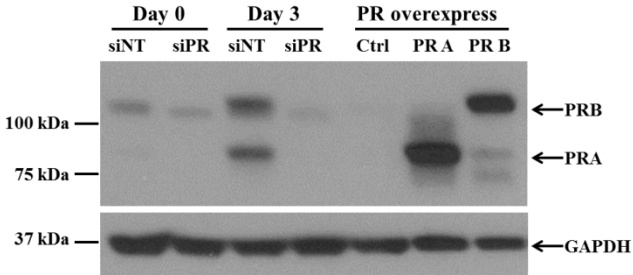
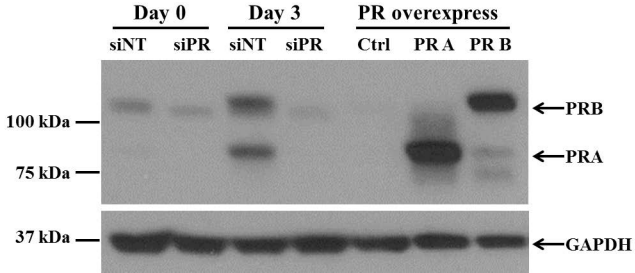


### Supplemental Figure

**Supplemental Figure 1.** Validation of PR antibody (H-190). Lane 1-4: HESCs were transfected with non-target siRNA (siNT) or *PGR* target siRNA (siPR). Forty-eight hours after transfection (defined as day 0), HESCs started treatment with decidual hormones for 3 days. The cells were collected on day 0 and day 3 for protein extraction. Lane 5-7: HESCs were transfected with empty pcDNA3 vector (Ctrl) or PRA vector or PRB vector which were constructed in pcDNA3 vector. 25  $\mu$ g protein was loaded in each lane for lane 1-5, while 5  $\mu$ g proteins were loaded each lane for lane 6-7.

Supplemental Figure 1.





## Supplemental Tables

**TABLE 1.** Probes or primers used for qPCR with Taqman and SYBR Green method

<i>Probes used for qPCR with Taqman method*</i>			
Gene	Probe	Gene	Probe
COUP-TFII	Hs01041380_g1	CTNNB1	Hs00355049_ml
IGFBP1	Hs00426285_ml	HBEGF	Hs00181813_ml
PRL	Hs00168730_ml	MIG6 (ERRFI1)	Hs00219060_ml
WNT4	Hs01573504_ml	PIK3R1	Hs00381459_ml
IL6	Hs00174131_ml	SPP1	Hs00959010_ml
IL8	Hs00174103_ml	FOSL1	Hs04187685_ml
PGR	Hs01556702_ml	JUN	Hs01103582_s1
FGF9	Hs00181829_ml	TGFB3	Hs01086000_ml
GLI3	Hs00609233_ml		
<i>Primers used for qPCR with SYBR Green method**</i>			
Gene	PrimerBank ID	Primer sequence	Product Length (bp)
18S <sup>†</sup>	N/A	Forward: 5'- CATAACGAACGAGACTCTGGCA -3' Reverse: 5'- GGACATCTAAGGGCATCACAG -3'	139
CCL2	4506841a1	Forward: 5'- CAGCCAGATGCAATCAATGCC -3' Reverse: 5'- TGGAACTCTGAACCCACTTCT -3'	190
CSF1	166235149c1	Forward: 5'- TGGCGAGCAGGAGTATCAC -3' Reverse: 5'- AGGTCTCCATCTGACTGTCAAT -3'	108
CXCL12	296011022c1	Forward: 5'- ATTCTCAACACTCCAACTGTGC -3' Reverse: 5'- ACTTTAGCTTCGGGTCAATGC -3'	88
HGF	58533162c1	Forward: 5'- GCTATCGGGTAAAGACCTACA -3' Reverse: 5'- CGTAGCGTACCTCTGGATTGC -3'	99
IL1R1	27894331c2	Forward: 5'- GGCTGAAAAGCATAGAGGGAAC -3' Reverse: 5'- CTGGGCTCACAATCACAGG -3'	137
IL1R2	27894333c2	Forward: 5'- CCGCATCAACCTGACATGG -3' Reverse: 5'- GCCACATCCGTGTCTCTT -3'	75
PTGS1	18104968c2	Forward: 5'- TGGCTCCAACCTTATCCC -3' Reverse: 5'- AGAGGGCAGAATACGAGTGTA -3'	107
PTGS2	223941909c1	Forward: 5'- CTGGCGCTCAGCCATACAG -3' Reverse: 5'- CGCACTTATACTGGTCAAATCCC -3'	94
STAR	56243550c1	Forward: 5'- GGGAGTGGAAACCCCAATGTC -3' Reverse: 5'- CCAGCTCGTGAGTAATGAATGT -3'	78
TNF	25952110c1	Forward: 5'- CCTCTCTCTAATCAGCCCTCTG -3' Reverse: 5'- GAGGACCTGGGAGTAGATGAG -3'	220

\*Probes were purchased from Applied Biosystems (Foster City, CA);

\*\*The sequences of primers were from PrimerBank (<http://pga.mgh.harvard.edu/primerbank/index.html>) (Ref. 1)

<sup>†</sup>18S primers sequences were from (Ref. 2) with slightly modified.

### Reference

- Spandidos A, Wang X, Wang H, Seed B 2010 PrimerBank: a resource of human and mouse PCR primer pairs for gene expression detection and quantification. Nucl Acids Res. 38:D792-799
- Dai RY, Chen Y, Fu J, Dong LW, Ren YB, Yang GZ, Qian YW, Cao J, Tang SH, Yang SL, Wang HY 2009 p28GANK inhibits endoplasmic reticulum stress-induced cell death via enhancement of the endoplasmic reticulum adaptive capacity. Cell Res. 19:1243-1257

**TABLE 2.** Primers of ChIP-Seq binding region used in the qPCR with SYBR Green method

<b>Gene</b>	<b>Primer sequence</b>	<b>Product Length (bp)</b>
IL8	Forward: 5'- GTAGGACACTTTTGGCAACA -3' Reverse:5'- GACCATTTCAGTTCCATCTC -3'	96
IL6ST	Forward: 5'- CTCTCCCAGACTAGATCGAA -3' Reverse:5'- GACCCCGTTATTCCACAGAA -3'	91
PGR	Forward: 5'- CCACAATCATTGACCTCAC -3' Reverse:5'- GCACAAGGACATGAACAAC -3'	112
IGFBP1	Forward: 5'- GTGTCCCTGGATTGCAGCAT -3' Reverse:5'- CCATCATCTGCTCTTCCCAA -3'	153
WNT4	Forward: 5'- GGGACAAAGGGGAGACAAGC -3' Reverse:5'- GAGTTAGCCTTCCCAGCCAT -3'	108

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**TABLE 3.** Patient information for the samples of eutopic endometrium and ectopic lesion

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<b>Patient No.</b>	<b>Eutopic endometrium</b>	<b>Ectopic lesion</b>	<b>Stage of the cycle</b>	<b>Status of endometriosis</b>
1	G64A	G64E	Early Secretory	III
2	G209A	G209	Early Secretory	III
3	G51E	G51F	Mid Secretory	II
4	G119B	G119I	Mid Secretory	III
5	G109C	G109B	Mid Secretory	IV
6	G198B	G198A	Mid Secretory	II
7	G221A	G221H	Late Secretory	II
8	G164A	G164F	Late Secretory	III
9	G204A	G204E	Late Secretory	II-III

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**TABLE 4.** Top biology processes of genes regulated by COUP-TFII with DAVID analysis

GO term	Genes	Count	P-value
Cell adhesion	MTSS1, CADM1, NELL1, ZAN, LMO7, POSTN, CXCL12, CTNNB1, HMCN2, NEGR1, DSCAM, SPON1, PTPRK, CLCA2, PCDHGA11, ROCK1, MAGI1, PTPRT, AJAP1, SSPO, NCAM1, HES1, TNFAIP6, PODXL2, CX3CR1, ROR2, COL24A1, EDA, CD226, PLXNC1, CDK5R1, CCL2, PCDH20, NEDD9, SOX9, ITGBL1, ITGAX, ITGB7, KAL1, BAI1, SPP1, COL18A1, BMP1, PPFIBP1, ITGA4, MCAM, COL16A1, MUC4, LAMA2, LAMA1, ITGA6, ATP2A2, FREM3, DSG2, DSG3, FCGBP, SLURP1, COL21A1, CLSTN3, CLDN3, IGFBP7, NPNT, CNTNAP3, CEACAM1, SPACA4, PCDHB8, CNTN5, CNTN6, SDK1, PCDH7, ARVCF, CPXM1, CLDN2, CNTN1, VCAN, CNTN3, LIMS1, TNF, EPDR1, TNC, CCR1, CTNND2, KITLG, PCDHGC4, COL2A1, PCDHB11, CDH4, CDH6, COL9A1, CDH9, COL6A6, SORBS1, GP1BB, MYBPH, COL6A1, THBS1, PTPRC, COL4A3, HAPLN3, TNXB, COL13A1, NLGN1, COL15A1, NID1, CCL11, COL19A1, SNED1, CDH11	108	6.38E-12
Regulation of cell proliferation	HMX2, PTGS2, IL6ST, PDGFA, FGF17, PTGS1, TGFB3, MMP7, NR2E3, SHH, CTNNB1, PGR, CDKN2B, MYOCD, APOH, IFNK, ODZ1, PTPRK, VASH2, PTHLH, HES1, TNS3, ADAMTS8, JUN, FOXG1, CCL2, ERBB4, CLU, ST8SIA1, ASZ1, SOX9, BAI1, ADRA2A, NKX3-1, BMP4, COL18A1, SPHK1, KDR, BTLA, CDKN1C, LAMA1, PLA2G4A, FAPB3, TGFB3, PLAU, ADRA1D, FGF9, IGFBP7, E2F7, CXCR2, PAWR, SCGB1A1, GLI3, EDNRA, EDNRB, KISS1R, PTGES, HMOX1, HEY2, TGFA, NOS3, NOS2, FOSL1, LTA, CTBP2, FOXJ1, RXFP2, ESR2, IL6R, CD86, HIPK2, LACRT, SCIN, SCGB3A1, IL12B, VIP, FRK, TNF, PRTN3, FOXM1, CSF1, KITLG, IGF1R, DHCR7, BCL6, THBS1, PPAP2A, INGI, TLX1, NOX4, CEBPA, COL4A3, PTPRC, NACC2, PDS5B, IL8, NF1, SPARC, CDKN3, DBH, SOD2, BNC1, HBEGF, SP6, PTCH1, ID4, IGFBP3, FOXE3, IGFBP5	109	3.28E-09
Cell surface receptor linked signal transduction	CGA, GDF2, IL6ST, FSTL1, LPAR1, SHH, CTNNB1, LPHN3, AGTR2, OR7C1, CFD, GNG7, PTPRJ, PTPRK, OR2S2, OR52K3P, MAGI1, PTPRT, PDYN, CCR9, CCR7, TACSTD2, JUN, PRAM1, CX3CR1, ROR1, ROR2, STC1, OR2B6, IL1R1, CDK5R1, OR2B3, ERBB4, ENPP2, CACNB3, BDKRB1, GPR143, ADCYAP1, ITGBL1, HCRTR2, IFNA2, BAI1, BAI3, BMP4, CAMLG, SMAD6, SPHK1, GPR150, HGF, OR1F1, COL16A1, GNAT2, KDR, BTLA, EPHA5, EPHA4, LAMA1, NPVF, TGFB3, RGS9, OR1A1, FGF9, TAS2R5, OR7E24, GLI3, EDNRA, EDNRB, KISS1R, OXER1, ZFYVE9, ANGPT1, NOS3, MAS1L, NOS2, CEACAM1, GPR173, GPR97, RXFP3, LOC646626, RXFP2, CD160, CLEC1A, INHBA, DOK2, LAX1, PTGDR, OR4N4, IL12B, RAPGEFL1, RASD1, GPR182, GPR62, CCR1, SORBS1, DGKG, CCBP2, MC3R, CD27, WNT8A, IL8, OR2IIP, GPR78, NPR1, DGKI, PTGFR, BIRC3, DKK4, CCL17, DKK2, P2RY12, LRP1, HBEGF, PTCH1, BAMB1, HTR2B, GNA14, MTSS1, PDGFA, GRIK2, FGF17, TGFB3, RPE65, CXCL12, VIPR2, MARCO, WNT4, WNT3, GALR1, MRGPRX3, ELTD1, RGR, PTHLH, NCAM1, GABRR3, GLP1R, CCL2, FKSG83, ADORA2B, KLRK1, NEDD9, GREM2, ITGAX, P2RY2, ITGB7, P2RY1, ADRA2A, OR10C1, GABRE, GABRA2, MYO1E, GABRA6, MALT1, ITGA4, GPR32, ITGA6, GPR39, MTNR1B, GPR31, ADRA1D, CD8A, RRH, CXCR2, TAAR8, VNIR4, FOS, HEY1, CXCR5, RSPO3, HEY2, TAAR5, KNG1, RAMP3, TBL1XR1, GABRG3, CNTN6, OXGR1, FSHR, UBE2B, GRP, TAS2R16, ADRB1, HIPK2, CNTN1, GAP43, VIP, NDP, GPR6, GPRC5B, GPR1, GPRC5A, IGF1R, GP1BB, DNER, GPR101, PPAP2A, PIK3R1, PTPRC, COL4A3, PTPRD, DTX1, OR7A5, RGS18, TAB1, WNT2B, OR3A3, OR3A1, GPR111, IGFBP1, OPRD1, GPR116	210	7.72E-09
Blood vessel morphogenesis	FGF9, PDGFA, CXCL12, SHH, CTNNB1, ZFP36L1, EDNRA, ANGPTL6, APOB, AGTR2, HEY1, MYOCD, HMOX1, CCBE1, HEY2, TGFA, NOS3, HS6ST1, ANGPT1, NOS2, NR2F2, THBS1, CEACAM1, PTPRJ, BMP4, COL18A1, IL8, MYO1E, TBX4, NF1, COL15A1, ITGA4, MMP14, DBH, ARHGAP24, SLIT2, KDR, CXCL17, SH2D2A, JUN, PLAU	41	1.17E-07
Defense response	ALS2, A2M, GRIK2, CXCR2, TLR4, ANKRD1, CFP, FOS, HTN1, SAA1, HIST1H2BI, PGLYRP2, HMOX1, IL1RAP, CFH, IFNK, NOS2, REG3G, MX1, CFD, FOSL1, GNG7, KNG1, SPACA3, C4A, LOC646626, CD160, IL25, PSG3, COLEC12, ESR2, IL6R, TRAT1, NCR3, CLEC1A, C1QA, CCR9, INHBB, TNFAIP6, CD83, INHBA, BPI, CCR7, GAGE3, PSG9, CX3CR1, PSG4, MNDA, CLEC5A, HLA-DRA, KIR2DL4, TNFAIP8L2, LALBA, IL1R1, CCL2, TNF, ADORA2B, DEFB125, CCR1, CLU, RSAD2, BDKRB1, DEFB127, TNFRSF1A, IFNA2, IFNA6, C2, THBS1, IL1RAPL2, SPP1, NOX4, LY75, PTPRC, HIST1H2BC, CAMLG, IL8, CFB, KIR2DS1, MALT1, CCL18, CCL17, CCL11, CXCL13, AOX1, IFNA13, PLA2G4C	85	2.52E-07
Response to steroid hormone stimulus	ALPL, A2M, TNF, CCL2, ERBB4, PTGS2, PDGFA, IGFBP7, PTGS1, TGFB3, ASZ1, TIMP3, SHH, CTNNB1, FOS, TNFRSF11B, BCHE, HMOX1, NOS3, ANGPT1, TFF1, THBS1, NEFL, FOSL1, SPP1, BMP4, PNLIPRP1, CYP11A1, CRYAB, SOCS3, RCAN1, IL6R, ESR2, MMP14, PLA2G4A, PTCH1, RGS9	37	6.56E-07
Vasculature development	FGF9, PDGFA, CXCL12, SHH, CTNNB1, ZFP36L1, EDNRA, ANGPTL6, APOB, AGTR2, HEY1, MYOCD, HMOX1, DHCR7, CCBE1, HEY2, TGFA, NOS3, HS6ST1, ANGPT1, NOS2, NR2F2, THBS1, CEACAM1, PTPRJ, BMP4, COL18A1, IL8, MYO1E, TBX4, NF1, COL15A1, ITGA4, MMP14, DBH, ARHGAP24, SLIT2, KDR, CXCL17, SH2D2A, JUN, TGFB3, PLAU	43	1.89E-06
Cell-cell signaling	ALS2, CGA, SYT5, FGF9, GRIK2, PDGFA, FAM3B, FGF17, LTBP4, SLC6A4, VIPR2, SHH, MBP, CTNNB1, PGR, WNT4, SPRY1, WNT3, NQO1, TAAR5, LTA, CHAT, PTPRJ, GABRG3, KCND2, SIX3, BSN, ESR2, PDYN, PTHLH, C1QA, TNFAIP6, GABRR3, INHBA, CD86, KIF1B, SEMA4F, UBC, STC1, GLP1R, LALBA, KCNM4, CPLX1, NDP, CCR1, ASZ1, PCDHB11, ADCYAP1, HCRTR2, IFNA2, TSPAN32, POU2F1, PRIMA1, GAD1, NOVA1, BMP4, BMP3, DLGAP1, GABRA2, FADS1, CPNE6, MAOA, GABRA6, NLGN1, PARK2, HGF, DBH, CCL18, LIN7A, CCL17, CXCL14, GRIA1, CXCL13, RAPSN, MTNR1B, LRP2, CHRNE, ADRA1D, SMPD3, MGST2	80	2.51E-06
Respiratory system development	CEBPA, BMP4, PDGFA, FGF9, TBX4, RPRGRIP1L, TGFB3, ASZ1, MMP14, TAB1, GLI3, SHH, ASAH1, CTNNB1, KDR, HES1, PTHLH, TNS3, ALDH1A3, DHCR7, HSD11B1, POU2F1, NOS3, HS6ST1	24	7.77E-06
Response to nutrient	ALPL, A2M, CCL2, STAR, PTGS2, PDGFA, IL6ST, IGFBP7, TIMP3, SHH, TNFRSF11B, CDKN2B, BCHE, HMOX1, SLC30A4, ANGPT1, LTA, SPP1, MUC1, BMP4, SOAT2, CYP11A1, CFB, FADS1, PLA2G4A, STC1, PTCH1, LRP2	28	9.35E-06

**TABLE 4. Continued**

<b>GO term</b>	<b>Genes</b>	<b>Count</b>	<b>P-value</b>
Positive regulation of immune system process	CADM1, ADORA2B, IL6ST, FCER2, TBX21, CLU, KLRK1, CACNB3, TLR4, BDKRB1, CXCL12, CFP, CFH, BCL6, IFNK, NOS2, C2, CFD, THBS1, CD27, PTPRC, SPACA3, CRTAM, IKZF1, C4A, FOXJ1, CFB, LOC646626, MALT1, IL6R, TRAT1, NCR3, C1QA, CD83, CD86, LAX1, IL12B, CD226, HLA-DRA	39	1.75E-05
Cell motion	FGF19, MTSS1, PTGS2, CXCR2, MYLIP, CXCL12, SHH, EDNRB, APOB, CXCR5, UNC5B, SAA1, POU4F3, NOS3, SEMA3A, NR2F2, CEACAM1, VNN2, PTPRK, PHOX2B, ROCK1, FOXJ1, PSG2, IL6R, ESR2, MMP14, SLIT2, TNS3, SEMA4F, FOXG1, UBC, VCAN, IL12B, GAP43, PALM, CDK5R1, CCL2, TNF, ENPP2, CALD1, ASZ1, KITLG, CDH4, DNER, KAL1, ADRA2A, PPAP2A, THBS1, ETV4, LMX1B, IL8, PODXL, ATP1A4, ITGA4, DBH, KDR, FEZF2, EPHA4, LAMA1, ITGA6, TGFB3, HBEGF, LRP8, PLAU	64	2.13E-05
Immune response	CD8A, CADM1, PAX5, IFI44L, TLR4, CXCL12, MBP, CFP, PGLYRP2, IL1RAP, MS4A1, CFH, NOS2, ODZ1, CFD, LTA, CRTAM, C4A, FOXJ1, LOC646626, TNFRSF17, COLEC12, IL6R, FCAMR, TRAT1, NCR3, C1QA, CCR9, CD83, BPI, CCR7, CD86, IL18BP, LAX1, IL12B, GBP4, EDA, CLEC5A, KIR2DL2, LCP1, HLA-DRA, TNFAIP8L2, IL1R2, IL1R1, CCL2, TNF, ENPP2, CCR1, UNG, CLU, OAS3, RSAD2, OAS1, DEFB127, OAS2, PF4V1, KAAG1, TNFRSF1A, IGF1R, PROCR, ICOS, POU2F2, CCBP2, C2, THBS1, IL1RAPL2, CD27, LY75, PTPRC, IL8, CFB, SMAD6, KIR2DS1, MALT1, DBH, CCL18, CCL17, CCL11, BTLA, CXCL14, CXCL13, SP2, TGFB3, IFI6, OPRD1	85	2.50E-05
Negative regulation of multicellular organismal process	HS3ST5, TNF, ADORA2B, PTGS2, GRIK2, PDGFA, TSPAN8, SOX9, SCGB1A1, TNFRSF11B, AGTR2, BCHE, HMOX1, APOH, PCSK9, NOS3, BCL6, THBS1, SRGN, KNG1, IL6R, LRPAP1, INHBA, CD83, BPI, ADRB1, ATP2A2, PTCH1, ADRA1D, PLAU	30	2.51E-05
Angiogenesis	PDGFA, FGF9, CXCL12, SHH, CTNNA1, EDNRA, ANGPTL6, HMOX1, CCBE1, TGFA, NOS3, ANGPT1, HS6ST1, THBS1, CEACAM1, BMP4, COL18A1, IL8, TBX4, COL15A1, ARHGAP24, MMP14, SLIT2, KDR, SH2D2A, CXCL17, JUN, PLAU	28	2.67E-05
Regulation of cell activation	ADORA2B, PDGFA, IL6ST, TBX21, KLRK1, TLR4, RORA, PAWR, SPINK5, SCGB1A1, SHH, HMOX1, NOS3, BCL6, THBS1, CD27, PTPRC, SPACA3, IKZF1, FOXJ1, LOC646626, MALT1, BTLA, INHBA, CD83, CD86, BPI, LAX1, PRAM1, IL12B, CD226	31	3.39E-05
Female pregnancy	MUC1, CSH1, PTGS2, IGFBP7, PSG2, TGFB3, PSG3, PSG1, COL16A1, SCGB1A1, IL11RA, ADCYAP1, PTHLH, FOS, PSG9, PLA2G4A, PSG6, PAPP, PSG5, PSG4, FOSL1, PLAU, SPP1	23	3.43E-05
Response to endogenous stimulus	CGA, A2M, PTGS2, STAR, PDGFA, IGFBP7, PTGS1, TGFB3, RPE65, SHH, CTNNA1, FOS, TNFRSF11B, HMOX1, ANGPT1, NOS3, FOSL1, GNG7, CYP11A1, SOCS3, CRYAB, IL6R, ESR2, MMP14, UBE2B, CAPN10, ALPL, TNF, CCL2, ERBB4, ASZ1, TIMP3, IGF1R, SORBS1, BCHE, REN, MS1, PCSK9, TFF1, THBS1, NEFL, PIK3R1, SPP1, BMP4, PNLIPRP1, FADS1, RCAN1, DBH, ABCG1, PLA2G4A, FABP3, TGFB3, PTCH1, IGFBP1, RGS9, MGST1	56	3.62E-05
Regulation of cell migration	GDF2, ERBB4, ENPP2, PDGFA, IL6ST, CSF1, BDKRB1, CXCL12, SHH, IGF1R, PRR5, AGTR2, KISS1R, SERPINE2, HMOX1, APOH, THBS1, PIK3R1, COL18A1, PTPRK, NF1, SPHK1, IL6R, KDR, LAMA2, LAMA1, HBEGF, TGFB3, IGFBP3, IGFBP5	30	4.47E-05
Regulation of leukocyte mediated immunity	PTPRC, CRTAM, CADM1, ADORA2B, FOXJ1, TBX21, FCER2, KLRK1, MALT1, NCR3, HMOX1, PRAM1, BCL6, IL12B, CD226, DPP4	16	5.09E-05



**TABLE 5.** Listing of top significantly enriched sequence motifs identified using the SeqPos tool on the web-based application Cistrome for the dataset containing COUP-TFII binding sites

ID	Factors	DNA-binding domain	Consensus	<i>P</i> value
M01268	NR1H4	Hormone-nuclear Receptor Family	RGGTCAY	1E-30
UP00009	NR2F2	Hormone-nuclear Receptor Family	7GGTCA4	1E-30
M01282	PPARA	Hormone-nuclear Receptor Family	RAGGTCA	1E-30
hPDI020	ZNF655	BetaBetaAlpha-zinc finger Family	AGGTSA	1E-30
UP00048	RARA	Hormone-nuclear Receptor Family	7GGTCA4	1E-30
hPDI182	ZNF71	BetaBetaAlpha-zinc finger Family	ARRGGTCA	1E-30
M01198	Nr1h2	Hormone-nuclear Receptor Family	1G1T1A1AG4	1E-30
MC00005	RXRG	Hormone-nuclear Receptor Family	GGTCAAAGGTCA	1E-30
EN0033	RXRA	Hormone-nuclear Receptor Family	GCAAAGGTCA	1E-30
MA0017	NR2F1	Hormone-nuclear Receptor Family	5CA2G1TC1	1E-30
M01153	NR1I2	Cys4 zinc finger of nuclear receptor	RVAGKTCA	1E-30
M01589	ESRRB	Cys4 zinc finger of nuclear receptor	YCAAGGTCASSS	1E-30
EN0418	NR2C2	Hormone-nuclear Receptor Family	1GG2A2GG3	1E-30
UP00079	ESRRA	Hormone-nuclear Receptor Family	5AAGGT7	1E-30
UP00066	HNF4A	Hormone-nuclear Receptor Family	7GGTCA5	1E-30
M01650	NR2E3	Hormone-nuclear Receptor Family	4T1A1A2T1A	1E-30
EN0372	SP1	BetaBetaAlpha-zinc finger Family	3CA1AG2C2	1E-30
EN0414	TCF12	Helix-Loop-Helix Family (bHLH)	4G3A1AG2C1	1E-30
MC00013	CEBPB	Leucine zipper Family (bZIP)	4TTG3AA1	1E-30
EN0008	CEBPA	Leucine zipper Family (bZIP)	ATTRCMYAAYYH	1E-30
M00473	FOXO1	Forkhead Domain Family	HTTGTTTWYK	1E-30
M01132	SF1	Cys4 zinc finger of nuclear receptor	YCAAGGYCA	1E-30
M01728	NR2F6	Hormone-nuclear Receptor Family	2G2CA1AG4	1E-30
hPDI075	THRA	Hormone-nuclear Receptor Family	GTKRCC	1E-30
UP00245	HOXC10	Homeodomain Family	5TC1T1AA4	1E-30
MA0067	PAX2	Homeodomain Family	VMRTGACW	1E-30
M00731	RUNX2	Runt Domain Family	KTGTGGT	2.0E-27
MA0018	CREB1	Leucine zipper Family (bZIP)	TGRCGTCA	7.7E-23
M01142	NR5A2	Hormone-nuclear Receptor Family	CKRRCCTTGvac	1.9E-17
M00961	VDR	Hormone-nuclear Receptor Family	DGGTTCACMSRG	8.9E-13
MA0084	SRY	High Mobility Group (Box) Family	KWWAACAAW	2.5E-06

**TABLE 6.** Biology processes of genes that altered by COUP-TFII identified with microarray and showing COUP-TFII binding sites identified with ChIP-seq

GO Term	Genes	Count	P-Value
Cell adhesion	MTSS1, COL21A1, NPNT, IGFBP7, ZAN, LMO7, CXCL12, CTNNB1, NEGR1, PTPRK, PCDHGA11, MAGI1, ROCK1, CNTN5, CNTN6, SDK1, PCDH7, HES1, TNFAIP6, PODXL2, CNTN1, ROR2, COL24A1, CD226, PLXNC1, LIMS1, CCL2, EPDR1, TNC, KITLG, NEDD9, PCDHGC4, CDH4, ITGBL1, COL6A6, SORBS1, MYBPH, COL6A1, THBS1, SPP1, COL18A1, COL4A3, PTPRC, TNXB, PPFIBP1, NLGN1, COL15A1, NID1, MCAM, LAMA2, LAMA1, COL19A1, FREM3, ATP2A2, ITGA6, CDH11	56	<0.0001
Vasculature development	PTPRJ, COL18A1, IL8, MYO1E, NF1, COL15A1, ARHGAP24, CXCL12, SLIT2, CTNNB1, ZFP36L1, EDNRA, SH2D2A, CXCL17, APOB, MYOCD, JUN, CCBE1, TGFB3, HS6ST1, ANGPT1, NR2F2, THBS1, PLA1	24	<0.0001
Regulation of cell proliferation	CCL2, IL6ST, IGFBP7, CSF1, PTGS1, ST8SIA1, TGFB3, ASZ1, KITLG, GLI3, SCGB1A1, CTNNB1, PGR, EDNRA, IGF1R, MYOCD, PTGES, PPAP2A, THBS1, FOSL1, INGI, NOX4, COL18A1, PTPRK, COL4A3, PTPRC, CTBP2, IL8, NF1, RXFP2, SPARC, IL6R, VASH2, SOD2, HES1, TNS3, LAMA1, PLA2G4A, ADAMTS8, JUN, TGFB3, HBEGF, IL12B, PLA1, ADRA1D	45	<0.0001
Enzyme linked receptor protein signaling pathway	MTSS1, CCL2, GRIK2, IL6ST, TGFB3, FSTL1, GREM2, FOS, IGF1R, SORBS1, ZFYVE9, ANGPT1, PIK3R1, GNG7, PTPRJ, PTPRK, PTPRD, MYO1E, SMAD6, HGF, EPHA5, JUN, ROR1, HBEGF, ROR2, TGFB3, IGFBP1	27	<0.0001
Angiogenesis	COL18A1, IL8, COL15A1, ARHGAP24, CXCL12, SLIT2, CTNNB1, EDNRA, CXCL17, SH2D2A, JUN, CCBE1, ANGPT1, HS6ST1, THBS1, PLA1	16	<0.0001
Regulation of cell migration	COL18A1, PTPRK, IL6ST, CSF1, NF1, BDKRB1, IL6R, CXCL12, LAMA2, LAMA1, IGF1R, PRR5, HBEGF, TGFB3, THBS1, PIK3R1	16	<0.0001
Response to steroid hormone stimulus	A2M, CCL2, CRYAB, IGFBP7, PTGS1, TGFB3, ASZ1, IL6R, CTNNB1, FOS, PLA2G4A, TNFRSF11B, ANGPT1, RGS9, THBS1, FOSL1, SPP1	17	<0.0001
Response to endogenous stimulus	A2M, CCL2, IGFBP7, PTGS1, TGFB3, ASZ1, CTNNB1, FOS, IGF1R, TNFRSF11B, SORBS1, REN, ANGPT1, THBS1, FOSL1, PIK3R1, SPP1, GNG7, CRYAB, IL6R, ABCG1, PLA2G4A, TGFB3, RGS9, IGFBP1	25	0.0001
Female pregnancy	FOS, PSG9, PLA2G4A, PAPP, IGFBP7, PSG4, TGFB3, SCGB1A1, FOSL1, IL11RA, PLA1, SPP1	12	0.0001
Cytoskeleton organization	MTSS1, PALM, CALD1, PREX1, ASZ1, NEDD9, LMO7, CTNNB1, CORO2B, PRR5, PFN4, SORBS1, PAK1, FGD6, FGD4, TNXB, ROCK1, CRYAB, NF1, MID1, SVIL, MAP2, SGCD, MAP7, LCP1, TMOD1	26	0.0001
Localization of cell	PTPRK, CCL2, ROCK1, IL8, ASZ1, KITLG, IL6R, CXCL12, SLIT2, LAMA1, TNS3, APOB, ITGA6, HBEGF, TGFB3, IL12B, PPAP2A, NR2F2, THBS1, PLA1	20	0.0003
Actin filament-based process	MTSS1, TNXB, ROCK1, CALD1, MYO1E, PREX1, NF1, LMO7, NEDD9, CORO2B, PRR5, SORBS1, PFN4, FGD6, LCP1, FGD4, TMOD1	17	0.0004
Response to heat	PLA2G4A, CCL2, HSPB6, CRYAB, IGFBP7, ST8SIA1, THBS1, SCARA5	8	0.0005
Actin cytoskeleton organization	MTSS1, TNXB, ROCK1, CALD1, PREX1, NF1, LMO7, NEDD9, CORO2B, PRR5, SORBS1, PFN4, FGD6, LCP1, FGD4, TMOD1	16	0.0006
Response to organic substance	IL1R1, A2M, CCL2, IL6ST, IGFBP7, PTGS1, TGFB3, ASZ1, BDKRB1, CTNNB1, EDNRA, IGF1R, TNFRSF1A, FOS, TNFRSF11B, APOB, SORBS1, REN, ANGPT1, THBS1, FOSL1, PIK3R1, GNG7, SPP1, COL4A3, CRYAB, COLEC12, IL6R, ABCG1, PLA2G4A, JUN, TGFB3, RGS9, IGFBP1	34	0.0006
Positive regulation of biosynthetic process	CRTC1, TGFB3, SPI1, KITLG, RORB, RORA, GLI3, CTNNB1, FOS, TNFRSF1A, IGF1R, NPAS2, SORBS1, MYOCD, POU2F1, NR2F2, THBS1, NFATC2, INGI, FOSL1, MYST4, TBL1XR1, NFE2, RXFP2, AFF1, HMGA1, ABCG1, SOD2, HES1, PLA2G4A, JUN, UBC, IL12B	33	0.0006
TGF beta receptor signaling pathway	PTPRK, FOS, CCL2, ZFYVE9, JUN, SMAD6, TGFB3, TGFB3	8	0.0007
Embryo implantation	IGFBP7, SCGB1A1, IL11RA, PLA1, SPP1	5	0.0063
Chemotaxis	CXCL17, CCR7, CCL2, IL8, CXCL13, IL6R, SEMA3A, FOSL1, CXCL12, SLIT2, PLA1	11	0.0069
Inflammatory response	NOX4, A2M, CCL2, IL8, BDKRB1, IL6R, FOS, TNFRSF1A, TNFAIP6, CCR7, CXCL13, IL1RAP, AOX1, PLA2G4C, THBS1, CFD, SPP1	17	0.0078

**TABLE 7.** Reproductive diseases and disorder of genes regulated by COUP-TFII with IPA analysis

Diseases	Molecules	Count	P-Value
Uterine cancer	ADH1B,ANXA3,CAPN6,CDH11,CDH4,COL15A1,CRABP2,CSF1,CTNNB1,CXCL12,EDNRA,FOS,GLI3,GPRC5A,GPX3,HMGA1,HSD17B6,HSPB6,HTR2B,IFIT3,IGF1R,IGFBP7,IL8,ITGA6,ITPR1,JUN,KRT34,LDB2,LMOD1,MAPK10,MATN2,MRV11,NEGR1,NR2F2,PGR,PIK3R1,PLXNC1,PPAP2A,PRUNE2,PTGFR,RAD51B,RREB1,SCARA5,SNCAIP,SPP1,SPSB1,ST7L,TGFB3,TGFBR3,TNC,TNXB	51	3.48E-09
Endometriosis	ABCG1,ANGPT1,CAPN6,CCL2,CNTN1,COL18A1,COL6A1,CXCL13,ERRFI1,FOS,GAS6,GPX3,GUCY1B3,HGF,IGFBP1,IL1R1,IL1R2,IL8,ITGA6,JUN,MBP,PFKFB3,PGR,PIK3R1,PLA2G4A,PTGS1,RREB1,SERPINB1,SLC6A6,SMAD6,SORBS1,SP2,SPP1,TNFRSF1A	34	1.47E-08
Inflammatory response	A2M,ANGPT1,AOX1,BDKRB1,CCL2,CCR7,CHI3L1,COL18A1,CSF1,CXCL12,CXCL13,EDNRA,FOS,HAVCR2,HGF,IL12B,IL1R1,IL1RAP,IL6ST,IL8,KITLG,MSR1,NEDD9,NFATC2,NOX4,PDE4B,PLA2G4A,PLAU,PREX1,PTGES,PTGS1,PTPRC,PTPRJ,ROCK1,RORA,SCGB1A1,SERPINB1,SLIT2,SPI1,SPP1,THBS1,TNFAIP3,TNFAIP6,TNFRSF1A,UACA	46	2.48E-08
Chemotaxis of leukocytes	ANGPT1,CCL2,CCR7,CSF1,CXCL12,CXCL13,EDNRA,IL12B,IL1R1,IL6R,IL8,KITLG,NEDD9,PDE4B,PLAU,PREX1,PTGES,PTPRC,PTPRJ,ROCK1,SERPINB1,SLIT2,SPI1,SPP1,THBS1,TNFRSF1A	26	9.77E-07