

Supplemental Table 2 : Gene Description

Symbol	Entrez Gene Name	Molecular Function	Canonical Pathway	Description	Biological process
AHDC1	AT-hook DNA binding motif containing 1	DNA binding	–	Gene mutations: Xia-Gibbs syndrome	–
AQP2	Aquaporin 2	actin binding; channel activity; glycerol transmembrane transporter activity	Apelin endothelial signaling pathway; eNOS signaling	Water channel protein from kidney collecting tubule. Gene mutations: nephrogenic diabetes insipidus	actin filament depolymerization; apoptotic process; excretion; cell homeostasis; glycerol transport
BAIAP3	BAI1 associated protein 3	calcium ion binding; phospholipid binding; protein binding; syntaxin binding	–	P53-target gene encodes brain-specific angiogenesis inhibitor. Two C2 domains from proteins involved in signal transduction or membrane trafficking	exocytosis; G-protein coupled receptor signaling pathway; regulation of synaptic transmission; retrograde transport
BLK	BLK proto-oncogene, Src family tyrosine kinase	ATP-binding; kinase activity; protein binding; transferase activity	PI3K Signaling in B lymphocytes; Tec kinase signaling	Involved in b cell proliferation and differentiation and has a role in B-cell receptor signaling and B-cell development	B cell receptor signaling pathway; cell differentiation and proliferation; innate immune response; intracellular signal transduction
DAAM1	Dishevelled associated activator of morphogenesis 1	actin binding; identical protein binding; protein binding; Rho GTPase binding	PCP pathway; Role of macrophages; Fibroblasts and Endothelial Cells in Rheumatoid Arthritis	Involved in cell motility, adhesion, cytokinesis, reorganization of the actin cytoskeleton, cell polarity and movement (activated during Wnt/Fz signalling) and regulates cell growth	actin cytoskeleton organization; Wnt receptor signalling pathway
EBF1	Early B cell factor 1	RNA polymerase II core promoter proximal region sequence-specific DNA binding; transcription factor involved in positive regulation of transcription activity; DNA binding	B cell receptor signalling; IL-17 Signaling pathway	Transcriptional activator which recognizes variations of the palindromic sequence 5-ATTCCCNNGGAATT-3. Named Transcription factor COE1 and activates target genes	multicellular organismal development; positive regulation of transcription; DNA-dependent; positive regulation of transcription from RNA polymerase II promoter
EIF4E2	Eukaryotic translation initiation factor 4E family member 2	RNA binding; translation initiation factor activity; ubiquitin protein ligase binding	–	Recognizes and binds the 7-methylguanosine-containing mRNA cap during an early step in the initiation. Acts as a repressor of translation initiation	negative regulation of translation
EMX2	Empty spiracles homeobox 2	sequence-specific DNA binding RNA polymerase II transcription factor activity	–	Known expressed in three human tissues: dorsal telencephalon, olfactory neuroepithelium, and epithelial urogenital system	brain development; multicellular organismal development; neuron

					differentiation; regulation of gene expression
FAM149B1	Family with sequence similarity 149 member B1	-	-	-	-
FLT1	Fms related tyrosine kinase 1	ATP binding; vascular endothelial growth factor-activated receptor activity; kinase activity; transferase activity; protein binding; transmembrane signalling receptor activity	eNOS signalling; IL-8 signaling; NF-kB signalling; Nitric oxide signalling in the cardiovascular system; PTEN signalling; STAT3 pathway; VEGF family ligand-receptor interactions; VEGF signaling	Binds to VEGFR-1, VEGFR-B and placental growth factor and plays an important role in angiogenesis and vasculogenesis. Expression of this receptor is found in vascular endothelial cells and peripheral blood monocytes	angiogenesis; blood vessel morphogenesis; cell differentiation; cell migration; cell proliferation; cellular response to vascular endothelial growth factor stimulus; monocyte chemotaxis; negative regulation of apoptotic process; negative regulation of signal transduction; positive regulation of kinase activity; vascular endothelial growth factor signalling pathway
FOXD4L3	Forhead box D4 like 6	protein binding; sequence-specific DNA binding; sequence-sequence DNA binding RNA polymerase II transcription factor activity	-	-	anatomical structure morphogenesis; cell differentiation; regulation of transcription from RNA polymerase II promoter
GPC6	Glypican 6	heparan sulfate proteoglycan binding; protein binding	-	The glypicans comprise a family of glycosylphosphatidylinositol-anchored heparin sulfate proteoglycans, are implicated in the control of cell growth and cell division. Putative cell surface coreceptor for growth factors, extracellular matrix proteins, proteases and anti-proteases.	cell migration; glycosaminoglycan biosynthetic process; regulation of signal transduction; retinoid metabolic process; Wnt receptor signalling pathway
HMGA2	High mobility group AT-hook 2	5'-deoxyribose-5-phosphate lyase activity; AT DNA binding; C2H2 zinc finger domain binding; cAMP response element binding; DNA-dependent protein kinase activity; MH1 domain binding; transcription regulation	Regulation of the Epithelial-Mesenchymal Transition Pathway	Belongs to the non-histone chromosomal high mobility group (HMG) protein family, as architectural factors and are essential components of the enhancosome. This protein contains structural DNA-binding domains and may act as a transcriptional regulating factor. Is involved in adipogenesis and mesenchymal differentiation.	cell division; chromatin organization; DNA damage response; endodermal / mesodermal cell differentiation; epithelial to mesenchymal transition; negative regulation of retroviral genome replication; negative regulation of apoptotic process; negative regulation of transcription; positive regulation of angiogenesis
IGLV8-61	Immunoglobulin lambda variable 8-61	Antigen binding	-	Participates in the antigen recognition. Membrane-bound antibodies or secreted glycoproteins produced by B lymphocytes. In the humoral immunity, the membrane-bound immunoglobulins serve as	adaptive immune response; immunoglobulin production

				receptors which, upon binding of a specific antigen, trigger the clonal expansion and differentiation of B lymphocytes into immunoglobulins-secreting plasma cells.	
LOC100131655	Uncharacterized	-	-	-	-
MCMBP	Minichromosome maintenance complex binding protein	chromatin binding; protein binding	-	Encodes a protein which is a component of the hexameric minichromosome maintenance (MCM) complex which regulates initiation and elongation of DNA	cell cycle; cell division; DNA-dependent DNA replication
MEI4	Meiotic double-stranded break formation protein 4	Protein binding	-	Required for DNA double-strand breaks formation in unsynapsed regions during meiotic recombination	DNA recombination; meiotic cell cycle; meiotic DNA double-strand break formation, synapsis
MIR3677	microRNA 3677	-	-	Non-coding RNAs involved in post-transcriptional regulation of gene expression in multicellular organisms by affecting both the stability and translation of mRNAs	-
NDUFC1	NADH: ubiquinone oxidoreductase subunit C1	NADH dehydrogenase (ubiquinone) activity	-	Subunit of the NADH: ubiquinone oxidoreductase, the first enzyme complex in the electron transport chain located in the inner mitochondrial membrane	mitochondrial electron transport, NADH to ubiquinone; mitochondrial respiratory chain complex I assembly; oxidation-reduction process
OSER1	Oxidative stress responsive serine rich 1	-	-	-	cellular response to hydrogen peroxide
RPL34	Ribosomal protein L34	cadherin binding; RNA binding; structural constituent of ribosome	EIF2 Signaling	Component of the 60S subunit belongs to the L34E family of ribosomal proteins. It is located in the cytoplasm and overexpression of this gene has been observed in some cancer cells	nuclear-transcribed mRNA catabolic process; nonsense-mediated decay; SRP-dependent cotranslational protein targeting to membrane; translation initiation
SLC46A3	Solute carrier family 46 member 3	-	-	Transmembrane protein, transports small molecules across membrane. Found in lysosomal membranes where it transports catabolites from the lysosomes to the cytoplasm. Effective transporter of the cytotoxic drug maytansine	transmembrane transport
SNAPC2	Small nuclear RNA activating complex polypeptide 2	sequence-specific DNA binding transcription factor activity	-	Subunit of the snRNA-activating protein complex associated with the TATA box-binding protein. Is	regulation of transcription; DNA-dependent; transcription from RNA polymerase III promoter

				necessary for RNA polymerase II and III dependent small-nuclear RNA gene transcription	
SPHK2	Sphinganine kinase	ATP binding; sphinganine kinase activity; nucleotide binding; Ras GTPase binding; sphingosine-1-phosphate receptor activity; transferase activity	Ceramide Signaling; PDGF Signaling	One of two sphingosine kinase isozymes, catalyses the sphingosine phosphorylation into sphingosine 1-phosphate. It mediates many cellular processes including migration, proliferation and apoptosis	blood vessel development; cell proliferation; lipid phosphorylation; metabolic process; negative regulation of apoptotic process; positive regulation of cell proliferation; sphingosine metabolic process
TMEM17	Transmembrane protein 17	protein binding	-	Transmembrane component of the tectonic-like complex localized at the transition zone of primary cilia and acting as a barrier that prevents diffusion of transmembrane proteins between the cilia and plasma membrane. Required for ciliogenesis and sonic hedgehog/SHH signaling	cell projection organization; cilium morphogenesis; smoothened signalling pathway
TOMM70	Translocase of outer mitochondrial membrane 70	protein binding; protein transmembrane transporter activity	Sirtuin Signaling Pathway	Import receptor of the outer mitochondrial membrane that is part of the translocase of the outer membrane complex. Involved in the import of mitochondrial precursor proteins	negative regulation of cell growth involved in cardiac muscle cell development; protein targeting to mitochondrion; protein transmembrane transport; response to thyroxine stimulus
TRBJ2-1	T cell receptor beta joining 2-1	-	-	-	-
TRBV7-3	T cell receptor beta variable 7-3	-	-	-	-
TRIP11	Thyroid hormone receptor interactor 11	protein binding; transcription coactivator activity	Aryl Hydrocarbon receptor signalling	Interaction with thyroid hormone receptor beta. Associated protein with Golgi apparatus. Protein N-terminal region binds Golgi membranes and C-terminal binds the minus ends of microtubules; thus, the protein is thought to play a role in assembly and maintenance of the Golgi ribbon structure around the centrosome	bone development; chondrocyte differentiation involved in endochondral bone morphogenesis; Golgi organization; intraflagellar transport involved in cilium morphogenesis; protein glycosylation; transcription from RNA polymerase II promoter; ventricular septum development
UGT2A1	UDP glucuronosyl transferase family 2 member A1 complex locus	glucuronosyltransferase activity; transferase activity; transferring glycosyl groups; transferring hexosyl groups; UDP-glycosyltransferase activity	Melatonin degradation I; Nicotine degradation II/III; Serotonin degradation; Thyroid hormone metabolism II; Xenobiotic metabolism signaling	Belongs to the UDP-glycosyltransferase family, members of which catalyse biotransformation reactions in which lipophilic substrates are conjugated with glucuronic acid to increase water solubility and enhance excretion. Major importance in the conjugation and elimination of potentially toxic xenobiotics and endogenous compounds	cellular glucuronidation; detection of chemical stimulus; metabolic process; response to stimulus; response to toxin; sensory perception of smell

ZDHHC2	Zinc finger DHHC-type containing 2	palmitoyltransferase activity; protein-cysteine S-palmitoleyltransferase activity; transferase activity; transferring acyl groups	-	Involved in cellular protein metabolic process. Palmitoyltransferase specific for GAP43 and DLG4/PSD95	cellular protein metabolic process; peptidyl-L-cysteine S-palmitoylation; protein palmitoylation; protein targeting to membrane
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- Common skin & stool
- Specific skin
- Specific stool