

Supplemental table 3A. Top 5 Networks affected by E2

Associated Network Function	Molecules in Network	Score	# of molecules
Cardiovascular System Development and Function, Antigen Presentation, Cellular Function and Maintenance	ABCG5, Angiotensin II receptor type 1, ANGPT2, CaMKII, CCDC92 (includes EG:80212), CCL19, CCL21, CDO1, CHGB, CLDN4, Creb, CXCL2, DLGAP1, EPHA2, FLNB, FOSL1, IER3, ITPR2, IVL, LOX, MYH11, NUPR1, p70 S6k, p85 (pik3r), PCP4, PDGF BB, PI3K (complex), PIK3R1, PSD, RIMS1, SH3KBP1, SNCG, SYT1, VIP, VWF	50	28
Cell Death, Respiratory Disease, Cardiovascular Disease	ALDH1A3, APOC2, C3, C1q, CAMK2G, CDK14, CFB, CFD, CLEC10A, ETS, GCH1, GDF15, Growth hormone, Hemoglobin, IL33, IL-1R, IL17B, IP6K2, Ldh, MIR1, MYLK, NFkB (complex), PABPN1, PI3, PLIN2, Pro-inflammatory Cytokine, SAA, SCNN1A, SLC11A2, SLC25A4, SPHK1, SRXN1, TEF, TNFRSF10A (includes EG:8797), XDH	40	25
Behavior, Digestive System Development and Function, Cell-To-Cell Signaling and Interaction	CARTPT, Cytochrome c, Cytokeratin, DES, DTNA, EMP1, FABP4, GHRL, hCG, HIST1H1C, HIST1H1D (includes EG:3007), Histone H1, Histone h3, Insulin, Jnk, KIF5A, KIF5C, KRT20, MAP2K1/2, MCF2L, MEG3 (includes EG:17263), Mlc, MYB (includes EG:4602), MYL9 (includes EG:98932), PDYN, PP2A, PPP2R2B, PRL, RGS2, SFRP2, SFRP4, SNTG2, STC1, SYNM, TRO	38	25
Cell-To-Cell Signaling and Interaction, Renal and Urological System Development and Function, Embryonic Development	Akt, Alp, ANXA2, BGLAP, Calpain, CASP12 (includes EG:12364), Caspase, CAV1, Caveolin, Collagen Alpha1, DNAJA1, DNAJB1, E2f, HIST4H4, Histone h4, HSP, Hsp70, Hsp90, HSPA1A, INHBA, LTBP2, NGFR, PLAUR, PRAP1, PRNP, Raf, Rb, RNF4, SDPR, SEC14L2, SERPINE1, SPARCL1, TAGLN, Tgf beta, TRIM25	33	21
Connective Tissue Disorders, Genetic Disorder, Ophthalmic Disease	ANGPTL4, CELF6, CHP2, CIITA, CLDN4, CYP2D10, ERBB2, EXP1, FLRT3, FOXC2, FSTL3, GCNT2, HNF1A, HNMT, HSD17B6, IGFBP6, INS1, ITPR2, KIAA1199, KIF12, LAMC2, LTBP2, MIR24-1 (includes EG:407012), PAX4, PDHB, PDLIM4, PMM1, PRKCDBP, PRODH, RALB, SCG5, SDPR, SPARCL1, TGFB1, TGFB1	31	20

Supplemental table 3B. Top 5 Networks affected by Tamoxifen

Associated Network Function	Molecules in Network	Score	# of molecules
Behavior, Nervous System Development and Function, Cellular Movement	Alp, APOC2, ARNTL, C8, CCL2, CCL7, CXADR, CXCL2, CYP4A11, DBP, GCH1, GDF15, HSPA1A, IFIT1B, Ifn, IFN Beta, IgG, Igm, IL12 (complex), IL1A, Immunoglobulin, Interferon alpha, IP6K2, LDL, MIR1, MX1, NFIL3, NFkB (complex), NR1D2, PER1, PER3, SAA, SLC25A4, SRXN1, TEF	45	22
Nutritional Disease, Organismal Injury and Abnormalities, Neurological Disease	ACACB, ADORA2B, ANXA2, APLNR, ARL2BP, ATXN1, BDKRB1, CCR4, CDC42EP5, CHADL (includes EG:150356), CYBRD1, F2RL3, FNBP1, GPRC5A, GTP, HMGB1L1, HNRPDL, iron, ITPR2, KIAA1199, LSS, MMP10, MSR1, PIGA, RBM7, RBMX, SEMA3G, SLC1A4, SLC43A2, SYBU, TARDBP, TCF3, TGFB1, TNF, ZFP36	32	17
Cellular Growth and Proliferation, Hematological System Development and Function, Nervous System Development and Function	Ap1, CCDC92 (includes EG:80212), CFLAR, CHGB, Collagen Alpha1, Collagen type IV, Collagen(s), Creb, ERK1/2, Fibrinogen, FOSL1, FSH, hCG, IGF1, INHBA, ITPR2, Laminin, Lh, MAP2K1/2, MMP10, NTF4, P38 MAPK, p70 S6k, Pdgf, PDGF BB, PLAUR, PP2A, PPP2R2B, PRKG2, SERPINE1, SMG7, Tgf beta, THRSP, TRO, Vegf	29	16
Cell Death, Dermatological Diseases and Conditions, Connective Tissue Disorders	ABL1, beta-carotene, beta-hydroxyisovaleric acid, C10ORF58, C12ORF5, CHD3, CHI3L3, DBP, FAM173A, HCN2, HMGB1L1, IK, IL6, IL1/IL6/TNF, IL1F8, IVNS1ABP, KIFC2, LUC7L2, MAN2A2, MIR103-1 (includes EG:406895), NEAT1 (includes EG:66961), NFKB1, NFKBIZ, OSBPL1A, PARD6B, PDE1C, PTEN, SOX21, TAC1, TERT, TNRC6B, TP53, TSPAN6, UBE2B, ZCCHC10	26	15
Cellular Compromise, Cell Morphology, Cellular Growth and Proliferation	A2M, ABHD2, ARNTL, ASB13, BAG1, CACNA1B, CARM1, CD7, CEBPA, CEBPG, CHORDC1, CTSL2, DNAJB4, DNAJC3, DNM1, FAM13A, FGR, GBP1 (includes EG:2633), GNAO1, GNB5, HIF1AN, HSP90AA1, LITAF, MEG3 (includes EG:17263), MFGE8, MIR124-1 (includes EG:406907), NOD1, PABPN1, PER3, PRL, RBM4B, RGS11, SECTM1, SFRP2, SMARCA4	21	12

Supplemental table 3C. Top 3 Networks affected by both E2 and Tamoxifen

Associated Network Function	Molecules in Network	Score	# of molecules
Tumor Morphology, Cell Morphology, Hair and Skin Development and Function	CCDC92 (includes EG:80212), CHGB, Collagen type IV, CXCL2, DNAJA1, DNAJB1, FOSL1, FSH, GCH1, GDF15, hCG, HSP, Hsp70, HSPA1A, IL1, IL1A, Immunoglobulin, INHBA, IP6K2, ITPR2, LDL, MIR1, Mmp, MMP10, NFkB (complex), P38 MAPK, Pdgf, PDGF BB, PLAUR, SERPINE1, SLC25A4, SRXN1, Tgf beta, TRO, Vegf	45	19
Tissue Development, Cell Death, Drug Metabolism	ABCC5, ANXA2, APOC2, ASB13, BAG4, BAMBI, beta-estradiol, CASP3, CHORDC1, CIDEA, DNAJB4, DNM1, DPM2, FNBP1, GCHFR, HMCN1 (includes EG:83872), HNF4A, HSP90AA1, IL15, KIAA1199, lipoprotein lipase, PABPN1, PCP4L1, PIGA, RBM5, RBM4B, SFRP2, SLC1A4, ST13, TEF, TGFB1, TNF, TSPAN6, TTC9, ZFP36	36	16
Cell Signaling, Molecular Transport, Nucleic Acid Metabolism	13(S)-hydroxyoctadecadienoic acid, ADRB, AFP, Akt, APLNR, C10ORF58, CHGA, CIDEA, DIO2, DSPP, DUSP6, ELK4, ERK, ERK1/2, F2RL3, FZD6, gamma-linolenic acid, GDF15, Histone h3, IL1F8, Insulin, Jnk, lauric acid, Lh, Mac1, MAP3K8, Ncx, NTF4, Pkc(s), PPP2R2B, PPP2R2C, PRKAG1, TERT, THRSP, triiodothyronine, reverse	18	9