

Suppl. Table S2: PCR primers

| Primer name | Primer sequence (5' - 3') |
|--------------------|----------------------------------|
| HIST1H3B_F | GGGCAGGAGCCTCTCTTAAT |
| HIST1H3B_R | ACCAAGTAGGCCTCACAAGC |
| Hist1H3C_F | CTCATTGCAAATGGCTCGTA |
| Hist1H3C_R | CATGATGGTGACGCGTTTAG |
| Hist2H3C_F | TGGCCCGTACTAAGCAGACT |
| Hist2H3C_R | AGCGGTACAGCTTCTTCCAA |
| H3F3A_V2_F | GTGATCGTGGCAGGAAAAGT |
| H3F3A_V2_R | GGTTTCTTCACCCCTCCAGT |
| H3F3A_V1_F | GATTTTGGGTAGACGTAATCTTC |
| H3F3A_V1_R | TTTCCTGTTATCCATCTTTTTGTT |
| ACVR1-gen-R206-F | TCAGGAAGTGGCTCTGGTCT |
| ACVR1-gen-R206-R | CAAGTTCAGGTGCTCCAACA |
| ACVR1-gen-R258-F | AAGGCAGGTATGGTGAGGTG |
| ACVR1-gen-R258-R | CCAAAACGGAGAGAGCAAAG |
| ACVR1-gen-G328-F | GCCTTCGAATAGTGCTGTCC |
| ACVR1-gen-G328-R | AACATGTTGTGGGGGAGAGA |
| ACVR1-gen-G356-F | AGGTAGCCTAGCGGGAGAAG |
| ACVR1-gen-G356-R | CGGCCAGATCGATTTACAAG |

Suppl. Table S3: List of differentially expressed genes.

| Official Gene Symbol | H3.1/ H3.3 ratio | Adjusted <i>p</i> -value |
|----------------------|------------------|--------------------------|
| HOXD8 | 18.17 | 1.56E-07 |
| TLX2 | 11.98 | 9.19E-05 |
| ANGPTL4 | 5.89 | 1.18E-02 |
| ADM | 5.85 | 1.18E-02 |
| SLC30A3 | 5.83 | 3.41E-02 |
| BNC1 | 4.31 | 1.99E-07 |
| TBX1 | 3.73 | 2.48E-02 |
| NGFR | 3.64 | 1.97E-02 |
| IFITM4P | 3.61 | 2.48E-02 |
| IFITM2 | 3.58 | 1.18E-02 |
| IFITM3 | 3.55 | 2.42E-02 |
| EGFLAM | 2.58 | 1.89E-02 |
| FRZB | 2.46 | 2.48E-02 |
| FGF11 | 2.40 | 1.49E-03 |
| IRX4 | 2.37 | 2.21E-03 |
| LDHA | 2.31 | 2.06E-02 |
| PMAIP1 | 2.31 | 4.06E-03 |
| MRAP | 2.25 | 2.42E-02 |
| CD14 | 2.21 | 3.30E-02 |
| LSP1 | 2.17 | 9.97E-03 |
| ITGA6 | 2.13 | 3.99E-02 |
| SLC40A1 | 2.06 | 3.81E-02 |
| GPR116 | 2.05 | 3.33E-02 |
| ITPKB | 2.05 | 2.96E-02 |
| PYGL | 2.05 | 3.47E-02 |
| FOLR2 | 2.03 | 3.75E-02 |
| CDKN1A | 2.01 | 4.04E-02 |
| PRRX1 | 2.00 | 3.20E-03 |
| ERO1L | 2.00 | 1.18E-02 |
| SLC16A4 | 1.99 | 1.39E-02 |
| DDB2 | 1.97 | 2.89E-03 |
| C1orf54 | 1.93 | 1.30E-02 |
| STAB1 | 1.92 | 1.50E-02 |
| HK2 | 1.92 | 7.94E-03 |
| FADS2 | 1.90 | 4.49E-02 |
| SHC1 | 1.89 | 2.25E-02 |
| LRRC17 | 1.82 | 4.04E-02 |
| PLXND1 | 1.80 | 3.54E-02 |
| TNS1 | 1.79 | 2.48E-02 |
| CACNA2D4 | 1.79 | 3.77E-02 |

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|---------------|-------------|-----------------|
| ITGA1 | 1.79 | 2.96E-02 |
| EPAS1 | 1.76 | 3.30E-02 |
| RGL3 | 1.76 | 1.49E-03 |
| RAB7L1 | 1.75 | 1.93E-02 |
| ANO7 | 1.73 | 1.67E-02 |
| PPP1R3B | 1.71 | 3.87E-02 |
| CLEC1A | 1.71 | 1.63E-02 |
| PDK1 | 1.67 | 4.20E-02 |
| SLC27A3 | 1.66 | 4.24E-02 |
| RHOB | 1.65 | 2.48E-02 |
| NOSTRIN | 1.65 | 3.33E-02 |
| INSIG2 | 1.63 | 4.04E-02 |
| MSC | 1.63 | 1.46E-02 |
| FRMD6 | 1.61 | 3.45E-02 |
| FDXR | 1.60 | 4.06E-03 |
| EDA2R | 1.60 | 2.17E-02 |
| MYO10 | 1.58 | 2.86E-02 |
| GABPB2 | 1.58 | 7.94E-03 |
| ABHD1 | 1.57 | 7.08E-03 |
| FAM57A | 1.54 | 3.86E-02 |
| PDIA6 | 1.53 | 3.30E-02 |
| AEN | 1.48 | 2.96E-02 |
| TPR | 1.47 | 1.93E-02 |
| FLVCR2 | 1.47 | 1.67E-02 |
| ZNF366 | 1.47 | 2.96E-02 |
| AP1S3 | 1.44 | 9.74E-03 |
| DERL2 | 1.42 | 3.47E-02 |
| ITGA10 | 1.41 | 4.13E-02 |
| ELP5 | 1.40 | 2.48E-02 |
| DSP | 1.38 | 3.27E-02 |
| EGLN1 | 1.37 | 2.24E-02 |
| STARD13 | 1.36 | 3.01E-02 |
| TOR1AIP2 | 1.31 | 2.61E-02 |
| BLZF1 | 1.30 | 1.74E-02 |
| DMBX1 | 1.27 | 2.96E-02 |
| MSLN | 1.23 | 3.27E-02 |
| ANKFY1 | 1.22 | 2.68E-02 |
| IL6R | 1.21 | 2.48E-02 |
| ALX1 | 1.18 | 4.12E-02 |
| GRIK3 | 0.82 | 4.49E-02 |
| CMPK1 | 0.81 | 4.37E-02 |
| XCR1 | 0.77 | 3.45E-02 |
| HTT | 0.76 | 3.01E-02 |
| MEAF6 | 0.74 | 2.18E-02 |
| BCORL1 | 0.74 | 2.96E-02 |
| KCNA3 | 0.74 | 1.47E-02 |

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| CROCC | 0.73 | 2.06E-02 |
| ZP3 | 0.73 | 4.65E-02 |
| NUDT10 | 0.73 | 2.48E-02 |
| RCC2 | 0.71 | 3.07E-02 |
| ATAD3A | 0.70 | 4.04E-02 |
| ZNRF1 | 0.70 | 4.32E-02 |
| MGAT5B | 0.70 | 4.04E-02 |
| CDK5R1 | 0.70 | 2.85E-02 |
| CCDC158 | 0.69 | 3.30E-02 |
| TMEM240 | 0.68 | 4.57E-03 |
| KCNG3 | 0.68 | 1.18E-02 |
| RAB9B | 0.67 | 3.30E-02 |
| PCDH11X | 0.67 | 3.63E-02 |
| TCEB2 | 0.67 | 1.89E-02 |
| HPCA | 0.66 | 3.87E-02 |
| NUDT11 | 0.66 | 4.04E-02 |
| TMEM132B | 0.66 | 2.96E-02 |
| ELAVL3 | 0.66 | 4.93E-02 |
| DES | 0.64 | 3.33E-02 |
| PRDM8 | 0.64 | 4.37E-02 |
| AMER1 | 0.63 | 4.49E-02 |
| TLE4 | 0.63 | 3.45E-02 |
| ZSCAN1 | 0.62 | 2.48E-02 |
| WFIKKN1 | 0.61 | 4.37E-02 |
| CTNNBIP1 | 0.61 | 2.48E-02 |
| MEF2B | 0.60 | 3.20E-03 |
| CBX8 | 0.60 | 4.98E-02 |
| PRKCZ | 0.59 | 2.48E-02 |
| PCYT1B | 0.59 | 2.82E-02 |
| TRPC3 | 0.59 | 4.04E-02 |
| CACNA1A | 0.58 | 1.10E-02 |
| PPM1E | 0.58 | 2.48E-02 |
| SBK1 | 0.58 | 1.38E-02 |
| GLT1D1 | 0.58 | 2.96E-02 |
| FAM131B | 0.58 | 3.09E-02 |
| PCSK1N | 0.57 | 2.68E-02 |
| C2orf74 | 0.57 | 4.37E-02 |
| DLG3 | 0.57 | 3.20E-03 |
| ZCCHC12 | 0.57 | 2.93E-02 |
| WFDC2 | 0.56 | 1.04E-02 |
| FAM184B | 0.54 | 2.48E-02 |
| SYT14 | 0.54 | 1.66E-02 |
| KCNMB2 | 0.54 | 2.48E-02 |
| SHISA9 | 0.53 | 4.04E-02 |
| LRRC73 | 0.52 | 3.54E-02 |
| ASIC1 | 0.52 | 2.42E-02 |

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| FBL1 | 0.52 | 3.01E-02 |
| ADAMTS17 | 0.52 | 7.90E-04 |
| DLGAP3 | 0.50 | 3.54E-02 |
| IRX5 | 0.49 | 2.06E-02 |
| CAMTA1 | 0.49 | 2.85E-02 |
| CAMK2N2 | 0.48 | 1.49E-03 |
| CACNG1 | 0.47 | 3.54E-02 |
| RPRM | 0.47 | 4.12E-02 |
| RIMS2 | 0.46 | 1.93E-02 |
| PDGFRA | 0.43 | 2.25E-02 |
| HS6ST2 | 0.43 | 4.61E-02 |
| CA10 | 0.42 | 2.42E-02 |
| PCDH11Y | 0.42 | 3.41E-02 |
| TMEFF2 | 0.42 | 3.54E-02 |
| ATCAY | 0.41 | 1.18E-02 |
| SLC35F3 | 0.40 | 2.48E-02 |
| CHRDL1 | 0.38 | 3.69E-02 |
| WNT6 | 0.38 | 2.25E-02 |
| CNGA3 | 0.37 | 1.13E-02 |
| CMYA5 | 0.37 | 1.32E-03 |
| KLRC1 | 0.33 | 4.84E-02 |
| SPHKAP | 0.32 | 3.38E-02 |
| NPM2 | 0.29 | 3.27E-02 |
| TSPYL5 | 0.29 | 4.03E-03 |
| MGARP | 0.28 | 3.54E-02 |
| MOXD1 | 0.27 | 2.96E-02 |
| ARHGEF5 | 0.27 | 1.93E-02 |
| MAB21L1 | 0.24 | 1.32E-03 |
