Supplementary Table 2. Differentially expressed vitamin D responsive genes in BVECyp24a1-wt and BVECyp24a1-null cells

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Gene Name | Log2 Ratio (BVECyp24a1-wt-1 with D3/ BVECyp24a1-wt-1) | Log2 Ratio (BVECyp24a1-null-1 with D3/ BVECyp24a1-null-1) | Log2 Ratio (BVECyp24a1-null-1/ BVECyp24a1-wt-1) | Gene description or role in cancer | Reference |
| 2210011C24Rik | -2.4584597 | -0.80385747 | -2.848774849 | RIKEN cDNA 2210011C24 gene. |  |
| Acot2 | 2.55721751 | 0.054447784 | 0.5711567011 | Acyl-CoA Thioesterase 2 involved in mitochondrial fatty acid oxidation in the liver |  |
| Adamts2 | 2.459431619 | 2.64385619 | -2.459431618 | DAM Metallopeptidase With Thrombospondin Type 1 Motif 2 |  |
| Adarb1 | 2.62188907 | 1.42786154 | 0.9004643264 | Adenosine Deaminase, RNA Specific B1. Can inhibit cell proliferation and migration |  |
| Adgrd1 | 4.611434712 | 4.47370575 | -0.491853096 | Adhesion G Protein-Coupled Receptor D1 |  |
| Aldh1l2 | -2.18982455 | 1.584962501 | -5.189824558 | A mitochondrial 10-formyltetrahydrofolate dehydrogenase in the folate pathway. Promote metastasis | ([1](#_ENREF_1)) |
| Baiap2l2 | 2.091922489 | 0 | -3.247927513 | BAI1 Associated Protein 2 Like 2. an epithelial-specific BAR domain protein that generates planar membrane structures |  |
| C1qtnf1 | 2.6485786 | 1.622195407 | -1.258311995 | C1q And Tumor Necrosis Factor Related Protein 1 |  |
| Cabp1 | 2.117422862 | -1 | -3.095924419 | Calcium Binding Protein 1, inhibits inositol trisphosphate receptors |  |
| Cacna2d4 | 5.044394119 | 4.029747343 | 2.5849625007 | Calcium Voltage-Gated Channel Auxiliary Subunit Alpha2delta 4 |  |
| Cdon | 2.096215315 | 3.452512205 | -0.610053481 | Cell Adhesion Associated, Oncogene Regulated |  |
| ChkbCpt1b | 6.686500527 | -1.93288580 | 6.3923174227 | predicted readthrough transcript that is candidate for nonsense-mediated mRNA decay. Function unknown |  |
| Col16a1 | 5.139551352 | 0 | 0 | induces expression of MMP9 and facilitates invasion of oral squamous cell carcinoma |  |
| Cpt1b | -6.10852445 | 5.584962501 | -6.108524456 | Carnitine Palmitoyltransferase 1, which is required for the net transport of long-chain fatty acyl-CoAs from the cytoplasm into the mitochondria |  |
| Ctsw | -2.87890818 | -1.58496250 | -0.318607736 | Cathepsin W |  |
| Cyp24a1 | 10.54761755 | 1.295775807 | 5.383704292 | Internal control for RNA-Sequencing |  |
| Dmpk | 2.435888738 | 0.901307685 | 1.9535150976 | Dystrophia Myotonica Protein Kinase |  |
| Efemp1 | 2.388342633 | -1 | -9.655083445 | promotes tumor cell migration and invasion | ([2](#_ENREF_2)) |
| Egr1 | -3.52714184 | -0.61835898 | -0.465365648 | a nuclear protein that functions as a transcriptional regulator and a tumor suppressor gene |  |
| Emilin2 | 4.415037499 | 0 | -1 | an extracellular matrix glycoprotein. It can trigger cell death through a direct binding to death receptors. It can also promote tumor angiogenesis. |  |
| Esr2 | 2.366782331 | -1.58496250 | 2.1950159824 | Estrogen Receptor 2 |  |
| Fat4 | 2.029146346 | 2.021061616 | -1.527247002 | FAT Atypical Cadherin 4 |  |
| Fndc1 | 4.266786541 | 1.807354922 | -1.584962500 | A receptor-independent accessory protein for the Gβγ subunit. It is involved in VEGF-mediated signal processing during angiogenesis |  |
| Gjb2 | 2.135436625 | 2.263034406 | -4.666756591 | Gap Junction Protein Beta 2 and its upregulation may play a role in local invasion of breast cancer | ([3](#_ENREF_3)) |
| Gm12505 | -2.18997094 | -0.74296433 | -3.353897204 | predicted gene 12505 |  |
| Gm12669 | -5.87344411 | -3.97459545 | -0.104432791 | predicted gene 12669 |  |
| Gm13278 | 3.901819606 | 1.412598454 | 1.9615258521 | predicted gene 13278 |  |
| Gm15772 | -2.75769703 | -1.33174715 | 0.0056027062 | predicted gene 15772 |  |
| Gm4070 | -4.95419631 | 3.025535092 | -2.146841388 | predicted gene 4070. Function unknown |  |
| Gm5801 | -3.15286983 | -0.51624975 | -0.910795050 | ubiquitin-conjugating enzyme E2, J2 homolog pseudogene |  |
| Gm7334 | 2.40151636 | 1 | 0.2006973502 | B-cell translocation gene 3 pseudogene |  |
| Greb1l | 2.032421478 | 1.392317423 | -0.459431618 | Growth Regulation By Estrogen In Breast Cancer-Like |  |
| Grin1os | 2.047753131 | 1.141427892 | 2.3602562135 | glutamate receptor, ionotropic, NMDA1 (zeta 1), opposite strand. Function unknown |  |
| Grk5 | 2.425606741 | 0.263034406 | 0.4568576749 | Promote migration and invasion of prostate cancer cells | ([4](#_ENREF_4)) |
| Haus1 | -2.88857871 | -1.25669287 | -0.271483595 | HAUS Augmin Like Complex Subunit 1 |  |
| Hist2h2aa2 | -9.11374216 | 8.169925001 | -9.113742166 | nucleosome assembly and DNA packaging |  |
| Hk1os | 2.850423644 | 0 | -0.584962500 | hexokinase 1, opposite strand |  |
| Htra3 | 2.42786154 | 2.080919995 | -0.691877704 | HtrA Serine Peptidase 3 |  |
| Kcnh1 | 3.906890596 | 2.080919995 | 3.1154772174 | Potassium Voltage-Gated Channel Subfamily H Member 1. Overexpression of the gene may confer a growth advantage to cancer cells and favor tumor cell proliferation | ([5](#_ENREF_5)) |
| Klhl33 | 7.238404739 | 2.807354922 | NA | Kelch Like Family Member 33. Function unknown |  |
| Krt16 | 6.988684687 | -0.19993757 | 6.409390936 | Keratin 16, which may be involved in tumor metastasis | ([6](#_ENREF_6)) |
| Krt17 | 5.832890014 | 6.942514505 | -3 | Keratin 17, which promote tumorigenesis | ([7](#_ENREF_7)) |
| Lbp | 2.192074279 | 1.652617741 | 4.0766803169 | Lipopolysaccharide Binding Protein, which is involved in the acute-phase immunologic response and promotes the release of cytokines in response to bacterial lipopolysaccharide |  |
| Lrtm2 | 7.087462841 | 5.610497593 | 2.8073549220 | Leucine-Rich Repeats And Transmembrane Domains 2, Function unknown |  |
| Matn2 | 2.756505781 | 1.40053793 | 0.5994620704 | Matrilin 2 |  |
| Mir5114 | 3.582099791 | -1.47502708 | 2.9569612764 | microRNA 5114 |  |
| Mir678 | 12.13378441 | 9.829722735 | NA | microRNA 678 |  |
| Mlph | 2.718087584 | 2.195015982 | 4.1890338243 | Melanophilin, a Rab effector protein involved in melanosome transport |  |
| Mmp13 | 3.247101937 | 5.777122721 | -2.569365645 | Matrix Metallopeptidase 13, which play a role in tumor invasion | ([8](#_ENREF_8)) |
| Mmp17 | 2.201633861 | 3.025535092 | -3.974004791 | Matrix Metallopeptidase 17, which promotes tumor growth and metastasis | ([9](#_ENREF_9)) |
| Mmp3 | 6.426264755 | 4.247927513 | 3.7004397181 | Matrix Metallopeptidase 3, which may play a role in tumor cell migration and invasion | ([10](#_ENREF_10)) |
| Mturn | 2.215012891 | 1.047305715 | -0.900464326 | Maturin, Neural Progenitor Differentiation Regulator Homolog (Xenopus) |  |
| Nedd9 | 2.237767647 | 2.06008305 | 0.1080597458 | Neural Precursor Cell Expressed, Developmentally Down-Regulated 9 |  |
| Notum | 2.01402047 | 1.938599455 | -4.415037499 | A key negative regulator of the Wnt signaling pathway and overexpressed in colorectal cancer | ([11](#_ENREF_11)) |
| Parm1 | 2.858723313 | 1.558628353 | 0.9451380649 | Prostate Androgen-Regulated Mucin-Like Protein 1 |  |
| Pdlim2 | 2.005171206 | 0.665089412 | 2.3860097312 | A member of the actinin-associated LIM family of proteins. A putative ubiquitin-E3 ligase and tumor suppressor gene. It is able to inhibit tumorigenicity and induces tumor cell death. | ([12](#_ENREF_12), [13](#_ENREF_13)) |
| Pdzk1ip1 | 2.0890433 | 0.30718151 | -1.448273828 | It promotes cancer progression and is overexpressed in thyroid carcinomas and target of Twist1 transcription factor | ([14](#_ENREF_14), [15](#_ENREF_15)) |
| Pigr | 2.047305715 | 1.403554061 | 5.5637682784 | Polymeric Immunoglobulin Receptor. A prognostic biomarker: reduced expression is associated with poor prognosis | ([16](#_ENREF_16)) |
| Ppp1r2-ps3 | -7.94836723 | 5.930737338 | -7.948367231 | protein phosphatase 1, regulatory (inhibitor) subunit 2, pseudogene 3. Function unknown |  |
| Prelp | 2.869843609 | 2.807354922 | -1.979822118 | Proline/Arginine-Rich End Leucine-Rich Repeat Protein |  |
| Prex2 | -3.78905410 | -1.87762600 | 0.3761484858 | Phosphatidylinositol-3,4,5-Trisphosphate Dependent Rac Exchange Factor 2 |  |
| Rassf2 | 2.359895945 | 0.847996907 | -1.584962500 | a tumor suppressor gene, which acts as a KRAS-specific effector protein and promote apoptosis and cell cycle arrest |  |
| Relt | 2.301090632 | 0.842273338 | 0.7607230852 | RELT Tumor Necrosis Factor Receptor |  |
| Rgl1 | 2.215267987 | 1.777607579 | -2.050626073 | Ral Guanine Nucleotide Dissociation Stimulator Like 1 |  |
| Sarnp | -2.86090439 | -3.26946067 | 1.1284483654 | SAP Domain Containing Ribonucleoprotein |  |
| Shisa6 | 4.672425342 | 3.273018494 | 0.5849625007 | Shisa Family Member 6 |  |
| Slc30a2 | 6.375039431 | 2.807354922 | NA | a zinc transporter |  |
| Sprr2e | 9.328674927 | 4.988086678 | 4.2479275134 | Small proline rich protein 2E, Function unknown |  |
| Sprr2h | 3.658211483 | 4.235216462 | 0.5849625007 | Small proline-rich protein 2H |  |
| Srcin1 | 2.20511443 | 1.091147888 | -1.646363045 | SRC Kinase Signaling Inhibitor 1, a putative tumor suppressor gene | ([17](#_ENREF_17)) |
| Srp54a | 2.125530882 | 2.029747343 | -0.874469117 | Signal recognition particle 54A |  |
| Tesc | 2.549406131 | 0.699714199 | 1.7816544117 | It promotes tumor progression | ([18](#_ENREF_18)) |
| Tgfbr3 | 2.200139614 | 2.936637939 | -0.807354922 | Transforming Growth Factor Beta Receptor 3 |  |
| Tmem254b | -11.3111806 | -0.05102566 | 0.4545198275 | transmembrane protein 254b. Function unknown |  |
| Tmem254c | 2.256603081 | 1.542968412 | -0.384412224 | transmembrane protein 254c. Function unknown |  |
| Tmsb15l | -8.27146302 | -7.05528243 | -1.216180592 | thymosin beta 15b like |  |
| Tnnt2 | -2.02742715 | -1.54755994 | 1.8928436390 | troponin T2, cardiac type |  |
| Ttc22 | 5.930737338 | 4.744161096 | 2.3219280948 | tetratricopeptide repeat domain 22. Function unknown |  |
| Vnn1 | 2.046619326 | 2.780801503 | -1.403480467 | Vanin 1 |  |
| Wdr72 | 5.754887502 | 4.189824559 | 2 | WD Repeat Domain 72. Function unknown |  |

Based on log2 ratio>2 of BVECyp24a1-null /BVECyp24a1-wt, up-regulated genes are highlighted in red and down-regulated genes are in green.

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