

Additional file 1 – Differentially expressed genes in the vicinity of ER binding sites

| RefSeq_ID | Gene Symbol | Chromosome | Expression Level | |
|-----------|-------------|------------|------------------|----------------|
| | | | Up-regulated | Down-regulated |
| NR_028386 | LOC375196 | chr2 | | + |
| NR_027322 | LOC283070 | chr10 | | + |
| NR_026955 | LOC121838 | chr13 | | + |
| NR_026943 | LOC642852 | chr21 | | + |
| NR_026800 | KIAA0125 | chr14 | | + |
| NR_026773 | C6orf123 | chr6 | | + |
| NR_024576 | SEC61A2 | chr10 | | + |
| NM_199005 | ZNF322B | chr9 | | + |
| NM_197956 | NAIF1 | chr9 | | + |
| NM_183419 | RNF19A | chr8 | | + |
| NM_182757 | RNF144B | chr6 | | + |
| NM_181709 | FAM101A | chr12 | | + |
| NM_181671 | PITPNC1 | chr17 | | + |
| NM_181354 | OXR1 | chr8 | | + |
| NM_181054 | HIF1A | chr14 | | + |
| NM_178815 | ARL5B | chr10 | | + |
| NM_173515 | CNKS3 | chr6 | | + |
| NM_173354 | SIK1 | chr21 | | + |
| NM_153229 | TMEM92 | chr17 | | + |
| NM_152903 | KBTBD6 | chr13 | | + |
| NM_152830 | ACE | chr17 | | + |
| NM_152365 | C1orf172 | chr1 | | + |
| NM_152308 | C16orf75 | chr16 | | + |
| NM_152295 | TARS | chr5 | | + |
| NM_152243 | CDC42EP1 | chr22 | | + |
| NM_147184 | TP53I3 | chr2 | | + |
| NM_145804 | ABTB2 | chr11 | | + |
| NM_144665 | SESN3 | chr11 | | + |
| NM_139283 | PPTC7 | chr12 | | + |
| NM_138572 | TAF8 | chr6 | | + |
| NM_133510 | RAD51L1 | chr14 | | + |
| NM_130445 | COL18A1 | chr21 | | + |
| NM_080927 | DCBLD2 | chr3 | | + |
| NM_053031 | MYLK | chr3 | | + |
| NM_052929 | FHAD1 | chr1 | | + |
| NM_052870 | SNX18 | chr5 | | + |
| NM_052864 | TIFA | chr4 | | + |
| NM_033508 | GCK | chr7 | | + |
| NM_033379 | CDC2 | chr10 | | + |

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|-----------|----------|-------|--|---|
| NM_033069 | C6orf114 | chr6 | | + |
| NM_033023 | PDGFA | chr7 | | + |
| NM_032873 | UBASH3B | chr11 | | + |
| NM_032717 | AGPAT9 | chr4 | | + |
| NM_032211 | LOXL4 | chr10 | | + |
| NM_032148 | SLC41A2 | chr12 | | + |
| NM_032048 | EMILIN2 | chr18 | | + |
| NM_031965 | GSG2 | chr17 | | + |
| NM_031892 | SH3KBP1 | chrX | | + |
| NM_030797 | FAM49A | chr2 | | + |
| NM_024605 | ARHGAP10 | chr4 | | + |
| NM_024587 | TMEM53 | chr1 | | + |
| NM_024524 | ATP13A3 | chr3 | | + |
| NM_024076 | KCTD15 | chr19 | | + |
| NM_024070 | PVRIG | chr7 | | + |
| NM_021177 | LSM2 | chr6 | | + |
| NM_020947 | KIAA1609 | chr16 | | + |
| NM_020845 | PITPNM2 | chr12 | | + |
| NM_020805 | KLHL14 | chr18 | | + |
| NM_020803 | KLHL8 | chr4 | | + |
| NM_020458 | TTC7A | chr2 | | + |
| NM_020397 | CAMK1D | chr10 | | + |
| NM_020382 | SETD8 | chr12 | | + |
| NM_020225 | STOX2 | chr4 | | + |
| NM_018990 | SASH3 | chrX | | + |
| NM_018697 | LANCL2 | chr7 | | + |
| NM_018649 | H2AFY2 | chr10 | | + |
| NM_018641 | CHST12 | chr7 | | + |
| NM_018482 | ASAP1 | chr8 | | + |
| NM_018265 | C1orf106 | chr1 | | + |
| NM_018112 | TMEM38B | chr9 | | + |
| NM_018006 | TRMU | chr22 | | + |
| NM_017791 | FLVCR2 | chr14 | | + |
| NM_017784 | OSBPL10 | chr3 | | + |
| NM_017628 | TET2 | chr4 | | + |
| NM_017596 | KIF21B | chr1 | | + |
| NM_017551 | GRID1 | chr10 | | + |
| NM_017519 | ARID1B | chr6 | | + |
| NM_017490 | MARK2 | chr11 | | + |
| NM_017436 | A4GALT | chr22 | | + |
| NM_016448 | DTL | chr1 | | + |
| NM_016445 | PLEK2 | chr14 | | + |
| NM_016282 | AK3 | chr9 | | + |

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|-----------|-----------|-------|--|---|
| NM_016071 | MRPS33 | chr7 | | + |
| NM_016058 | TPRKB | chr2 | | + |
| NM_015991 | C1QA | chr1 | | + |
| NM_015379 | BRI3 | chr7 | | + |
| NM_015259 | ICOSLG | chr21 | | + |
| NM_015215 | CAMTA1 | chr1 | | + |
| NM_015112 | MAST2 | chr1 | | + |
| NM_015093 | MAP3K7IP2 | chr6 | | + |
| NM_015029 | POP1 | chr8 | | + |
| NM_015018 | DOPEY1 | chr6 | | + |
| NM_014732 | KIAA0513 | chr16 | | + |
| NM_014696 | GPRIN2 | chr10 | | + |
| NM_014553 | TFCP2L1 | chr2 | | + |
| NM_014363 | SACS | chr13 | | + |
| NM_014214 | IMPA2 | chr18 | | + |
| NM_014176 | UBE2T | chr1 | | + |
| NM_013336 | SEC61A1 | chr3 | | + |
| NM_012293 | PXDN | chr2 | | + |
| NM_012259 | HEY2 | chr6 | | + |
| NM_012100 | DNPEP | chr2 | | + |
| NM_012083 | FRAT2 | chr10 | | + |
| NM_007355 | HSP90AB1 | chr6 | | + |
| NM_007107 | SSR3 | chr3 | | + |
| NM_007080 | LSM6 | chr4 | | + |
| NM_007024 | TMEM115 | chr3 | | + |
| NM_006941 | SOX10 | chr22 | | + |
| NM_006808 | SEC61B | chr9 | | + |
| NM_006795 | EHD1 | chr11 | | + |
| NM_006607 | PTTG2 | chr4 | | + |
| NM_006482 | DYRK2 | chr12 | | + |
| NM_006203 | PDE4D | chr5 | | + |
| NM_006080 | SEMA3A | chr7 | | + |
| NM_005792 | MPHOSPH6 | chr16 | | + |
| NM_005729 | PPIF | chr10 | | + |
| NM_005720 | ARPC1B | chr7 | | + |
| NM_005596 | NFIB | chr9 | | + |
| NM_005582 | CD180 | chr5 | | + |
| NM_005434 | MALL | chr2 | | + |
| NM_005402 | RALA | chr7 | | + |
| NM_005360 | MAF | chr16 | | + |
| NM_005297 | MCHR1 | chr22 | | + |
| NM_005253 | FOSL2 | chr2 | | + |
| NM_004972 | JAK2 | chr9 | | + |

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|--------------|---------|-------|--|---|
| NM_004952 | EFNA3 | chr1 | | + |
| NM_004930 | CAPZB | chr1 | | + |
| NM_004924 | ACTN4 | chr19 | | + |
| NM_004782 | SNAP29 | chr22 | | + |
| NM_004745 | DLGAP2 | chr8 | | + |
| NM_004690 | LATS1 | chr6 | | + |
| NM_004669 | CLIC3 | chr9 | | + |
| NM_004595 | SMS | chrX | | + |
| NM_004586 | RPS6KA3 | chrX | | + |
| NM_004578 | RAB4A | chr1 | | + |
| NM_004394 | DAP | chr5 | | + |
| NM_004387 | NKX2-5 | chr5 | | + |
| NM_004215 | EBAG9 | chr8 | | + |
| NM_003954 | MAP3K14 | chr17 | | + |
| NM_003935 | TOP3B | chr22 | | + |
| NM_003770 | KRT37 | chr17 | | + |
| NM_003745 | SOCS1 | chr16 | | + |
| NM_003576 | STK24 | chr13 | | + |
| NM_003488 | AKAP1 | chr17 | | + |
| NM_003374 | VDAC1 | chr5 | | + |
| NM_003222 | TFAP2C | chr20 | | + |
| NM_002980 | SCTR | chr2 | | + |
| NM_002568 | PABPC1 | chr8 | | + |
| NM_002547 | OPHN1 | chrX | | + |
| NM_002485 | NBN | chr8 | | + |
| NM_002467 | MYC | chr8 | | + |
| NM_002271 | IPO5 | chr13 | | + |
| NM_002163 | IRF8 | chr16 | | + |
| NM_002144 | HOXB1 | chr17 | | + |
| NM_002061 | GCLM | chr1 | | + |
| NM_002046 | GAPDH | chr12 | | + |
| NM_001987 | ETV6 | chr12 | | + |
| NM_001962 | EFNA5 | chr5 | | + |
| NM_001935 | DPP4 | chr2 | | + |
| NM_001905 | CTPS | chr1 | | + |
| NM_001874 | CPM | chr12 | | + |
| NM_001838 | CCR7 | chr17 | | + |
| NM_001453 | FOXC1 | chr6 | | + |
| NM_001427 | EN2 | chr7 | | + |
| NM_001163817 | DHCR7 | chr11 | | + |
| NM_001161442 | SH2D2A | chr1 | | + |
| NM_001161440 | PTPRH | chr19 | | + |
| NM_001144033 | STOML3 | chr13 | | + |

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|--------------|-----------|-------|---|---|
| NM_001142864 | FAM38A | chr16 | | + |
| NM_001142776 | CHAC1 | chr15 | | + |
| NM_001135242 | NDRG1 | chr8 | | + |
| NM_001134479 | LRRC8D | chr1 | | + |
| NM_001130716 | PLAC8 | chr4 | | + |
| NM_001130455 | DYSF | chr2 | | + |
| NM_001130141 | PCBP3 | chr21 | | + |
| NM_001126121 | SLC25A19 | chr17 | | + |
| NM_001102 | ACTN1 | chr14 | | + |
| NM_001099856 | IKBKG | chrX | | + |
| NM_001099786 | ICAM2 | chr17 | | + |
| NM_001099285 | PTMA | chr2 | | + |
| NM_001098815 | KIAA0748 | chr12 | | + |
| NM_001098270 | MGAT3 | chr22 | | + |
| NM_001082959 | SCARB1 | chr12 | | + |
| NM_001040446 | MTMR12 | chr5 | | + |
| NM_001013436 | MPST | chr22 | | + |
| NM_001005389 | NFASC | chr1 | | + |
| NM_001005190 | OR7A10 | chr19 | | + |
| NM_001004416 | UMODL1 | chr21 | | + |
| NM_001003395 | TPD52L1 | chr6 | | + |
| NM_001001740 | RFWD2 | chr1 | | + |
| NM_001001392 | CD44 | chr11 | | + |
| NM_000977 | RPL13 | chr16 | | + |
| NM_000944 | PPP3CA | chr4 | | + |
| NM_000701 | ATP1A1 | chr1 | | + |
| NM_000700 | ANXA1 | chr9 | | + |
| NM_000573 | CR1 | chr1 | | + |
| NM_000274 | OAT | chr10 | | + |
| NM_000189 | HK2 | chr2 | | + |
| NR_030691 | ANO1 | chr11 | + | |
| NR_028408 | LOC400027 | chr12 | + | |
| NR_028048 | CRAT | chr9 | + | |
| NR_027868 | PDCD6IP | chr3 | + | |
| NR_026779 | C14orf139 | chr14 | + | |
| NR_026590 | CDYL | chr6 | + | |
| NR_024555 | RHOBTB1 | chr10 | + | |
| NR_003587 | MYO15B | chr17 | + | |
| NR_003367 | PVT1 | chr8 | + | |
| NM_213613 | SLC26A1 | chr4 | + | |
| NM_213601 | TMED8 | chr14 | + | |
| NM_207446 | FAM174B | chr15 | + | |
| NM_206967 | C16orf74 | chr16 | + | |

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|-----------|----------|-------|---|--|
| NM_203458 | NOTCH2NL | chr1 | + | |
| NM_203284 | RBPJ | chr4 | + | |
| NM_201557 | FHL2 | chr2 | + | |
| NM_198514 | NHLRC2 | chr10 | + | |
| NM_198461 | LONRF2 | chr2 | + | |
| NM_194278 | C14orf43 | chr14 | + | |
| NM_183357 | ADCY5 | chr3 | + | |
| NM_182920 | ADAMTS9 | chr3 | + | |
| NM_181784 | SPRED2 | chr2 | + | |
| NM_181481 | C18orf1 | chr18 | + | |
| NM_178126 | FAM134C | chr17 | + | |
| NM_177964 | LYPD6B | chr2 | + | |
| NM_175931 | CBFA2T3 | chr16 | + | |
| NM_175058 | PLEKHA7 | chr11 | + | |
| NM_174886 | TGIF1 | chr18 | + | |
| NM_173527 | REM2 | chr14 | + | |
| NM_173505 | ANKRD29 | chr18 | + | |
| NM_170721 | MSI2 | chr17 | + | |
| NM_153812 | PHF13 | chr1 | + | |
| NM_153322 | PMP22 | chr17 | + | |
| NM_152900 | MAGI3 | chr1 | + | |
| NM_152793 | C7orf41 | chr7 | + | |
| NM_152573 | RASEF | chr9 | + | |
| NM_152400 | C4orf32 | chr4 | + | |
| NM_152396 | METTL6 | chr3 | + | |
| NM_152263 | TPM3 | chr1 | + | |
| NM_152231 | FBXO34 | chr14 | + | |
| NM_145253 | FAM100A | chr16 | + | |
| NM_144973 | DENND5B | chr12 | + | |
| NM_144628 | TBC1D20 | chr20 | + | |
| NM_138634 | MSMB | chr10 | + | |
| NM_138473 | SP1 | chr12 | + | |
| NM_133373 | PLCD3 | chr17 | + | |
| NM_080391 | PTP4A2 | chr1 | + | |
| NM_053056 | CCND1 | chr11 | + | |
| NM_033127 | SEC16B | chr1 | + | |
| NM_032199 | ARID5B | chr10 | + | |
| NM_032104 | PPP1R12B | chr1 | + | |
| NM_030793 | FBXO38 | chr5 | + | |
| NM_030762 | BHLHE41 | chr12 | + | |
| NM_025268 | TMEM121 | chr14 | + | |
| NM_025191 | EDEM3 | chr1 | + | |
| NM_025134 | CHD9 | chr16 | + | |

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|-----------|----------|-------|---|--|
| NM_024979 | MCF2L | chr13 | + | |
| NM_024815 | NUDT18 | chr8 | + | |
| NM_024607 | PPP1R3B | chr8 | + | |
| NM_024336 | IRX3 | chr16 | + | |
| NM_024071 | ZFYVE21 | chr14 | + | |
| NM_023037 | FRY | chr13 | + | |
| NM_022748 | TNS3 | chr7 | + | |
| NM_022648 | TNS1 | chr2 | + | |
| NM_022467 | CHST8 | chr19 | + | |
| NM_022358 | KCNK15 | chr20 | + | |
| NM_022151 | MOAP1 | chr14 | + | |
| NM_022132 | MCCC2 | chr5 | + | |
| NM_022068 | FAM38B | chr18 | + | |
| NM_021800 | DNAJC12 | chr10 | + | |
| NM_021215 | RPRD1B | chr20 | + | |
| NM_021183 | RAP2C | chrX | + | |
| NM_021168 | RAB40C | chr16 | + | |
| NM_020859 | SHROOM3 | chr4 | + | |
| NM_020820 | PREX1 | chr20 | + | |
| NM_020775 | KIAA1324 | chr1 | + | |
| NM_020689 | SLC24A3 | chr20 | + | |
| NM_020531 | C20orf3 | chr20 | + | |
| NM_020440 | PTGFRN | chr1 | + | |
| NM_020424 | LYRM1 | chr16 | + | |
| NM_020244 | CHPT1 | chr12 | + | |
| NM_020205 | OTUD7B | chr1 | + | |
| NM_020190 | OLFML3 | chr1 | + | |
| NM_020145 | SH3GLB2 | chr9 | + | |
| NM_019020 | TBC1D16 | chr17 | + | |
| NM_018976 | SLC38A2 | chr12 | + | |
| NM_018344 | SLC29A3 | chr10 | + | |
| NM_018271 | THNSL2 | chr2 | + | |
| NM_017782 | C10orf18 | chr10 | + | |
| NM_017771 | PXK | chr3 | + | |
| NM_017770 | ELOVL2 | chr6 | + | |
| NM_017583 | TRIM44 | chr11 | + | |
| NM_017423 | GALNT7 | chr4 | + | |
| NM_016463 | CXXC5 | chr5 | + | |
| NM_016441 | CRIM1 | chr2 | + | |
| NM_016346 | NR2E3 | chr15 | + | |
| NM_016121 | KCTD3 | chr1 | + | |
| NM_016048 | ISOC1 | chr5 | + | |
| NM_015886 | PI15 | chr8 | + | |

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|-----------|-----------|-------|---|--|
| NM_015635 | GAPVD1 | chr9 | + | |
| NM_015608 | C10orf137 | chr10 | + | |
| NM_015595 | SGEF | chr3 | + | |
| NM_015559 | SETBP1 | chr18 | + | |
| NM_015525 | IBTK | chr6 | + | |
| NM_015522 | DYNC2LI1 | chr2 | + | |
| NM_015404 | DFNB31 | chr9 | + | |
| NM_015335 | MED13L | chr12 | + | |
| NM_015317 | PUM2 | chr2 | + | |
| NM_015221 | DNMBP | chr10 | + | |
| NM_015168 | ZC3H4 | chr19 | + | |
| NM_015130 | TBC1D9 | chr4 | + | |
| NM_015111 | N4BP3 | chr5 | + | |
| NM_014992 | DAAM1 | chr14 | + | |
| NM_014945 | ABLIM3 | chr5 | + | |
| NM_014899 | RHOBTB3 | chr5 | + | |
| NM_014873 | LPGAT1 | chr1 | + | |
| NM_014779 | TSC22D2 | chr3 | + | |
| NM_014668 | GREB1 | chr2 | + | |
| NM_014633 | CTR9 | chr11 | + | |
| NM_014583 | LMCD1 | chr3 | + | |
| NM_014488 | RAB30 | chr11 | + | |
| NM_014365 | HSPB8 | chr12 | + | |
| NM_014267 | C11orf58 | chr11 | + | |
| NM_014246 | CELSR1 | chr22 | + | |
| NM_013262 | MYLIP | chr6 | + | |
| NM_013240 | N6AMT1 | chr21 | + | |
| NM_012398 | PIP5K1C | chr19 | + | |
| NM_012330 | MYST4 | chr10 | + | |
| NM_012318 | LETM1 | chr4 | + | |
| NM_012279 | ZNF346 | chr5 | + | |
| NM_007218 | RNF139 | chr8 | + | |
| NM_007173 | PRSS23 | chr11 | + | |
| NM_007106 | UBL3 | chr13 | + | |
| NM_007011 | ABHD2 | chr15 | + | |
| NM_007008 | RTN4 | chr2 | + | |
| NM_006885 | ZFH3 | chr16 | + | |
| NM_006868 | RAB31 | chr18 | + | |
| NM_006788 | RALBP1 | chr18 | + | |
| NM_006710 | COPS8 | chr2 | + | |
| NM_006645 | STARD10 | chr11 | + | |
| NM_006633 | IQGAP2 | chr5 | + | |
| NM_006621 | AHCYL1 | chr1 | + | |

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|-----------|---------|-------|---|--|
| NM_006556 | PMVK | chr1 | + | |
| NM_006513 | SARS | chr1 | + | |
| NM_006379 | SEMA3C | chr7 | + | |
| NM_006327 | TIMM23 | chr10 | + | |
| NM_006148 | LASP1 | chr17 | + | |
| NM_006108 | SPON1 | chr11 | + | |
| NM_006094 | DLC1 | chr8 | + | |
| NM_006019 | TCIRG1 | chr11 | + | |
| NM_006009 | TUBA1A | chr12 | + | |
| NM_005794 | DHRS2 | chr14 | + | |
| NM_005781 | TNK2 | chr3 | + | |
| NM_005749 | TOB1 | chr17 | + | |
| NM_005742 | PDIA6 | chr2 | + | |
| NM_005723 | TSPAN5 | chr4 | + | |
| NM_005578 | LPP | chr3 | + | |
| NM_005392 | PHF2 | chr9 | + | |
| NM_005375 | MYB | chr6 | + | |
| NM_005252 | FOS | chr14 | + | |
| NM_005128 | DOPEY2 | chr21 | + | |
| NM_005050 | ABCD4 | chr14 | + | |
| NM_004926 | ZFP36L1 | chr14 | + | |
| NM_004747 | DLG5 | chr10 | + | |
| NM_004725 | BUB3 | chr10 | + | |
| NM_004531 | MOCS2 | chr5 | + | |
| NM_004491 | GRLF1 | chr19 | + | |
| NM_004465 | FGF10 | chr5 | + | |
| NM_004430 | EGR3 | chr8 | + | |
| NM_004310 | RHOH | chr4 | + | |
| NM_004281 | BAG3 | chr10 | + | |
| NM_004235 | KLF4 | chr9 | + | |
| NM_004171 | SLC1A2 | chr11 | + | |
| NM_004104 | FASN | chr17 | + | |
| NM_004078 | CSRP1 | chr1 | + | |
| NM_004041 | ARRB1 | chr11 | + | |
| NM_004040 | RHOB | chr2 | + | |
| NM_003898 | SYNJ2 | chr6 | + | |
| NM_003848 | SUCLG2 | chr3 | + | |
| NM_003714 | STC2 | chr5 | + | |
| NM_003613 | CILP | chr15 | + | |
| NM_003568 | ANXA9 | chr1 | + | |
| NM_003565 | ULK1 | chr12 | + | |
| NM_003489 | NRIP1 | chr21 | + | |
| NM_003474 | ADAM12 | chr10 | + | |

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|--------------|----------|-------|---|--|
| NM_003463 | PTP4A1 | chr6 | + | |
| NM_003439 | ZKSCAN1 | chr7 | + | |
| NM_003358 | UGCG | chr9 | + | |
| NM_003300 | TRAF3 | chr14 | + | |
| NM_003246 | THBS1 | chr15 | + | |
| NM_003226 | TFF3 | chr21 | + | |
| NM_003225 | TFF1 | chr21 | + | |
| NM_003134 | SRP14 | chr15 | + | |
| NM_003060 | SLC22A5 | chr5 | + | |
| NM_002957 | RXRA | chr9 | + | |
| NM_002911 | UPF1 | chr19 | + | |
| NM_002841 | PTPRG | chr3 | + | |
| NM_002665 | PLGLB2 | chr2 | + | |
| NM_002583 | PAWR | chr12 | + | |
| NM_002449 | MSX2 | chr5 | + | |
| NM_002430 | MN1 | chr22 | + | |
| NM_002413 | MGST2 | chr4 | + | |
| NM_002412 | MGMT | chr10 | + | |
| NM_002273 | KRT8 | chr12 | + | |
| NM_002213 | ITGB5 | chr3 | + | |
| NM_002154 | HSPA4 | chr5 | + | |
| NM_002111 | HTT | chr4 | + | |
| NM_002074 | GNB1 | chr1 | + | |
| NM_002052 | GATA4 | chr8 | + | |
| NM_002019 | FLT1 | chr13 | + | |
| NM_002014 | FKBP4 | chr12 | + | |
| NM_001795 | CDH5 | chr16 | + | |
| NM_001769 | CD9 | chr12 | + | |
| NM_001756 | SERPINA6 | chr14 | + | |
| NM_001706 | BCL6 | chr3 | + | |
| NM_001632 | ALPP | chr2 | + | |
| NM_001584 | MPPED2 | chr11 | + | |
| NM_001552 | IGFBP4 | chr17 | + | |
| NM_001497 | B4GALT1 | chr9 | + | |
| NM_001408 | CELSR2 | chr1 | + | |
| NM_001329 | CTBP2 | chr10 | + | |
| NM_001310 | CREBL2 | chr12 | + | |
| NM_001218 | CA12 | chr15 | + | |
| NM_001166294 | SSX2IP | chr1 | + | |
| NM_001166263 | MTIF3 | chr13 | + | |
| NM_001166108 | PALLD | chr4 | + | |
| NM_001164595 | PDZRN4 | chr12 | + | |
| NM_001164317 | FLNB | chr3 | + | |

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|--------------|-----------|-------|---|--|
| NM_001163260 | FAM63A | chr1 | + | |
| NM_001161841 | SULF2 | chr20 | + | |
| NM_001161661 | WWC1 | chr5 | + | |
| NM_001159770 | SLC39A11 | chr17 | + | |
| NM_001159694 | EMCN | chr4 | + | |
| NM_001145443 | PFKFB3 | chr10 | + | |
| NM_001144758 | PHLDB1 | chr11 | + | |
| NM_001143989 | NBPF4 | chr1 | + | |
| NM_001143962 | CAPN8 | chr1 | + | |
| NM_001143819 | TPCN1 | chr12 | + | |
| NM_001142272 | RAB11FIP3 | chr16 | + | |
| NM_001134473 | KIAA0182 | chr16 | + | |
| NM_001134368 | SLC6A6 | chr3 | + | |
| NM_001130958 | FABP6 | chr5 | + | |
| NM_001127714 | HIVEP3 | chr1 | + | |
| NM_001122742 | ESR1 | chr6 | + | |
| NM_001122606 | LAMP2 | chrX | + | |
| NM_001116 | ADCY9 | chr16 | + | |
| NM_001113239 | HIPK2 | chr7 | + | |
| NM_001105568 | KIF13A | chr6 | + | |
| NM_001105192 | TLE3 | chr15 | + | |
| NM_001100913 | PACS2 | chr14 | + | |
| NM_001100590 | KIAA0232 | chr4 | + | |
| NM_001081562 | DMPK | chr19 | + | |
| NM_001080479 | RGNEF | chr5 | + | |
| NM_001080414 | CCDC88C | chr14 | + | |
| NM_001079539 | XBP1 | chr22 | + | |
| NM_001077484 | SLC38A1 | chr12 | + | |
| NM_001077397 | IRF2BP2 | chr1 | + | |
| NM_001042665 | PLEKHG5 | chr1 | + | |
| NM_001042353 | FAM110A | chr20 | + | |
| NM_001039360 | ZBTB7C | chr18 | + | |
| NM_001035223 | RGL3 | chr19 | + | |
| NM_001034850 | FAM134B | chr5 | + | |
| NM_001033057 | MAGI1 | chr3 | + | |
| NM_001032391 | LCMT1 | chr16 | + | |
| NM_001029851 | PDE8B | chr5 | + | |
| NM_001024956 | SC5DL | chr11 | + | |
| NM_001024074 | HNMT | chr2 | + | |
| NM_001018074 | NR3C1 | chr5 | + | |
| NM_001014797 | KCNMA1 | chr10 | + | |
| NM_001006657 | WDR35 | chr2 | + | |
| NM_001005914 | SEMA3B | chr3 | + | |

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| NM_001005476 | PKP4 | chr2 | + | |
| NM_001005159 | SFMBT1 | chr3 | + | |
| NM_001003698 | RREB1 | chr6 | + | |
| NM_001002914 | KCTD11 | chr17 | + | |
| NM_001002295 | GATA3 | chr10 | + | |
| NM_001001664 | SPOPL | chr2 | + | |
| NM_000926 | PGR | chr11 | + | |
| NM_000720 | CACNA1D | chr3 | + | |
| NM_000633 | BCL2 | chr18 | + | |
| NM_000623 | BDKRB2 | chr14 | + | |
| NM_000618 | IGF1 | chr12 | + | |
| NM_000609 | CXCL12 | chr10 | + | |
| NM_000552 | VWF | chr12 | + | |
| NM_000501 | ELN | chr7 | + | |
| NM_000366 | TPM1 | chr15 | + | |
| NM_000283 | PDE6B | chr4 | + | |
| NM_000224 | KRT18 | chr12 | + | |
| NM_000153 | GALC | chr14 | + | |

Additional file 2 –Candidate SNPs

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| Chromosome 1 |
| ANXA9:rs78982670,rs607518,rs3754210 |
| CAMTA1:rs11120798,rs80085554,rs78547373,rs35190009,rs1013248,rs61780894,rs12410166,rs1567402,rs68129642,rs74813748,rs72638577 |
| CAPN8:rs68072917,rs4653877 |
| CR1:rs55813295,rs55813295,rs55905875,rs55905875,rs55875400,rs55875400,rs56079743,rs55722040,rs56109143,rs56109143,rs56182593,rs56030162,rs56030162,rs56114117,rs56114117,rs56275712,rs55974817,rs55991702,rs55991702,rs55777427,rs55777427,rs56084806,rs56084806,rs55754610,rs56298042,rs56298042,rs56411060,rs55785804,rs55785804,rs55779204,rs55779204,rs56302981,rs56302981,rs55828967,rs55828967,rs56193300,rs56193300,rs56204135,rs56204135,rs56276874,rs56276874,rs55811516,rs56093932,rs56093932,rs56168197,rs56168197,rs56002956,rs56002956,rs55865820,rs55703877,rs55703877,rs55983342,rs55983342,rs55771013,rs555641872,rs55767627,rs55767627,rs56047029,rs56047029,rs56102197,rs56391032,rs56391032,rs55915510,rs55666812,rs55666812,rs55885741,rs55718069,rs55718069,rs55729318,rs55729318,rs56030390,rs56030390,rs55726190,rs55726190,rs55801279,rs55801279,rs56092428,rs56092428,rs55929821,rs56015412,rs56015412,rs1967828,rs56359850,rs56359850,rs55669141,rs55669141,rs55761008,rs55761008,rs5618781,rs5618781,rs55670331,rs55670331,rs56361204,rs56267956,rs55991765,rs55786257,rs55786257,rs55639135,rs55639135,rs55883797,rs56373231,rs56398864,rs56398864,rs55704769,rs56353950,rs56043167,rs56261321,rs56261321,rs55979404,rs56314797,rs56314797,rs55653509,rs56052213,rs56313533,rs56009212,rs56009212,rs55848422,rs56310405,rs56352571,rs56352571,rs56015758,rs56015758,rs56072537,rs56072537,rs56234734,rs55878655,rs55878655,rs56326394,rs56326394,rs55791318,rs55791318,rs55724640,rs55724640,rs55997834,rs55997834,rs56378827,rs56378827,rs55938003,rs55959625,rs56307287,rs56307287,rs55830750,rs55830750,rs55846619,rs55846619,rs55912924,rs55912924,rs55846728,rs56171829,rs56353976,rs56353976,rs55918401,rs55918401,rs55815626,rs55815626,rs56043430,rs56043430,rs56129138,rs56129138,rs55836426,rs55749808,rs55749808,rs55811653,rs55811653,rs56345001,rs55970375,rs55970375,rs55979222,rs55979222,rs55900657,rs55900657,rs55753551,rs55753551,rs56177984,rs56392313,rs56392313,rs55952684,rs56205102,rs55720721,rs55720721,rs55846136,rs55846136,rs56409218,rs56409218,rs55767030,rs55658501,rs56195127,rs56265707,rs56265707,rs55884405,rs55884405,rs55735142,rs56037822,rs56037822,rs56019948,rs56053139,rs55956260,rs55956260,rs55902061,rs55902061,rs55643045,rs55643045,rs56311501,rs56300774,rs56156766,rs55978552,rs55978552,rs55864105,rs55864105,rs55745723,rs55745723,rs55803443,rs55803443,rs55924525,rs56139167,rs56139167,rs55717512,rs55717512,rs56052895,rs56020776,rs56020776,rs5593005,rs55878543,rs55975235,rs55974321,rs55846628,rs55846628,rs56299420,rs56346880,rs56346880,rs55978988,rs55978988,rs56203358,rs56203358,rs56013449,rs56013449,rs55896092,rs56005541,rs56005541,rs55677167,rs55677167,rs56343686,rs56343686,rs55767641,rs55767641,rs55937128,rs55937128,rs55762770,rs55762770,rs56129265,rs56129265,rs55642106,rs55642106,rs55641633,rs56077723,rs56077723,rs56187018,rs56187018,rs56135198,rs56135198,rs56275361,rs56275361,rs56079149,rs56079149,rs56283013,rs56116155,rs56293185,rs56293185,rs56344090,rs56344090,rs56190053,rs56190053,rs56254726,rs56254726,rs55660220,rs55660220,rs56292493,rs56292493,rs55920254,rs55920254,rs56137601,rs56137601,rs55878564,rs55878564,rs55958312,rs56351037,rs56351037,rs56355024,rs56355024,rs55693072,rs56018236,rs55749945,rs56246301,rs56246301,rs55906506,rs55906506,rs55722809,rs55722809,rs55639201,rs55736256,rs56399315,rs56399315,rs55788979,rs55788979,rs55795011,rs56246645,rs56246645,rs55992341,rs55645336,rs55653580,rs56326826,rs55823564,rs55823564,rs55812785,rs55812785,rs56002218,rs55960704,rs55960704,rs56067147,rs56067147,rs56352598,rs56352598,rs55675707,rs55836902,rs55945035,rs55945035,rs55964020,rs56056140,rs55869469,rs55869469,rs56244656,rs56244656,rs55801565,rs56187514,rs55976152,rs55976152,rs56013080,rs56231283,rs56018255,rs55789578,rs55789578,rs55671111,rs55671111 |
| CSRP1:rs34038448,rs80336819,rs12070807,rs515384 |
| GCLM:rs2273406,rs2273407,rs34743713 |
| HIVEP3:rs12135701,rs655198,rs78804462 |
| NOTCH2NL:rs61815730,rs453773,rs2725962,rs2596007,rs384086,rs1690058,rs447289 |
| UBE2T:rs34701328,rs55668607,rs14451,rs56283140,rs79811259 |
| Chromosome 2 |

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| HK2:rs28362965 |
| LONRF2:rs79560895,rs7575849,rs17023907,rs77359732,rs11902303 |
| LYPD6B:rs79776678,rs7605478,rs6709479 |
| PKP4:rs1110506 |
| SCTR:rs6542532 |
| TP53I3:rs36207095,rs36207096,rs72049316,rs35924313,rs36207097,rs3030953,rs34502732,rs34704159,rs72078174,rs72135009,rs34362184,rs5829915 |
| TTC7A:rs79353883,rs12105384 |
| WDR35:rs75004252,rs36061489 |
| Chromosome 3 |
| ADAMTS9:rs73832347,rs35802352,rs77195672 |
| ADCY5:rs79462429 |
| CACNA1D:rs79016258,rs78461250,rs75140300,rs77921094,rs17053128,rs76823338,rs75094150,rs72967859,rs78207451,rs11336778 |
| FLNB:rs34911064,rs4453809,rs1718481,rs3772997,rs13067161 |
| LPP:rs35902973,rs75330435,rs7653763,rs80236973,rs77602825,rs7646788 |
| MAGI1:rs76005698 |
| MYLK:rs7653257,rs7641367,rs820455 |
| OSBPL10:rs35962535,rs79883182 |
| PDCD6IP:rs75015608,rs71875147,rs28381975 |
| PTPRG:rs28403395,rs588087,rs75480068,rs35061772,rs58646519,rs76704401,rs78836651 |
| PXK:rs6775710,rs73835192 |
| SEMA3B:rs12492880 |
| SFMBT1:rs78698666 |
| SGEF:rs74956401 |
| SLC6A6:rs78003737 |
| SUCLG2:rs74816918,rs75756678,rs79702177 |
| Chromosome 4 |
| ARHGAP10:rs11724772,rs7698520 |
| HTT:rs71597206,rs16843836 |
| LETM1:rs73202820 |
| PALLD:rs76731571,rs2712149,rs2712148,rs2712147 |
| SHROOM3:rs77486910,rs73828194 |
| TBC1D9:rs57949768,rs74858974,rs71606900,rs7686941 |
| TIFA:rs78320467,rs12510546 |
| TSPAN5:rs75532697,rs62323584,rs7665200 |
| Chromosome 5 |
| ABLIM3:rs74471144 |
| FBXO38:rs76818493 |
| ISOC1:rs17163708 |
| N4BP3:rs34062956,rs6601214,rs34226224,rs66991293,rs10635660 |
| PDE4D:rs72530555,rs6450518,rs2702365,rs10616440 |
| RGNEF:rs6881956,rs56692172,rs75553400,rs76642132,rs78248942 |
| SLC22A5:rs274567,rs77123396 |

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| WWC1:rs76463523,rs75849226 |
| ZNF346:rs2456181 |
| Chromosome 6 |
| CNKSR3:rs4870286,rs4870285,rs9478547,rs56359828,rs74679650 |
| DOPEY1:rs74920300,rs78582064 |
| MYB:rs17064301,rs11321182 |
| RREB1:rs9392864,rs35178637 |
| SYNJ2:rs78693252 |
| TAF8:rs2493838,rs9394860,rs76562503,rs35711896 |
| TPD52L1:rs17052846,rs55736347,rs76997203,rs3799757 |
| Chromosome 7 |
| ARPC1B:rs59680363 |
| C7orf41:rs28701848,rs28364759,rs17547923,rs3750090 |
| GCK:rs2908296,rs2908297 |
| HIPK2:rs58760678,rs940543,rs77111783 |
| RALA:rs35116603,rs71700028,rs74655958,rs72460287,rs70996821 |
| SEMA3C:rs767733,rs35240493,rs58168478 |
| Chromosome 8 |
| ASAP1:rs17287702,rs73425525,rs77467207 |
| DLGAP2:rs4875876,rs34951699,rs4875877,rs4875878 |
| GATA4:rs10096189,rs17153694,rs10109678,rs78693845 |
| NBN:rs13312849,rs1805844,rs72085652,rs76432414,rs1805799,rs71862785 |
| NDRG1:rs71526285,rs61543350,rs73708719,rs75523276,rs13263811 |
| PABPC1:rs73700221,rs56400641 |
| Chromosome 9 |
| RASEF:rs77598922,rs76617114 |
| RXRA:rs62576308,rs12006409,rs79703336 |
| SH3GLB2:rs5900824 |
| UGCG:rs78807957 |
| Chromosome 10 |
| BAG3:rs12358294,rs196317,rs7894233,rs7909225,rs196316 |
| CAMK1D:rs2768444,rs2768443 |
| CTBP2:rs35602222,rs10510141,rs7080602 |
| H2AFY2:rs56317707,rs35898392 |
| PFKFB3:rs10905916,rs60080851,rs76884437,rs10795848 |
| SEC61A2:rs9329337 |
| Chromosome 11 |
| ANO1:rs61885477 |
| ARRB1:rs2507924,rs34867163 |
| DHCR7:rs77926919,rs11233713 |
| MARK2:rs76906610,rs928948,rs75857867 |
| MPPED2:rs1222322,rs75642617,rs4922836 |
| PHLDB1:rs75727057,rs5795129,rs67407552,rs35307519,rs33922258 |

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| PLEKHA7:rs4141194,rs76831006 |
| RAB30:rs76931067,rs17144486,rs4944422 |
| SPON1:rs1528668,rs1528669,rs73420271 |
| STARD10:rs79843144 |
| TCIRG1:rs4147783 |
| Chromosome 12 |
| CD9:rs17850834,rs11568275,rs11568274 |
| CHPT1:rs59147798,rs74692062 |
| DENND5B:rs34417003,rs62663961 |
| ETV6:rs16907207,rs77355907,rs2710267,rs12816113 |
| GAPDH:rs36015908,rs45612631,rs45459592,rs45564644 |
| HSPB8:rs74648395 |
| PITPNM2:rs71456785,rs61955220 |
| SLC38A1:rs74831463,rs10880935,rs77006492,rs11183394 |
| TPCN1:rs74907360 |
| TUBA1A:rs58704368 |
| VWF:rs78016141,rs2283332,rs1800375,rs1800376 |
| Chromosome 13 |
| FLT1:rs79452797,rs78305106,rs75363896 |
| MCF2L:rs60864968,rs9549623,rs9549622 |
| Chromosome 14 |
| ACTN1:rs28657981,rs11626371,rs28514277,rs79000248,rs75442387,rs2268982 |
| BDKRB2:rs56274409,rs61193624 |
| C14orf43:rs79553653,rs76405516,rs28605040 |
| CCDC88C:rs60137749,rs61988430 |
| FBXO34:rs943591,rs943590,rs943592 |
| PACS2:rs78224797,rs79894079 |
| RAD51L1:rs7160794,rs76498298,rs79877406,rs73288074,rs76764799,rs35055159,rs1958112 |
| SERPINA6:rs1998057,rs2281518,rs73346825 |
| Chromosome 15 |
| ABHD2:rs75057621,rs75080156,rs4566139,rs35226145 |
| Chromosome 16 |
| CBFA2T3:rs75269947,rs16965183,rs72140231,rs35191022,rs76188937,rs62045796,rs72815515,rs12445380 |
| CHD9:rs35319530 |
| FAM100A:rs1982784,rs76081350,rs78906334 |
| KIAA0513:rs35349567,rs4991777,rs870149,rs870148,rs35649977 |
| LCMT1:rs34551656,rs71385512 |
| RAB11FIP3:rs74724425 |
| RAB40C:rs62030903,rs62030902 |
| ZFHX3:rs59660358,rs721823,rs74028152,rs35577902 |
| Chromosome 17 |
| ACE:rs13306085,rs4308,rs4309,rs72845022,rs59148455 |
| AKAP1:rs74776597 |

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| IGFBP4:rs10305291 |
| MAP3K14:rs77617592 |
| MSI2:rs7214435,rs71365819,rs57563427,rs35327867,rs68081130,rs35611813,rs76341695,rs71387499,rs76089718 |
| PITPNCL:rs8068510,rs1808693,rs7207677,rs79516805 |
| PLCD3:rs10468559,rs7214439,rs7224944,rs73316962,rs77506254 |
| SLC25A19:rs80337330,rs56090937 |
| TBC1D16:rs67455669,rs59043351 |
| Chromosome 18 |
| ANKRD29:rs76162671,rs34580471,rs35841435,rs76695608 |
| BCL2:rs3744949 |
| C18orf1:rs74482571,rs73421368 |
| EMILIN2:rs11660827,rs72870058 |
| IMPA2:rs75061481,rs76907436 |
| KLHL14:rs61737324,rs61737323 |
| RAB31:rs8091795,rs78258961 |
| SETBP1:rs79136715,rs16978187,rs9954058 |
| Chromosome 19 |
| ACTN4:rs973009,rs973010 |
| CHST8:rs284327,rs1400615 |
| DMPK:rs35500073,rs75890421 |
| PTPRH:rs78703538,rs76990668 |
| RGL3:rs34081 |
| UPF1:rs9917075,rs34322276,rs73923167,rs80073951 |
| ZC3H4:rs75022794,rs3745619,rs370649,rs442311,rs402833 |
| Chromosome 20 |
| PREX1:rs73326946,rs76652968,rs3746818,rs6095263,rs6063325,rs6019348,rs77571056,rs73911613,rs58812371 |
| RPRD1B:rs79813465,rs6013782 |
| SLC24A3:rs61185867,rs6106055,rs16980301,rs72073549,rs73282685 |
| Chromosome 21 |
| ICOSLG:rs35622408,rs75939338,rs2847224 |
| NRIP1:rs72547880,rs7280064,rs11434871,rs66500136,rs78658187,rs35728511,rs34828787 |
| PCBP3:rs2150454,rs55929196,rs78386080,rs75450717,rs63013260,rs7276623,rs76636709,rs2839025,rs34579989,rs72374338 |
| Chromosome 22 |
| CDC42EP1:rs11912966 |
| CELSR1:rs75807774,rs74324720,rs9615971,rs79272284,rs5768827,rs9615969,rs76623479,rs5768828,rs71313051,rs5768750,rs9615970 |
| MGAT3:rs75998268,rs78777985,rs34943118,rs9619814,rs9619815 |
| MN1:rs75880328,rs74362945 |
| MPST:rs5756489 |
| SNAP29:rs1802503,rs5844445,rs165877,rs72465347,rs3202072,rs73879429,rs35888298,rs3041344,rs67020728 |
| Chromosome X |
| SH3KBP1:rs35270010 |