**Supplement Table 1: List of primers used for real time RT-PCR reactions**

|  |  |  |
| --- | --- | --- |
| Gene | Primer sequence | Ref |
| HES1 F | 5’-ATGGAGAAAAATTCCTCGTCCC-3’ | 1 |
| HES1 R | 5’-TTCAGAGCATCCAAAATCAGTGT-3’ |
| HEY1 F | 5’-GAAACTTGAGTTCGGCTCTAGG-3’ |
| HEY1 R | 5’-GCTTAGCAGATCCTTGCTCCAT-3’ |
| HEY2 F | 5’-AGGGGGTAAAGGCTACTTTGA-3’ |
| HEY2 R | 5’-TGGCGCAAGTGCTGAGATG-3’ |
| GATA3 F | 5’-GTGCTTTTTAACATCGACGGTC-3’ |
| GATA3 R | 5’-AGGGGCTGAGATTCCAGGG-3’ |
| NRARP F | 5’-CAGAACATGACCAACTGCGAG-3’ |
| NRARP R | 5’-GGTGATGAGATAGAGCACGATG-3’ |
| DTX1 F | 5’-GGTGTGGGAGTGTCTGAATGA-3’ |
| DTX1 R | 5’-CCTGGCGAAACTGGTGCAT-3’ |
| PBX1 F | 5’-CATGCTGTTAGCGGAAGGC-3’ |
| PBX1 R | 5’-CAGCTCCGTATGGTAGATTTGTC-3’ |
| Dll1 F | 5’-ATCTGCCTGCCTGGATGTGATG-3’ | 2 |
| Dll1 R | 5’-AGACAGCCTGGATAGCGGATACAC-3’ |
| Dll3 F | 5’-CAATGGAGGCAGCTGTAGTG-3’ |
| Dll3 R | 5’-TCAAAGGACCTGGGTGTCTC-3’ |
| Dll4 F | 5’-TTGGATGAGCAAACCAGCACCC-3’ |
| Dll4 R | 5’-TGACAGCCCGAAAGACAGATAGG-3’ |
| JAG1 F | 5’-CAACCGTGCCAGTGACTATTTCTGC-3’ | 3 |
| JAG1 R | 5’-TGTTCCCGTGAAGCCTTTGTTACAG-3’ |
| JAG2 F | 5’-AACGATACCACCCCGAATGAGG-3’ |
| JAG2 R | 5’-GCTGCCACAGTAGTTCAGGTCTTTG-3’ |
| NOTCH 1 F | 5’-GAACCAATACAACCCTCTGC-3’ | 4 |
| NOTCH 1R | 5’-AGCTCATCATCTGGGACAGG-3’ |
| NOTCH 2 F | 5’-TGGGCTACACTGGGAAAAAC-3’ | 5 |
| NOTCH 2 R | 5’-ACATAGGCACTGGGACTCTG-3’ |
| NOTCH 3 F | 5’-TCTTGCTGCTGGTCATTCTC-3’ | 6 |
| NOTCH 3 R | 5’-TGCCTCATCCTCTTCAGTTG-3’ |
| NOTCH 4 F | 5’-AGTCCAGGCCTTGCCAGAACG-3’ | 7 |
| NOTCH 4 R | 5’-GTAGAAGGCATTGGCCAGAGAG-3’ |
| SOX2 F | 5’-CCTCCGGGACATGATCAGCATGTA-3’ | 8 |
| SOX2 R | 5’-GCAGTGTGCCGTTAATGGCCGTG-3’ |
| HES5 F | 5’-TCAGCCCCAAAGAGAAAAAC-3’ | 9 |
| HES5 R | 5’-TAGTCCTGGTGCAGGCTCTT-3’ |
| CD133 F | 5’-CTGGGGCTGCTGTTTATTATTCTG-3’ | 10 |
| CD133 R | 5’-ACGCCTTGTCCTTGGTAGTGTTG-3’ |
| BMI1 F | 5’-CTGGTTGCCCATTGACAGC-3’ | 11 |
| BMI1 R | 5’-CAGAAAATGAATGCGAGCCA-3’ |
| KLF4 F | 5’-ATCAGATGCAGCCGCAAGTCCC-3’ | 12 |
| KLF4 R | 5’-TCTTCATGTGTAAGGCGAGGTGGTCC-3’ |
| CD44 F | 5’-TGGAGCAAACACAACCTCTG-3’ | 13 |
| CD44 R | 5’-TCCACTTGGCTTTCTGTCCT-3’ |
| OCT4 F | 5’-ATTCAGCCAAACGACCATCT-3’ | 14 |
| OCT4 R | 5’-GTTTTCTTTCCCTAGCTCCTCC-3’ |
| ADAM17 F | 5’-GTCGTGGTGGTGGATGGTAAAA-3’ | 15 |
| ADAM17 R | 5’-GCCCCATCTGTGTTGATTCTGA-3’ |
| ERBB2 F | 5’-TTTGATGGTGACCTGGGAAT-3’ | 16 |
| ERBB2 R | 5’-GAACATCTGGCTGGTTCACA-3’ |
| FZD1 F | 5’-CACCTTGTGAGCCGACCAA-3’ | 17 |
| FZD1 R | 5’-CAGCACTGACCAAATGCCAAT-3’ |
| FZD6 F | 5’-ACAAGCTGAAGGTCATTTCCAAA-3’ |
| FZD6 R | 5’-GCTACTGCAGAAGTGCCATGAT-3’ |
| GLI1 F | 5’-GAAGTCATACTCACGCCTCGAA-3’ | 18 |
| GLI1 R | 5’-CAGCCAGGGAGCTTACATACAT-3’ |
| HDAC1 F | 5’-ACTGGGGACCTACGG-3’ | 19 |
| HDAC1 R | 5’-ACTTGGCGTGTCCTT-3’ |
| MMP7 F | 5’-TGAGCTACAGTGGGAACAGG-3’ | 20 |
| MMP7 R | 5’-TCATCGAAGTGAGCATCTCC-3’ |
| NCSTN F | 5’-CAAAGCACCTTCAGCATCAA-3’ | 21  22 |
| NCSTN R | 5’-GGTCACATCAGGTGCCTTTT-3’ |
| PSEN1 F | 5’-TTGCGGTCCTTAGACAGCTT-3’ |
| PSEN1 R | 5’-TGCTCCTGCCGTTCTCTATT-3’ |
| PSEN2 F | 5’-CCCAGAGGATGGAGAGAACA-3’ |
| PSEN2 R | 5’-CTACCACCACGATCATGGAC-3’ |
| APH1A F | 5’-CAGCCATTATCCTGCTCCAT-3’ |
| APH1A R | 5’-CTCATACCAGGGGTTCAGGA-3’ |
| SH2D1A F | 5’-TGGGTCCACATACCAACAGA-3’ |  |
| SH2D1A R | 5’-AACACACACCCTTGCACTCA-3’ |
| SHH F | 5’-CAAGCAGTTTATCCCCAATGTG-3’ | 23 |
| SHH R | 5’-TCACCCGCAGTTTCACTC-3’ |
| SMO F | 5’-GTTCTCCATCAAGAGCAACCAC-3’ | 24 |
| SMO R | 5’-CGATTCTTGATCTCACAGTCAGG-3’ |
| SUFU F | 5’-GAGGACAGCCGGAGCATCT-3’ | 25 |
| SUFU R | 5’-AGGACAGGTTTGCTGTTGATCTC-3’ |
| TEAD1 F | 5’-AATCCCACCGCCAAAATTGAGC-3’ | 26 |
| TEAD1 R | 5’-TACCATACATTTTGCCTTCGTCT-3’ |

**List of primers used for ChIP experiments**

|  |  |
| --- | --- |
| Gene | Primer Sequence |
| HES1-P F | 5’-CCCAGAGGGAGAGTAGCAAA-3’ |
| HES1-P R | 5’-CCCAAACTTTCTTTCCCACA-3’ |
| HES1-M F | 5’-CGCAGAACCTAAAGCCTACG-3’ |
| HES1-M R | 5’-TTCAGAAATTCCTCGTTTGGA-3’ |
| HES1-D F | 5’-GCCGCTTTAACCGCAGTC-3’ |
| HES1-D R | 5’-GCCTCCAAGTTTGCTCCTC-3’ |
| HES 5-P F | 5’-TCCCTTATCTGCTCCTACGG-3’ |
| HES 5-P R | 5’-CTCGCCCTCATTAGCATCC-3’ |
| HES 5-M F | 5’-TGCTGTGGGTTACAGTGCTC-3’ |
| HES 5-M R | 5’-TCACCTGGGACTCCTGACTT-3’ |
| HES 5-D F | 5’-AGTGTCACTGCCTCCCTCTG-3’ |
| HES 5-D R | 5’-AGGACTTCAAGCCAATGCAG-3’ |
| ADAM17 F | 5’-AGGCCGCTTTCTACAGCTC-3’ |
| ADAM17 R | 5’-CTTCCTGGACGCAGACGTA-3’ |
| ERBB2 F | 5’-GTCCTGGAAGCCACAAGGTA-3’ |
| ERBB2 R | 5’-AAATTCCCTAGGCTGCCACT-3’ |
| FOS F | 5’-TAGAATTGGGGATGGGGGTA-3’ |
| FOS R | 5’-GAGAACATTCGCACCTGGTT-3’ |
| FZD1 F | 5’-GTGCCACCACCACTACTTCC-3’ |
| FZD1 R | 5’-GCCCCGTAGTCTGTCTTTCA-3’ |
| FZD6 F | 5’-CTGAAATCCGCAAGGAAGTG-3’ |
| FZD6 R | 5’-CTCCACCTTGCCGTCTGTTA-3’ |
| HDAC1 F | 5’-ATCTCCAAGCACGCTTTTCA-3’ |
| HDAC1 R | 5’-AATCAGCTTGCGCAGACAC-3’ |
| JAG2 F | 5’-GAGTAGGAGGCGGCATCTC-3’ |
| JAG2 R | 5’-CACACCTCCGCGTGAGTC-3’ |
| SH2D1A F | 5’-TCAAGATGACTGCGTGAGGT-3’ |
| SH2D1A R | 5’-GGGCAAAAACACACTGACAA-3’ |
| STIL F | 5’-TAGAGCACTTCCGGCTTCAT-3’ |
| STIL R | 5’-TCGACCAATCCCAAGTCTTC-3’ |
| TEAD1 F | 5’-AACCCAGGCTTCCAGAGTTC-3’ |
| TEAD1 R | 5’-GGTGACGTCATGGGGAATC-3’ |

**Supplementary Table2: List of overlapping genes from ChIP assay**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***Gene symbol*** | ***Gene title*** | ***H3K4me3*** | ***P-value*** | ***H3K27me3*** | ***P-value*** |
| ADAM17 | ADAM metallopeptidase domain 17 | 0.52 | 5.2E-03 | 3.20 | 1.5E-04 |
| AES | Amino-terminal enhancer of split | 0.45 | 2.69E-03 | 3.78 | 1.1E-03 |
| DTX1 | Deltex homolog 1 (Drosophila) | 0.49 | 4.03E-03 | 2.12 | 3.2E-03 |
| ERBB2 | V-erb-b2 erythroblastic leukemia viral oncogene homolog 2 | 0.53 | 5.44E-03 | 5.92 | 6.6E-05 |
| FOS | FBJ murine osteosarcoma viral oncogene homolog | 0.06 | 3.03E-05 | 2.79 | 1.9E-04 |
| FZD1 | Frizzled family receptor 1 | 0.36 | 1.35E-03 | 2.14 | 3.1E-04 |
| FZD6 | Frizzled family receptor 6 | 0.43 | 2.37E-03 | 2.04 | 3.5E-05 |
| HDAC1 | Histone deacetylase 1 | 0.16 | 4.22E-04 | 2.62 | 2.0E-04 |
| HES5 | Hairy and enhancer of split 5 (Drosophila) | 0.49 | 1.29E-03 | 5.20 | 8.5E-05 |
| JAG2 | Jagged 2 | 0.56 | 7.27E-03 | 2.69 | 2.0E-04 |
| LFNG | LFNG O-fucosylpeptide 3-beta-N-acetylglucosaminyltransferase | 0.39 | 1.68E-03 | 2.28 | 2.6E-03 |
| LRP5 | Low density lipoprotein receptor-related protein 5 | 0.50 | 4.37E-03 | 1.97 | 4.0E-04 |
| MFNG | MFNG O-fucosylpeptide 3-beta-N-acetylglucosaminyltransferase | 0.30 | 9.15E-04 | 2.71 | 1.9E-03 |
| MMP7 | Matrix metallopeptidase 7 (matrilysin, uterine) | 0.48 | 3.58E-03 | 2.41 | 2.3E-03 |
| NCSTN | Nicastrin | 0.48 | 3.45E-03 | 2.34 | 2.5E-04 |
| NOTCH1 | Notch 1 | 0.53 | 1.56E-02 | 1.95 | 4.1E-03 |
| PSEN1 | Presenilin 1 | 0.48 | 1.20E-02 | 3.81 | 1.1E-04 |
| PSEN2 | Presenilin 2 | 0.32 | 1.04E-03 | 2.32 | 2.5E-04 |
| SH2D1A | SH2 domain containing 1A | 0.44 | 2.52E-03 | 1.88 | 1.7E-03 |
| SHH | Sonic hedgehog | 0.40 | 1.87E-03 | 3.23 | 1.4E-04 |
| STIL | SCL/TAL1 interrupting locus | 0.17 | 4.43E-04 | 2.70 | 1.7E-04 |
| TEAD1 | TEA domain family member 1 (SV40 transcriptional enhancer factor) | 0.27 | 7.83E-04 | 2.60 | 1.9E-05 |

Detailed annotations of the overlapping 22 genes are presented. Fold changes and p-values were obtained from knockdown cells compared to control cells.

**Supplement Table 3: ChIP qPCR analysis confirmed by qRT-PCR**

|  |  |  |
| --- | --- | --- |
| ***Gene symbol*** | ***Fold change  in HCT116*** | ***Fold change  in DLD-1*** |
| ADAM17 | 0.67 | 0.38 |
| AES | 0.59 | ND |
| DTX1 | 0.63 | 0.27 |
| ERBB2 | 0.67 | 0.30 |
| FOS | 0.17 | ND |
| FZD1 | 0.53 | 0.37 |
| FZD6 | 0.59 | 0.27 |
| HES5 | 0.71 | 0.42 |
| JAG2 | 0.67 | 0.47 |
| MMP7 | 0.63 | ND |
| NCSTN | 0.63 | 0.51 |
| PSEN2 | 0.48 | 0.55 |
| SH2D1A | 0.59 | 0.38 |
| TEAD1 | 0.43 | 0.42 |

ND: No Difference

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