

Supplement 2. Gene ontologies that best describe the 10 most significant annotation clusters affected by lactation and pregnancy (upregulated, downregulated and interaction) in intercaruncular endometrium on d 17 of the cycle or pregnancy

Cluster Terms	Enrichment Score	Genes, n	Main Effect	Regulation	Genes
GO:0006952-Defense response	8.36	39	Pregnancy	Up	<i>CD40, DDX58, FCGR1A, NMI, S100A12, SP140, AIF1, ANXA1, CCL11, CCL2, CCL8, CCR7, CXCL10, CXCL2, C1QA, C1QB, C1QC, C2, CFB, CFP, IFIH1, IRF7, IL1RN, IL20RB, LGALS3BP, MST1R, MX1, MX2, NCF2, NUPR1, PTX3, PLD1, RSAD2, RNASE6, SERPINA1, SERPING1, SIGLEC1, TAP1, TNFAIP6</i>
IPR001346:Interferon regulatory factor	6.32	7	Pregnancy	Up	<i>IRF1, IRF3, IRF5, IRF6, IRF7, IRF8, IRF9</i>
GO:0002252-Immune effector process	2.41	12	Pregnancy	Up	<i>FCER1G, C1QA, C1QB, C1QC, C2, CFB, CFP, PTX3, PRKCD, RSAD2, SERPING1, TNFSF13B</i>
GO:0010033-Response to organic substance	2.26	24	Pregnancy	Up	<i>BCL2L1, DNAJA1, ASL, CDH1, CA4, CASP1, CCL2, C1QB, CFB, CRYAB, EIF2AK2, FABP3, FBP1, HCLS1, IRF3, IL1RN, OSMR, PLD1, PRSS8, SELL, SERPINA1, STAT1, SOCS1, TACR3</i>
GO:0008219-Cell death	2.24	25	Pregnancy	Up	<i>BCL2L1, BCL2L12, BCL2L14, BCL2L15, CFLAR, FGD2, PYCARD, XAF1, AATK, AIFM1, ATXN3, CASP1, CASP4, DAXX, DNASE1L3, DNASE2, EIF2AK2, GADD45B, IFI6, OPTN, STK17A, SHISA5, STAT1, TREX1, YARS</i>
UP_SEQ_FEATURE:signal peptide	2.14	70	Pregnancy	Up	<i>BOC, CD40, CD86, DNAJC1, FCER1G, FCGR1A, FCGR3A, TIMD4, AGRN, AIFM1, CDH1, CA4, CPXM2, CCL11, CCL2, CCL8, CCR7, CXCL10, CXCL2, COL18A1, C1QA, C1QB, C1QC, C2, CFB, CFP, CRIMI, DNASE1L3, DNASE2, DKK1, DLAT,</i>

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					<i>EVI2B, FMOD, GPLD1, HEXB, ICAM2, IFI6, IL1RN, IL18BP, IL20RB, LGALS3BP, LY6E, LY6G6C, MST1R, MEP1B, MUC13, MPZL1, OSMR, PTX3, PXDN, PLA1A, PRSS22, PRSS8, RNASE6, SELL, SELT, SERPINA1, SERPINA11, SERPING1, SHISA2, SHISA3, SHISA5, SIGLEC1, SIGLEC14, SIRPA, SMPDL3B, SDC2, TINAGL1, TNFAIP6, TACSTD2</i>
GO:0030545-Receptor regulator activity	1.82	4	Pregnancy	Up	<i>AGRN, IL1RN, IL18BP, PXDN</i>
GO:0042981-Regulation of apoptosis	1.69	24	Pregnancy	Up	<i>BCL2L1, BCL2L14, CFLAR, DDX19B, FGD2, PYCARD, ANXA1, AIFM1, ALOX12, CDH1, CASP1, CASP4, CCL2, COL18A1, CRYAB, DAXX, IFIH1, IFI6, MX1, NUPR1, NR4A1, STK17A, STAT1, TNFSF13B</i>
GO:0008234-Cysteine-type peptidase activity	1.65	8	Pregnancy	Up	<i>CFLAR, PYCARD, CASP1, CASP4, TINAGL1, USP18, USP25, VCIPI1</i>
hsa04062:Chemokine signaling pathway	1.56	10	Pregnancy	Up	<i>ARRB1, CCL11, CCL2, CCL8, CCR7, CXCL10, CXCL2, PRKCD, STAT1, STAT2</i>
GO:0007155-Cell adhesion	11.29	53	Pregnancy	Down	<i>CD44, GMDS, TEK, TYRO3, WISP2, AMIGO1, CDH11, CDH13, CDH2, CADM3, CLDN10, CLDN5, COL3A1, COL5A3, COL11A1, COL12A1, COL13A1, COL27A1, CDK5, DST, EMCN, FEZ1, FBLN5, HES1, HSPG2, ISLR, IGFBP7, ITGA7, JAM2, LAMA4, MCAM, MIA, MTSS1, MFAP4, NPNT, NLGN3, NID1, PGM5, PECAM1, PTPRS, PCDHGA8, PCDHGB4, PCDHGC3, ROBO1, Sgce, SEMA5A, SIGLEC10, SPON1, SPON2, STAB1, TNXB, TGFB111, VCAN</i>

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GO:0031012-Extracellular matrix	9.95	38	Pregnancy	Down	<i>CD44, EGFLAM, TIMP4, CRTAP, CCDC80, COL1A1, COL1A2, COL3A1, COL4A4, COL4A5, COL5A3, COL11A1, COL12A1, COL13A1, COL27A1, CRISPLD2, DST, FBLN5, HMCN1, HSPG2, LAMA4, LOXL1, MMP11, MFAP2, MFAP4, NOV, NPNT, NID1, OGN, PRELP, SPON1, SPON2, TNXB, TGFB2, VEGFA, VCAN, VWA1, WNT2B</i>
GO:0005604-Basement membrane	7.35	11	Pregnancy	Down	<i>EGFLAM, CCDC80, COL4A4, COL4A5, DST, HMCN1, HSPG2, LAMA4, NID1, VEGFA, VWA1</i>
GO:0001944-Vasculature development	6.17	24	Pregnancy	Down	<i>CD44, CITED1, EGFL7, ELK3, NOTCH4, ARHGAP24, SOX18, CDH13, CDH2, COL1A1, COL1A2, COL3A1, EMCN, EDNRA, ITGA7, JAG1, LAMA4, NTRK2, ROBO4, ROBO1, SEMA5A, SPHK2, TGFB2, VEGFA</i>
GO:0030246-Carbohydrate binding	4.28	23	Pregnancy	Down	<i>CLEC14A, CD302, CD44, EGFLAM, GALNT1, GALNTL1, CCDC80, COL5A3, COL13A1, CRISPLD2, ENPP2, EMCN, FGFR2, MRC2, PFKM, PRELP, SERPINA5, SERPINE2, SIGLEC10, STAB1, TNXB, VEGFA, VCAN</i>
GO:0005198-Structural molecule activity	4.24	28	Pregnancy	Down	<i>ASPH, CLDN10, CLDN5, COL1A1, COL1A2, COL3A1, COL4A4, COL4A5, COL5A3, COL11A1, COL12A1, COL13A1, COL27A1, JAG1, KRT10, LAMA4, MAP1A, MAP1B, MYOC, NES, PGM5, PRELP, RPS8, SEP4, TNXB, TSPAN2, TPM2, TUBB</i>
IPR013783:Immunoglobulin-like fold	4.11	27	Pregnancy	Down	<i>CD300LG, TEK, TYRO3, CADM3, FGFR2, FLNA, FLNC, HMCN1, HSPG2, ISLR, IGSF10, JAM2, LRFN5, MXRA8, MCAM, MYLK, NTRK2, PECAM1,</i>

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					<i>PIGR, PTPRD, PTPRS, ROBO4, ROBO1, KIT, TRIM2, TRIM45, VCAN</i>
IPR001298:Filamin/ABP280 repeat	2.83	4	Pregnancy	Down	<i>FLNA, FLNC, TRIM2, TRIM45</i>
GO:0005583-Fibrillar collagen	2.79	7	Pregnancy	Down	<i>COL1A1, COL1A2, COL3A1, COL5A3, COL11A1, COL27A1, TNXB</i>
IPR006210:EGF-like	2.66	16	Pregnancy	Down	<i>CLEC14A, EGFLAM, EGFL7, NOTCH4, TEK, HMCN1, HSPG2, JAG1, JAG2, LRP4, NPNT, NID1, PEAR1, STAB1, TNXB, VCAN</i>
IPR013783:Immunoglobulin-like fold	1.59	7	Lactation	Up	<i>FCGRT, TRD@, IGHG1, IGL@, IGLL1, KDR, NPTN</i>
GO:0008135-Translation factor activity	1.49	5	Lactation	Up	<i>EIF2AK3, EIF2C2, EIF2C3, EIF4E3, EIF4ENIF1</i>
GO:0015630-Microtubule cytoskeleton	1.29	8	Lactation	Up	<i>AKAP9, ALMS1, BBS4, BBS5, CSPP1, KIF27, ODF2, PCMI</i>
GO:0000166-Nucleotide binding	1.25	13	Lactation	Up	<i>AKAP9, ATP2A2, PAN3, WNK1, DHFR, EIF2AK3, HSPA4, KDR, KIF27, PAPOLG, PDK4, RAGE, MST4</i>
GO:10033-Response to organic substance	1.15	6	Lactation	Up	<i>DNAJB6, EIF2AK3, EIF2C2, HSPA4, MSTN, SOCS2</i>
IPR3006-Ig/MHC-CS	1.06	4	Lactation	Up	<i>FCGRT, IGHG1, IGL@, IGLL1</i>
GO:0035239-Tube morphogenesis	0.99	4	Lactation	Up	<i>BBS4, BBS5, SIX1, KDR</i>

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GO:0042981-Regulation of apoptosis	0.91	7	Lactation	Up	<i>DNAJB6, ARHGEF11, ARHGEF3, ANGPTL4, EIF2AK3, MST4, SOCS2</i>
GO:0035556-Intracellular signaling cascade	0.79	7	Lactation	Up	<i>ALMS1, RASGRP1, ARHGEF11, ARHGEF3, WNK1, EIF2AK3, SOCS2</i>
GO:0007166-Cell surface receptor	0.57	5	Lactation	Up	<i>ARHGEF11, EIF2AK3, KDR, MSTN, SOCS2</i>
IPR017920:COMM domain	2.65	3	Lactation	Down	<i>COMMD4, COMMD5, COMMD1</i>
GO:0043228-Non-membrane-bounded organelle	1.65	29	Lactation	Down	<i>CDC42EP4, HAX1, LATS2, MID1IP1, RBM15B, S100A4, WDR74, ACTA2, CALM3, CHRAC1, CIRH1A, EMD, EIF6, EXOSC1, FAM125A, FAM32A, FEZ1, FLOT1, FHL3, HIPK1, HMBS, MCPH1, MACF1, MRPL48, MRPS26, NICN1, KCTD10, TUBB6, ZNF22</i>
GO:0043233-Organelle lumen	1.02	20	Lactation	Down	<i>CKS1B, RBM15B, S100A4, SIVA1, WDR74, CALM3, CIRH1A, DMGDH, EIF6, EXOSC1, FAM32A, HIPK1, MED11, MED18, MCM5, MRPS26, KCTD10, PDIA2, SUPT4H1, ZNF22</i>
GO:0005739-Mitochondrion	1.02	14	Lactation	Down	<i>HAX1, NDUFB10, RAB11FIP5, SIVA1, BRP44L, DMGDH, HMBS, CA5B, MRPL48, MRPS26, PEMT, SFXN3, DNAJC19, TGM2</i>
GO:0006006-Glucose metabolic process	0.99	4	Lactation	Down	<i>GALT, LDHB, RPIA, TALDO1</i>
GO:0043122-Regulation of I-kappaB kinase/NF-kappaB	0.90	4	Lactation	Down	<i>LGALS1, NFKBIL1, TSPAN6, TGM2</i>

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cascade					
GO:0030246-Carbohydrate binding	0.84	5	Lactation	Down	<i>LGALS1, LMAN2L, PGF, TALDO1, TNFAIP6</i>
GO:0042981-Regulation of apoptosis	0.81	10	Lactation	Down	<i>BAG3, NLRP1, SIVA1, APBB1, GSTP1, HIPK1, LGALS1, NFKBIL1, PSENEN, TGM2</i>
GO:0044092-Negative regulation of molecular function	0.77	6	Lactation	Down	<i>LATS2, SIVA1, CALM3, HEXIM2, MLLT1, RSF1</i>
GO:0019899-Enzyme binding	0.61	5	Lactation	Down	<i>ARFIP2, CDC42EP4, GRASP, NLRP1, FEZ1</i>
GO:0030163-Protein catabolic process	1.14	5	Interaction	---	<i>HECTD3, HERC2, MGRN1, TRIP12, USP20</i>
GO:0030695-GTPase regulator activity	1.13	6	Interaction	---	<i>ARL2, ARHGAP17, C9orf100, HERC2, RGL2, SYTL1</i>
GO:0055114-Oxidation reduction	0.93	3	Interaction	---	<i>COQ6, IVD, MICAL2</i>
GO:0046907-Intracellular transport	0.83	7	Interaction	---	<i>AP3D1, CSPG5, HERC2, KIF3B, MCM3AP, SYTL1, STX5</i>
GO:0000287-Magnesium ion binding	0.75	4	Interaction	---	<i>ADCY6, ENTPD4, POLR1A, SMPD4</i>
GO:0005739-Mitochondrion	0.70	8	Interaction	---	<i>NLRX1, AGXT2L2, BPHL, COQ6, HERC2, IVD, SAMM50, SUPV3L1</i>

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GO:0043228-Non-membrane-bounded organelle	0.57	12	Interaction	---	<i>ARL2, CNTROB, KLHDC3, KIF3B, MICAL2, POLR1A, REPIN1, RPL21, RPS15A, SUPV3L1, STX5, TACC2</i>
GO:0000166-Nucleotide binding	0.54	13	Interaction	---	<i>ARL2, GTPBP1, NLRX1, WRNIP1, ADCY6, ALPK1, COQ6, GAK, IVD, KIF3B, NRBP2, SUPV3L1, UCKL1</i>
GO:0043169-Cation binding	0.53	18	Interaction	---	<i>ADCY6, DCHS1, DUSP12, ENTPD4, GMEB2, HERC2, HEXDC, MGRN1, MICAL2, NR4A1, POLR1A, RELN, REPIN1, SLC38A2, SMPD4, USP20, ZNF142, ZFYVE26</i>
GO:0015630-Microtubule cytoskeleton	0.51	4	Interaction	---	<i>ARL2, CNTROB, KIF3B, TACC2</i>