

SUPPLEMENTARY MATERIAL

Application of Computational Systems Biology to Explore Environmental Toxicity

Hazards

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Supplementary Material, Table 1: List of human chemical-protein associations extracted from ChemProt.

Chemical name	Gene name
DDE	<i>ABCB1</i>
DDE	<i>ACVR1C</i>
DDE	<i>ACVRL1</i>
DDE	<i>AHR</i>
DDE	<i>ALK</i>
DDE	<i>AR</i>
DDE	<i>CYP19A1</i>
DDE	<i>CYP1B1</i>
DDE	<i>ERBB3</i>
DDE	<i>ESR1</i>
DDE	<i>ESR2</i>
DDE	<i>FSHB</i>
DDE	<i>IL4</i>
DDE	<i>KIT</i>
DDE	<i>PDGFRA</i>
DDE	<i>PDGFRB</i>
DDE	<i>PGR</i>
DDE	<i>SRD5A2</i>
DDT	<i>ABCB1</i>
DDT	<i>AHR</i>
DDT	<i>AR</i>
DDT	<i>CASP3</i>
DDT	<i>CASP7</i>
DDT	<i>CFTR</i>
DDT	<i>CYP11A1</i>
DDT	<i>CYP1A1</i>
DDT	<i>CYP1B1</i>
DDT	<i>CYP2B6</i>
DDT	<i>CYP3A4</i>
DDT	<i>ESR1</i>
DDT	<i>ESR2</i>
DDT	<i>FOS</i>
DDT	<i>GJA1</i>
DDT	<i>GNRH1</i>
DDT	<i>GPER</i>
DDT	<i>HSD17B1</i>
DDT	<i>HSD3B1</i>
DDT	<i>HSPA5</i>
DDT	<i>IL2</i>

Supplementary Material, Table 1 (continued)

Chemical name	Gene name
DDT	<i>IL4</i>
DDT	<i>JUN</i>
DDT	<i>MAPK1</i>
DDT	<i>MAPK14</i>
DDT	<i>MAPK3</i>
DDT	<i>MAPK8</i>
DDT	<i>MAPK9</i>
DDT	<i>MT2A</i>
DDT	<i>NFKB1</i>
DDT	<i>NR112</i>
DDT	<i>PGR</i>
DDT	<i>POMC</i>
DDT	<i>RXRB</i>
DDT	<i>TNF</i>
DDT	<i>TSHR</i>
o,p'-DDT	<i>ADAMTS9</i>
o,p'-DDT	<i>ANAPC1</i>
o,p'-DDT	<i>AR</i>
o,p'-DDT	<i>ASRGL1</i>
o,p'-DDT	<i>BCL2</i>
o,p'-DDT	<i>BNIP1</i>
o,p'-DDT	<i>C14ORF138</i>
o,p'-DDT	<i>C6ORF48</i>
o,p'-DDT	<i>CABLES1</i>
o,p'-DDT	<i>CAPN9</i>
o,p'-DDT	<i>CARS</i>
o,p'-DDT	<i>CHAC2</i>
o,p'-DDT	<i>CIRBP</i>
o,p'-DDT	<i>CYP2B6</i>
o,p'-DDT	<i>CYP3A11</i>
o,p'-DDT	<i>CYP3A4</i>
o,p'-DDT	<i>DHRS3</i>
o,p'-DDT	<i>EDG3</i>
o,p'-DDT	<i>EIF2B4</i>
o,p'-DDT	<i>ERBB2</i>
o,p'-DDT	<i>ERCC3</i>
o,p'-DDT	<i>ESR1</i>
o,p'-DDT	<i>ESR2</i>
o,p'-DDT	<i>ETNK2</i>
o,p'-DDT	<i>FAM107A</i>
o,p'-DDT	<i>FOLR1</i>

Supplementary Material, Table 1 (continued)

Chemical name	Gene name
o,p'-DDT	<i>FOXD1</i>
o,p'-DDT	<i>G0S2</i>
o,p'-DDT	<i>GALNT4</i>
o,p'-DDT	<i>GALR2</i>
o,p'-DDT	<i>GDPD5</i>
o,p'-DDT	<i>GPR142</i>
o,p'-DDT	<i>HAPLN3</i>
o,p'-DDT	<i>HES2</i>
o,p'-DDT	<i>HIST1H2BD</i>
o,p'-DDT	<i>HIVEP1</i>
o,p'-DDT	<i>HMGN2</i>
o,p'-DDT	<i>IMPDH2</i>
o,p'-DDT	<i>KCTD20</i>
o,p'-DDT	<i>KRT17</i>
o,p'-DDT	<i>LPPR2</i>
o,p'-DDT	<i>MAGEA3</i>
o,p'-DDT	<i>MANSC1</i>
o,p'-DDT	<i>MAPK1</i>
o,p'-DDT	<i>MAPK13</i>
o,p'-DDT	<i>MAPK3</i>
o,p'-DDT	<i>MEOX1</i>
o,p'-DDT	<i>MET</i>
o,p'-DDT	<i>MFGE8</i>
o,p'-DDT	<i>MFN2</i>
o,p'-DDT	<i>MLPH</i>
o,p'-DDT	<i>MRPS7</i>
o,p'-DDT	<i>NEIL2</i>
o,p'-DDT	<i>NR1I2</i>
o,p'-DDT	<i>OLFM1</i>
o,p'-DDT	<i>OLFML3</i>
o,p'-DDT	<i>PDCD7</i>
o,p'-DDT	<i>PELI1</i>
o,p'-DDT	<i>PGR</i>
o,p'-DDT	<i>PI4KA</i>
o,p'-DDT	<i>PIM1</i>
o,p'-DDT	<i>PKM2</i>
o,p'-DDT	<i>PLA2G3</i>
o,p'-DDT	<i>PRKAR2A</i>
o,p'-DDT	<i>RBM13</i>
o,p'-DDT	<i>SCAND2</i>

Supplementary Material, Table 1 (continued)

Chemical name	Gene name
o,p'-DDT	<i>SF3B5</i>
o,p'-DDT	<i>SHBG</i>
o,p'-DDT	<i>SIAH2</i>
o,p'-DDT	<i>SLC1A5</i>
o,p'-DDT	<i>SLC31A1</i>
o,p'-DDT	<i>SLCO2A1</i>
o,p'-DDT	<i>SQLE</i>
o,p'-DDT	<i>TGFA</i>
o,p'-DDT	<i>TGFB2</i>
o,p'-DDT	<i>THBS1</i>
o,p'-DDT	<i>TMED4</i>
o,p'-DDT	<i>TMEM16A</i>
o,p'-DDT	<i>TSC22D1</i>
o,p'-DDT	<i>TSPAN12</i>
o,p'-DDT	<i>TXNIP</i>
o,p'-DDT	<i>ZKSCAN2</i>
o,p'-DDT	<i>ZMYM3</i>

Supplementary Material, Table 2. List of inflammatory, reproductive, neurodevelopmental and cancer diseases predicted to be linked to chemicals using CTD (*p*-value adjusted for multiple comparisons) and OMIM (unadjusted *p*-value). All associations with *p*-values superior to 0.5 are shown with the number of gene/protein., where the source corresponds to the database used for the prediction: min ids are OMIM ids and mesh ids are from CTD.

DISEASE	CHEMICAL	NUMBER OF GENES	SOURCE	P-VAL	LIST OF GENES
ANDROGEN INSENSITIVITY SYNDROME	DDE	1	mim:300068	0.00628	<i>AR</i>
ANDROGEN INSENSITIVITY SYNDROME	opDDT	1	mim:300068	0.0109	<i>AR</i>
ANDROGEN INSENSITIVITY SYNDROME	DDT	1	mim:312300	0.0121	<i>AR</i>
ASTHMA	DDT	48	mesh :d001249	0.0028122	<i>CFTR;PNRC1;DUSP10;MAPK14;CYP3A4;CYP11A1;TSC22D3;DUSP1;DUSP5;DUSP6;NR0B1;AHR;ERF;ESR1;ETV5;FOS;FOSL2;GJA1;GNRHR;HAL;HSD17B1;IL1B;IL2;AR;JUN;MT2A;NFATC4;NFKB1;NRD1;NTRK3;ABCBI;PLA2G2A;POMC;POU4F1;POU4F2;MAPK1;MAPK3;MAPK8;MAPK9;RAGE;RXRB;TNF;TSHB;CASP3;PLA2G10;CASP7;NR0B2;NR1I2</i>
ASTHMA	DDT	1	mim:600807	0.147	<i>TNF</i>
AUTISM	opDDT	1	mim:611015	0.0109	<i>MET</i>
BREAST CANCER	DDT	22	mesh :d001932	0.00095202	<i>MAPK14;CYP3A4;CYP11A1;FOS;GNRH1;GNRHR;HSPA5;AR;JUN;MT2A;NFKB1;NUCB2;ABCBI;MAPK1;MAPK3;MAPK8;MAPK9;RXRB;TNF;CASP3;CASP7;NR1I2</i>
BREAST CANCER	DDE	24	mesh :d001943	0.0214	<i>PNRC1;CYP27A1;NR0B1;AHR;SPRED2;ERBB3;ESR1;ESR2;ETV5;FGF12;FSHB;AR;KIT;PDGFRA;PDGFRB;PGR;ABCBI;POU4F1;POU4F2;WIP1;RNF4;PRDM2;NCOA4;NRG2</i>
BREAST CANCER	opDDT	1	mim:114480	0.189	<i>HMMR</i>
BREAST CANCER	DDT	1	mim:114480	0.208	<i>HMMR</i>
COGNITION DISORDERS	DDT	22	mesh :d003072	0.00160218	<i>MAPK14;CYP3A4;DUSP2;DUSP6;ESR1;ESR2;GJA1;GNRH1;HAL;IL1B;AR;PGR;ABCBI;MAPK1;MAPK3;PTPRR;RXRB;TNF;NCOA4;CASP7;LMNB2;TNFSF11</i>

Supplementary Material, Table 2 (continued)

DISEASE	CHEMICAL	NUMBER OF GENES	SOURCE	P-VAL	LIST OF GENES
COGNITION DISORDERS	opDDT	22	mesh :d003072	0.00160218	<i>CYP3A4;DUSP2;DUSP6;ERBB2;ESR1;ESR2;HAL;AR;GAL;PGR;PIMI;MAPK1;MAPK3;PTPRR;BCL2;SHBG;MARCKSL1;TGFB2;THBS1;NCOA4;FYTTD1;LMNB2</i>
COGNITION DISORDERS	DDE	11	mesh :d003072	0.0034056	<i>CYP27A1;ERBB3;ESR1;ESR2;AR;PDGFRA;PDGFRB;PGR;ABCB1;NCOA4;NRG2</i>
COLORECTAL CANCER	DDT	40	mesh :d015179	2.14E-07	<i>DUSP10;CASPI2;MAPK14;CYP3A4;CYP11A1;COMMD6;DUSP2;DUSP3;AHR;ESR1;ESR2;FOS;GJA1;GNRHR;HMMR;HSPA5;IL1B;IL2;AR;JUN;JUNB;NFKB1;NUCB2;PGR;ABCB1;PLA2G2A;MAPK1;MAPK3;MAPK8;MAPK9;RNF4;RXRB;TNF;UGT2B7;PRDM2;CASP3;CASP7;BARX2;TNFSF11;NR112</i>
COLORECTAL CANCER	opDDT	1	mim:114500	0.189	<i>PLA2G2A</i>
COLORECTAL CANCER	DDT	1	mim:114500	0.208	<i>PLA2G2A</i>
COLORECTAL CANCER	opDDT	28	mesh :d015179	0.27864	<i>TXNIP;AKAP10;CLDN4;CYP3A4;DUSP2;ERBB2;ESR1;ESR2;HMMR;AR;KRT17;BFAR;PGR;PLA2G2A;MAPK1;MAPK3;MAPK13;BCL2;RNF4;SQLE;TGFA;TGFB2;TNFAIP6;UGT2B7;PRDM2;BCL2L14;NR112;MFN2</i>
CRYPTORCHIDISM	DDT	28	mesh :d003456	4.31E-05	<i>CFTR;CMTM3;CYP11A1;DUSP1;DUSP6;NR0B1;AHR;ESR1;ESR2;FOS;GJA1;HSD17B1;AR;MT2A;NFKB1;PGR;ABCB1;WIP11;AVPR2;MAPK1;MAPK3;MAPK8;RNF4;NFKBIZ;TNF;TSHR;CASP3;NR112</i>
CRYPTORCHIDISM	DDE	12	mesh :d003456	0.0056244	<i>NR0B1;AHR;SPRED2;ERBB3;ESR1;ESR2;FSHB;AR;PGR;ABCB1;WIP11;RNF4</i>
CRYPTORCHIDISM	opDDT	24	mesh :d003456	0.0086172	<i>CMTM3;DUSP6;NR0B1;ERBB2;ESR1;ESR2;FMOD;AR;MUC4;GAL;PGR;WIP11;AVPR2;MAPK1;MAPK3;BCL2;RNF4;SHBG;TGFA;GALR2;TSC22D1;NR112;CABLES1;SCARB2</i>
DEPRESSIVE DISORDERS	DDT	22	mesh :d003865	0.00187566	<i>MAPK14;CYP3A4;DUSP2;DUSP6;ESR1;ESR2;GJA1;GNRH1;HAL;IL1B;AR;PGR;ABCB1;MAPK1;MAPK3;PTPRR;RXRB;TNF;NCOA4;CASP7;LMNB2;TNFSF11</i>
DEPRESSIVE DISORDERS	opDDT	22	mesh :d003865	0.00187566	<i>CYP3A4;DUSP2;DUSP6;ERBB2;ESR1;ESR2;HAL;AR;GAL;PGR;PIMI;MAPK1;MAPK3;PTPRR;BCL2;SHBG;MARCKSL1;TGFB2;THBS1;NCOA4;FYTTD1;LMNB2</i>

Supplementary Material, Table 2 (continued)

DISEASE	CHEMICAL	NUMBER OF GENES	SOURCE	P-VAL	LIST OF GENES
DEPRESSIVE DISORDERS	DDE	11	mesh :d003865	0.003741	<i>CYP27A1;ERBB3;ESR1;ESR2;AR;PDGFRA;PDGFRB;PGR;ABCB1;NCOA4;NRG2</i>
GASTRIC CANCER	opDDT	1	mim:137215	0.123	<i>ERBB2</i>
GASTRIC CANCER	DDT	1	mim:137215	0.137	<i>IL1B</i>
HODGKIN DISEASE	opDDT	26	mesh :d006689	0.0106812	<i>CLDN4;CYP3A4;DUSP6;ERBB2;ESR1;ESR2;HNF4G;MET;MT1G;PGR;PIM1;MAPK1;MAPK3;MAPK13;BCL2;NSD1;BLVRA;ANAPC1;TGFB2;THBS1;TNFAIP6;DAP3;LMNB2;NR1I2;EIF2B4;TP53I3</i>
HODGKIN DISEASE	DDE	11	mesh :d006689	0.150156	<i>AHR;ERBB3;ESR1;ESR2;FGF21;KIT;PDGFRB;PGR;ABCB1;NSD1;DAP3</i>
HYPOSPADIAS	DDE	1	mim:300633	0.0125	<i>AR</i>
HYPOSPADIAS	opDDT	1	mim:300633	0.0217	<i>AR</i>
HYPOSPADIAS	DDT	1	mim:300633	0.0242	<i>AR</i>
INFERTILITY	DDT	25	mesh :d007246	0.00036636	<i>CFTR;CMTM3;CYP11A1;DUSP1;DUSP6;AHR;ESR1;ESR2;FOS;GJA1;HSD17B1;AR;MT2A;NFKB1;PGR;ABCB1;WIP1I;MAPK1;MAPK3;MAPK8;RNF4;NFKBIZ;TNF;CASP3;NR1I2</i>
INFERTILITY	DDE	11	mesh :d007246	0.0146286	<i>AHR;SPRED2;ERBB3;ESR1;ESR2;FSHB;AR;PGR;ABCB1;WIP1I;RNF4;CMTM3;DUSP6;ERBB2;ESR1;ESR2;FMOD;AR;MUC4;GAL;PGR;WIP1I;MAPK1;MAPK3;BCL2;RNF4;SHBG;TGFA;TSC22D1;NR1I2;</i>
INFERTILITY, FEMALE	opDDT	21	mesh :d007246	0.062694	<i>CABLES1;SCARB2</i>
INFERTILITY, FEMALE	DDT	14	mesh :d007247	1.94E-10	<i>CYP3A4;ESR1;ESR2;GJA1;IL1B;AR;JUN;NFKB1;PGR;MAPK1;MAPK3;TNF;CASP3;NR1I2</i>
INFERTILITY, FEMALE	opDDT	10	mesh :d007247	2.61E-05	<i>CYP3A4;ESR1;ESR2;AR;PGR;MAPK1;MAPK3;BCL2;SHBG;NR1I2</i>
INFERTILITY, FEMALE	DDE	4	mesh :d007247	0.232716	<i>ESR1;ESR2;AR;PGR</i>

Supplementary Material, Table 2 (continued)

DISEASE	CHEMICAL	NUMBER OF GENES	SOURCE	P-VAL	LIST OF GENES
INFERTILITY, MALE	DDT	58	mesh :d007248	0.0097782	<i>CFTR;MAPK14;CYP3A4;CYP11A1;DUSP1;DUSP6;AHR;ELK3;ESR1;ESR2;NSUN6;FOS;FOSL2;PLA2G2D;GJA1;GNRH1;COMMD5;HAL;HSD17B1;HSPA5;IL1B;IL2;AR;JUN;JUNB;MT2A;NEO1;NFKB1;NTRK3;FKBP7;PGR;ABCB1;PLA2G1B;PLA2G2A;PLA2G5;POMC;POU4F1;MAPK1;MAPK3;MAPK8;MAPK9;STARD7;PTPRR;NFKBIZ;BLVRA;ZFP36L1;TNF;TSHB;TSHR;UGT2B7;CUEDC2;NCOA4;CASP3;PLA2G10;CASP7;NR0B2;CTSF;NR1I2</i>
LEARNING DISORDERS	DDT	25	mesh :d007859	2.16E-15	<i>CYP3A4;CYP11A1;ESR1;ESR2;FOS;GJA1;GNRH1;HSPA5;IL1B;AR;JUN;MT2A;NFKB1;NTRK3;PGR;ABCB1;POU4F1;MAPK1;MAPK3;MAPK8;RXRB;TNF;CASP3;CASP7;NR1I2</i>
LEARNING DISORDERS	DDE	7	mesh :d007859	0.0108876	<i>ESR1;ESR2;AR;PDGFRA;PGR;ABCB1;POU4F1</i>
LEARNING DISORDERS	opDDT	12	mesh :d007859	0.0133902	<i>CYP3A4;ESR1;ESR2;AR;MET;PGR;POU4F1;MAPK1;MAPK3;BCL2;SHBG;NR1I2</i>
LEUKEMIA, ACUTE MYELOID	DDT	52	mesh :d015470	4.02E-05	<i>CFTR;PNRC1;DUSP10;MAPK14;CYP3A4;CYP11A1;TSC22D3;DUSP1;DUSP6;NR0B1;AHR;PAOX;ERF;ESR1;ESR2;ETV5;FOS;GJA1;HAL;HSD17B1;HSPA5;IL1B;IL2;AR;JUN;MT2A;NFKB1;NRD1;NTRK3;NUCB2;ABCB1;PLA2G2A;POU4F1;POU4F2;MAPK1;MAPK3;MAPK8;MAPK9;RAGE;RXRB;NSD1;GRAMD3;ZFP36L1;TNF;TSHB;CASP3;PLA2G10;CASP7;NR0B2;KLF11;TNFSF11;NR1I2</i>
LEUKEMIA, ACUTE MYELOID	DDE	2	mim:601626	0.00593	<i>KIT;NSD1</i>
LEUKEMIA, ACUTE MYELOID	opDDT	44	mesh :d015470	0.086172	<i>TXNIP;PNRC1;CLDN4;CPT1A;CYP3A4;DUSP6;NR0B1;PAOX;ERBB2;ERF;ESR1;ESR2;ETV5;AKR1B1;HAL;IMPDH2;AR;KRT17;MEOX1;MET;MT1G;MUC4;PAX1;PIMI;PKM2;PLA2G2A;POU4F1;POU4F2;MAPK1;MAPK3;RAB27B;BCL2;NSD1;GRAMD3;BTC;TGFA;TGFB2;THBS1;PLA2G10;KLF11;SCEL;NR1I2;TP53I3;MFN2</i>
LEUKEMIA, ACUTE MYELOID	opDDT	1	mim:601626	0.189	<i>NSD1</i>
LEUKEMIA, ACUTE MYELOID	DDT	1	mim:601626	0.208	<i>NSD1</i>

Supplementary Material, Table 2 (continued)

DISEASE	CHEMICAL	NUMBER OF GENES	SOURCE	P-VAL	LIST OF GENES
LIVER CANCER	opDDT	71	mesh :d008113	0.046698	<i>APBB3; CORO2B; TXNIP; MAGED2; CMTM3; CLDN4; CPT1A; CYP3A4; DUSP6; PAOX; KRTCAP2; ERBB2; ERCC3; ESR1; ESR2; NSUN6; AKR1B1; FMOD; PLA2G2D; HAL; HNF4G; HPD; AR; KRT17; MET; ASAH1; MT1G; MUC4; GAL; PCTK2; PGR; PIMI; PLA2G2A; WIPI1; ANO1; MAPK1; MAPK3; MAPK13; STARD7; OLFML3; RAB27B; BCL2; RNF4; NSD1; BLVRA; SHBG; ANAPC1; MARCKSL1; GRAMD3; SQLE; TGFA; TGFB2; THBS1; TNFAIP6; UGT2B7; UCK2; VRK2; DAP3; NCOA4; SH3BGRL3; PLA2G10; KLF11; SPSB2; LMNB2; TSC22D1; NR1I2; EIF2B4; CABLES1; SCARB2; TP53I3; MFN2 CFTR; CASP12; CMTM3; MAPK14; PDIK1L; CYP3A4; CYP11A1; TSC22D3; DUSP1; DUSP6; AHR; PAOX; ELK3; ELK4; ESR1; ESR2; NSUN6; FOS; FOSL2; PLA2G2D; GJAI; GNRH1; HAL; HNF4G; HPD; HSD17B1; HSPA5; HTR3A; IL1B; IL2; AR; JUN; JUNB; MT2A; NFATC4; NFKB1; NUCB2; PGR; ABCB1; PLA2G2A; POMC; WIPI1; MAPK1; MAPK3; MAPK8; MAPK9; STARD7; RNF4; NSD1; NFKBIZ; BLVRA; GRAMD3; ZFP36L1; TNF; TSHB; TSHR; UGT2B7; DAP3; NCOA4; CASP3; PLA2G10; CASP7; NR0B2; KLF11; LMNB2; PARG; TNFSF11; CTSE; NR1I2</i>
LIVER CANCER	DDT	69	mesh :d008113	0.204336	<i>CFTR; DUSP10; MAPK14; CYP3A4; CYP11A1; TSC22D3; DUSP1; DUSP6; AHR; PAOX; ELK3; ELK4; ESR1; ESR2; FOS; FOSL2; GJAI; HNF4G; HSPA5; HTR3A; IL1B; IL2; JUN; JUNB; MT2A; NFATC4; NFKB1; NUCB2; PGR; ABCB1; MAPK1; MAPK3; MAPK8; MAPK9; RXRB; NSD1; BLVRA; GRAMD3; ZFP36L1; TNF; TSHB; DAP3; BIRC7; CASP3; CASP7; KLF11; LMNB2; TNFSF11; NR1I2 CFTR; DUSP10; MAPK14; CYP3A4; DUSP1; AHR; ESR1; FOS; IL1B; JUN; NFKB1; NTRK3; ABCB1; POU4F1; MAPK1; MAPK3; MAPK8; ZFP36L1; TNF; BIRC7; CASP3; CASP7; NR1I2</i>
LUNG CANCER	DDT	49	mesh :d008175	3.10E-06	<i>NTRK3; ABCB1; POU4F1; MAPK1; MAPK3; MAPK8; ZFP36L1; TNF; BIRC7; CASP3; CASP7; NR1I2</i>
MEMORY DISORDERS	DDT	23	mesh :d008569	1.17E-14	<i>AHR; ERBB3; ESR1; PDGFRA; ABCB1; POU4F1</i>
MEMORY DISORDERS	DDE	6	mesh :d008569	0.05676	<i>ALK</i>
NEUROBLASTOMA	DDE	1	mim:256700	0.0249	<i>CFTR; PNRC1; DUSP10; MAPK14; CYP3A4; CYP11A1; CYP11B2; TSC22D3; DUSP1; DUSP6; NR0B1; AHR; PAOX; ERF; ESR1; ESR2; ETV5; FOS; FOSL2; GJAI; GNRHR; HAL; HSD17B1; HSPA5; IL1B; IL2; AR; JUN; JUNB; MT2A; NFKB1; NRD1; NTRK3; NUCB2; ABCB1; PLA2G2A; POU4F1; POU4F2; MAPK1; MAPK3; MAPK8; MAPK9; RAGE; RNF4; RXRB; GRAMD3; ZFP36L1; TNF; TSHB; CASP3; PLA2G10; CASP7; NR0B2; KLF11; NR1I2</i>
PROSTATE CANCER	DDT	55	mesh :d010190	0.000106554	<i>CFTR; PNRC1; DUSP10; MAPK14; CYP3A4; CYP11A1; CYP11B2; TSC22D3; DUSP1; DUSP6; NR0B1; AHR; PAOX; ERF; ESR1; ESR2; ETV5; FOS; FOSL2; GJAI; GNRHR; HAL; HSD17B1; HSPA5; IL1B; IL2; AR; JUN; JUNB; MT2A; NFKB1; NRD1; NTRK3; NUCB2; ABCB1; PLA2G2A; POU4F1; POU4F2; MAPK1; MAPK3; MAPK8; MAPK9; RAGE; RNF4; RXRB; GRAMD3; ZFP36L1; TNF; TSHB; CASP3; PLA2G10; CASP7; NR0B2; KLF11; NR1I2</i>

Supplementary Material, Table 2 (continued)

DISEASE	CHEMICAL	NUMBER OF GENES	SOURCE	P-VAL	LIST OF GENES
PROSTATE CANCER	opDDT	70	mesh :d011471	0.034314	<i>TXNIP;PNRC1;CMTM3;CLDN4;CPT1A;CYP3A4;DUSP2;DUSP5;DUSP6;DUSP9;ERBB2;ERCC3;ERF;ESR1;ESR2;NSUN6;AKR1B1;FMOD;HAL;HNF4G;HPD;AR;KRT17;MET;MT1F;MT1G;MUC4;GAL;PGR;PIMI;PLA2G1B;WIP11;NUDT11;MAPK1;MAPK3;MAPK13;OLFML3;PTPRR;BCL2;RNF4;NSD1;BLVRA;SHBG;ANAPC1;SLC1A5;MARCKSL1;BNIP1;SQLE;TGFA;TGFB2;THBS1;TNFAIP6;UGT2B7;PRDM2;DAP3;MLPH;BCL2L14;NCOA4;PLA2G10;FYTTD1;KLF11;LMNB2;SCEL;TSC22D1;NR112;EIF2B4;CABLES1;SCARB2;TP53I3;MFN2</i>
PROSTATE CANCER	DDE	1	mim:176807	0.124	<i>AR</i>
PROSTATE CANCER	opDDT	1	mim:176807	0.206	<i>AR</i>
PROSTATE CANCER	DDT	1	mesh :d012559	0.227	<i>AR</i>
SCHIZOPHRENIA	DDT	16	mesh :d012559	0.0034056	<i>CYP11A1;FOS;APOL2;GJAI;GNRH1;IL2;AR;JUN;MT2A;NFKB1;MAPK1;MAPK3;MAPK8;TNF;CASP3;CASP7</i>
SCHIZOPHRENIA	DDE	1	mim:181500	0.152	<i>APOL2</i>
SCHIZOPHRENIA	opDDT	1	mim:181500	0.249	<i>APOL2</i>
SCHIZOPHRENIA	DDT	1	mim:181500	0.273	<i>APOL2</i>
SEX REVERSAL	DDE	1	mim:300018	0.00628	<i>NR0B1</i>
SEX REVERSAL	opDDT	1	mim:300018	0.0109	<i>NR0B1</i>
SEX REVERSAL	DDT	1	mim:300018	0.0121	<i>NR0B1</i>
SOTOS SYNDROME	DDE	1	mim:117550	0.00628	<i>NSD1</i>
SOTOS SYNDROME	opDDT	1	mim:117550	0.0109	<i>NSD1</i>
SOTOS SYNDROME	DDT	1	mim:117550	0.0121	<i>NSD1</i>
TESTICULAR CANCER	DDT	10	mesh :d013736	0.0037668	<i>CYP3A4;GJAI;JUN;MT2A;ABCB1;MAPK1;MAPK3;ZFP36L1;CASP3;NR112</i>

Supplementary Material, Table 2 (continued)

DISEASE	CHEMICAL	NUMBER OF GENES	SOURCE	P-VAL	LIST OF GENES
TESTICULAR CANCER	DDE	1	mim:273300	0.0125	<i>KIT</i>
THYROID CANCER	DDT	45	mesh :d013964	0.00046698	<i>CFTR;PNRC1;DUSP10;MAPK14;CYP3A4;CYP11A1;TSC22D3;DUSP1;DUSP3;DUSP6;NR0B1;AHR;ERF;ESR1;ETV5;FOS;GJA1;HAL;HSD17B1;IL1B;IL2;AR;JUN;NFKB1;NRD1;NTRK3;PGR;ABCB1;PLA2G2A;POU4F1;POU4F2;MAPK1;MAPK3;MAPK8;MAPK9;RAGE;RXRB;TNF;TSHB;TSHR;CASP3;PLA2G10;CASP7;NR0B2;NR1I2</i>
THYROID CANCER	DDE	1	mim:188550	0.0432	<i>NCOA4</i>
THYROID CANCER	opDDT	1	mim:188550	0.0739	<i>NCOA4</i>
THYROID CANCER	DDT	1	mim:188550	0.0821	<i>NCOA4</i>
TYPE II DIABETES WEAVER SYNDROME	DDT	40	mesh_d003924	1.22E-05	<i>CFTR;PNRC1;MAPK14;CYP3A4;CYP11A1;TSC22D3;DUSP1;AHR;ESR1;ESR2;FOS;FOSL2;GJA1;HAL;HSD17B1;HSPA5;IL1B;IL2;AR;JUN;JUNB;MT2A;NFKB1;PGR;ABCB1;PLA2G1B;POMC;MAPK1;MAPK3;MAPK8;SCN8A;NFKBIZ;ZFP36L1;TNF;TSHB;UGT2B7;CASP3;NR0B2;TNFSF11;NR1I2</i>
WEAVER SYNDROME	DDE	1	mim:277590	0.00628	<i>NSDI</i>
WEAVER SYNDROME	opDDT	1	mim:277590	0.0109	<i>NSDI</i>
WEAVER SYNDROME	DDT	1	mim:277590	0.0121	<i>NSDI</i>