

## **Supplementary Table S1 The gene lists of the DEGs**

Groups	Gene lists
Up-regulated genes	ABCA2, ABCB9, ABCC3, ABCD1, ABHD14B, ABTB1, ACADS, ACBD4, ACOT11, ACRBP, ADAM11, ADAMTS10, ADAMTS15, ADAMTSL4, ADAP1, ALDH3B2, ANAPC2, ANKRD13D, AP2A1, AP5B1, APOD, AQP1, ARHGAP27, ARHGAP30, ARHGEF1, ATAD3B, ATOH8, ATP13A2, B3GNT7, BCL2L1, BG N, C10orf10, C10orf54, C19orf66, C1orf210, C1QTNF1, C5orf56, CALCOCO1, CBX4, CC2D1A, CCDC184, CCL21, CCL3L3, CCM2L, CD3E, CD7, CD79B, CDA, CDKN1A, CEACAM1, CEBPB, CHPF, CHRD, CLCF1, CLTB, CMTM7, CNTROB, COL5A3, COMP, CPLX1, CPTP, CRTIC1, CSF3R, CST1, CTSW, CX3CL1, CXCL2, CYR61, DCAF15, DHX34, DIO3OS, DLGAP1, DMPK, DOK2, DUOX1, DUSP2, EEFSEC, EFHD1, EGFL8, EGR1, EGR3, ELN, EPN1, EPS1 5L1, ESAM, FAM107A, FAM131A, FAM132A, FAM134A, FAM27E2, FAM27E3, FAM3A, FAM43A, FAM83F, FBLN1, FBXL16, FBXL18, FGD2, FGD3, FGF R1, FGR, FIZ1, FLAD1, FLT3LG, FLYWCH1, FMNL1, FOS, FOSB, FOXP4, FSTL3, FURIN, FUT2, FXYD2, FYN, FZD10AS1, GADD45B, GATA6, GDPP5, GGT3P, GGT5, GGTLC2, GIGYF1, GNA15, GNAO1, GPR157, GPR4, GPX3, GTPBP2, HAB1, HABP2, HAMP, HEMK1, HHLA3, HIC2, HIF3A, HMGA1, HNF1B, HSD11B1L, HSD17B1, HSD3B7, HSPB6, HSPG2, IDS, IDUA, IGFBP5, IGH, IGHAA1, IGHAA2, IGK, IL2RG, IRS2, IRX3, JAK3, JOSD2, JUNB, KANK3, KAT5, KCNG1, KCNK3, KCTD13, KDM6B, KIR2DL2, KIR2DS2, KIR3DL1, KIR3DL2, KLF15, KLF2, KLF3, KMT5C, KRT18, LDOC1, LENG1, LIF, LIL RB3, LOC100289058, LOC100505984, LOC114224, LRCH3, LSS, LY6G5C, LYL1, MAGIX, MAP4K2, MAPK3, MAPK8IP2, MAPRE3, MATN2, MAZ, MB OAT7, MEF2D, MEIS3, MELTF, MID1IP1, MOCS1, MROH1, MROH6, MT1E, MT1G, MTG2, MTSS1L, MUC20, MUSTN1, MVB12A, MYADM, MYO1F, NAA38, NATD1, NDUFA4L2, NEAT1, NEDD4L, NFATC1, NFKBIB, NPR1, NPTXR, NR4A1, NRROS, ORAI3, OSER1AS1, PARVG, PCAT6, PCDHGA7, PC DHGA9, PCDHGB2, PCDHGC5, PCNX3, PCYT2, PDGFB, PDLLIM2, PDLLIM7, PDZRN3, PGP, PHC2, PHOSPHO2KLHL23, PLA2G2A, PLBD2, PLK1, PL PPR2, PLVAP, PLXNA3, PNKD, POLR2M, PPP2R2A, PRELP, PROK1, PTGER3, PTOV1AS2, PTPRO, RAB1B, RAB20, RAMP2, RAMP3, RANBP3, RAP1 GAP, RAPGEF3, RBPM5, RCE1, RDH5, REM1, RGMA, RHOB, RIN1, RIN3, ROGDI, RORC, RPRM, RSG1, S100A1, S100A3, S1PR2, SBNO2, SCAMP4, SEMA3F, SERPINE1, SF3B4, SFTA2, SFXN3, SGK494, SH2B2, SHB, SIX5, SLA2, SLC12A9, SLC25A35, SLC26A6, SLC29A2, SLC30A2, SLC6A16, SLC7A5, SLC40A1, SLIT3, SMDT1, SMIM24, SMN2, SMTN, SNX21, SNX29, SOCS3, SOGA1, SOX12, SPATA2, SPDYE2, SPHK1, SPINK2, SPNS1, SPSB3, SRC, SRF, SSC5D, SST, ST3GAL2, STAG3L3, STARD10, STARD5, SUN1, SYDE1, SYNGR1, SYNPO, TAF6L, TBC1D17, TBC1D25, TLN1, TM6SF2, TMC8, TMEM86A, TMUB1, TNK1, TNK2, TNPO2, TNS1, TOLLIP, TPSAB1, TRAF7, TRIM52AS1, TRMT2A, TRNP1, TSTD2, TTYH2, UBXN11, UCKL1, UNC13D, VAC14, VMP1, WAS, WBP2, WHRN, WIPF1, WWTR1, ZBTB16, ZBTB22, ZBTB7B, ZC3H10, ZCCHC7, ZDHHC14, ZFP36, ZFP41, ZNF160, ZNF213, ZNF254, ZNF574.
Eutopic vs normal endometrium	ACVR2B, ADAM12, ADAMTS16, ADH5, AGR2, AHCYL1, AIFM1, ALCAM, ALDH3A2, ALDH6A1, ALG5, ANK3, ANKRD11, ANKRD17, ANO1, ANP32E, AP3D1, AP3M2, APPL1, AR, ARFGAP3, ARIH2, ARPC2, ARPC5, ASPH, ATP1B3, ATP2B1, ATP2C1, ATP5G3, ATP6V1D, ATPAF1, ATRX, BACE2, BBX, BCLAF1, BECN1, BRCC3, BRI3BP, BTG3, BWZ1, C11orf58, C12orf65, C1orf109, C1orf174, C4orf3, C6orf62, C6orf89, C9orf3, CACYBP, CADM1, CANX, CAP1, CASP4, CAST, CBWD5, CBX1, CBX3, CCDC117, CCDC50, CCDC6, CCNB2, CCND2, CCT2, CCT3, CCT4, CD164, CDC40, CDC6, CDH11, CENPF, CENPN, CENPW, CEP55, CFI, CGNL1, CHSY1, CKS1B, CLIC5, CMTM6, CNN3, COL14A1, COL4A3BP, COL5A2, COPB2, COX4I1, CPM, CSDE1, CSNK2A1, CTBP2, CTNNB1, CTSC, CTSV, CTSZ, CYB5B, DCAF7, DCBLD2, DDX24, DDX42, DEPDC1, DHX9, DIO2, DNAJB11, DNAJC10, DNAJC3, DNALI1, DYNC1LI2, EDNRA, EEF1A1, EFCAB14, EGFL6, EID1, EIF3A, EIF3L, EIF4B, EIF4E, EIF4G2, EMC7, EML4, ENC1, ERC1, ERP44, EZR, F13A1, F8A1, FA M155A, FAM169A, FAM199X, FAM60A, FAM98A, FANCD2, FBXL17, FBXO21, FBXO9, FEN1, FNDC3B, FOCAD, FOLH1, FOXN3, FSTL1, G3BP1, G3BP2, GALNT12, GALNT4, GAPVD1, GINM1, GLIS3, GMCL1, GNB1, GOLGA7, GOLIM4, GSTM3, GTF2I, H2AFV, H2AFZ, HACD3, HADH, HBA1, HBA2, HIST1H2AM, HIST1H4B, HIST1H4C, HIST1H4D, HIST1H4E, HIST1H4F, HIST1H4H, HIST1H4I, HJURP, HK2, HN1L, HNRNPA0, HNRNPA1, HNRNPA2B1, HNRNPC, HNRNPD, HNRNPH1, HNRNPK, HPGD, HS2ST1, HSP90AA1, HSP90AB1, HSP90B1, HSPA5, HSPA8, HSPD1, IGF1, IGF2, IGF2R, IL13RA1, ILF2, ISOC1, ITGB1, ITIH5, ITPRIPL2, KAT14, KDM4A, KDM5A, KDM5B, KIAA0101, KIAA2013, KIF20A, KIF21A, KIF23, KIF26B, KMT2C, KMT2E, KPNA3, KPNB1, KRT17, LAMC2, LARS, LIMCH1, LMNB1, LMO4, PPP1R16A, LPAR3, LPGAT1, LRP12, LRP6, LYPLA1, LZIC, M6PR, MAGT1, MALAT1, MAP2K3, MAP3K1, MAP4, MAPK1, MARCKS, MAT2A, MCM3, MCM4, MCM6, MECOM, MEST, METAP2, METTL21A, METTL2B, MFF, MGA, MIEF1, MMP7, MORF4L1, MPRIP, MRFAP1L1, MRPL15, MRPL19, MRPS25, MSH6, MTDH, MTMR4, MTPN, MYB, MYLIP, MYOF, NA A35, NAB1, NASP, NBPF10, NBPF19, NBPF3, NBPF9, NCAPD2, NCBP2, NCL, NCOA4, NCOR1, NEK2, NFIA, NGRN, NIP7, NOL8, NORAD, NOTCH2, NP AS3, NPEPPS, NPM1, NREP, NUCKS1, NUP107, NUSAP1, ODC1, OIP5, OVGPI, PAICS, PALLD, PAM, PAPOLA, PCNA, PDIA3, PDIA6, PDZD8, PGR, PR RMC1, PIGY, PIK3R1, PKP2, PLA1A, PLCB1, PLSCR3, PNMAL1, PODXL, PPIC, PPP2R2C, PRC1, PRICKLE1, PRKCI, PRPF4, PRPF40A, PSMA4, PSM A5, PSMA6, PSPH, PTN, PTP4A2, PUM2, PWP1, RAB18, RAB2A, RAB31, RAD51, RALBP1, RAN, RBBP4, RBBP7, RBM17, RBM25, RBM3, RBM4, RBM8A, RC3H1, RCAN3, RCN2, REST, RFC1, RGPD5, RHEB, RHOJ, RHOQ, RMI1, RPAIN, RPL35A, RPL37A, RPN2, RPS23, RPS24, RRB1P, RRM1, RRM2, RS L1D1, RUNX1T1, RYK, SAE1, SAP18, SAR1A, SARNP, SBNO1, SCAF11, SDAD1, SDHC, SEL1L, SEL1L3, SEMA3E, SERBP1, SERPINA5, SET, SETD2, SF RP1, SFRP4, SHROOM3, SKI, SKP1, SLBP, SLC16A3, SLC25A36, SLC31A1, SLC47A1, SMAD9, SMARCA4, SMARCC1, SNRPA1, SNRPD1, SORD, SP100, SPATA13, SPOP, SRP72, SRSF1, SRSF3, SRSF7, SSB, STMN1, STX18, STX2, STXBP6, SUCLG2, SUPT16H, SYNCRI, TARDBP, TCAF1, TCF4, TEAD1, TGOLN2, THRAP3, THSD4, THYN1, TIA1, TIMELESS, TIMM17A, TMA16, TMED2, TMEM106C, TMEM261, TMEM97, TMX4, TOMM20, TOP1, TOP2A, TPR, TPX2, TRIM2, TRIM25, TRIM4, TRMT5, TSPYL5, TTC3, TUG1, TXNDC5, TXNL4A, TYMS, UBE2T, UBE2V1, UBXN4, UBXN6, UCHL1, UHMK1, VANGL1, VCAN, VDAC1, VIM, WASF2, WHSC1L1, WNT5A, WWC1, YIPF6, YWHA, YWHAZ, YY1, ZBTB38, ZCCHC17, ZDHHC13, ZKSCAN1, ZMYND11, ZNF148, ZNF22, ZNF24, ZNF644, ZNF704, ZWINT.
Up-regulated genes	ABCA6, ABLIM1, ACP5, ACTA2, ADIRF, AEBP1, ANTXR2, APOE, ARHGAP22, BAMBI, BEX2, C11orf96, C1QB, C1R, C3, CALD1, CAV1, CBS, CCDC3, CDC50, CD59, CEBPD, CFD, CFH, CLU, COLEC11, CTSE, CXCL12, DACT1, DCN, EFEMP1, EPAS1, ESYT2, FAM162A, FAM46A, FBXO32, FGF7, FGL2, FHL2, FLJ30901, FMOD, FN1, FOXN3, FOXP1, FTL, G0S2, GNG4, GPNMB, HLADPB1, HLADRA, HLADRB1, HLA-E, HMOX1, HOPX, HS3ST1, HSD17B11, HSPA12A, IFI16, IGFBP3, IGFBP5, JAK3, JUNB, KLF2, KLHDC8A, LAMB2, LEPROT, LHFP, LMCD1, LXN, MAN1C1, MAST4, MCUB, MEG3, MYL9, NDRG1, NEFH, NUPR1, OPTN, PALM2AKAP2, PAPSS2, PDGFRL, PDK4, PEG3AS1, PLA2G16, PLCXD3, PMP22, PRNP, PROS1, PTGIS, PTRF, RABGAP1L, RARRES2, RARRES3, RASSF3, RGS2, RNASE1, ROBO3, RPL23AP32, RPP25, SCARB1, SEPP1, SGCE, SH3BP5, SH3D19, SLCO2B1, SMOC2, SOBP, SOD3, SP100, ST13, STAR, STON1, TAGLN, TCEAL3, TCEAL4, TGFBR2, THBS2, THBS4, TIMP1, TIMP2, TLCD2, TPM1, TPM2, TRPV2, TSPAN4, UCHL1, VLDLR, VSIG4, VWF, WISP2, WWTR1, ZEB2, ZNF275, ZNF395.
Ectopic vs eutopic endometrium	AADAT, ADAMTS6, ADAMTS9, ADGRG2, AGMAT, AGR3, ALDH1A2, ANO1, APOBEC3B, ARHGAP26, ARSJ, ASPM, ATP5G3, ATP6V1C2, ATP8B3, AURKA, BCAS1, BRI3BP, BRIP1, BTBD11, C1orf168, C2orf88, C4orf19, CAPSL, CASZ1, CBLN1, CCNA1, CCNA2, CCNB1, CDC20, CDCA2, CDCA3, CDKN3, CECR2, CENPF, CENPN, CFAP43, CHEK1, CHMP4C, CITED4, CLIC5, CLMN, COBL, CRISPLD1, CTAGE5, CTNNA2, CXADR, DACH1, DACT2, DEPDC1B, DHFR, DIO2, DLX6, DLX6AS1, DNAJC22, DOK7, DTL, DUSP4, E2F7, E2F8, ECT2, EDNRA, EHF, ELF3, ENPP3, ERBB3, ERICH3, ESR1, ESRP1, EXPH5, FAM169A, FAM83D, FBN2, FEN1, FOLH1B, FOXA2, FRAS1, GCNT1, GCNT2, GJB6, GPR160, GPSM2, GREM2, GTSE1, HELLs, HHIP, HJURP, HOMER2, HOOK1, HOXA11, HOXA5, HOXB8, HOXD11, JL17RB, JRF6, KIF11, KIF14, KIF18A, KIF20A, KIF21A, KIF5A, KLHL13, KMO, KNL1, KRT23, LAMC2, LINC00261, LOC100190986, LOC100506098, MAP3K1, MAP7, MCM10, MCM4, MET, MFAP3L, MFSD2A, MKI67, MLPH, MME, MMP16, MPED2, MREG, MS4A8, MSX1, MSX2, MTCL1, MTHFD2L, MUC16, NEDD9, NEK2, NRCAM, NREP, NRTN, NRXN1, NUP62CL, NUSAP1, OCLN, OLFM4, ORM1, ORM2, OVOL2, PANK1, PARPBP, PATJ, PBK, PKD1L2, PLCH1, PLPPR4, PLS1, PMAIP1, POLE2, PPP2R2C, PRR15, PRR15L, PRR5ARHGAP8, PRRG4, PRSS16, PRSS8, PTCH1, RAB25, RAD51, RAD51AP1, RAD51BP1, RASEF, RCAN3, RIPK4, RNF183, RORR, RRM2, RXFP1, SCGB1D2, SCNN1A, SCNN1G, SERINC2, SFN, SHANK2, SHISA6, SLAIN1, SLC15A2, SLC26A2, SLC34A2, SLC35A3, SLC44A3, SLC46A2, SMC2, SMPDL3B, SOX9, SPATA17, SPATA18, SPINT1, SSX2IP, ST6GAL2, STRBP, STXBP6, TACC3, TACSTD2, TBX3, TFCP2L1, TMC4, TNNC1, TPBG, TPD52, TPX2, TRAF3IP2, TRH, TRIP13, TUBB2B, UBXN10, UGT2B28, UGT8, VTCN1, WEE1, WHSC1, XBP1, XPR1, ZBBX, ZCCHC12, ZMYND8, ZNF367.
Down-regulated genes	

**Supplementary Table S2** The selected hub genes

Groups	Hub genes
Eutopic vs normal endometrium	ABCD1;AGR2;AHCYL1;ALDH3B2;ANKRD17;AR;ATP6V1D;BACE2;BBX;CANX;CCDC117;CENPN;COX4I1;CSNK2A1;CST1;CTNNB1;CTSW;CYB5B;DCBLD2;DDX24;DDX42;DNAJC10;DUSP2;EIF3A;EIF4B;EIF4E;EIF4G2;FGFR1;FYN;G3BP1;GADD45B;GNA15;GNAO1;GTF2I;HIST1H2AM;HIST1H4B;HIST1H4C;HIST1H4D;HIST1H4E;HIST1H4F;HIST1H4H;HIST1H4I;HJURP;HNRNPA0;HNRNPA1;HNRNPA2B1;HNRNPA3;HNRNPC;HNRNPD;HNRNPH1;HNRNPK;HSP90AA1;HSP90AB1;HSPA5;HSPA8;HSPD1;ITGB1;KCNK3;KDM5A;KDM5B;KDM6B;KIF20A;KIF23;KMT2C;KPNA3;MAGT1;MAP3K1;MAPK1;MAPK3;METTL2B;MORF4L1;MT1E;MT1G;MTPN;NASP;NCBP2;NCL;NFATC1;NOL8;PALLD;PDIA3;PDIA6;PGR;PIK3R1;PPIC;PRC1;PRKC1;PUM2;RAD51;RB1BP4;RBM25;RBML3;RBM3;RBM4;RBM8A;RC3H1;ROGDI;RRBP1;RUNX1T1;RYK;SEMA3E;SEMA3F;SERPINA5;SGK494;SMARCC1;SNRPD1;SOGA1;SRC;SRF;SRSF1;SSB;TARDBP;TIA1;TMUB1;TNK1;TNK2;VIM;WAS;WHSC1L1;YWHAB;YWHAZ;ZFP36.
Ectopic vs eutopic endometrium	ACTA2;ASPM;AURKA;CAV1;CCNA1;CCNA2;CCNB1;CD59;CDC20;CENPF;CLU;COBL;E2F7;E2F8;ECT2;ESR1;ESRP1;FAM83D;HOMER2;KIF14;KIF20A;MAP3K1;MET;NRCCAM;NUSAP1;PAPSS2;PLS1;POLE2;PRNP;PTRF;RASEF;RIPK4;RNF183;SFN;SHANK2;STXBP6;TNNC1;TPM1;TPM2;TPX2;TRIP13;TUBB2B.