**Signal transduction**

For each of the shared differentially expressed gene are reported: the gene and protein names obtained from the top hit blast results against the proteome of *D. rerio*; whether it is up(+)- or down(-)- regulated in the EO; its function or pathway (or both when available); the phenotypic effect on *D. rerio* of its mis-expression (when available).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Gene | Protein Name | Expression in EO | Pathway | Disrupted Phenotype | Reference |
| arhgef7a | Rho guanine nucleotide exchange factor (GEF) 7a | + | Regulation of actin cytoskeleton; Signaling by GPCR; Signaling by FGFR |  |  |
| arhgef7b | Rho guanine nucleotide exchange factor (GEF) 7b | + | Regulation of actin cytoskeleton; Signaling by GPCR; Signaling by FGFR |  |  |
| catip | ciliogenesis associated TTC17 interacting protein | + | actin filament polymerization | Imperfect ciliogenesis | [1] |
| fgf8a | fibroblast growth factor 8a | + | Signaling by FGFR; Regulation of actin cytoskeleton | Imperfect morphogenesis | [2] |
| kal1b | Kallmann syndrome 1b sequence | + | Signaling by FGFR |  |  |
| gpr22 | G protein-coupled receptor 22 | + | G-protein coupled receptor signaling pathway |  |  |
| reps2 | RALBP1 associated Eps domain containing 2 | + | EGFR1 Signaling Pathway  |  |  |
| olfcs2 | olfactory receptor C family, s2 | + | G-protein coupled receptor signaling pathway |  |  |
| olfm2a | olfactomedin 2a | + | neural crest cell development | Central nervous system development | [3] |
| opn3 | Opsin 3 | + | G-protein coupled receptor signaling pathway |  |  |
| pcsk5b | proprotein convertase subtilisin/kexin type 5b | + | Signaling by FGFR; Signaling by GPCR; NGF processing |  |  |
| pik3cg | phosphatidylinositol-4,5-bisphosphate 3-kinase, catalytic subunit gamma | + | Toll-like receptor signaling pathway  |  |  |
| prkar1b | protein kinase, cAMP-dependent, regulatory, type I, beta | + | G-protein coupled receptor signaling pathway |  |  |
| rgs11 | regulator of G-protein signaling 11 | + | G-protein coupled receptor signaling pathway |  |  |
| arhgap44 | Rho GTPase activating protein 44 | + | G-protein coupled receptor signaling pathway |  |  |
| rapgefl1 | Rap guanine nucleotide exchange factor (GEF)-like 1 | + | G-protein coupled receptor signaling pathway |  |  |
| gab3 | GRB2-Associated Binding Protein 3 | + | Akt Signaling Pathway |  |  |
| tpbga | trophoblast glycoprotein a | + | negative regulation of canonical Wnt signaling pathway |  |  |
| trabd2b | TraB domain containing 2B  | + | Wnt signaling pathway |  |  |
| twf1b | twinfilin actin-binding protein 1b | + | negative regulation of actin filament polymerization |  |  |
| wwc1 | WW and C2 domain containing 1 | + | G-protein coupled receptor signaling pathway |  |  |
| cdk14 | cyclin-dependent kinase 14 | + | Transcriptional misregulation in cancer |  |  |
| angpt1 | angiopoietin 1 | - | ERK Signaling; Akt Signaling; TGF-Beta Pathway; Hedgehog signaling | Imperfect angiogenesis | [4] |
| asb10 | ankyrin repeat and SOCS box containing 10 | - | Class I MHC mediated antigen processing and presentation  |  |  |
| calcoco1 | calcium binding and coiled-coil domain 1 | - | Wnt signaling pathway |  |  |
| ccng1 | cyclin G1 | - | p53 signaling pathway; G-protein coupled receptor signaling pathway |  |  |
| dapk2a | death-associated protein kinase 2a | - | Regulation of Apoptosis |  |  |
| dusp22b | dual specificity phosphatase 22b | - | TGF-Beta Pathway |  |  |
| fhl1a | four and a half LIM domains 1a | - | Delta-Notch Signaling Pathway | Abnormal cardiac function | [5] |
| flncb | filamin C, gamma b (actin binding protein 280) | - | MAPK signaling pathway | Myofibril disruption | [6]  |
| homer1b | homer homolog 1b (Drosophila) | - | FoxO signaling pathway; Regulation of calcium homeostasis | defective phenotypes in fast muscle | [7] |
| igf1 | insulin-like growth factor 1 | - | Development IGF 1 receptor signaling; G-protein coupled receptor signaling pathway |  |  |
| il13ra2 | interleukin 13 receptor, alpha 2 | - | Akt Signaling; TGF-Beta Pathway; ERK Signaling  |  |  |
| klhl41b | kelch-like family member 41b | - | Regulation of myoblast differentiation | myofibrillar disorganization | [8] |
| lnx1 | ligand of numb-protein X 1 | - | Notch signaling pathway |  |  |
| lypd6 | LY6/PLAUR domain containing 6 | - | positive regulation of canonical Wnt signaling pathway | caudal fin decreased size; trunk decreased size | [9] |
| myoc | myocilin | - | Wnt signaling pathway |  |  |
| ndp | Norrie disease (pseudoglioma) | - | Wnt signaling pathway |  |  |
| pde7a | phosphodiesterase 7A | - | G-protein coupled receptor signaling pathway |  |  |
| pmp22a | peripheral myelin protein 22a | - | Neural Crest Differentiation |  |  |
| ppdpfa | pancreatic progenitor cell differentiation and proliferation factor a | - | Negative regulation of RA signaling pathway | Abnormal pancreas development | [10] |
| prkg1b | protein kinase, cGMP-dependent, type Ib | - | beta-catenin independent WNT signaling  |  |  |
| sbk3 | SH3 domain binding kinase family, member 3 | - | MAPK signaling pathway |  |  |
| mras | muscle RAS oncogene homolog  | - | MAPK signaling pathway; G-protein coupled receptor signaling pathway |  |  |
| plekha1 | pleckstrin homology domain containing, family A (phosphoinositide binding specific) member 1 | - | Class I PI3K signaling events |  |  |
| spon2a | spondin 2a, extracellular matrix protein | - | Integrin Pathway; ERK Signaling |  |  |
| tacr1a | tachykinin receptor 1a | - | G-protein coupled receptor signaling pathway |  |  |
| txlnba | taxilin beta a | - | TNF-alpha/NF-kB Signaling Pathway |  |  |
| txlnbb | taxilin beta b | - | TNF-alpha/NF-kB Signaling Pathway |  |  |
| ywhag1 | 3-monooxygenase/tryptophan 5-monooxygenase activation protein, gamma polypeptide 1 | - | Cell cycle  | Reduced brain size; Increased heart tube diameter | [11] |

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