kamouraska type),adaptor related protein complex 1 sigma 1 subunit  | adaptor related protein complex 1 subunit sigma 1     |                                       |
| AP2S1   | NM_021575.2    | CLAPS2,HHC3;hypocalciuric hypercalcemia 3 (Oklahoma type),adaptor related protein complex 2 sigma 1 subunit  | adaptor related protein complex 2 subunit sigma 1     |                                       |
| APC     | NM_000038.3    | adenomatosis polyposis coli,APC, WNT signaling pathway regulator   | APC regulator of WNT signaling pathway                |                                       |
| APCS    | NM_001639.3    |  | amyloid P component, serum                            |                                       |
| APLP2   | NM_001243299.1 | APPL2;amyloid beta (A4) precursor-like protein 2   | amyloid beta precursor like protein 2                 |                                       |
| APOA1   | NM_000039.1    | apolipoprotein A-I   | apolipoprotein A1                                     |                                       |
| APOA2   | NM_001643.1    | apolipoprotein A-II  | apolipoprotein A2                                     |                                       |
| APOA4   | NM_000482.3    | apolipoprotein A-IV  | apolipoprotein A4                                     |                                       |
| APOB    | NM_000384.2    | apolipoprotein B (including Ag(x) antigen)   | apolipoprotein B                                      |                                       |
| APOC2   | NM_000483.3    | apolipoprotein C-II  | apolipoprotein C2                                     |                                       |
| APOC3   | NM_000040.1    | apolipoprotein C-III   | apolipoprotein C3                                     |                                       |
| APOH    | NM_000042.2    | B2G1;apolipoprotein H (beta-2-glycoprotein I)  | apolipoprotein H                                      |                                       |
| APP     | NM_000484.3    | AD1;Alzheimer disease,amyloid beta (A4) precursor protein  | amyloid beta precursor protein                        |                                       |
| AQP8    | NM_001169.2    |  | aquaporin 8   |                                       |
| ARG1    | NM_000045.3    | arginase, liver  | arginase 1  |                                       |

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| ARHGAP35 | NM_004491.4    | GRLF1;glucocorticoid receptor DNA binding factor 1   | Rho GTPase activating protein 35                      |
| ARHGEF2  | NM_004723.2    | rho/rac guanine nucleotide exchange factor (GEF)<br>2,Rho/Rac guanine nucleotide exchange factor (GEF) 2   | Rho/Rac guanine nucleotide exchange factor 2          |
| ARHGEF6  | NM_004840.2    | MRX46;mental retardation, X-linked 46,Rac/Cdc42<br>guanine nucleotide exchange factor (GEF) 6  | Rac/Cdc42 guanine nucleotide exchange factor 6        |
| ARRB1    | NM_004041.3    | ARR1;arrestin, beta 1  | arrestin beta 1                                       |
| ATF4     | NM_001675.2    | TXREB;activating transcription factor 4 (tax-responsive<br>enhancer element B67)   | activating transcription factor 4                     |
| ATF7IP   | NM_018179.3    |  | activating transcription factor 7 interacting protein |
| ATG101   | NM_021934.4    | C12orf44;chromosome 12 open reading frame 44   | autophagy related 101                                 |
| ATG2B    | NM_018036.5    | C14orf103;chromosome 14 open reading frame<br>103,ATG2 autophagy related 2 homolog B (S. cerevisiae)   | autophagy related 2B                                  |
| ATOX1    | NM_004045.3    | ATX1 (antioxidant protein 1, yeast) homolog 1,ATX1<br>antioxidant protein 1 homolog (yeast)  | antioxidant 1 copper chaperone                        |
| ATP6V1E1 | NM_001039367.1 | ATP6E,ATP6V1E;ATPase, H+ transporting, lysosomal<br>(vacuolar proton pump) 31kD,ATPase, H+ transporting,<br>lysosomal 31kDa, V1 subunit E isoform 1,ATPase, H+<br>transporting, lysosomal 31kDa, V1 subunit E1 | ATPase H+ transporting V1 subunit E1                  |
| ATP6V1F  | NM_001198909.1 | ATPase, H+ transporting, lysosomal 14kDa, V1 subunit F   | ATPase H+ transporting V1 subunit F                   |
| ATP6V1G2 | NM_130463.2    | ATP6G,ATP6G2;ATPase, H+ transporting, lysosomal<br>(vacuolar proton pump),ATPase, H+ transporting,<br>lysosomal 13kDa, V1 subunit G isoform 2,ATPase, H+<br>transporting, lysosomal 13kDa, V1 subunit G2       | ATPase H+ transporting V1 subunit G2                  |
| ATP7A    | NM_000052.4    | MNK;Menkes syndrome,ATPase, Cu++ transporting,<br>alpha polypeptide  | ATPase copper transporting alpha                      |
| AXL      | NM_021913.2    |  | AXL receptor tyrosine kinase                          |
| BANF1    | NM_001143985.1 |  | barrier to autointegration factor 1                   |
| BAX      | NM_138761.3    | BCL2-associated X protein,BCL2 associated X protein  | BCL2 associated X, apoptosis regulator                |
| BCAP31   | NM_001139457.1 |  | B cell receptor associated protein 31                 |
| BCL2     | NM_000657.2    | B-cell CLL/lymphoma 2,BCL2, apoptosis regulator  | BCL2 apoptosis regulator                              |
| BCL2L1   | NM_138578.1    |  | BCL2 like 1   |
| BIRC3    | NM_182962.1    | API2;baculoviral IAP repeat-containing 3   | baculoviral IAP repeat containing 3                   |
| BLK      | NM_001715.2    | B lymphoid tyrosine kinase   | BLK proto-oncogene, Src family tyrosine kinase        |
| BMP10    | NM_014482.1    |  | bone morphogenetic protein 10                         |
| BPI      | NM_001725.2    | bactericidal/permeability-increasing protein   | bactericidal permeability increasing protein          |
| BRAF     | NM_004333.3    | v-raf murine sarcoma viral oncogene homolog B  | B-Raf proto-oncogene, serine/threonine kinase         |
| BRPF3    | NM_015695.2    | bromodomain and PHD finger containing, 3   | bromodomain and PHD finger containing 3               |
| BST2     | NM_004335.2    |  | bone marrow stromal cell antigen 2                    |
| C15      | NM_001734.2    | complement component 1, s subcomponent   | complement C1s  |
| C3       | NM_000064.2    | complement component 3   | complement C3   |
| C3AR1    | NM_004054.2    | complement component 3a receptor 1   | complement C3a receptor 1                             |
| C4BPA    | NM_000715.3    | C4BP;complement component 4-binding protein, alpha   | complement component 4 binding protein alpha          |
| C5       | NM_001735.2    | complement component 5   | complement C5   |
| C6       | NM_000065.2    | complement component 6   | complement C6   |
| C8A      | NM_000562.2    | complement component 8, alpha<br>polypeptide,complement component 8 alpha subunit  | complement C8 alpha chain                             |
| C8B      | NM_000066.2    | complement component 8, beta polypeptide   | complement C8 beta chain                              |
| C9       | NM_001737.3    | complement component 9   | complement C9   |
| CALM1    | NM_006888.3    | CALML2;calmodulin 1 (phosphorylase kinase, delta)  | calmodulin 1  |
| CAPN5    | NM_004055.4    | VRNI;vitreoretinopathy, neovascular inflammatory   | calpain 5   |
| CARD9    | NM_052814.3    | caspase recruitment domain family, member 9  | caspase recruitment domain family member 9            |
| CASP12   | NR_034061.1    | CASP12P1;caspase 12 pseudogene 1,caspase 12  | caspase 12 (gene/pseudogene)                          |
| CASP3    | NM_004346.3    | caspase 3, apoptosis-related cysteine protease,caspase 3,<br>apoptosis-related cysteine peptidase  | caspase 3   |
| CASP4    | NM_001225.3    | caspase 4, apoptosis-related cysteine protease,caspase 4,<br>apoptosis-related cysteine peptidase  | caspase 4   |
| CASP6    | NM_032992.2    | caspase 6, apoptosis-related cysteine protease,caspase 6,<br>apoptosis-related cysteine peptidase  | caspase 6   |
| CASP7    | NM_001227.3    | caspase 7, apoptosis-related cysteine protease,caspase 7,<br>apoptosis-related cysteine peptidase  | caspase 7   |
| CASP8    | NM_001228.4    | caspase 8, apoptosis-related cysteine protease,caspase 8,<br>apoptosis-related cysteine peptidase  | caspase 8   |
| CAT      | NM_001752.2    |  | catalase  |
| CBL      | NM_005188.2    | CBL2;Cas-Br-M (murine) ecotropic retroviral transforming<br>sequence,Cbl proto-oncogene, E3 ubiquitin protein ligase   | Cbl proto-oncogene                                    |
| CCL13    | NM_005408.2    | SCYA13;small inducible cytokine subfamily A (Cys-Cys),<br>member 13,chemokine (C-C motif) ligand 13  | C-C motif chemokine ligand 13                         |

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|---------|----------------|--|---|--|
| CCL19   | NM_006274.2    | SCYA19;small inducible cytokine subfamily A (Cys-Cys), member 19,chemokine (C-C motif) ligand 19   | C-C motif chemokine ligand 19                                   |  |
| CCL2    | NM_002982.3    | SCYA2;small inducible cytokine A2 (monocyte chemotactic protein 1, homologous to mouse Sig-je),chemokine (C-C motif) ligand 2                                  | C-C motif chemokine ligand 2                                    |  |
| CCL4    | NM_002984.2    | LAG1,SCYA4;small inducible cytokine A4 (homologous to mouse Mip-1b),chemokine (C-C motif) ligand 4   | C-C motif chemokine ligand 4                                    | CCL4L1 (NM_207007)   |
| CCN2    | NM_001901.2    | CTGF;connective tissue growth factor   | cellular communication network factor 2                         |  |
| CCNA2   | NM_001237.2    | CCNA,CCN1  | cyclin A2   |  |
| CCR1    | NM_001295.2    | SCYAR1,CMKBR1;chemokine (C-C motif) receptor 1   | C-C motif chemokine receptor 1                                  |  |
| CCR2    | NM_001123041.2 | CMKBR2;chemokine (C-C motif) receptor 2  | C-C motif chemokine receptor 2                                  |  |
| CCR4    | NM_005508.4    | chemokine (C-C motif) receptor 4   | C-C motif chemokine receptor 4                                  |  |
| CCR7    | NM_001838.2    | CMKBR7,EBI1;chemokine (C-C motif) receptor 7   | C-C motif chemokine receptor 7                                  |  |
| CCS     | NM_005125.1    |  | copper chaperone for superoxide dismutase                       |  |
| CD14    | NM_000591.2    | CD14 antigen   | CD14 molecule   |  |
| CD163   | NM_004244.4    | CD163 antigen  | CD163 molecule  |  |
| CD180   | NM_005582.2    | LY64;lymphocyte antigen 64 (mouse) homolog, radioprotective, 105kD,CD180 antigen   | CD180 molecule  |  |
| CD19    | XM_011545981.1 | CD19 antigen   | CD19 molecule   |  |
| CD209   | NM_001144899.1 | CD209 antigen  | CD209 molecule  |  |
| CD244   | NM_001166663.1 | natural killer cell receptor 2B4,CD244 natural killer cell receptor 2B4,CD244 molecule, natural killer cell receptor 2B4                                       | CD244 molecule  |  |
| CD34    | NM_001025109.1 | CD34 antigen   | CD34 molecule   |  |
| CD36    | NM_000072.3    | CD36 antigen (collagen type I receptor, thrombospondin receptor),CD36 molecule (thrombospondin receptor)   | CD36 molecule   |  |
| CD3D    | NM_000732.4    | T3D;CD3d antigen, delta polypeptide (TIT3 complex),CD3d molecule, delta (CD3-TCR complex)  | CD3d molecule   |  |
| CD3E    | NM_000733.2    | CD3e antigen, epsilon polypeptide (TIT3 complex),CD3e molecule, epsilon (CD3-TCR complex)  | CD3e molecule   |  |
| CD3G    | NM_000073.2    | CD3g antigen, gamma polypeptide (TIT3 complex),CD3g molecule, gamma (CD3-TCR complex)  | CD3g molecule   |  |
| CD4     | NM_000616.4    | CD4 antigen (p55),T-cell surface glycoprotein CD4 MIC4,MDU2,MDU3;CD44 antigen (homing function and Indian blood group system)                                  | CD4 molecule  |  |
| CD44    | NM_001001392.1 | CD44 antigen (Indian blood group system)   | CD44 molecule (Indian blood group)                              |  |
| CD6     | NM_001254751.1 | CD6 antigen  | CD6 molecule  |  |
| CD68    | NM_001251.2    | CD68 antigen   | CD68 molecule   |  |
| CD84    | NM_001184879.1 | CD84 antigen (leukocyte antigen),CD84 molecule CD28LG2;CD86 antigen (CD28 antigen ligand 2, B7-2 antigen)  | CD84 molecule   |  |
| CD86    | NM_175862.3    | CD86 antigen   | CD86 molecule   |  |
| CD8A    | NM_001768.5    | CD8;CD8 antigen, alpha polypeptide (p32),T-cell surface glycoprotein CD8 alpha chain   | CD8a molecule   |  |
| CD8B    | NM_172099.2    | CD8B1;CD8 antigen, beta polypeptide 1 (p37)  | CD8b molecule   | CD8B2 (NM_001368307;NM_001349727)                            |
| CDH2    | NM_001792.3    | NCAD;cadherin 2, type 1, N-cadherin (neuronal)   | cadherin 2  |  |
| CDH5    | NM_001795.3    | cadherin 5, type 2, VE-cadherin (vascular epithelium),cadherin 5, type 2 (vascular endothelium)  | cadherin 5  |  |
| CDK4    | NM_000075.2    |  | cyclin dependent kinase 4                                       | TSPAN31 (NM_005981)  |
| CDKN1A  | NM_000389.2    | CDKN1;cyclin-dependent kinase inhibitor 1A (p21, Cip1)   | cyclin dependent kinase inhibitor 1A                            |  |
| CDKN2C  | NM_001262.2    | cyclin-dependent kinase inhibitor 2C (p18, inhibits CDK4)  | cyclin dependent kinase inhibitor 2C                            |  |
| CDON    | NM_016952.4    | Cdon homolog (mouse)   | cell adhesion associated, oncogene regulated                    |  |
| CEACAM3 | NM_001815.3    | CGM1;carcinoembryonic antigen-related cell adhesion molecule 3   | carcinoembryonic antigen related cell adhesion molecule 3       |  |
| CEBPA   | NM_004364.2    | CEBP;CCAAT/enhancer binding protein (C/EBP), alpha,CCAAT/enhancer binding protein alpha  | CCAAT enhancer binding protein alpha                            |  |
| CETP    | NM_000078.2    | cholesteryl ester transfer protein, plasma   | cholesteryl ester transfer protein                              |  |
| CFH     | NM_001014975.2 | HF,HF1,HF2;H factor 1 (complement)   | complement factor H   |  |
| CFHR1   | NM_002113.2    | HFL1,CFHL1,CFHR1P,HFL2,CFHL1P;H factor (complement)-like 1,complement factor H-related 1 pseudogene,H factor (complement)-like 2,complement factor H-related 1 | complement factor H related 1                                   |  |
| CFHR4   | NM_001201550.2 | CFHL4;complement factor H-related 4  | complement factor H related 4                                   |  |
| CFHR5   | NM_030787.3    | CFHL5;complement factor H-related 5  | complement factor H related 5                                   |  |
| CFI     | NM_000204.3    | IF;I factor (complement)   | complement factor I   |  |
| CFLAR   | NM_001127183.1 | CASP8AP1;CASP8 and FADD-like apoptosis regulator   | CASP8 and FADD like apoptosis regulator                         | sub-maximal isoform coverage due to non-overlapping variants |
| CFTR    | NM_000492.3    | CF,ABCC7;cystic fibrosis transmembrane conductance regulator, ATP-binding cassette (sub-family C, member 7)  | cystic fibrosis transmembrane conductance regulator             |  |
| CH3L1   | NM_001276.2    | chitinase 3-like 1 (cartilage glycoprotein-39)   | chitinase 3 like 1  |  |
| CHMP4B  | NM_176812.4    | C20orf178;chromosome 20 open reading frame 178,chromatin modifying protein 4B  | charged multivesicular body protein 4B                          |  |
| CHUK    | NM_001278.3    | TCF16;conserved helix-loop-helix ubiquitous kinase   | component of inhibitor of nuclear factor kappa B kinase complex |  |

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| CIITA   | NM_000246.3    | MHC2TA;MHC class II transactivator,class II, major histocompatibility complex, transactivator   | class II major histocompatibility complex transactivator |
| CKAP4   | NM_006825.3    | cytoskeleton-associated protein 4   | cytoskeleton associated protein 4                        |
| COL10A1 | NM_000493.3    | collagen, type X, alpha 1   | collagen type X alpha 1 chain                            |
| COL14A1 | NM_021110.1    | UND;undulin,collagen, type XIV, alpha 1   | collagen type XIV alpha 1 chain                          |
| COL16A1 | NM_001856.3    | collagen, type XVI, alpha 1   | collagen type XVI alpha 1 chain                          |
| COL1A1  | NM_000088.3    | collagen, type I, alpha 1   | collagen type I alpha 1 chain                            |
| COL1A2  | NM_000089.3    | OI4;osteogenesis imperfecta type IV,collagen, type I, alpha 2,collagen type I alpha 2   | collagen type I alpha 2 chain                            |
| COL3A1  | NM_000090.3    | EDS4A;Ehlers-Danlos syndrome type IV, autosomal dominant,collagen, type III, alpha 1  | collagen type III alpha 1 chain                          |
| COL4A1  | NM_001845.4    | collagen, type IV, alpha 1  | collagen type IV alpha 1 chain                           |
| COL4A2  | NM_001846.2    | collagen type IV alpha 2  | collagen type IV alpha 2 chain                           |
| COL5A1  | NM_000093.3    | collagen type V alpha 1   | collagen type V alpha 1 chain                            |
| COL5A3  | NM_015719.3    | collagen type V alpha 3   | collagen type V alpha 3 chain                            |
| COL6A3  | NM_004369.3    | collagen, type VI, alpha 3  | collagen type VI alpha 3 chain                           |
| COL6A5  | NR_022012.2    | COL29A1;collagen, type XXIX, alpha 1,collagen, type VI, alpha 5,collagen type VI alpha 5  | collagen type VI alpha 5 chain                           |
| COL7A1  | NM_000094.2    | EBDCT,EBD1,EBR1;epidermolysis bullosa, dystrophic, dominant and recessive,collagen, type VII, alpha 1   | collagen type VII alpha 1 chain                          |
| COX4I2  | NM_032609.2    | COX4L2;cytochrome c oxidase subunit IV isoform 2,cytochrome c oxidase subunit IV isoform 2 (lung)   | cytochrome c oxidase subunit 4I2                         |
| COX6A1  | NM_004373.2    | COX6A;cytochrome c oxidase subunit VIa polypeptide 1  | cytochrome c oxidase subunit 6A1                         |
| COX6B1  | NM_001863.4    | COX6B;cytochrome c oxidase subunit VIb,cytochrome c oxidase subunit VIb polypeptide 1 (ubiquitous),cytochrome c oxidase subunit VIb polypeptide 1 (ubiquitous)                                    | cytochrome c oxidase subunit 6B1                         |
| COX7B   | NM_001866.2    | cytochrome c oxidase subunit VIIb   | cytochrome c oxidase subunit 7B                          |
| COX7C   | NM_001867.2    | cytochrome c oxidase subunit VIIc   | cytochrome c oxidase subunit 7C                          |
| CPA3    | NM_001870.2    | carboxypeptidase A3 (mast cell)   | carboxypeptidase A3                                      |
| CPB2    | NM_001872.3    | carboxypeptidase B2 (plasma, carboxypeptidase U),carboxypeptidase B2 (plasma)   | carboxypeptidase B2                                      |
| CPN1    | NM_001308.2    | carboxypeptidase N, polypeptide 1, 50kD,carboxypeptidase N, polypeptide 1   | carboxypeptidase N subunit 1                             |
| CPT1A   | NM_001876.3    | CPT1;carnitine palmitoyltransferase 1A (liver)  | carnitine palmitoyltransferase 1A                        |
| CR1     | XM_006711166.2 | complement component (3b/4b) receptor 1, including Knops blood group system,complement component (3b/4b) receptor 1 (Knops blood group),complement component 3b/4b receptor 1 (Knops blood group) | complement C3b/C4b receptor 1 (Knops blood group)        |
| CREB1   | NM_004379.3    |   | cAMP responsive element binding protein 1                |
| CREB3   | NM_006368.4    | cAMP responsive element binding protein 3 (human)   | cAMP responsive element binding protein 3                |
| CREBBP  | NM_004380.2    | RSTS;Rubinstein-Taybi syndrome  | CREB binding protein                                     |
| CRK     | NM_016823.2    | v-crk avian sarcoma virus CT10 oncogene homolog   | CRK proto-oncogene, adaptor protein                      |
| CRKL    | NM_005207.3    | v-crk avian sarcoma virus CT10 oncogene homolog-like  | CRK like proto-oncogene, adaptor protein                 |
| CRP     | NM_000567.2    | C-reactive protein, pentraxin-related   | C-reactive protein                                       |
| CSF1R   | NM_005211.2    | FMS;McDonough feline sarcoma viral (v-fms) oncogene homolog   | colony stimulating factor 1 receptor                     |
| CSF3R   | NM_000760.3    | CD114;colony stimulating factor 3 receptor (granulocyte)  | colony stimulating factor 3 receptor                     |
| CSNK1A1 | NM_001892.4    | casein kinase 1, alpha 1  | casein kinase 1 alpha 1                                  |
| CSNK1D  | NM_001893.3    | casein kinase 1, delta  | casein kinase 1 delta                                    |
| CSNK1E  | NM_152221.2    | casein kinase 1, epsilon  | casein kinase 1 epsilon                                  |
| CSNK1G3 | NM_001031812.1 | casein kinase 1, gamma 3  | casein kinase 1 gamma 3                                  |
| CSNK2A1 | NM_177559.2    | casein kinase 2, alpha 1 polypeptide  | casein kinase 2 alpha 1                                  |
| CSNK2B  | NM_001320.5    | casein kinase 2, beta polypeptide   | casein kinase 2 beta                                     |
| CTBP2   | NM_001329.2    |   | C-terminal binding protein 2                             |
| CTNNB1  | NM_001098210.1 | CTNNB;catenin (cadherin-associated protein), beta 1 (88kD),catenin (cadherin-associated protein), beta 1, 88kDa,catenin (cadherin-associated protein), beta 1                                     | catenin beta 1   |
| CTNND1  | NM_001331.2    | CTNND;catenin (cadherin-associated protein), delta 1  | catenin delta 1  |
| CTSB    | NM_147780.2    |   | cathepsin B  |
| CTSD    | NM_001909.3    | CPSD;cathepsin D (lysosomal aspartyl protease)  | cathepsin D  |
| CTSL    | NM_001912.4    | CTSL1;cathepsin L1  | cathepsin L  |
| CTSW    | NM_001335.3    | cathepsin W (lymphopain)  | cathepsin W  |
| CUL1    | NM_003592.2    |   | cullin 1   |
| CUL3    | NM_003590.2    |   | cullin 3   |
| CXCL10  | NM_001565.2    | INP10,SCYB10;small inducible cytokine subfamily B (Cys-X-Cys), member 10,chemokine (C-X-C motif) ligand 10  | C-X-C motif chemokine ligand 10                          |
| CXCL11  | NM_005409.4    | SCYB9B,SCYB11;small inducible cytokine subfamily B (Cys-X-Cys), member 11,chemokine (C-X-C motif) ligand 11   | C-X-C motif chemokine ligand 11                          |
| CXCL12  | NM_199168.3    | SDF1A,SDF1B,SDF1;stromal cell-derived factor 1,chemokine (C-X-C motif) ligand 12  | C-X-C motif chemokine ligand 12                          |
| CXCL16  | NM_001100812.1 | chemokine (C-X-C motif) ligand 16   | C-X-C motif chemokine ligand 16                          |
| CXCL2   | NM_002089.3    | GRO2;GRO2 oncogene,chemokine (C-X-C motif) ligand 2   | C-X-C motif chemokine ligand 2                           |

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| CXCL8      | NM_000584.2    | IL8;interleukin 8,chemokine (C-X-C motif) ligand 8   | C-X-C motif chemokine ligand 8                 |
| CXCR1      | NM_000634.2    | CMKAR1,IL8RA;interleukin 8 receptor, alpha,chemokine (C-X-C motif) receptor 1  | C-X-C motif chemokine receptor 1               |
| CXCR3      | NM_001504.1    | GPR9;G protein-coupled receptor 9,chemokine (C-X-C motif) receptor 3   | C-X-C motif chemokine receptor 3               |
| CXCR4      | NM_003467.2    | chemokine (C-X-C motif), receptor 4 (fusin),chemokine (C-X-C motif) receptor 4   | C-X-C motif chemokine receptor 4               |
| CXCR6      | NM_006564.1    | chemokine (C-X-C motif) receptor 6   | C-X-C motif chemokine receptor 6               |
| CYBB       | NM_000397.3    | CGD;chronic granulomatous disease,cytochrome b-245, beta polypeptide   | cytochrome b-245 beta chain                    |
| CYCS       | NM_018947.4    |  | cytochrome c, somatic                          |
| CYFIP1     | NM_014608.2    |  | cytoplasmic FMR1 interacting protein 1         |
| CYP1A1     | NM_000499.3    | CYP1;cytochrome P450, subfamily I (aromatic compound-inducible), polypeptide 1,cytochrome P450, family 1, subfamily A, polypeptide 1                                   | cytochrome P450 family 1 subfamily A member 1  |
| CYP1A2     | NM_000761.3    | cytochrome P450, subfamily I (aromatic compound-inducible), polypeptide 2,cytochrome P450, family 1, subfamily A, polypeptide 2  | cytochrome P450 family 1 subfamily A member 2  |
| CYP27A1    | NM_000784.3    | CYP27;cytochrome P450, subfamily XXVIIA (steroid 27-hydroxylase, cerebrotendinous xanthomatosis), polypeptide 1,cytochrome P450, family 27, subfamily A, polypeptide 1 | cytochrome P450 family 27 subfamily A member 1 |
| CYP2C19    | NM_000769.1    | CYP2C;cytochrome P450, subfamily IIC (mephenytoin 4-hydroxylase), polypeptide 19,cytochrome P450, family 2, subfamily C, polypeptide 19                                | cytochrome P450 family 2 subfamily C member 19 |
| CYP2C8     | NM_000770.3    | cytochrome P450, subfamily IIC (mephenytoin 4-hydroxylase), polypeptide 8,cytochrome P450, family 2, subfamily C, polypeptide 8  | cytochrome P450 family 2 subfamily C member 8  |
| CYP2C9     | NM_000771.3    | CYP2C10;cytochrome P450, subfamily IIC (mephenytoin 4-hydroxylase), polypeptide 9,cytochrome P450, family 2, subfamily C, polypeptide 9                                | cytochrome P450 family 2 subfamily C member 9  |
| CYP2E1     | NM_000773.3    | CYP2E;cytochrome P450, subfamily IIE (ethanol-inducible), polypeptide 1,cytochrome P450, family 2, subfamily E, polypeptide 1  | cytochrome P450 family 2 subfamily E member 1  |
| CYP2J2     | NM_000775.2    | cytochrome P450, subfamily IJJ (arachidonic acid epoxygenase) polypeptide 2,cytochrome P450, family 2, subfamily J, polypeptide 2                                      | cytochrome P450 family 2 subfamily J member 2  |
| CYP4A11/22 | NM_001010969.3 |  | cytochrome P450 family 4 subfamily A member 22 |
| CYP7A1     | NM_000780.3    | CYP7;cytochrome P450, subfamily VIIA (cholesterol 7 alpha-monooxygenase), polypeptide 1,cytochrome P450, family 7, subfamily A, polypeptide 1                          | cytochrome P450 family 7 subfamily A member 1  |
| CYP8B1     | NM_004391.2    | cytochrome P450, subfamily VIII B (sterol 12-alpha-hydroxylase), polypeptide 1,cytochrome P450, family 8, subfamily B, polypeptide 1                                   | cytochrome P450 family 8 subfamily B member 1  |
| DAPK1      | NM_001288729.1 | death-associated protein kinase 1  | death associated protein kinase 1              |
| DAXX       | NM_001350.3    | death-associated protein 6   | death domain associated protein                |
| DDIT3      | NM_004083.4    | DNA-damage-inducible transcript 3  | DNA damage inducible transcript 3              |
| DDR2       | NM_006182.2    | TYRO10,NTRKR3;discoidin domain receptor family, member 2   | discoidin domain receptor tyrosine kinase 2    |
| DEPDC5     | NM_001136029.2 |  | DEP domain containing 5                        |
| DERL1      | NM_001134671.2 | Der1-like domain family, member 1  | derlin 1                                       |
| DERL2      | NM_016041.3    | Der1-like domain family, member 2  | derlin 2                                       |
| DIAPH1     | NM_005219.4    | DFNA1;diaphanous (Drosophila, homolog) 1,diaphanous homolog 1 (Drosophila)   | diaphanous related formin 1                    |
| DLL1       | NM_005618.3    | delta (Drosophila)-like 1,delta-like 1 (Drosophila)  | delta like canonical Notch ligand 1            |
| DLL4       | NM_019074.2    | delta-like 4 homolog (Drosophila),delta-like 4 (Drosophila)  | delta like canonical Notch ligand 4            |
| DOCK1      | NM_001290223.1 | dedicator of cyto-kinesis 1  | dedicator of cytokinesis 1                     |
| DOCK2      | NM_004946.2    | dedicator of cyto-kinesis 2  | dedicator of cytokinesis 2                     |
| DUSP7      | NM_001947.2    |  | dual specificity phosphatase 7                 |
| DUSP8      | NM_004420.2    | C11orf81;chromosome 11 open reading frame 81   | dual specificity phosphatase 8                 |
| DYNLL1     | NM_003746.2    | DNCL1;dynein, cytoplasmic, light polypeptide 1   | dynein light chain LC8-type 1                  |
| E2F4       | NM_001950.3    | E2F transcription factor 4, p107/p130-binding  | E2F transcription factor 4                     |
| EEF2K      | NM_013302.3    |  | eukaryotic elongation factor 2 kinase          |
| EGFR       | NM_201282.1    | ERBB;epidermal growth factor receptor (avian erythroblastic leukemia viral (v-erb-b) oncogene homolog)   | epidermal growth factor receptor               |
| EGR1       | NM_001964.2    |  | early growth response 1                        |
| EHMT1      | NM_024757.3    | EHMT1-IT1;euchromatic histone methyltransferase 1,EHMT1 intronic transcript 1  | euchromatic histone lysine methyltransferase 1 |
| ELN        | NM_001081754.1 |  | elastin  |
| ELOVL6     | NM_001130721.1 | ELOVL family member 6, elongation of long chain fatty acids (FEN1/Elo2, SUR4/Elo3-like, yeast)   | ELOVL fatty acid elongase 6                    |
| EOMES      | NM_005442.2    | eomesodermin (Xenopus laevis) homolog  | eomesodermin                                   |
| EP300      | NM_001429.2    |  | E1A binding protein p300                       |
| EP400      | NM_015409.3    | TNRC12;trinucleotide repeat containing 12  | E1A binding protein p400                       |
| EPAS1      | NM_001430.3    |  | endothelial PAS domain protein 1               |
| EPHX2      | NM_001979.5    | epoxide hydrolase 2, cytoplasmic   | epoxide hydrolase 2                            |
| ERC1       | NM_178040.1    | RAB6IP2;RAB6 interacting protein 2   | ELKS/RAB6-interacting/CAST family member 1     |
| ERN1       | NM_001433.2    | ER to nucleus signalling 1   | endoplasmic reticulum to nucleus signaling 1   |

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| ERO1A    | NM_014584.1    | ERO1L;ERO1 ( <i>S. cerevisiae</i> )-like,ERO1-like ( <i>S. cerevisiae</i> )   | endoplasmic reticulum oxidoreductase 1 alpha   |
| ERP29    | NM_001034025.1 | C12orf8;chromosome 12 open reading frame 8  | endoplasmic reticulum protein 29               |
| F11R     | NM_144503.1    | JAM1;junctional adhesion molecule 1   | F11 receptor                                   |
| F5       | NM_000130.2    | coagulation factor V (proaccelerin, labile factor)  | coagulation factor V                           |
| F8       | NM_019863.2    | F8C;coagulation factor VIII, procoagulant component   | coagulation factor VIII                        |
| FABP4    | NM_001442.2    |   | fatty acid binding protein 4                   |
| FABP5    | NM_001444.1    | fatty acid binding protein 5 (psoriasis-associated)   | fatty acid binding protein 5                   |
| FADD     | NM_003824.2    | Fas (TNFRSF6)-associated via death domain   | Fas associated via death domain                |
| FAM30A   | NR_026800.2    | C14orf110,KIAA0125;chromosome 14 open reading frame 110,KIAA0125  | family with sequence similarity 30 member A    |
| FAP      | NM_004460.2    | fibroblast activation protein, alpha  | fibroblast activation protein alpha            |
| FAS      | NM_000043.4    | FAS1,APT1,TNFRSF6;tumor necrosis factor receptor superfamily, member 6,Fas (TNF receptor superfamily, member 6)   | Fas cell surface death receptor                |
| FASN     | NM_004104.4    |   | fatty acid synthase                            |
| FBP1     | NM_000507.3    | FBP;fructose-1,6-bisphosphatase 1   | fructose-bisphosphatase 1                      |
| FCAR     | NM_002000.2    | Fc fragment of IgA, receptor for  | Fc fragment of IgA receptor                    |
| FCER1A   | NM_002001.2    | FCE1A;Fc fragment of IgE, high affinity I, receptor for; alpha polypeptide  | Fc fragment of IgE receptor Ia                 |
| FCER1G   | NM_004106.1    | Fc fragment of IgE, high affinity I, receptor for; gamma polypeptide  | Fc fragment of IgE receptor Ig                 |
| FCGR3A/B | NM_000570.4    | FCGR3,FCG3;Fc fragment of IgG, low affinity IIIb, receptor for (CD16),Fc fragment of IgG, low affinity IIIb, receptor (CD16b)   | Fc fragment of IgG receptor IIIb               |
| FCRL2    | NM_001159488.1 | SPAP1;SH2 domain-containing phosphatase anchor protein 1,Fc receptor-like 2   | Fc receptor like 2                             |
| FGA      | NM_021871.2    | fibrinogen, A alpha polypeptide   | fibrinogen alpha chain                         |
| FGB      | NM_005141.3    | fibrinogen, B beta polypeptide  | fibrinogen beta chain                          |
| FGD2     | NM_173558.3    | FGD1 family, member 2   | FYVE, RhoGEF and PH domain containing 2        |
| FGF19    | NM_005117.2    |   | fibroblast growth factor 19                    |
| FGF2     | NM_002006.4    | FGFB;fibroblast growth factor 2 (basic)   | fibroblast growth factor 2                     |
| FGF21    | NM_019113.2    |   | fibroblast growth factor 21                    |
| FGG      | NM_000509.4    | fibrinogen, gamma polypeptide   | fibrinogen gamma chain                         |
| FGL2     | NM_006682.2    | fibrinogen-like 2   | fibrinogen like 2                              |
| FLI1     | NM_001167681.2 | Friend leukemia virus integration 1   | Fli-1 proto-oncogene, ETS transcription factor |
| FLNB     | NM_001164317.1 | FLN1L,LR51;filamin B, beta (actin binding protein 278),Larsen syndrome 1 (autosomal dominant),filamin B, beta   | filamin B                                      |
| FLT1     | NM_002019.4    | FLT;fms-related tyrosine kinase 1 (vascular endothelial growth factor/vascular permeability factor receptor),fms-related tyrosine kinase 1  | fms related tyrosine kinase 1                  |
| FLT4     | NM_002020.1    | fms-related tyrosine kinase 4   | fms related tyrosine kinase 4                  |
| FN1      | NM_212482.1    |   | fibronectin 1                                  |
| FNIP2    | NM_020840.1    |   | folliculin interacting protein 2               |
| FOXP3    | NM_014009.3    | IPEX;immune dysregulation, polyendocrinopathy, enteropathy, X-linked  | forkhead box P3                                |
| FPR1     | NM_002029.3    |   | formyl peptide receptor 1                      |
| FRS2     | NM_006654.3    |   | fibroblast growth factor receptor substrate 2  |
| FST      | NM_006350.2    |   | folliculin                                     |
| FURIN    | NM_002569.2    | PCSK3,FUR,PACE;paired basic amino acid cleaving enzyme (furin, membrane associated receptor protein),furin (paired basic amino acid cleaving enzyme)  | furin, paired basic amino acid cleaving enzyme |
| FZD2     | NM_001466.2    | frizzled ( <i>Drosophila</i> ) homolog 2,frizzled homolog 2 ( <i>Drosophila</i> ),frizzled 2, seven transmembrane spanning receptor,frizzled family receptor 2  | frizzled class receptor 2                      |
| FZD5     | NM_003468.2    | C2orf31;frizzled ( <i>Drosophila</i> ) homolog 5,chromosome 2 open reading frame 31,frizzled homolog 5 ( <i>Drosophila</i> ),frizzled 5, seven transmembrane spanning receptor,frizzled family receptor 5 | frizzled class receptor 5                      |
| GAB1     | NM_002039.3    |   | GRB2 associated binding protein 1              |
| GAS1     | NM_002048.2    |   | growth arrest specific 1                       |
| GATA3    | NM_001002295.1 | GATA-binding protein 3  | GATA binding protein 3                         |
| GBP4     | NM_052941.4    |   | guanylate binding protein 4                    |
| GBP5     | NM_052942.3    |   | guanylate binding protein 5                    |
| GCNT1    | NM_001097633.1 | NACGT2;glucosaminyl (N-acetyl) transferase 1, core 2 (beta-1,6-N-acetylglucosaminyltransferase),glucosaminyl (N-acetyl) transferase 1, core 2   | glucosaminyl (N-acetyl) transferase 1          |
| GLI1     | NM_005269.1    | GLI;glioma-associated oncogene homolog 1 (zinc finger protein),glioma-associated oncogene family zinc finger 1  | GLI family zinc finger 1                       |
| GLI2     | NM_005270.4    | GLI-Kruppel family member GLI2,glioma-associated oncogene family zinc finger 2  | GLI family zinc finger 2                       |
| GLI3     | NM_000168.5    | GCPS,PHS;Greig cephalopolysyndactyly syndrome,GLI-Kruppel family member GLI3,glioma-associated oncogene family zinc finger 3  | GLI family zinc finger 3                       |
| GLP1R    | NM_002062.3    | glucagon-like peptide 1 receptor  | glucagon like peptide 1 receptor               |
| GNB4     | NM_021629.3    | guanine nucleotide binding protein (G protein), beta polypeptide 4  | G protein subunit beta 4                       |
| GNG2     | NM_053064.4    | guanine nucleotide binding protein (G protein), gamma 2   | G protein subunit gamma 2                      |

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| GNLY     | NM_012483.2    | LAG2   | granulysin  |                   |
| GNPTAB   | NM_024312.3    | GNPTA;N-acetylglucosamine-1-phosphate transferase, alpha and beta subunits   | N-acetylglucosamine-1-phosphate transferase subunits alpha and beta           |                   |
| GOT2     | NM_002080.2    | glutamic-oxaloacetic transaminase 2, mitochondrial (aspartate aminotransferase 2),glutamic-oxaloacetic transaminase 2, mitochondrial   | glutamic-oxaloacetic transaminase 2   |                   |
| GPC4     | NM_001448.2    |  | glypican 4  |                   |
| GPR65    | NM_003608.2    |  | G protein-coupled receptor 65   |                   |
| GPX2     | NM_002083.2    | glutathione peroxidase 2 (gastrointestinal)  | glutathione peroxidase 2  |                   |
| GPX3     | NM_002084.3    | glutathione peroxidase 3 (plasma)  | glutathione peroxidase 3  |                   |
| GRB10    | NM_001001555.2 | growth factor receptor-bound protein 10  | growth factor receptor bound protein 10                                       |                   |
| GREM1    | NM_013372.5    | CTKSF1B1,CRAC1;cysteine knot superfamily 1, BMP antagonist 1,gremlin 1, cysteine knot superfamily, homolog (Xenopus laevis),gremlin 1,colorectal adenoma and carcinoma 1   | gremlin 1, DAN family BMP antagonist  |                   |
| GSK3B    | NM_002093.2    |  | glycogen synthase kinase 3 beta   |                   |
| GZMA     | NM_006144.2    | HFSP,CTLA3;granzyme A (granzyme 1, cytotoxic T-lymphocyte-associated serine esterase 3)  | granzyme A  |                   |
| GZMB     | NM_004131.3    | CTLA1,CSPB;granzyme B (granzyme 2, cytotoxic T-lymphocyte-associated serine esterase 1)  | granzyme B  |                   |
| GZMH     | NM_033423.3    | CTSLG2;granzyme H (cathepsin G-like 2, protein h-CCPX)   | granzyme H  |                   |
| HADH     | NM_001184705.2 | HADHSC;L-3-hydroxyacyl-Coenzyme A dehydrogenase, short chain,hydroxyacyl-Coenzyme A dehydrogenase  | hydroxyacyl-CoA dehydrogenase   |                   |
| HADHA    | NM_000182.4    | hydroxyacyl-Coenzyme A dehydrogenase/3-ketoacyl-Coenzyme A thiolase/enoyl-Coenzyme A hydratase (trifunctional protein), alpha subunit,hydroxyacyl-CoA dehydrogenase/3-ketoacyl-CoA thiolase/enoyl-CoA hydratase (trifunctional protein), alpha subunit | hydroxyacyl-CoA dehydrogenase trifunctional multienzyme complex subunit alpha |                   |
| HAVCR1   | NM_001173393.1 |  | hepatitis A virus cellular receptor 1   |                   |
| HCAR2    | NM_177551.3    | GPR109A;G protein-coupled receptor 109A  | hydroxycarboxylic acid receptor 2   | HCAR3 (NM_006018) |
| HCFC1    | NM_005334.2    | HFC1,MRX3;mental retardation, X-linked 3,host cell factor C1 (VP16-accessory protein)  | host cell factor C1   |                   |
| HCK      | NM_002110.2    | hemopoietic cell kinase  | HCK proto-oncogene, Src family tyrosine kinase                                |                   |
| HDAC4    | NM_006037.3    | BDMR;brachydactyly-mental retardation syndrome   | histone deacetylase 4   |                   |
| HDC      | NM_002112.3    |  | histidine decarboxylase   |                   |
| HIF1A    | NM_001530.2    | hypoxia inducible factor 1, alpha subunit (basic helix-loop-helix transcription factor)  | hypoxia inducible factor 1 subunit alpha                                      |                   |
| HIF3A    | NM_152796.2    |  | hypoxia inducible factor 3 subunit alpha                                      |                   |
| HIKESHI  | NM_016401.4    | C11orf73;chromosome 11 open reading frame 73   | heat shock protein nuclear import factor hikeshi                              |                   |
| HKDC1    | NM_025130.3    |  | hexokinase domain containing 1  |                   |
| HLA-A    | NM_002116.5    |  | major histocompatibility complex, class I, A                                  |                   |
| HLA-B    | NM_005514.6    | AS;ankylosing spondylitis  | major histocompatibility complex, class I, B                                  |                   |
| HLA-DPA1 | NM_033554.2    | HLA-DP1A   | major histocompatibility complex, class II, DP alpha 1                        |                   |
| HLA-DQA1 | NM_002122.3    | HLA-DQA  | major histocompatibility complex, class II, DQ alpha 1                        |                   |
| HLA-DQA2 | NM_020056.4    | HLA-DXA  | major histocompatibility complex, class II, DQ alpha 2                        |                   |
| HLA-DRA  | NM_019111.3    | HLA-DRA1   | major histocompatibility complex, class II, DR alpha                          |                   |
| HLA-E    | NM_005516.4    |  | major histocompatibility complex, class I, E                                  |                   |
| HLA-F    | NM_001098479.1 |  | major histocompatibility complex, class I, F                                  |                   |
| HLA-G    | NM_002127.4    | HLA-G histocompatibility antigen, class I, G   | major histocompatibility complex, class I, G                                  |                   |
| HMGCS2   | NM_005518.3    | 3-hydroxy-3-methylglutaryl-Coenzyme A synthase 2 (mitochondrial),3-hydroxy-3-methylglutaryl-CoA synthase 2 (mitochondrial)   | 3-hydroxy-3-methylglutaryl-CoA synthase 2                                     |                   |
| HMOX1    | NM_002133.2    | heme oxygenase (decycling) 1   | heme oxygenase 1  |                   |
| HSBP1    | NM_001537.2    |  | heat shock factor binding protein 1   |                   |
| HSD11B1  | NM_181755.1    | HSD11B,HSD11;hydroxysteroid (11-beta) dehydrogenase 1  | hydroxysteroid 11-beta dehydrogenase 1  |                   |
| HSD17B4  | NM_000414.2    | hydroxysteroid (17-beta) dehydrogenase 4   | hydroxysteroid 17-beta dehydrogenase 4  |                   |
| HSP90AA1 | NM_001017963.2 | HSPC1,HSPCA;heat shock 90kD protein 1, alpha,heat shock 90kDa protein 1, alpha,heat shock protein 90kDa alpha (cytosolic), class A member 1  | heat shock protein 90 alpha family class A member 1                           |                   |
| HSP90AB1 | NM_007355.3    | HSPC2,HSPCB;heat shock 90kD protein 1, beta,heat shock 90kDa protein 1, beta,heat shock protein 90kDa alpha (cytosolic), class B member 1  | heat shock protein 90 alpha family class B member 1                           |                   |
| HSPG2    | NM_005529.5    | SJS1;Schwartz-Jampel syndrome 1 (chondrodystrophic myotonia)   | heparan sulfate, proteoglycan 2   |                   |
| HTRA2    | NM_013247.4    | PRSS25;protease, serine, 25  | HtrA serine peptidase 2   |                   |
| HVCN1    | NM_032369.3    | hydrogen voltage-gated channel 1   | hydrogen voltage gated channel 1  |                   |
| ICAM1    | NM_000201.2    |  | intercellular adhesion molecule 1   |                   |
| ICOS     | NM_012092.2    | inducible T-cell costimulator  | inducible T cell costimulator   |                   |
| IFI27    | NM_005532.3    |  | interferon alpha inducible protein 27   |                   |
| IFI35    | NM_005533.3    | interferon-induced protein 35  | interferon induced protein 35   |                   |
| IFI6     | NM_002038.3    | G1P3;interferon, alpha-inducible protein (clone IFI-6-16)  | interferon alpha inducible protein 6  |                   |
| IFNG     | NM_000619.2    |  | interferon gamma  |                   |
| IFNGR1   | NM_000416.2    | IFNGR  | interferon gamma receptor 1   |                   |
| IGF1     | NM_000618.3    | insulin-like growth factor 1 (somatomedin C)   | insulin like growth factor 1  |                   |
| IGF1R    | NM_000875.4    | insulin-like growth factor 1 receptor  | insulin like growth factor 1 receptor   |                   |
| IHH      | NM_002181.2    | Indian hedgehog (Drosophila) homolog   | Indian hedgehog signaling molecule  |                   |
| IKKB     | NM_001556.1    | inhibitor of kappa light polypeptide gene enhancer in B-cells, kinase beta   | inhibitor of nuclear factor kappa B kinase subunit beta                       |                   |
| IL10     | NM_000572.2    |  | interleukin 10  |                   |

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|-----------|----------------|---|--|---|
| IL10RA    | NM_001558.2    | IL10R;interleukin 10 receptor, alpha  | interleukin 10 receptor subunit alpha  |   |
| IL11      | NM_000641.2    |   | interleukin 11   |   |
| IL12RB2   | NM_001559.2    | interleukin 12 receptor, beta 2   | interleukin 12 receptor subunit beta 2   |   |
| IL13      | NM_002188.2    |   | interleukin 13   |   |
| IL17A     | NM_002190.2    | CTLA8,IL17;interleukin 17 (cytotoxic T-lymphocyte-associated serine esterase 8)   | interleukin 17A  |   |
| IL18R1    | NM_003855.3    |   | interleukin 18 receptor 1  |   |
| IL1B      | NM_000576.2    |   | interleukin 1 beta   |   |
| IL1R1     | NM_001320984.1 | IL1R,IL1RA;interleukin 1 receptor, type I   | interleukin 1 receptor type 1  |   |
| IL1RAP    | NM_002182.2    |   | interleukin 1 receptor accessory protein   |   |
| IL20RB    | NM_144717.2    | FNDC6;fibronectin type III domain containing 6,interleukin 20 receptor beta,interleukin 20 receptor beta subunit  | interleukin 20 receptor subunit beta   |   |
| IL21R     | NM_021798.2    |   | interleukin 21 receptor  |   |
| IL27      | NM_145659.3    | IL30;interleukin 30   | interleukin 27   |   |
| IL2RA     | NM_000417.1    | IL2R,IDD10;insulin-dependent diabetes mellitus 10,interleukin 2 receptor, alpha   | interleukin 2 receptor subunit alpha   |   |
| IL2RB     | NM_000878.2    | IL15RB;interleukin 15 receptor, beta,interleukin 2 receptor, beta   | interleukin 2 receptor subunit beta  |   |
| IL33      | NM_033439.2    | C9orf26;chromosome 9 open reading frame 26 (NF-HEV)   | interleukin 33   |   |
| IL4       | NM_000589.2    |   | interleukin 4  |   |
| IL6       | NM_000600.3    | IFNB2;interleukin 6 (interferon, beta 2)  | interleukin 6  |   |
| IL6ST     | NM_002184.2    | interleukin 6 signal transducer (gp130, oncostatin M receptor)  | interleukin 6 signal transducer  |   |
| ILK       | NM_004517.2    | integrin-linked kinase  | integrin linked kinase   |   |
| INPP5D    | NM_005541.3    | inositol polyphosphate-5-phosphatase, 145kD,inositol polyphosphate-5-phosphatase, 145kDa  | inositol polyphosphate-5-phosphatase D   |   |
| INSR      | NM_000208.2    |   | insulin receptor   |   |
| IQGAP1    | NM_003870.3    |   | IQ motif containing GTPase activating protein 1  |   |
| IRAK3     | NM_007199.1    | interleukin-1 receptor-associated kinase 3  | interleukin 1 receptor associated kinase 3   |   |
| IRF1      | NM_002198.2    |   | interferon regulatory factor 1   |   |
| IRF3      | NM_001571.5    |   | interferon regulatory factor 3   |   |
| IRF4      | NM_002460.1    | MUM1  | interferon regulatory factor 4   |   |
| IRF8      | NM_002163.2    | ICSBP1;interferon consensus sequence binding protein 1  | interferon regulatory factor 8   |   |
| IRS1      | NM_005544.2    |   | insulin receptor substrate 1   |   |
| ISG15     | NM_005101.3    | G1P2;interferon, alpha-inducible protein (clone IFI-15K)  | ISG15 ubiquitin like modifier  |   |
| ISG20     | NM_002201.5    | interferon stimulated exonuclease gene 20kDa  | interferon stimulated exonuclease gene 20  |   |
| ITCH      | NM_001257138.1 | itchy (mouse homolog) E3 ubiquitin protein ligase,itchy E3 ubiquitin protein ligase homolog (mouse)   | itchy E3 ubiquitin protein ligase  |   |
| ITGA1     | NM_181501.1    | integrin, alpha 1   | integrin subunit alpha 1   |   |
| ITGA4     | NM_000885.4    | CD49D;integrin, alpha 4 (antigen CD49D, alpha 4 subunit of VLA-4 receptor)  | integrin subunit alpha 4   |   |
| ITGA5     | NM_002205.2    | FNRA;integrin, alpha 5 (fibronectin receptor, alpha polypeptide)  | integrin subunit alpha 5   |   |
| ITGA9     | NM_002207.2    | integrin, alpha 9   | integrin subunit alpha 9   |   |
| ITGB1     | NM_002211.3    | FNRB,MSK12,MDF2;integrin, beta 1 (fibronectin receptor, beta polypeptide, antigen CD29 includes MDF2, MSK12) GP3A;integrin, beta 3 (platelet glycoprotein IIIa, antigen CD61)   | integrin subunit beta 1  |   |
| ITGB3     | NM_000212.2    |   | integrin subunit beta 3  |   |
| ITPR2     | NM_002223.2    | inositol 1,4,5-triphosphate receptor, type 2,inositol 1,4,5-triphosphate receptor, type 2   | inositol 1,4,5-triphosphate receptor type 2  |   |
| JAG1      | NM_000214.2    | AGS,JAGL1;Alagille syndrome,jagged 1  | jagged canonical Notch ligand 1  |   |
| JAG2      | NM_145159.1    | jagged 2  | jagged canonical Notch ligand 2  |   |
| JAK1      | NM_002227.1    | JAK1B   | Janus kinase 1   |   |
| JAK2      | NM_004972.3    |   | Janus kinase 2   |   |
| JMJD4     | NM_001161465.1 |   | jumonji domain containing 4  |   |
| JUN       | NM_002228.3    | v-jun avian sarcoma virus 17 oncogene homolog,jun oncogene  | Jun proto-oncogene, AP-1 transcription factor subunit                                  |   |
| KANSL1    | NM_001193465.1 | KIAA1267;KIAA1267   | KAT8 regulatory NSL complex subunit 1  |   |
| KAT6A     | NM_001099412.1 | ZNF220,RUNXBP2,MYST3;runt-related transcription factor binding protein 2,MYST histone acetyltransferase (monocytic leukemia) 3,K(lysine) acetyltransferase 6A                   | lysine acetyltransferase 6A  |   |
| KDM2A     | NM_012308.1    | FBXL11;F-box and leucine-rich repeat protein 11,lysine (K)-specific demethylase 2A  | lysine demethylase 2A  |   |
| KDM3B     | NM_016604.3    | CSorf7,JMJD1B;chromosome 5 open reading frame 7,jumonji domain containing 1B,lysine (K)-specific demethylase 3B   | lysine demethylase 3B  |   |
| KDM5D     | NM_001146705.1 | HYA,HY,SMCY,JARID1D;jumonji, AT rich interactive domain 1D (RBP2-like),Smcy homolog, Y-linked (mouse),jumonji, AT rich interactive domain 1D,lysine (K)-specific demethylase 5D | lysine demethylase 5D  |   |
| KDR       | NM_002253.2    | kinase insert domain receptor (a type III receptor tyrosine kinase)   | kinase insert domain receptor  |   |
| KIF3A     | NM_007054.5    |   | kinesin family member 3A   |   |
| KIR2DL3   | NM_015868.2    | killer cell immunoglobulin-like receptor, two domains, long cytoplasmic tail, 3   | killer cell immunoglobulin like receptor, two Ig domains and long cytoplasmic tail 3   | KIR2DL2 (NM_014219), KIR2DS4 (NM_001281971;NM_012314;NM_001281972), KIR2DS2 (NM_001291701;NM_012312;NM_001291695) |
| KIR3DL1/2 | NM_001322168.1 | killer cell immunoglobulin-like receptor, three domains, long cytoplasmic tail, 2   | killer cell immunoglobulin like receptor, three Ig domains and long cytoplasmic tail 2 | LOC112268355 (NM_001368254), KIR3DS1 (NM_001282171;NM_001282170;NM_001083539)                                     |
| KLF5      | NM_001730.3    | BTEB2;Kruppel-like factor 5 (intestinal)  | Kruppel like factor 5  |   |
| KLKB1     | NM_000892.3    | KLK3;kallikrein B, plasma (Fletcher factor) 1   | kallikrein B1  |   |



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| KLRB1    | NM_002258.2    | NKR;killer cell lectin-like receptor subfamily B, member 1<br>CD94;killer cell lectin-like receptor subfamily D, member 1  | killer cell lectin like receptor B1                         |  |
| KLRD1    | NM_007334.2    |  | killer cell lectin like receptor D1                         |  |
| KLRK1    | NM_007360.3    | D12S2489E;DNA segment on chromosome 12 (unique)<br>2489 expressed sequence,killer cell lectin-like receptor subfamily K, member 1  | killer cell lectin like receptor K1                         |  |
| KMT2D    | NM_003482.3    | TNRC21,MLL2;trinucleotide repeat containing<br>21,myeloid/lymphoid or mixed-lineage leukemia 2,lysine (K)-specific methyltransferase 2D  | lysine methyltransferase 2D                                 |  |
| KNG1     | NM_000893.2    | KNG,BDK;kininogen  | kininogen 1   |  |
| KRAS     | NM_033360.2    | KRAS2;v-Ki-ras2 Kirsten rat sarcoma 2 viral oncogene homolog,v-Ki-ras2 Kirsten rat sarcoma viral oncogene homolog,Kirsten rat sarcoma viral oncogene homolog                                       | KRAS proto-oncogene, GTPase                                 |  |
| LAG3     | NM_002286.5    | lymphocyte-activation gene 3   | lymphocyte activating 3                                     |  |
| LAMA3    | NM_000227.3    | LAMNA;laminin, alpha 3 (nicein (150kD), kalinin (165kD),<br>BM600 (150kD), epilegrin),laminin, alpha 3   | laminin subunit alpha 3                                     | sub-maximal isoform coverage due to non-overlapping variants |
| LAMC1    | NM_002293.3    | LAMB2;laminin, gamma 1 (formerly LAMB2)  | laminin subunit gamma 1                                     |  |
| LAMTOR2  | NM_001145264.1 | ROBLD3;roadblock domain containing 3   | late endosomal/lysosomal adaptor, MAPK and MTOR activator 2 |  |
| LAMTOR4  | NM_001008395.2 | C7orf59;chromosome 7 open reading frame 59   | late endosomal/lysosomal adaptor, MAPK and MTOR activator 4 |  |
| LATS1    | NM_004690.2    | LATS (large tumor suppressor, Drosophila) homolog<br>1,LATS, large tumor suppressor, homolog 1 (Drosophila)  | large tumor suppressor kinase 1                             |  |
| LATS2    | NM_014572.2    | LATS (large tumor suppressor, Drosophila) homolog<br>2,LATS, large tumor suppressor, homolog 2 (Drosophila)  | large tumor suppressor kinase 2                             |  |
| LDLRAP1  | NM_015627.2    |  | low density lipoprotein receptor adaptor protein 1          |  |
| LEP      | NM_000230.2    | OBS,OB;leptin (murine obesity homolog),leptin (obesity homolog, mouse)   | leptin  |  |
| LEPR     | NM_001003679.1 |  | leptin receptor   |  |
| LGALS3   | NM_001177388.1 | LGALS2;lectin, galactoside-binding, soluble, 3   | galectin 3  |  |
| LGMN     | NM_001008530.2 | PRSC1;protease, cysteine, 1 (legumain)   | legumain  |  |
| LILRB2   | NM_001278405.1 | leukocyte immunoglobulin-like receptor, subfamily B<br>(with TM and ITIM domains), member 2  | leukocyte immunoglobulin like receptor B2                   |  |
| LIPA     | NM_000235.3    | lipase A, lysosomal acid, cholesterol esterase   | lipase A, lysosomal acid type                               |  |
| LIPC     | NM_000236.2    | lipase, hepatic  | lipase C, hepatic type                                      |  |
| LIPG     | NM_006033.2    | lipase, endothelial  | lipase G, endothelial type                                  |  |
| LOX      | NM_002317.4    |  | lysyl oxidase   |  |
| LOXL1    | NM_005576.2    | lysyl oxidase-like 1   | lysyl oxidase like 1  |  |
| LOXL2    | NM_002318.2    | lysyl oxidase-like 2   | lysyl oxidase like 2  |  |
| LOXL4    | NM_032211.6    | lysyl oxidase-like 4   | lysyl oxidase like 4  |  |
| LPA      | NM_005577.2    | LP;lipoprotein, Lp(a)  | lipoprotein(a)  |  |
| LPAR5    | NM_020400.4    | GPR93,GPR92;G protein-coupled receptor 92  | lysophosphatidic acid receptor 5                            |  |
| LPCAT1   | NM_024830.3    | AYTL2;acyltransferase like 2   | lysophosphatidylcholine acyltransferase 1                   |  |
| LPL      | NM_000237.2    | LIPD   | lipoprotein lipase  |  |
| LRP1     | NM_002332.2    | APR,A2MR,IGFBP3R1,IGFBP-3R;alpha-2-macroglobulin receptor,low density lipoprotein receptor-related protein 1   | LDL receptor related protein 1                              |  |
| LRP2     | NM_004525.2    | low density lipoprotein receptor-related protein 2   | LDL receptor related protein 2                              |  |
| LRP6     | NM_002336.1    | low density lipoprotein receptor-related protein 6   | LDL receptor related protein 6                              |  |
| LRRC32   | NM_001128922.1 | D11S833E,GARP;glycoprotein A repetitions predominant   | leucine rich repeat containing 32                           |  |
| LTA      | NM_000595.2    | TNFB;lymphotoxin alpha (TNF superfamily, member 1)   | lymphotoxin alpha   |  |
| LTB      | NM_002341.1    | TNFC   | lymphotoxin beta  |  |
| LYN      | NM_002350.3    | v-yes-1 Yamaguchi sarcoma viral related oncogene homolog   | LYN proto-oncogene, Src family tyrosine kinase              |  |
| MAF      | NM_005360.4    | v-maf avian musculoaponeurotic fibrosarcoma oncogene homolog   | MAF bZIP transcription factor                               |  |
| MAML1    | NM_014757.4    | mastermind (drosophila)-like 1,mastermind-like 1 (Drosophila)  | mastermind like transcriptional coactivator 1               |  |
| MAML2    | NM_032427.2    | mastermind (Drosophila)-like 2,mastermind-like 2 (Drosophila)  | mastermind like transcriptional coactivator 2               |  |
| MAML3    | NM_018717.4    | TNRC3;trinucleotide repeat containing 3,mastermind-like 3 (Drosophila)   | mastermind like transcriptional coactivator 3               |  |
| MAP1LC3A | NM_032514.2    |  | microtubule associated protein 1 light chain 3 alpha        |  |
| MAP2K1   | NM_002755.2    | PRKMK1   | mitogen-activated protein kinase kinase 1                   |  |
| MAP3K1   | NM_005921.1    | MEKK1;MEKK1  | mitogen-activated protein kinase kinase kinase 1            |  |
| MAPK1    | NM_138957.2    | PRKM2,PRKM1  | mitogen-activated protein kinase 1                          |  |
| MAPK10   | NM_138981.2    | PRKM10   | mitogen-activated protein kinase 10                         |  |
| MAPK11   | NM_002751.6    | PRKM11   | mitogen-activated protein kinase 11                         |  |
| MAPK8    | NM_002750.2    | PRKM8  | mitogen-activated protein kinase 8                          |  |
| MAPK9    | NM_001135044.1 | PRKM9  | mitogen-activated protein kinase 9                          |  |
| MARCO    | NM_006770.3    |  | macrophage receptor with collagenous structure              |  |
| MASP1    | NM_001031849.2 | CRARF,PRSS5;mannan-binding lectin serine protease 1 (C4/C2 activating component of Ra-reactive factor),mannan-binding lectin serine peptidase 1 (C4/C2 activating component of Ra-reactive factor) | mannan binding lectin serine peptidase 1                    |  |
| MBTPS2   | NM_015884.3    | KFSD;membrane-bound transcription factor protease, site 2,keratosis follicularis spinulosa decalvans   | membrane bound transcription factor peptidase, site 2       |  |

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|---------|----------------|--|---|
|         |                | RTT,MRX16,MRX79;mental retardation, X-linked 16,mental retardation, X-linked 79,Rett syndrome,methyl CpG binding protein 2 (Rett syndrome),methyl CpG binding protein 2  | methyl-CpG binding protein 2                    |
| MECP2   | NM_001110792.1 |  |   |
| MEF2A   | NM_005587.2    |  | myocyte enhancer factor 2A                      |
| MEFV    | NM_000243.2    | MEF;Mediterranean fever,MEFV, pyrin innate immunity regulator  | MEFV innate immunity regulator, pyrin           |
| MET     | NM_001127500.1 | met proto-oncogene   | MET proto-oncogene, receptor tyrosine kinase    |
| MFAP3   | NM_001242336.1 | microfibrillar associated protein 3  | microfibril associated protein 3                |
| MKI67   | NM_002417.2    | antigen identified by monoclonal antibody Ki-67  | marker of proliferation Ki-67                   |
| MLXIPL  | NM_032951.2    | WBSCR14;Williams Beuren syndrome chromosome region 14,MLX interacting protein-like   | MLX interacting protein like                    |
| MMP1    | NM_002421.3    | CLG;matrix metalloproteinase 1 (interstitial collagenase)  | matrix metalloproteinase 1                      |
| MMP10   | NM_002425.1    | STMY2;matrix metalloproteinase 10 (stromelysin 2),stromelysin 2  | matrix metalloproteinase 10                     |
| MMP11   | NM_005940.3    | STMY3;matrix metalloproteinase 11 (stromelysin 3),stromelysin 3  | matrix metalloproteinase 11                     |
| MMP12   | NM_002426.3    | matrix metalloproteinase 12 (macrophage elastase)  | matrix metalloproteinase 12                     |
| MMP13   | NM_002427.2    | matrix metalloproteinase 13 (collagenase 3)  | matrix metalloproteinase 13                     |
| MMP14   | NM_004995.2    | matrix metalloproteinase 14 (membrane-inserted),matrix metalloproteinase 14 (membrane-inserted)  | matrix metalloproteinase 14                     |
| MMP16   | NM_005941.4    | C8orf57;matrix metalloproteinase 16 (membrane-inserted),chromosome 8 open reading frame 57,matrix metalloproteinase 16 (membrane-inserted)   | matrix metalloproteinase 16                     |
| MMP2    | NM_004530.2    | CLG4,CLG4A;matrix metalloproteinase 2 (gelatinase A, 72kDa gelatinase, 72kDa type IV collagenase)  | matrix metalloproteinase 2                      |
| MMP3    | NM_002422.3    | STMY1,STMY;matrix metalloproteinase 3 (stromelysin 1, progelatinase),stromelysin 1   | matrix metalloproteinase 3                      |
| MMP7    | NM_002423.3    | MPSL1;matrix metalloproteinase 7 (matriiysin, uterine)   | matrix metalloproteinase 7                      |
| MMP8    | NM_002424.2    | CLG1;matrix metalloproteinase 8 (neutrophil collagenase)   | matrix metalloproteinase 8                      |
| MMP9    | NM_004994.2    | CLG4B;matrix metalloproteinase 9 (gelatinase B, 92kDa gelatinase, 92kDa type IV collagenase)   | matrix metalloproteinase 9                      |
| MMRN1   | NM_007351.2    | MMRN;multimerin  | multimerin 1                                    |
| MMUT    | NM_000255.2    | MUT;methylmalonyl Coenzyme A mutase  | methylmalonyl-CoA mutase                        |
| MOB1B   | NM_173468.3    | MOBK1A;MOB1, Mps One Binder kinase activator-like 1A (yeast),MOB1 Mps One Binder homolog B (yeast)   | MOB kinase activator 1B                         |
| MS4A1   | NM_152866.2    | CD20;membrane-spanning 4-domains, subfamily A, member 1  | membrane spanning 4-domains A1                  |
| MS4A2   | NM_000139.3    | FCER1B,IgE,APY;IgE responsiveness (atopic),membrane-spanning 4-domains, subfamily A, member 2 (Fc fragment of IgE, high affinity I, receptor for; beta polypeptide),membrane-spanning 4-domains, subfamily A, member 2 | membrane spanning 4-domains A2                  |
| MS4A4A  | NM_024021.2    | MS4A4;membrane-spanning 4-domains, subfamily A, member 4,membrane-spanning 4-domains, subfamily A, member 4A   | membrane spanning 4-domains A4A                 |
| MTMR4   | NM_004687.4    |  | myotubularin related protein 4                  |
| MTOR    | NM_004958.3    | FRAP,FRAP2,FRAP1;FK506 binding protein 12-rapamycin associated protein 1,mechanistic target of rapamycin (serine/threonine kinase),mechanistic target of rapamycin   | mechanistic target of rapamycin kinase          |
| MUC5B   | NM_002458.1    | MUC5; mucin 5, subtype B, tracheobronchial   | mucin 5B, oligomeric mucus/gel-forming          |
| MYD88   | NM_002468.3    | myeloid differentiation primary response gene (88),myeloid differentiation primary response 88   | MYD88 innate immune signal transduction adaptor |
| MYL2    | NM_000432.3    | myosin, light polypeptide 2, regulatory, cardiac, slow,myosin, light chain 2, regulatory, cardiac, slow  | myosin light chain 2                            |
| MYLK    | NM_053032.2    | myosin, light polypeptide kinase   | myosin light chain kinase                       |
| NCAM1   | NM_000615.5    |  | neural cell adhesion molecule 1                 |
| NCEH1   | NM_020792.4    | AADACL1;arylacetamide deacetylase-like 1   | neutral cholesterol ester hydrolase 1           |
| NCF1    | NM_000265.4    | neutrophil cytosolic factor 1 (47kD, chronic granulomatous disease, autosomal 1)   | neutrophil cytosolic factor 1                   |
| NCF4    | NM_000631.4    | neutrophil cytosolic factor 4 (40kD),neutrophil cytosolic factor 4, 40kDa  | neutrophil cytosolic factor 4                   |
| NCK2    | NM_001004720.2 |  | NCK adaptor protein 2                           |
| NCKAP1L | NM_005337.4    | HEM1;hematopoietic protein 1   | NCK associated protein 1 like                   |
| NCOA2   | NM_006540.2    |  | nuclear receptor coactivator 2                  |
| NCOR2   | NM_006312.3    | nuclear receptor co-repressor 2  | nuclear receptor corepressor 2                  |
| NCR1    | NM_004829.5    | LY94;lymphocyte antigen 94 (mouse) homolog (activating NK-receptor; NK-p46)  | natural cytotoxicity triggering receptor 1      |
| NCSTN   | NM_015331.2    |  | nicastrin                                       |
| NDUFA1  | NM_004541.3    | NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 1 (7.5kD, MWFE),NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 1, 7.5kDa  | NADH:ubiquinone oxidoreductase subunit A1       |

|        |                |   |   |
|--------|----------------|---|---|
| NDUFB5 | NM_002492.3    | NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 5 (16kD, SGDH),NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 5, 16kDa   | NADH:ubiquinone oxidoreductase subunit B5         |
| NDUFB6 | NM_002493.5    | NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 6 (17kD, B17),NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 6, 17kDa  | NADH:ubiquinone oxidoreductase subunit B6         |
| NDUFB8 | NM_001284367.1 | NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 8 (19kD, ASH1),NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 8, 19kDa   | NADH:ubiquinone oxidoreductase subunit B8         |
| NDUFC1 | NM_002494.2    | NADH dehydrogenase (ubiquinone) 1, subcomplex unknown, 1 (6kD, KFYI),NADH dehydrogenase (ubiquinone) 1, subcomplex unknown, 1, 6kDa   | NADH:ubiquinone oxidoreductase subunit C1         |
| NDUFS3 | NM_004551.1    | NADH dehydrogenase (ubiquinone) Fe-S protein 3 (30kD) (NADH-coenzyme Q reductase),NADH dehydrogenase (ubiquinone) Fe-S protein 3, 30kDa (NADH-coenzyme Q reductase)   | NADH:ubiquinone oxidoreductase core subunit S3    |
| NDUFS5 | NM_004552.2    | NADH dehydrogenase (ubiquinone) Fe-S protein 5 (15kD) (NADH-coenzyme Q reductase),NADH dehydrogenase (ubiquinone) Fe-S protein 5, 15kDa (NADH-coenzyme Q reductase)   | NADH:ubiquinone oxidoreductase subunit S5         |
| NEDD8  | NM_006156.2    | neural precursor cell expressed, developmentally down-regulated 8   | NEDD8 ubiquitin like modifier                     |
| NF1    | NM_000267.2    |   | neurofibromin 1                                   |
| NFAM1  | NM_145912.5    |   | NFAT activating protein with ITAM motif 1         |
| NFKB1  | NM_003998.2    | nuclear factor of kappa light polypeptide gene enhancer in B-cells 1  | nuclear factor kappa B subunit 1                  |
| NID1   | NM_002508.2    | NID;nidogen (enactin)   | nidogen 1   |
| NID2   | NM_007361.3    |   | nidogen 2   |
| NKG7   | NM_005601.3    | natural killer cell group 7 sequence  | natural killer cell granule protein 7             |
| NLRC4  | NM_001199138.1 | CARD12;caspase recruitment domain family, member 12 C1orf7,CIAS1,DFNA34;cold autoinflammatory syndrome  | NLR family CARD domain containing 4               |
| NLRP3  | NM_001079821.2 | 1,deafness, autosomal dominant 34   | NLR family pyrin domain containing 3              |
| NOS1   | NM_000620.4    | NOS;nitric oxide synthase 1 (neuronal)  | nitric oxide synthase 1                           |
| NOS3   | NM_000603.4    | nitric oxide synthase 3 (endothelial cell)  | nitric oxide synthase 3                           |
| NOTCH1 | NM_017617.3    | TAN1;Notch (Drosophila) homolog 1 (translocation-associated),Notch homolog 1, translocation-associated (Drosophila),notch 1   | notch receptor 1                                  |
| NOTCH2 | NM_024408.3    | Notch (Drosophila) homolog 2,Notch homolog 2 (Drosophila),notch 2   | notch receptor 2                                  |
| NOTCH3 | NM_000435.2    | CADASIL;Notch (Drosophila) homolog 3,Notch homolog 3 (Drosophila),notch 3   | notch receptor 3                                  |
| NOTCH4 | NM_004557.3    | INT3;Notch (Drosophila) homolog 4,Notch homolog 4 (Drosophila),notch 4  | notch receptor 4                                  |
| NPC1   | NM_000271.3    | Niemann-Pick disease, type C1   | NPC intracellular cholesterol transporter 1       |
| NPHP4  | NM_015102.3    | nephronophthisis 4  | nephrocystin 4                                    |
| NR1H2  | NM_007121.4    | UNR;ubiquitously-expressed nuclear receptor,nuclear receptor subfamily 1, group H, member 2   | nuclear receptor subfamily 1 group H member 2     |
| NR1H3  | NM_005693.2    | nuclear receptor subfamily 1, group H, member 3   | nuclear receptor subfamily 1 group H member 3     |
| NR1H4  | NM_001206977.1 | nuclear receptor subfamily 1, group H, member 4   | nuclear receptor subfamily 1 group H member 4     |
| NRIP3  | NM_020645.2    | C11orf14;chromosome 11 open reading frame 14  | nuclear receptor interacting protein 3            |
| NRP2   | NM_003872.2    |   | neuropilin 2                                      |
| NUMB   | NM_001005743.1 | C14orf41;numb (Drosophila) homolog,chromosome 14 open reading frame 41,numb homolog (Drosophila)  | NUMB endocytic adaptor protein                    |
| OAS1   | NM_001032409.1 | OIAS;2',5'-oligoadenylate synthetase 1 (40-46 kD),2'-5'-oligoadenylate synthetase 1, 40/46kDa   | 2'-5'-oligoadenylate synthetase 1                 |
| OASL   | NM_198213.1    | 2'-5'-oligoadenylate synthetase-like  | 2'-5'-oligoadenylate synthetase like              |
| OCLN   | NM_002538.3    |   | occludin  |
| OGT    | NM_181673.2    | O-linked N-acetylglucosamine (GlcNAc) transferase (UDP-N-acetylglucosamine:polypeptide-N-acetylglucosaminyl transferase)  | O-linked N-acetylglucosamine (GlcNAc) transferase |
| OSBPL5 | NM_020896.3    | oxysterol binding protein-like 5  | oxysterol binding protein like 5                  |
| P2RY13 | NM_176894.1    | GPR94,GPR86;G protein-coupled receptor 86,purinergic receptor P2Y, G-protein coupled, 13  | purinergic receptor P2Y13                         |
| P3H3   | NM_014262.4    | LEPREL2;leprecan-like 2   | prolyl 3-hydroxylase 3                            |
| P4HB   | NM_000918.3    | PO4DB,ERBA2L;procollagen-proline, 2-oxoglutarate 4-dioxygenase (proline 4-hydroxylase), beta polypeptide (protein disulfide isomerase; thyroid hormone binding protein p55),procollagen-proline, 2-oxoglutarate 4-dioxygenase (proline 4-hydroxylase), beta polypeptide (protein disulfide isomerase-associated 1),procollagen-proline, 2-oxoglutarate 4-dioxygenase (proline 4-hydroxylase), beta polypeptide,prolyl 4-hydroxylase, beta polypeptide | prolyl 4-hydroxylase subunit beta                 |

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|----------|----------------|--|--|--|
| PANX1    | NM_015368.3    |  | pannexin 1   |  |
| PARP1    | NM_001618.3    | PPOL,ADPRT;ADP-ribosyltransferase (NAD+; poly (ADP-ribose) polymerase),poly (ADP-ribose) polymerase family, member 1   | poly(ADP-ribose) polymerase 1  |  |
| PARP4    | NM_006437.3    | ADPRTL1;ADP-ribosyltransferase (NAD+; poly (ADP-ribose) polymerase)-like 1   | poly(ADP-ribose) polymerase family member 4                            |  |
| PC       | NM_000920.3    |  | pyruvate carboxylase   |  |
| PCCB     | NM_000532.4    | propionyl Coenzyme A carboxylase, beta polypeptide   | propionyl-CoA carboxylase subunit beta                                 |  |
| PCK1     | NM_002591.2    | phosphoenolpyruvate carboxykinase 1 (soluble)  | phosphoenolpyruvate carboxykinase 1                                    |  |
| PDE2A    | NM_001143839.1 | phosphodiesterase 2A, cGMP-stimulated  | phosphodiesterase 2A   |  |
| PDE3B    | NM_000922.3    | phosphodiesterase 3B, cGMP-inhibited   | phosphodiesterase 3B   |  |
| PDGFB    | NM_033016.2    | SIS;platelet-derived growth factor beta polypeptide (simian sarcoma viral (v-sis) oncogene homolog),platelet-derived growth factor beta polypeptide  | platelet derived growth factor subunit B                               |  |
| PDGFRB   | NM_002609.3    | PDGFR;platelet-derived growth factor receptor, beta polypeptide  | platelet derived growth factor receptor beta                           |  |
| PDHA1    | NM_000284.3    | PDHA;pyruvate dehydrogenase (lipoamide) alpha 1,pyruvate dehydrogenase alpha 1   | pyruvate dehydrogenase E1 alpha 1 subunit                              |  |
| PECAM1   | NM_000442.3    | platelet/endothelial cell adhesion molecule 1  | platelet and endothelial cell adhesion molecule 1                      |  |
| PELI1    | NM_020651.3    | pellino (Drosophila) homolog 1,pellino homolog 1 (Drosophila)  | pellino E3 ubiquitin protein ligase 1                                  |  |
| PELI2    | NM_021255.2    | pellino (Drosophila) homolog 2,pellino homolog 2 (Drosophila)  | pellino E3 ubiquitin protein ligase family member 2                    |  |
| PGM1     | NM_001172818.1 |  | phosphoglucomutase 1   |  |
| PHLPP1   | NM_194449.3    | PLEKHE1,PHLPP;pleckstrin homology domain containing, family E (with leucine rich repeats) member 1,PH domain and leucine rich repeat protein phosphatase   | PH domain and leucine rich repeat protein phosphatase 1                |  |
| PHYKPL   | NM_153373.3    | AGXT2L2;alanine-glyoxylate aminotransferase 2-like 2   | 5-phosphohydroxy-L-lysine phospho-lyase                                |  |
| PIDD1    | NM_145886.2    | LRDD,PIDD;leucine-rich repeats and death domain containing,p53-induced death domain protein  | p53-induced death domain protein 1                                     |  |
| PIK3C3   | NM_002647.2    | phosphoinositide-3-kinase, class 3,phosphatidylinositol 3-kinase, catalytic subunit type 3   | phosphatidylinositol 3-kinase catalytic subunit type 3                 |  |
| PIK3CA   | NM_006218.2    | phosphoinositide-3-kinase, catalytic, alpha polypeptide,phosphatidylinositol-4,5-bisphosphate 3-kinase, catalytic subunit alpha  | phosphatidylinositol-4,5-bisphosphate 3-kinase catalytic subunit alpha |  |
| PIK3CB   | NM_006219.1    | PIK3C1;phosphoinositide-3-kinase, catalytic, beta polypeptide,phosphatidylinositol-4,5-bisphosphate 3-kinase, catalytic subunit beta   | phosphatidylinositol-4,5-bisphosphate 3-kinase catalytic subunit beta  |  |
| PIK3R4   | NM_014602.1    | phosphoinositide-3-kinase, regulatory subunit 4  | phosphoinositide-3-kinase regulatory subunit 4                         |  |
| PIK3R5   | NM_001142633.1 | phosphoinositide-3-kinase, regulatory subunit 5  | phosphoinositide-3-kinase regulatory subunit 5                         |  |
| PKHD1    | NM_138694.3    | TIGM1;TIG multiple domains 1,polycystic kidney and hepatic disease 1 (autosomal recessive),PKHD1, fibrocystin/polyductin   | PKHD1 ciliary IPT domain containing fibrocystin/polyductin             |  |
| PLCB2    | NM_004573.2    | phospholipase C, beta 2  | phospholipase C beta 2   |  |
| PLCB3    | NM_000932.2    | phospholipase C, beta 3 (phosphatidylinositol-specific)  | phospholipase C beta 3   |  |
| PLCG1    | NM_002660.2    | PLC1;phospholipase C, gamma 1 (formerly subtype 148),phospholipase C, gamma 1  | phospholipase C gamma 1  |  |
| PLCG2    | NM_002661.2    | phospholipase C, gamma 2 (phosphatidylinositol-specific)   | phospholipase C gamma 2  |  |
| PLG      | NM_000301.3    |  | plasminogen  | PLGLB1 (NM_001032392), PLGLB2 (NM_002665)                    |
| PLIN4    | NM_001080400.1 | KIAA1881;KIAA1881  | perilipin 4  |  |
| PLPP4    | NM_001030059.1 | PPAPDC1,PPAPDC1A;phosphatidic acid phosphatase type 2 domain containing 1,phosphatidic acid phosphatase type 2 domain containing 1A  | phospholipid phosphatase 4   |  |
| PLTP     | NM_006227.2    |  | phospholipid transfer protein  |  |
| PNOC     | NM_001284244.1 |  | prepronociceptin   |  |
| PNPLA3   | NM_025225.2    | C22orf20,ADPN;chromosome 22 open reading frame 20,adiponutrin,patatin-like phospholipase domain containing 3   | patatin like phospholipase domain containing 3                         |  |
| POSTN    | NM_001135935.1 | periostin, osteoblast specific factor  | periostin  |  |
| PPARA    | NM_001001928.2 | PPAR;peroxisome proliferative activated receptor, alpha,peroxisome proliferator-activated receptor alpha   | peroxisome proliferator activated receptor alpha                       |  |
| PPARD    | NM_006238.4    | peroxisome proliferative activated receptor, delta,peroxisome proliferator-activated receptor delta  | peroxisome proliferator activated receptor delta                       |  |
| PPARG    | NM_005037.5    | peroxisome proliferative activated receptor, gamma,peroxisome proliferator-activated receptor gamma  | peroxisome proliferator activated receptor gamma                       |  |
| PPARGC1A | NM_013261.3    | PPARGC1;peroxisome proliferative activated receptor, gamma, coactivator 1,peroxisome proliferative activated receptor, gamma, coactivator 1, alpha,peroxisome proliferator-activated receptor gamma, coactivator 1 alpha | PPARG coactivator 1 alpha  | sub-maximal isoform coverage due to non-overlapping variants |
| PPM1A    | NM_021003.4    | protein phosphatase 1A (formerly 2C), magnesium-dependent, alpha isoform,protein phosphatase, Mg2+/Mn2+ dependent, 1A  | protein phosphatase, Mg2+/Mn2+ dependent 1A                            |  |

|         |                |   |  |
|---------|----------------|---|--|
| PPP2CA  | NM_002715.2    | protein phosphatase 2 (formerly 2A), catalytic subunit, alpha isoform,protein phosphatase 2, catalytic subunit, alpha isozyme   | protein phosphatase 2 catalytic subunit alpha                            |
| PRAP1   | NM_145202.4    |   | proline rich acidic protein 1  |
| PRDX1   | NM_002574.2    | PAGA  | peroxiredoxin 1  |
| PRDX6   | NM_004905.2    |   | peroxiredoxin 6  |
| PREX1   | NM_020820.3    | phosphatidylinositol-3,4,5-trisphosphate-dependent Rac exchange factor 1  | phosphatidylinositol-3,4,5-trisphosphate dependent Rac exchange factor 1 |
| PRF1    | NM_005041.3    | perforin 1 (pore forming protein)   | perforin 1   |
| PRKAA1  | NM_006251.5    | protein kinase, AMP-activated, alpha 1 catalytic subunit  | protein kinase AMP-activated catalytic subunit alpha 1                   |
| PRKAB2  | NM_005399.3    | protein kinase, AMP-activated, beta 2 non-catalytic subunit   | protein kinase AMP-activated non-catalytic subunit beta 2                |
| PRKACA  | NM_002730.3    | protein kinase, cAMP-dependent, catalytic, alpha,protein kinase, cAMP-dependent, alpha catalytic subunit  | protein kinase cAMP-activated catalytic subunit alpha                    |
| PRKACB  | NM_182948.2    | protein kinase, cAMP-dependent, catalytic, beta,protein kinase, cAMP-dependent, beta catalytic subunit  | protein kinase cAMP-activated catalytic subunit beta                     |
| PRKAG1  | NM_002733.3    | protein kinase, AMP-activated, gamma 1 non-catalytic subunit  | protein kinase AMP-activated non-catalytic subunit gamma 1               |
| PRKAG2  | NM_016203.3    | protein kinase, AMP-activated, gamma 2 non-catalytic subunit  | protein kinase AMP-activated non-catalytic subunit gamma 2               |
| PRKCA   | NM_002737.2    | PKCA;protein kinase C, alpha  | protein kinase C alpha   |
| PRKDC   | NM_006904.6    | HYRC,HYRC1;protein kinase, DNA-activated, catalytic polypeptide   | protein kinase, DNA-activated, catalytic subunit                         |
| PRLR    | NM_001204318.1 |   | prolactin receptor   |
| PROS1   | NM_000313.1    | PROS;protein S (alpha)  | protein S  |
| PSEN2   | NM_000447.2    | AD4;Alzheimer disease 4   | presenilin 2   |
| PSENF1  | NM_172341.1    | presenilin enhancer 2 homolog (C. elegans)  | presenilin enhancer, gamma-secretase subunit                             |
| PSMB1   | NM_002793.2    | proteasome (prosome, macropain) subunit, beta type, 1   | proteasome subunit beta 1  |
| PSMB7   | NM_002799.2    | proteasome (prosome, macropain) subunit, beta type, 7   | proteasome subunit beta 7  |
| PSMB8   | NM_004159.4    | LMP7;proteasome (prosome, macropain) subunit, beta type, 8 (large multifunctional protease 7),large multifunctional peptidase 7,proteasome (prosome, macropain) subunit, beta type, 8 | proteasome subunit beta 8  |
| PSMC3   | NM_002804.4    | proteasome (prosome, macropain) 26S subunit, ATPase, 3  | proteasome 26S subunit, ATPase 3   |
| PSMD13  | NM_175932.2    | proteasome (prosome, macropain) 26S subunit, non-ATPase, 13   | proteasome 26S subunit, non-ATPase 13                                    |
| PTAFR   | NM_000952.3    |   | platelet activating factor receptor                                      |
| PTCH1   | NM_000264.4    | NBCC5,PTCH;patched (Drosophila) homolog,patched homolog (Drosophila),patched homolog 1 (Drosophila)   | patched 1  |
| PTGER4  | NM_000958.2    | prostaglandin E receptor 4 (subtype EP4)  | prostaglandin E receptor 4   |
| PTGS2   | NM_000963.1    | prostaglandin-endoperoxide synthase 2 (prostaglandin G/H synthase and cyclooxygenase)   | prostaglandin-endoperoxide synthase 2                                    |
| PTK2    | NM_005607.4    | PTK2 protein tyrosine kinase 2  | protein tyrosine kinase 2  |
| PTK2B   | NM_004103.3    | FAK2;FAK2   | protein tyrosine kinase 2 beta   |
| PTPA    | NM_021131.4    | PPP2R4;protein phosphatase 2A, regulatory subunit B' (PR 53),protein phosphatase 2A activator, regulatory subunit 4,protein phosphatase 2 regulatory subunit 4                        | protein phosphatase 2 phosphatase activator                              |
| PTPN1   | NM_002827.3    | PTP1B   | protein tyrosine phosphatase non-receptor type 1                         |
| PTPN11  | NM_002834.3    | NS1;Noonan syndrome 1,protein tyrosine phosphatase, non-receptor type 11  | protein tyrosine phosphatase non-receptor type 11                        |
| PTPN12  | NM_002835.3    |   | protein tyrosine phosphatase non-receptor type 12                        |
| PTPN6   | NM_002831.5    |   | protein tyrosine phosphatase non-receptor type 6                         |
| PTPRC   | NM_080923.2    | CD45  | protein tyrosine phosphatase receptor type C                             |
| PYGM    | NM_001164716.1 | phosphorylase, glycogen; muscle   | glycogen phosphorylase, muscle associated                                |
| RAB7B   | NM_001164522.1 |   | RAB7B, member RAS oncogene family  |
| RAC1    | NM_006908.4    | ras-related C3 botulinum toxin substrate 1 (rho family, small GTP binding protein Rac1)   | Rac family small GTPase 1  |
| RAC2    | NM_002872.4    | ras-related C3 botulinum toxin substrate 2 (rho family, small GTP binding protein Rac2)   | Rac family small GTPase 2  |
| RAC3    | NM_005052.2    | ras-related C3 botulinum toxin substrate 3 (rho family, small GTP binding protein Rac3)   | Rac family small GTPase 3  |
| RAP1B   | NM_001010942.2 |   | RAP1B, member of RAS oncogene family                                     |
| RAPGEF1 | NM_005312.2    | GRF2;guanine nucleotide-releasing factor 2 (specific for crk proto-oncogene),Rap guanine nucleotide exchange factor (GEF) 1   | Rap guanine nucleotide exchange factor 1                                 |
| RAPGEF2 | NM_014247.2    | PDZGEF1;PDZ domain containing guanine nucleotide exchange factor (GEF) 1,Rap guanine nucleotide exchange factor (GEF) 2   | Rap guanine nucleotide exchange factor 2                                 |
| RASGRP4 | NM_170604.1    |   | RAS guanyl releasing protein 4   |
| RBX1    | NM_014248.2    |   | ring-box 1   |
| RELA    | NM_021975.3    | NFKB3;nuclear factor of kappa light polypeptide gene enhancer in B-cells 3,v-rel avian reticuloendotheliosis viral oncogene homolog A   | RELA proto-oncogene, NF-kB subunit                                       |
| RELB    | NM_006509.3    | v-rel avian reticuloendotheliosis viral oncogene homolog B (nuclear factor of kappa light polypeptide gene enhancer in B-cells 3)   | RELB proto-oncogene, NF-kB subunit                                       |
| RELN    | NM_005045.2    |   | reelin   |
| RETN    | NM_020415.2    |   | resistin   |

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|----------|----------------|--|--|--|
| RGS7     | NM_002924.2    | regulator of G-protein signalling 7,regulator of G-protein signaling 7   | regulator of G protein signaling 7                     |  |
| RHO      | NM_000539.2    | RP4;retinitis pigmentosa 4, autosomal dominant   | rhodopsin  |  |
| RIPK3    | NM_006871.3    | receptor-interacting serine-threonine kinase 3   | receptor interacting serine/threonine kinase 3         |  |
| RNF111   | NM_017610.6    |  | ring finger protein 111                                |  |
| RNF152   | NM_173557.2    |  | ring finger protein 152                                |  |
| ROCK2    | NM_004850.3    |  | Rho associated coiled-coil containing protein kinase 2 |  |
| RORA     | NM_134261.2    | RAR-related orphan receptor A  | RAR related orphan receptor A                          |  |
| RPS27A   | NM_002954.5    |  | ribosomal protein S27a                                 |  |
| RPS6KA2  | NM_021135.4    | ribosomal protein S6 kinase, 90kD, polypeptide 2   | ribosomal protein S6 kinase A2                         |  |
| RPS6KB2  | NM_003952.2    | ribosomal protein S6 kinase, 70kD, polypeptide 2   | ribosomal protein S6 kinase B2                         |  |
| S100A12  | NM_005621.1    | S100 calcium-binding protein A12 (calgranulin C)   | S100 calcium binding protein A12                       |  |
| S100A4   | NM_002961.2    | MTS1,CAPL;metastasin 1,calcium placental protein,S100 calcium-binding protein A4 (calcium protein, calvasculin, metastasin, murine placental homolog)  | S100 calcium binding protein A4                        |  |
| SAA1     | NM_199161.1    | SAA  | serum amyloid A1                                       | SAA2 (NM_030754;NM_001127380)                                |
| SCD      | NM_005063.4    | SCDOS;stearoyl-CoA desaturase opposite strand,stearoyl-CoA desaturase (delta-9-desaturase)   | stearoyl-CoA desaturase                                |  |
| SCIN     | NM_033128.3    |  | scinderin  |  |
| SDC3     | NM_014654.3    | syndecan 3 (N-syndecan)  | syndecan 3   |  |
| SEC24C   | NM_004922.2    | SEC24 (S. cerevisiae) related gene family, member C,SEC24 family, member C (S. cerevisiae),SEC24 family member C   | SEC24 homolog C, COPII coat complex component          |  |
| SEC61B   | NM_006808.2    | Sec61 beta subunit   | SEC61 translocon beta subunit                          |  |
| SEH1L    | NM_001013437.1 | SEH1-like (S. cerevisiae),SEH1-like nucleoporin  | SEH1 like nucleoporin                                  |  |
| SELENOS  | NM_203472.1    | VIMP;VCP-interacting membrane protein,VCP interacting membrane selenoprotein   | selenoprotein S  |  |
| SEM1     | NM_001201451.1 | SHFD1,SHFM1,C7orf76;split hand/foot malformation (ectrodactyly) type 1,chromosome 7 open reading frame 76,SEM1, 26S proteasome complex subunit   | SEM1 26S proteasome complex subunit                    | sub-maximal isoform coverage due to non-overlapping variants |
| SERPINE1 | NM_000602.2    | PLANH1,PAI1;serine (or cysteine) proteinase inhibitor, clade E (nexin, plasminogen activator inhibitor type 1), member 1   | serpin family E member 1                               |  |
| SERPINF1 | NM_002615.4    | PEDF;serine (or cysteine) proteinase inhibitor, clade F (alpha-2 antiplasmin, pigment epithelium derived factor), member 1,pigment epithelium-derived factor   | serpin family F member 1                               |  |
| SERPING1 | NM_000062.2    | C1NH;serine (or cysteine) proteinase inhibitor, clade G (C1 inhibitor), member 1, (angioedema, hereditary),serpin peptidase inhibitor, clade G (C1 inhibitor), member 1  | serpin family G member 1                               |  |
| SERPINH1 | NM_001235.2    | CBP1,CBP2,SERPINH2;serine (or cysteine) proteinase inhibitor, clade H (heat shock protein 47), member 2,serine (or cysteine) proteinase inhibitor, clade H (heat shock protein 47), member 1, (collagen binding protein 1),serpin peptidase inhibitor, clade H (heat shock protein 47), member 1, (collagen binding protein 1) | serpin family H member 1                               |  |
| SH2D1A   | NM_002351.4    | IMD5,LYP;lymphoproliferative syndrome,SH2 domain protein 1A  | SH2 domain containing 1A                               |  |
| SIGLEC5  | NM_003830.3    | CD33L2;sialic acid binding Ig-like lectin 5  | sialic acid binding lg like lectin 5                   |  |
| SIL1     | NM_001037633.1 | MSS;Marinesco-Sjogren syndrome,SIL1 homolog, endoplasmic reticulum chaperone (S. cerevisiae)   | SIL1 nucleotide exchange factor                        |  |
| SIRT1    | NM_012238.4    | sirtuin (silent mating type information regulation 2, S. cerevisiae, homolog) 1,sirtuin (silent mating type information regulation 2 homolog) 1 (S. cerevisiae)  | sirtuin 1  |  |
| SKI      | NM_003036.2    | v-ski avian sarcoma viral oncogene homolog   | SKI proto-oncogene                                     |  |
| SKP1     | NM_170679.2    | SKP1A;S-phase kinase-associated protein 1A (p19A)  | S-phase kinase associated protein 1                    |  |
| SKP2     | NM_005983.2    | S-phase kinase-associated protein 2 (p45),S-phase kinase-associated protein 2, E3 ubiquitin protein ligase   | S-phase kinase associated protein 2                    |  |
| SLC25A10 | NM_012140.3    | DIC;solute carrier family 25 (mitochondrial carrier; dicarboxylate transporter), member 10   | solute carrier family 25 member 10                     |  |
| SLC25A13 | NM_001160210.1 | CTLN2;solute carrier family 25, member 13 (citrin),solute carrier family 25 (aspartate/glutamate carrier), member 13   | solute carrier family 25 member 13                     |  |
| SLC2A2   | NM_000340.1    | GLUT2;solute carrier family 2 (facilitated glucose transporter), member 2  | solute carrier family 2 member 2                       |  |
| SLC37A4  | NM_001164277.1 | G6PT1,G6PT2,G6PT3;glucose-6-phosphatase, transport (glucose-6-phosphate) protein 1,solute carrier family 37 (glucose-6-phosphate transporter), member 4  | solute carrier family 37 member 4                      |  |
| SMAD2    | NM_001003652.3 | MADH2;MAD, mothers against decapentaplegic homolog 2 (Drosophila),SMAD, mothers against DPP homolog 2 (Drosophila)   | SMAD family member 2                                   |  |

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|----------|----------------|--|---|
| SMAD3    | NM_005902.3    | MADH3;MAD, mothers against decapentaplegic homolog 3 (Drosophila),SMAD, mothers against DPP homolog 3 (Drosophila)       | SMAD family member 3  |
| SMAD4    | NM_005359.3    | MADH4;MAD, mothers against decapentaplegic homolog 4 (Drosophila),SMAD, mothers against DPP homolog 4 (Drosophila)       | SMAD family member 4  |
| SMAD6    | NR_027654.1    | MADH7,MADH6;MAD, mothers against decapentaplegic homolog 6 (Drosophila),SMAD, mothers against DPP homolog 6 (Drosophila) | SMAD family member 6  |
| SMARCC2  | NM_001130420.1 | SWI/SNF related, matrix associated, actin dependent regulator of chromatin, subfamily c, member 2                        | SWI/SNF related, matrix associated, actin dependent regulator of chromatin subfamily c member 2 |
| SMURF1   | NM_181349.1    |  | SMAD specific E3 ubiquitin protein ligase 1   |
| SNAI2    | NM_003068.3    | SLUG;slug homolog, zinc finger protein (chicken),snail homolog 2 (Drosophila),snail family zinc finger 2                 | snail family transcriptional repressor 2  |
| SOD1     | NM_000454.4    | ALS,ALS1;amyotrophic lateral sclerosis 1 (adult),superoxide dismutase 1, soluble   | superoxide dismutase 1  |
| SORBS1   | NM_001034956.1 | SH3D5;SH3-domain protein 5 (ponsin)  | sorbin and SH3 domain containing 1  |
| SOS1     | NM_005633.2    | GINGF;gingival fibromatosis, hereditary, 1,son of sevenless homolog 1 (Drosophila)                                       | SOS Ras/Rac guanine nucleotide exchange factor 1  |
| SP1      | NM_003109.1    |  | Sp1 transcription factor  |
| SP3      | NM_003111.3    |  | Sp3 transcription factor  |
| SPIB     | NM_003121.3    | Spi-B transcription factor (Spi-1/PU.1 related)  | Spi-B transcription factor  |
| SPOP     | NM_001007226.1 | speckle-type POZ protein   | speckle type BTB/POZ protein  |
| SPOPL    | NM_001001664.1 | speckle-type POZ protein-like  | speckle type BTB/POZ protein like   |
| SPP1     | NM_000582.2    | BNSP,OPN;osteopontin,bone sialoprotein I   | secreted phosphoprotein 1   |
| SRC      | NM_005417.3    | SRC1,v-src avian sarcoma (Schmidt-Ruppin A-2) viral oncogene homolog   | SRC proto-oncogene, non-receptor tyrosine kinase  |
| SREBF1   | NM_001005291.1 |  | sterol regulatory element binding transcription factor 1  |
| SSR2     | NM_003145.3    | signal sequence receptor, beta (translocon-associated protein beta)  | signal sequence receptor subunit 2  |
| SSR4     | NM_006280.1    | signal sequence receptor, delta  | signal sequence receptor subunit 4  |
| STAT1    | NM_139266.1    | signal transducer and activator of transcription 1, 91kDa,signal transducer and activator of transcription 1, 91kDa      | signal transducer and activator of transcription 1  |
| STAT3    | NM_003150.3    | signal transducer and activator of transcription 3 (acute-phase response factor)   | signal transducer and activator of transcription 3  |
| STAT5A   | NM_003152.2    | STAT5  | signal transducer and activator of transcription 5A   |
| STAT5B   | NM_012448.3    |  | signal transducer and activator of transcription 5B   |
| STK4     | NR_147975.1    |  | serine/threonine kinase 4   |
| SUFU     | NM_001178133.1 | suppressor of fused homolog (Drosophila)   | SUFU negative regulator of hedgehog signaling   |
| SUGT1    | NM_001130912.1 | SGT1, suppressor of G2 allele of SKP1 (S. cerevisiae)  | SGT1 homolog, MIS12 kinetochore complex assembly cochaperone                                    |
| SYK      | NM_003177.5    | spleen tyrosine kinase   | spleen associated tyrosine kinase   |
| TBC1D4   | NM_014832.2    | TBC1 domain family, member 4   | TBC1 domain family member 4   |
| TBL1XR1  | NM_024665.4    | transducin (beta)-like 1X-linked receptor 1  | transducin beta like 1 X-linked receptor 1  |
| TBX21    | NM_013351.1    |  | T-box 21  |
| TCF7L1   | NM_031283.1    | TCF3;transcription factor 7-like 1 (T-cell specific, HMG-box)  | transcription factor 7 like 1   |
| TCF7L2   | NM_001146274.1 | TCF4;transcription factor 7-like 2 (T-cell specific, HMG-box)  | transcription factor 7 like 2   |
| TCL1A    | NR_049726.1    | T-cell leukemia/lymphoma 1A  | T cell leukemia/lymphoma 1A   |
| TEK      | NM_000459.3    | VMCM;venous malformations, multiple cutaneous and mucosal,TEK tyrosine kinase, endothelial                               | TEK receptor tyrosine kinase  |
| TGFB1    | NM_000660.3    | TGFB,DPD1;transforming growth factor, beta 1   | transforming growth factor beta 1   |
| TGFB11   | NM_001042454.1 |  | transforming growth factor beta 1 induced transcript 1  |
| TGFBRI   | NM_004612.2    | MSSE,ESS1;multiple self-healing squamous epithelioma,transforming growth factor beta receptor I                          | transforming growth factor beta receptor 1  |
| TGFBRII  | NM_001024847.1 | MFS2;transforming growth factor, beta receptor II (70/80kDa),transforming growth factor beta receptor II                 | transforming growth factor beta receptor 2  |
| THBS1    | NM_003246.2    |  | thrombospondin 1  |
| THBS2    | NM_003247.2    |  | thrombospondin 2  |
| THBS3    | NM_001252607.1 |  | thrombospondin 3  |
| TIMP1    | NM_003254.2    | TIMP,CLGI;tissue inhibitor of metalloproteinase 1 (erythroid potentiating activity, collagenase inhibitor)               | TIMP metalloproteinase inhibitor 1  |
| TIMP2    | NM_003255.4    | tissue inhibitor of metalloproteinase 2  | TIMP metalloproteinase inhibitor 2  |
| TJP1     | NM_003257.3    |  | tight junction protein 1  |
| TJP2     | NM_004817.2    | DFNA51;deafness, autosomal dominant 51   | tight junction protein 2  |
| TLN1     | NM_006289.3    | TLN  | talin 1   |
| TLR1     | NM_003263.3    | toll-like receptor 1   | toll like receptor 1  |
| TLR2     | NM_003264.3    | toll-like receptor 2   | toll like receptor 2  |
| TLR4     | NM_138554.2    | toll-like receptor 4   | toll like receptor 4  |
| TLR6     | NM_006068.2    | toll-like receptor 6   | toll like receptor 6  |
| TLR8     | NM_016610.2    | toll-like receptor 8   | toll like receptor 8  |
| TM6SF2   | NM_001001524.2 |  | transmembrane 6 superfamily member 2  |
| TNF      | NM_000594.2    | TNFA;tumor necrosis factor (TNF superfamily, member 2)   | tumor necrosis factor   |
| TNFRSF17 | NM_001192.2    | BCMA;tumor necrosis factor receptor superfamily, member 17   | TNF receptor superfamily member 17  |
| TNFRSF10 | NM_003810.2    | tumor necrosis factor (ligand) superfamily, member 10  | TNF superfamily member 10   |

|                                 |                |  |  |
|---------------------------------|----------------|--|--|
| TNFSF14                         | NM_003807.3    | tumor necrosis factor (ligand) superfamily, member 14  | TNF superfamily member 14  |
| TNN                             | NM_022093.1    |  | tenascin N   |
| TPR                             | NM_003292.2    | translocated promoter region (to activated MET oncogene)   | translocated promoter region, nuclear basket protein                           |
| TPSAB1/B2                       | NM_003294.3    |  | trypsin alpha/beta 1   |
| TRADD                           | NM_003789.2    | TNFRSF1A-associated via death domain   | TNFRSF1A associated via death domain   |
| TRAF2                           | NM_021138.3    |  | TNF receptor associated factor 2   |
| TRAF6                           | NM_145803.2    | TNF receptor-associated factor 6, E3 ubiquitin protein ligase  | TNF receptor associated factor 6   |
| TRAT1                           | NM_016388.2    | TCRIM;TCRIM  | T cell receptor associated transmembrane adaptor 1                             |
| TRIB3                           | NM_021158.3    | C2orf97;chromosome 20 open reading frame 97,tribbles homolog 3 (Drosophila)  | tribbles pseudokinase 3  |
| TRRAP                           | NM_003496.2    | transformation/transcription domain-associated protein   | transformation/transcription domain associated protein                         |
| TTN                             | NM_133432.1    | CMD1G;cardiomyopathy, dilated 1G (autosomal dominant)  | titin  |
| TXN                             | NM_003329.2    |  | thioredoxin  |
| TXN2                            | NM_012473.3    |  | thioredoxin 2  |
| TXNDC5                          | NM_030810.2    |  | thioredoxin domain containing 5  |
| UBA52                           | NM_003333.3    |  | ubiquitin A-52 residue ribosomal protein fusion product 1                      |
| UBE2D2                          | NM_181838.1    | ubiquitin-conjugating enzyme E2D 2 (homologous to yeast UBC4/5),ubiquitin-conjugating enzyme E2D 2 (UBC4/5 homolog, yeast),ubiquitin-conjugating enzyme E2D 2                            | ubiquitin conjugating enzyme E2 D2   |
| UBE2N                           | NM_003348.3    | ubiquitin-conjugating enzyme E2N (homologous to yeast UBC13),ubiquitin-conjugating enzyme E2N (UBC13 homolog, yeast),ubiquitin-conjugating enzyme E2N                                    | ubiquitin conjugating enzyme E2 N  |
| UBE4B                           | NM_006048.4    | ubiquitination factor E4B (homologous to yeast UFD2),ubiquitination factor E4B (UFD2 homolog, yeast)   | ubiquitination factor E4B  |
| UQCRB                           | NM_006294.3    | UQBP   | ubiquinol-cytochrome c reductase binding protein                               |
| UQCRFS1                         | NM_006003.2    |  | ubiquinol-cytochrome c reductase, Rieske iron-sulfur polypeptide 1             |
| UQCRH                           | NM_006004.2    |  | ubiquinol-cytochrome c reductase hinge protein                                 |
| VAMP8                           | NM_003761.4    |  | vesicle associated membrane protein 8  |
| VAV1                            | NM_005428.2    | VAV;vav 1 oncogene,vav 1 guanine nucleotide exchange factor  | vav guanine nucleotide exchange factor 1                                       |
| VCAM1                           | NM_001078.3    |  | vascular cell adhesion molecule 1  |
| VEGFA                           | NM_001025366.1 | VEGF;vascular endothelial growth factor  | vascular endothelial growth factor A   |
| VEGFB                           | NM_003377.3    | VRF  | vascular endothelial growth factor B   |
| VIM                             | NM_003380.2    |  | vimentin   |
| WAS                             | NM_000377.2    | IMD2,THC;thrombocytopenia 1 (X-linked),Wiskott-Aldrich syndrome (eczema-thrombocytopenia),Wiskott-Aldrich syndrome   | WASP actin nucleation promoting factor   |
| WWC1                            | NM_001161662.1 | WW, C2 and coiled-coil domain containing 1   | WW and C2 domain containing 1  |
| XAF1                            | NM_199139.2    |  | XIAP associated factor 1   |
| XBP1                            | NM_005080.2    | XBP2   | X-box binding protein 1  |
| XCL1/2                          | NM_003175.3    | SCYC2;small inducible cytokine subfamily C, member 2,chemokine (C motif) ligand 2  | X-C motif chemokine ligand 2   |
| XIAP                            | NM_001167.3    | API3,BIRC4;baculoviral IAP repeat-containing 4,X-linked inhibitor of apoptosis, E3 ubiquitin protein ligase  | X-linked inhibitor of apoptosis  |
| YWHAB                           | NM_003404.4    | YWHAH;tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, alpha polypeptide,tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, beta polypeptide | tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein beta    |
| YWHAE                           | NM_006761.4    | tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, epsilon polypeptide  | tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein epsilon |
| YWHAG                           | NM_012479.3    | tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, gamma polypeptide  | tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein gamma   |
| YWHAQ                           | NM_006826.2    | tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, theta polypeptide,protein, theta   | tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein theta   |
| ZFYVE16                         | NM_001105251.2 | zinc finger, FYVE domain containing 16   | zinc finger FYVE-type containing 16  |
| <b>Internal Reference Genes</b> |                |  |  |
| ACAD9                           | NM_014049.4    | acyl-Coenzyme A dehydrogenase family, member 9,acyl-CoA dehydrogenase family, member 9   | acyl-CoA dehydrogenase family member 9   |
| ARMH3                           | NM_024541.2    | C10orf76;chromosome 10 open reading frame 76   | armadillo like helical domain containing 3                                     |
| CNOT10                          | NM_001256741.1 | CCR4-NOT transcription complex, subunit 10   | CCR4-NOT transcription complex subunit 10                                      |
| GUSB                            | NM_000181.3    | glucuronidase, beta  | glucuronidase beta   |
| MTMR14                          | NM_022485.3    | C3orf29;chromosome 3 open reading frame 29   | myotubularin related protein 14  |
| NOL7                            | NM_016167.3    | C6orf90,PQBP3;chromosome 6 open reading frame 90,polyglutamine binding protein 3,nucleolar protein 7, 27kDa  | nucleolar protein 7  |
| NUBP1                           | NM_002484.3    | NBP1;nucleotide binding protein 1 (E.coli MinD like),nucleotide binding protein 1 (MinD homolog, E. coli)  | nucleotide binding protein 1   |
| PGK1                            | NM_000291.2    |  | phosphoglycerate kinase 1  |



PPIA NM\_021130.3  
RPLP0 NM\_001002.3 ribosomal protein, large, P0

peptidylprolyl isomerase A  
ribosomal protein lateral stalk subunit P0

PPIAL4A (NM\_001143883), PPIAL4C  
(NM\_001135789), PPIAL4E (NM\_001144032),  
PPIAL4D (NM\_001164261), PPIAL4G  
(NM\_001123068), PPIAL4F (NM\_001164262)