

Functions Annotation	p-value	Molecules
Carcinoma	2.00E-07	AGR2, AR, CCND1, CDC20, CDCA8, COL1A2, ESR1, FOXA1, GATA3, GFRA1, IRS1, KIF20A, KIFC1, KRT16, KRT7, MELK, MYB, MYBL2, PGR, PLAT, S100A1, SERPINA3, SERPINA5, SERPINA6, TFF1, TFF3, ZEB1
Cell cycle progression	2.00E-07	AR, CCND1, CDC20, CDCA8, CENPE, ESR1, FOXA1, GATA3, HJURP, IRS1, KIFC1, MELK, MYB, MYBL2, NDC80, PGR, SERPINA5, ZEB1
Chromosomal congression of chromosomes	1.58E-06	CENPE, KIF18A, KIFC1, NDC80
Cancer	1.58E-06	AGR2, AR, CCND1, CDC20, CDCA8, COL1A2, ESR1, FOXA1, GATA3, GFRA1, IRS1, KIF20A, KIFC1, KRT15, KRT16, KRT17, KRT7, MELK, MYB, MYBL2, NDC80, PGR, PLAT, S100A1, SERPINA3, SERPINA5, SERPINA6, TFF1, TFF3, ZEB1
Carcinoma in breast	1.58E-06	AGR2, AR, CCND1, COL1A2, ESR1, GATA3, GFRA1, MYBL2, PGR, SERPINA5, TFF1
Breast cancer	1.58E-06	AGR2, AR, CCND1, CDC20, COL1A2, ESR1, FOXA1, GATA3, GFRA1, KRT15, KRT17, MYB, MYBL2, PGR, SERPINA5, TFF1
Digestive organ tumor	1.89E-05	AR, CCND1, CDC20, CDCA8, COL1A2, ESR1, FOXA1, IRS1, KIF20A, KIFC1, KRT7, MELK, MYB, PGR, PLAT, SERPINA3, SERPINA6, TFF1, TFF3
Proliferation of cells	3.49E-05	AGR2, AR, CCND1, CDC20, CDCA8, COL1A2, ESR1, FOXA1, GATA3, GFRA1, IRS1, KIF20A, KRT16, KRT17, MELK, MYB, MYBL2, PGR, PLAT, S100A1, S100A7, SERPINA5, SERPINH1, TFF1, TFF3, ZEB1
Proliferation of tumor cells	6.25E-05	AR, CCND1, ESR1, GFRA1, IRS1, MYB, MYBL2, PLAT, S100A7, TFF3
Plaque psoriasis	6.25E-05	CCND1, GATA3, KRT15, KRT16, KRT17, S100A7
Cell movement	7.72E-05	AGR2, AR, CCND1, ESR1, FOXA1, GATA3, GFRA1, IRS1, KRT16, LYPD3, MYB, PLAT, S100A1, S100A7, SERPINA3, SERPINA5, TFF1, TFF3, ZEB1
Proliferation of breast cancer cell lines	1.00E-04	AR, CCND1, ESR1, IRS1, MYB, PGR, S100A1, S100A7, ZEB1
Amenorrhea	2.46E-04	AR, PGR, SERPINA6
Cell cycle progression of tumor cell lines	2.65E-04	AR, CCND1, ESR1, FOXA1, MELK, PGR, ZEB1
Proliferation of cancer cells	2.98E-04	ESR1, GFRA1, IRS1, MYB, MYBL2, PLAT, S100A7, TFF3
Hyperplasia	3.32E-04	AR, CCND1, ESR1, GATA3, IRS1, KRT16, KRT17, MYB, PGR, S100A7
Mitosis	3.98E-04	AR, CCND1, CDC20, CDCA8, CENPE, IRS1, KIFC1, MYBL2, NDC80
Skin development	4.33E-04	CCND1, COL1A2, GFRA1, KRT15, KRT16, KRT17, S100A7
Development of epidermis	4.92E-04	CCND1, GFRA1, KRT15, KRT16, KRT17, S100A7
Cell cycle progression of breast cancer cell lines	5.04E-04	CCND1, ESR1, MELK, PGR
Cell viability of endometrial cells	5.06E-04	ESR1, PGR
Cloning of fibroblast cell lines	5.06E-04	CCND1, MYBL2
Infanticide	5.06E-04	ESR1, PGR
Mammary gland development	5.09E-04	AR, CCND1, ESR1, GATA3, IRS1, PGR
Carcinoma in situ	5.09E-04	AR, ESR1, GATA3, KRT16, KRT7, TFF3

Table S4. Top 25 terms of Ingenuity Functional Enrichment Analysis for E40 gene set including associated genes and p-values (corrected for multiple testing using BenjaminiHochberg correction).