**Supplementary Table 1. List of genes with a more than 2-fold increase in short-term cultured ORS cells.**

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| --- | --- | --- | --- | --- |
| No. | Gene Symbol | Average Fold change\* | Gene Accession | Gene Description |
| 1 | FGF2 | 9.079 | NM\_002006  | fibroblast growth factor 2 (basic)  |
| 2 | FOXA2 | 8.173 | NM\_021784  | forkhead box A2  |
| 3 | LAMP3 | 8.056 | NM\_014398  | lysosomal-associated membrane protein 3  |
| 4 | CCNA1 | 6.075 | NM\_001111045  | cyclin A1  |
| 5 | MBOAT1 | 5.984 | NM\_001080480  | membrane bound O-acyltransferase domain containing 1  |
| 6 | GDF15 | 5.698 | NM\_004864  | growth differentiation factor 15  |
| 7 | KITLG | 5.672 | NM\_000899  | KIT ligand  |
| 8 | BHLHA15 | 5.114 | NM\_177455  | basic helix-loop-helix family, member a15  |
| 9 | CDK2AP2 | 4.959 | NM\_001271849  | cyclin-dependent kinase 2 associated protein 2  |
| 10 | CA5B | 4.837 | ENST00000498004  | carbonic anhydrase VB, mitochondrial  |
| 11 | CADPS2 | 4.756 | NM\_001009571  | Ca++-dependent secretion activator 2  |
| 12 | RWDD2A | 4.640 | NM\_033411  | RWD domain containing 2A  |
| 13 | DDIT3 | 4.558 | NM\_001195053  | DNA-damage-inducible transcript 3  |
| 14 | CDC6 | 4.425 | NM\_001254  | cell division cycle 6  |
| 15 | CCDC163P | 4.250 | NR\_033296  | coiled-coil domain containing 163, pseudogene  |
| 16 | CLGN | 4.240 | NM\_001130675  | calmegin  |
| 17 | ERN1 | 4.239 | NM\_001433  | endoplasmic reticulum to nucleus signaling 1  |
| 18 | UNC5B | 4.083 | NM\_001244889  | unc-5 netrin receptor B  |
| 19 | ABHD4 | 3.913 | NM\_022060  | abhydrolase domain containing 4  |
| 20 | C6orf48 | 3.849 | NM\_001040437  | chromosome 6 open reading frame 48  |
| 21 | NID1 | 3.836 | NM\_002508  | nidogen 1  |
| 22 | ARRDC3 | 3.797 | NM\_020801  | arrestin domain containing 3  |
| 23 | NGF | 3.783 | NM\_002506  | nerve growth factor (beta polypeptide)  |
| 24 | SEC11C | 3.717 | NM\_001307941  | SEC11 homolog C, signal peptidase complex subunit  |
| 25 | LMAN1 | 3.706 | NM\_005570  | lectin, mannose-binding, 1  |
| 26 | FIBIN | 3.703 | NM\_203371  | fin bud initiation factor homolog (zebrafish)  |
| 27 | MYDGF | 3.678 | NM\_019107  | myeloid-derived growth factor  |
| 28 | DNAJC3 | 3.672 | NM\_006260  | DnaJ (Hsp40) homolog, subfamily C, member 3  |
| 29 | HID1 | 3.669 | NM\_030630  | HID1 domain containing  |
| 30 | HSPA13 | 3.614 | NM\_006948  | heat shock protein 70kDa family, member 13  |
| 31 | C4orf32 | 3.561 | NM\_152400  | chromosome 4 open reading frame 32  |
| 32 | CATSPER2P1 | 3.545 | NR\_002318  | cation channel, sperm associated 2 pseudogene 1  |
| 33 | DNAJB9 | 3.510 | NM\_012328  | DnaJ (Hsp40) homolog, subfamily B, member 9  |
| 34 | MIF4GD | 3.490 | NM\_001242498  | MIF4G domain containing  |
| 35 | ARG2 | 3.476 | NM\_001172  | arginase 2  |
| 36 | ABI3BP | 3.389 | NM\_015429  | ABI family, member 3 (NESH) binding protein  |
| 37 | PARM1 | 3.385 | NM\_015393  | prostate androgen-regulated mucin-like protein 1  |
| 38 | ERO1B | 3.383 | NM\_019891  | endoplasmic reticulum oxidoreductase beta  |
| 39 | CTBS | 3.306 | NM\_004388  | chitobiase, di-N-acetyl-  |
| 40 | PER3 | 3.269 | NM\_001289861  | period circadian clock 3  |
| 41 | SLC7A11 | 3.237 | NM\_014331  | solute carrier family 7 (anionic amino acid transporter light chain, xc- system), member 11  |
| 42 | ALDH6A1 | 3.223 | NM\_001278593  | aldehyde dehydrogenase 6 family, member A1  |
| 43 | BLNK | 3.188 | NM\_001114094  | B-cell linker  |
| 44 | ERVE-1 | 3.166 | BC037342  | endogenous retrovirus group E, member 1  |
| 45 | PEG10 | 3.149 | NM\_001040152  | paternally expressed 10  |
| 46 | SLC22A3 | 3.137 | NM\_021977  | solute carrier family 22 (organic cation transporter), member 3  |
| 47 | H19 | 3.107 | NR\_002196  | H19, imprinted maternally expressed transcript (non-protein coding)  |
| 48 | GPCPD1 | 3.096 | NM\_019593  | glycerophosphocholine phosphodiesterase 1  |
| 49 | BCAM | 3.080 | NM\_001013257  | basal cell adhesion molecule (Lutheran blood group)  |
| 50 | RAB27A | 3.070 | NM\_004580  | RAB27A, member RAS oncogene family  |
| 51 | GPNMB | 3.070 | NM\_001005340  | glycoprotein (transmembrane) nmb  |
| 52 | LOC105369502 | 3.061 | XR\_913542  | uncharacterized LOC105369502  |
| 53 | NUCB2 | 3.018 | NM\_005013  | nucleobindin 2  |
| 54 | PITPNM3 | 2.990 | NM\_001165966  | PITPNM family member 3  |
| 55 | BARX2 | 2.971 | NM\_003658  | BARX homeobox 2  |
| 56 | SEC23B | 2.956 | NM\_001172745  | Sec23 homolog B, COPII coat complex component  |
| 57 | WFS1 | 2.928 | NM\_001145853  | Wolfram syndrome 1 (wolframin)  |
| 58 | ATP6V0D2 | 2.905 | NM\_152565  | ATPase, H+ transporting, lysosomal 38kDa, V0 subunit d2  |
| 59 | SGCG | 2.893 | NM\_000231  | sarcoglycan gamma  |
| 60 | ZBTB8A | 2.888 | NM\_001040441  | zinc finger and BTB domain containing 8A  |
| 61 | CYP39A1 | 2.877 | NM\_001278738  | cytochrome P450, family 39, subfamily A, polypeptide 1  |
| 62 | UNC5B-AS1 | 2.875 | NR\_038453  | UNC5B antisense RNA 1  |
| 63 | ARFGAP3 | 2.874 | NM\_001142293  | ADP-ribosylation factor GTPase activating protein 3  |
| 64 | CERS3 | 2.838 | NM\_001290341  | ceramide synthase 3  |
| 65 | HIST1H2BN | 2.826 | ENST00000449538  | histone cluster 1, H2bn  |
| 66 | SLC50A1 | 2.796 | NM\_001122837  | solute carrier family 50 (sugar efflux transporter), member 1  |
| 67 | LARP1B | 2.782 | NM\_001278604  | La ribonucleoprotein domain family, member 1B  |
| 68 | E2F7 | 2.782 | NM\_203394  | E2F transcription factor 7  |
| 69 | FAM46A | 2.781 | NM\_017633  | family with sequence similarity 46, member A  |
| 70 | CYP3A5 | 2.765 | NM\_000777  | cytochrome P450, family 3, subfamily A, polypeptide 5  |
| 71 | FKBP5 | 2.743 | NM\_001145775  | FK506 binding protein 5  |
| 72 | UPP1 | 2.716 | NM\_001287426  | uridine phosphorylase 1  |
| 73 | SLC10A7 | 2.700 | NM\_001029998  | solute carrier family 10, member 7  |
| 74 | LOC105378653 | 2.684 | XR\_947200  | uncharacterized LOC105378653  |
| 75 | MIR22HG | 2.683 | NR\_028502  | MIR22 host gene  |
| 76 | ALPK1 | 2.655 | NM\_001102406  | alpha kinase 1  |
| 77 | RGS16 | 2.651 | NM\_002928  | regulator of G-protein signaling 16  |
| 78 | ERICH2 | 2.620 | NM\_001290030  | glutamate rich 2  |
| 79 | TULP3 | 2.602 | NM\_001160408  | tubby like protein 3  |
| 80 | CYB561 | 2.601 | NM\_001017916  | cytochrome b561  |
| 81 | ANAPC16 | 2.598 | NM\_001242546  | anaphase promoting complex subunit 16  |
| 82 | FRRS1 | 2.591 | NM\_001013660  | ferric-chelate reductase 1  |
| 83 | SAT2 | 2.589 | NM\_133491  | spermidine/spermine N1-acetyltransferase family member 2  |
| 84 | MIR3665 | 2.573 | NR\_037438  | microRNA 3665  |
| 85 | SMIM14 | 2.549 | NM\_174921  | small integral membrane protein 14  |
| 86 | CCNB1IP1 | 2.541 | NM\_021178  | cyclin B1 interacting protein 1, E3 ubiquitin protein ligase  |
| 87 | SLC16A7 | 2.538 | NM\_001270622  | solute carrier family 16 (monocarboxylate transporter), member 7  |
| 88 | AMN1 | 2.518 | NM\_001113402  | antagonist of mitotic exit network 1 homolog  |
| 89 | GFPT1 | 2.516 | NM\_001244710  | glutamine--fructose-6-phosphate transaminase 1  |
| 90 | HMGB2 | 2.511 | NM\_001130688  | high mobility group box 2  |
| 91 | EPCAM | 2.474 | NM\_002354  | epithelial cell adhesion molecule  |
| 92 | SMDT1 | 2.460 | NM\_033318  | single-pass membrane protein with aspartate-rich tail 1  |
| 93 | GOLPH3L | 2.456 | NM\_018178  | golgi phosphoprotein 3-like  |
| 94 | SPACA5 | 2.454 | uc004diu.3  | sperm acrosome associated 5  |
| 95 | SMOC1 | 2.433 | NM\_001034852  | SPARC related modular calcium binding 1  |
| 96 | SNHG17 | 2.415 | NR\_015366  | small nucleolar RNA host gene 17  |
| 97 | DNAJC27 | 2.411 | NM\_001198559  | DnaJ (Hsp40) homolog, subfamily C, member 27  |
| 98 | HIST2H2AB | 2.410 | NM\_175065  | histone cluster 2, H2ab  |
| 99 | ZBED3 | 2.409 | NM\_032367  | zinc finger, BED-type containing 3  |
| 100 | AMZ2 | 2.394 | NM\_001033569  | archaelysin family metallopeptidase 2  |
| 101 | NR1D1 | 2.393 | NM\_021724  | nuclear receptor subfamily 1, group D, member 1  |
| 102 | UAP1L1 | 2.386 | NM\_207309  | UDP-N-acetylglucosamine pyrophosphorylase 1 like 1  |
| 103 | SNHG8 | 2.378 | NR\_003584  | small nucleolar RNA host gene 8  |
| 104 | BLVRB | 2.377 | NM\_000713  | biliverdin reductase B  |
| 105 | ZNF14 | 2.375 | NM\_021030  | zinc finger protein 14  |
| 106 | PGM3 | 2.371 | NM\_001199917  | phosphoglucomutase 3  |
| 107 | GOLT1A | 2.357 | NM\_198447  | golgi transport 1A  |
| 108 | SGTB | 2.351 | NM\_019072  | small glutamine-rich tetratricopeptide repeat (TPR)-containing, beta  |
| 109 | TMEM47 | 2.328 | NM\_031442  | transmembrane protein 47  |
| 110 | TMEM116 | 2.326 | NM\_001193453  | transmembrane protein 116  |
| 111 | NEDD4 | 2.324 | NM\_001284338  | neural precursor cell expressed, developmentally down-regulated 4, E3 ubiquitin protein ligase  |
| 112 | MIS12 | 2.323 | NM\_001258217  | MIS12 kinetochore complex component  |
| 113 | DNMT3B | 2.323 | NM\_001207055  | DNA (cytosine-5-)-methyltransferase 3 beta  |
| 114 | LYSMD3 | 2.320 | NM\_001286812  | LysM, putative peptidoglycan-binding, domain containing 3  |
| 115 | UGDH-AS1 | 2.307 | NR\_047679  | UGDH antisense RNA 1  |
| 116 | HIST1H3I | 2.304 | NM\_003533  | histone cluster 1, H3i  |
| 117 | ZFAS1 | 2.294 | NR\_003604  | ZNFX1 antisense RNA 1  |
| 118 | CLEC18A | 2.288 | NM\_001136214  | C-type lectin domain family 18, member A  |
| 119 | RPS6KA6 | 2.276 | NM\_014496  | ribosomal protein S6 kinase, 90kDa, polypeptide 6  |
| 120 | APTR | 2.275 | NR\_038361  | Alu-mediated CDKN1A/p21 transcriptional regulator (non-protein coding)  |
| 121 | SP4 | 2.262 | NM\_003112  | Sp4 transcription factor  |
| 122 | ERLEC1 | 2.260 | NM\_001127397  | endoplasmic reticulum lectin 1  |
| 123 | PLA2G12A | 2.256 | NM\_030821  | phospholipase A2, group XIIA  |
| 124 | P2RY1 | 2.255 | NM\_002563  | purinergic receptor P2Y, G-protein coupled, 1  |
| 125 | ARMCX3 | 2.254 | NM\_016607  | armadillo repeat containing, X-linked 3  |
| 126 | DERL2 | 2.250 | NM\_001304777  | derlin 2  |
| 127 | PRPSAP2 | 2.236 | NM\_001243936  | phosphoribosyl pyrophosphate synthetase-associated protein 2  |
| 128 | ZC3H6 | 2.232 | NM\_198581  | zinc finger CCCH-type containing 6  |
| 129 | COBLL1 | 2.229 | NM\_001278458  | cordon-bleu WH2 repeat protein like 1  |
| 130 | SEL1L | 2.219 | NM\_001244984  | sel-1 suppressor of lin-12-like (C. elegans)  |
| 131 | ARHGAP42 | 2.215 | NM\_152432  | Rho GTPase activating protein 42  |
| 132 | EAF2 | 2.211 | NM\_018456  | ELL associated factor 2  |
| 133 | ARL13B | 2.194 | NM\_001174150  | ADP-ribosylation factor like GTPase 13B  |
| 134 | RAB33B | 2.192 | NM\_031296  | RAB33B, member RAS oncogene family  |
| 135 | CD274 | 2.189 | NM\_001267706  | CD274 molecule  |
| 136 | RPS15A | 2.178 | NM\_001019  | ribosomal protein S15a  |
| 137 | SHISA4 | 2.176 | NM\_198149  | shisa family member 4  |
| 138 | NFXL1 | 2.153 | NM\_001278623  | nuclear transcription factor, X-box binding-like 1  |
| 139 | KIAA0226L | 2.145 | NM\_001286761  | KIAA0226-like  |
| 140 | LIN52 | 2.139 | NM\_001024674  | lin-52 DREAM MuvB core complex component  |
| 141 | FBLN1 | 2.138 | NM\_001996  | fibulin 1  |
| 142 | CORO2A | 2.115 | NM\_003389  | coronin, actin binding protein, 2A  |
| 143 | MARVELD2 | 2.103 | NM\_001038603  | MARVEL domain containing 2  |
| 144 | PAN2 | 2.081 | NM\_001127460  | PAN2 poly(A) specific ribonuclease subunit  |

\* The value applies the fold change which compares short-term and long-term cultured samples. It is averaged between two individual samples that were separately experimented.