

Expanded View Figures

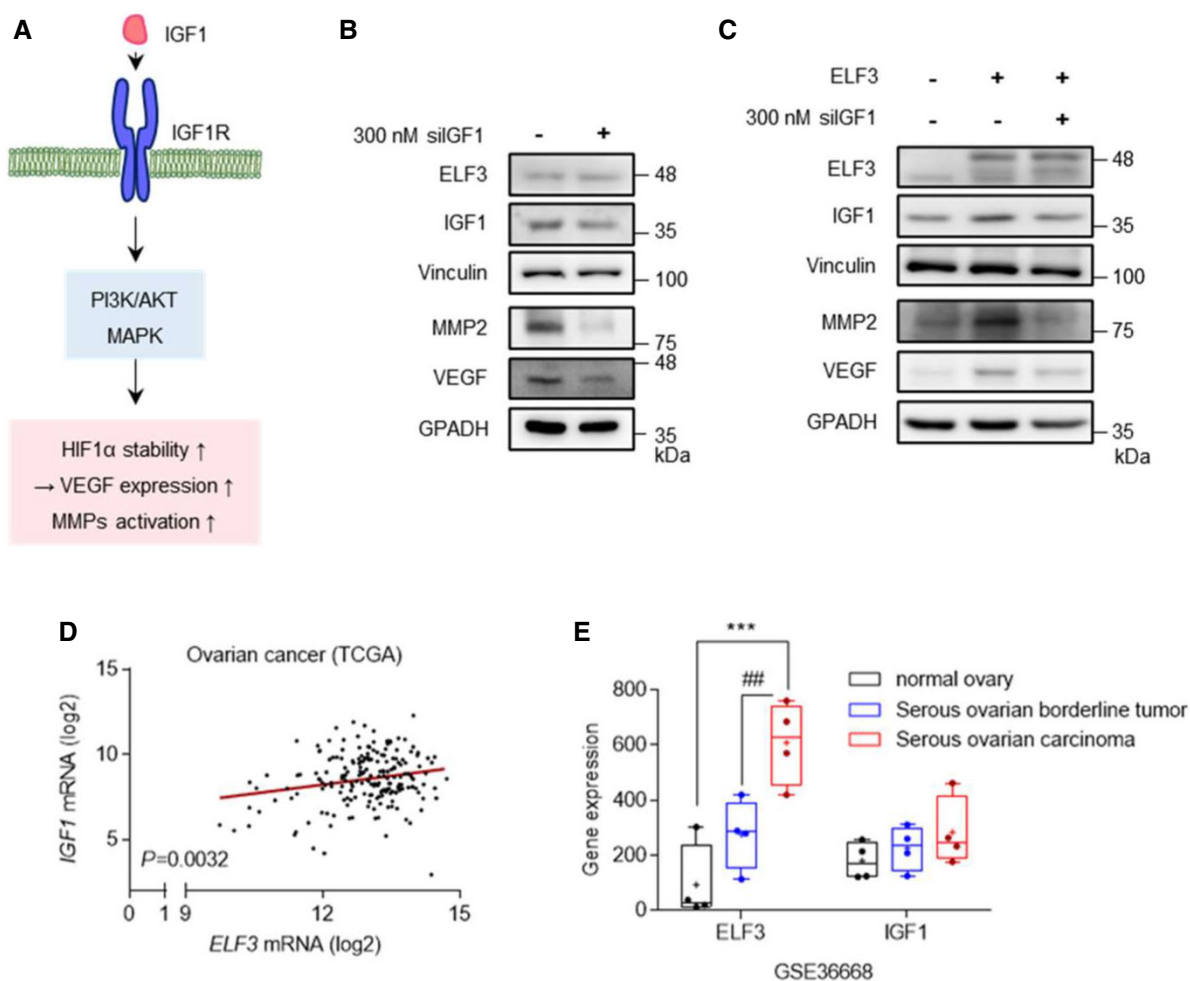


Figure EV1. ELF3 was positively correlated with IGF1 in EOC patients.

- A The schematic summarizes the signal pathways of IGF1/IGF1R associated with PI3K/AKT and MAPK.
 B SKOV3 cells were transfected with 300 nM siIGF1 for 24 h. Protein levels of proangiogenic factors were confirmed by western blot.
 C SKOV3 cells were transfected with an empty vector (ctrl), only ELF3, or ELF3 + siIGF1 for 24 h.
 D The clinical relevance of ELF3 and IGF1 was examined in EOC patients (TCGA, PanCanAtlas, $n = 200$).
 E The expression degrees of ELF3 and IGF1 were analyzed in normal ovaries, borderline ovarian tumors, and ovarian carcinomas, respectively (GSE36668, $n = 4$).

Data information: (D) $r = 0.2076$, $P = 0.0032$ (Pearson's correlation coefficient). (E) The whiskers of the boxplot represent the min and max values, and the dots are data points. The "center line" and "+" in the boxplot represent the median and the mean, respectively. *** $P < 0.001$ vs. normal ovary; ## $P < 0.01$ vs. serous ovarian borderline tumor (two-way ANOVA, Tukey's).

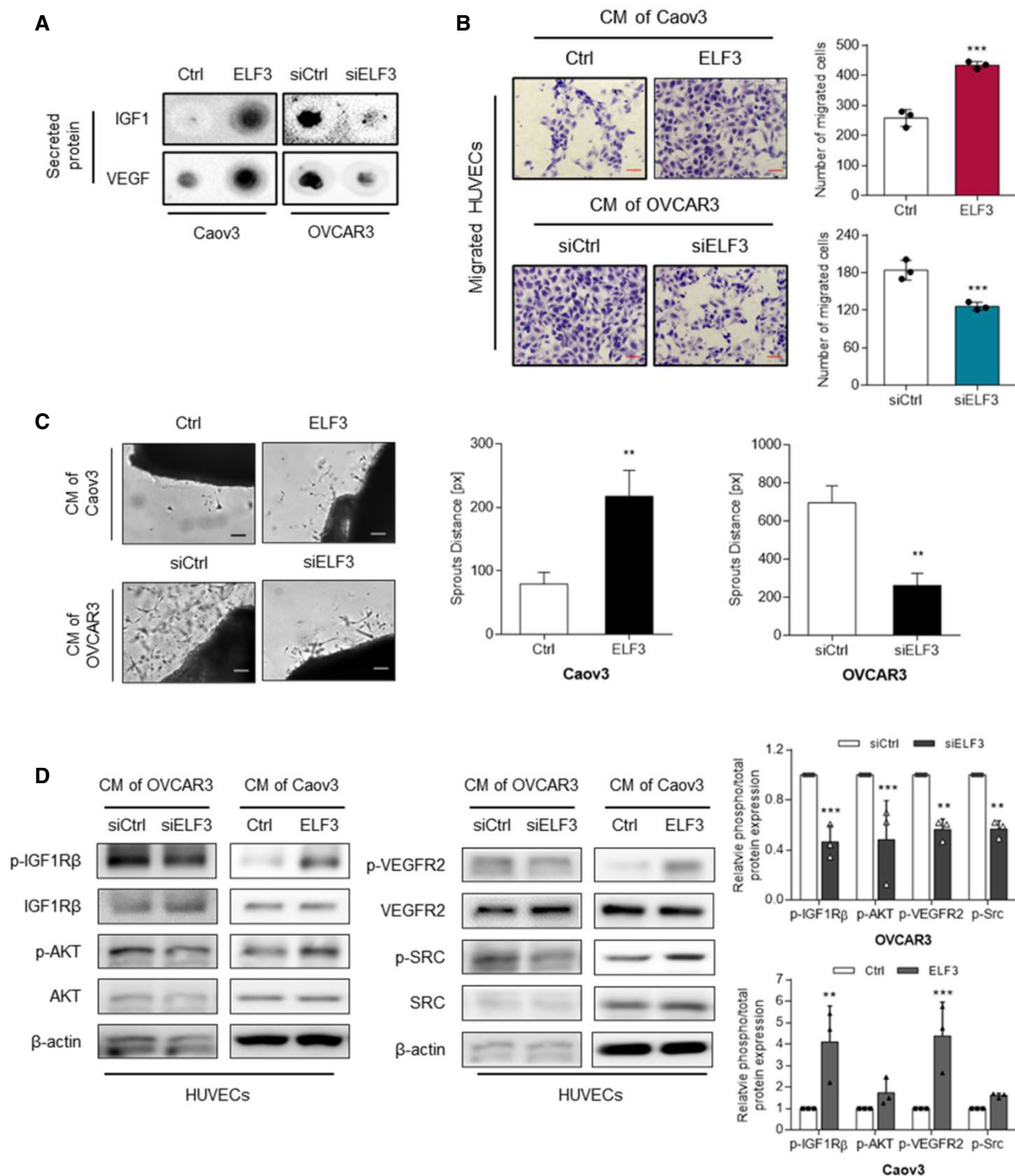


Figure Ev2.

Figure EV2. ELF3 was a key molecule in inducing tumor angiogenesis by promoting IGF1 secretion in EOC cells.

A The levels of secreted IGF1 and VEGF were analyzed using CMs from ELF3-overexpressed or ELF3-silenced EOC cells by dot blotting.
B The mobility of HUVECs was observed using a transwell migration assay. The migrated HUVECs were stained with 2% crystal violet (scale bar, 500 μ m). Images were quantified using ImageJ ($n = 3$ independent repetitions).
C Microvascular sprouting ability was observed through an *ex vivo* aortic ring assay (scale bar, 100 μ m). Sprouting distances were quantified using ImageJ ($n = 3$ independent repetitions).
D Changes in proteins of HUVECs incubated with CM of ELF3-overexpressed or -silenced EOC cells were detected by Western blotting. This blotting was performed and quantified in 3 independent experiments.

Data information: Data are expressed as mean $\pm$ SD. (B) *** $P < 0.001$ vs. Ctrl or shCtrl. (Student's *t*-test, two-tailed), (C) ** $P < 0.01$ vs. Ctrl or shCtrl. (Student's *t*-test, two-tailed) (D) ** $P < 0.01$, *** $P < 0.001$ vs. Ctrl or siCtrl. (two-way ANOVA, Sidak's).

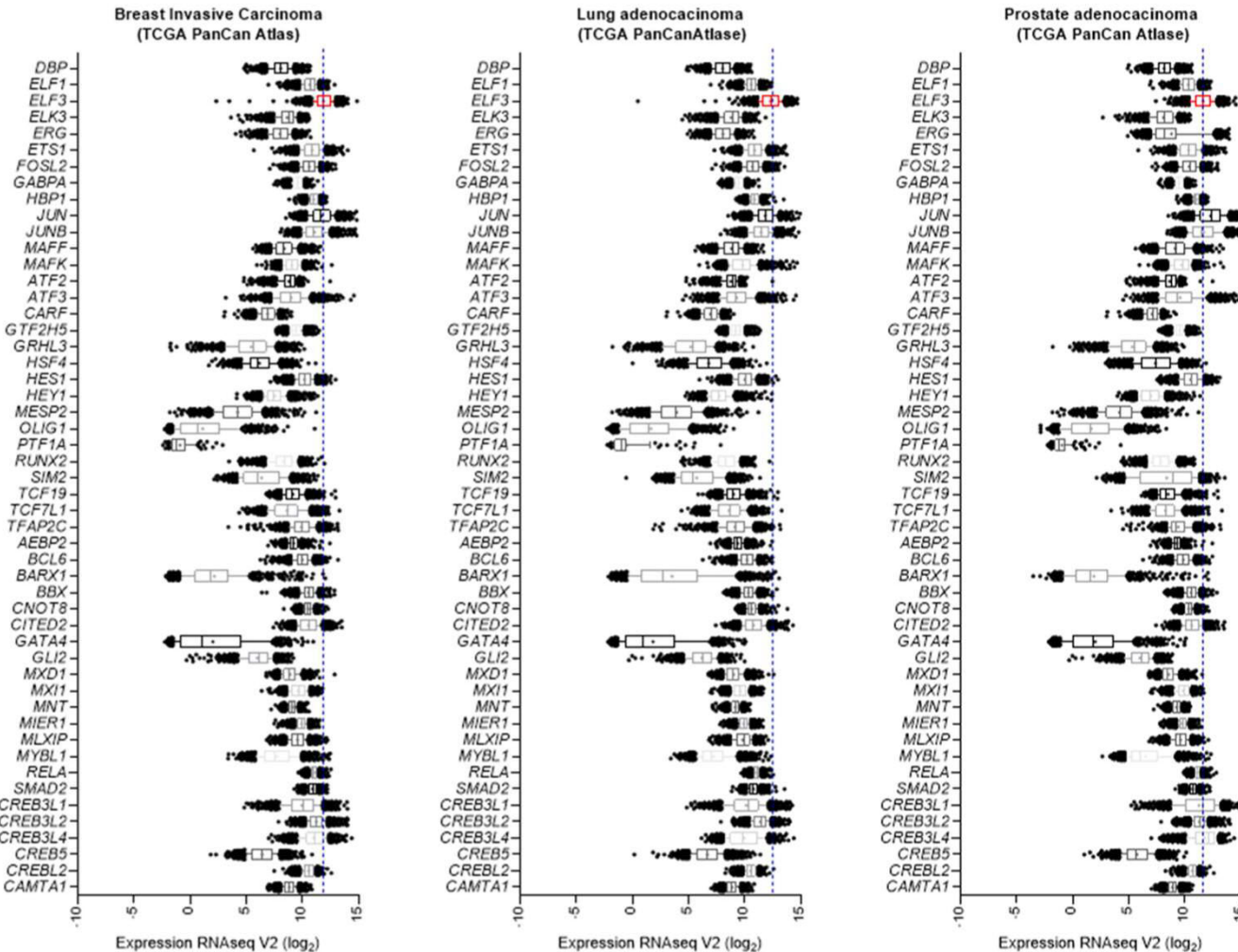


Figure EV3. Expression levels of 51 TFs in various carcinomas were compared.

The expression of 51 TFs was compared with those in the breast (left), lung (center), prostate (right) adenocarcinoma dataset (TCGA, PanCanAtlas; breast, $n = 1,082$; lung, $n = 507$; prostate, $n = 489$). The whiskers of the boxplot represent the 10–90th percentile and outliers are indicated by black dots. The “center line” and “+” in the boxplot represent the median and the mean, respectively. The vertical dashed line represents the mean of ELF3 expression.

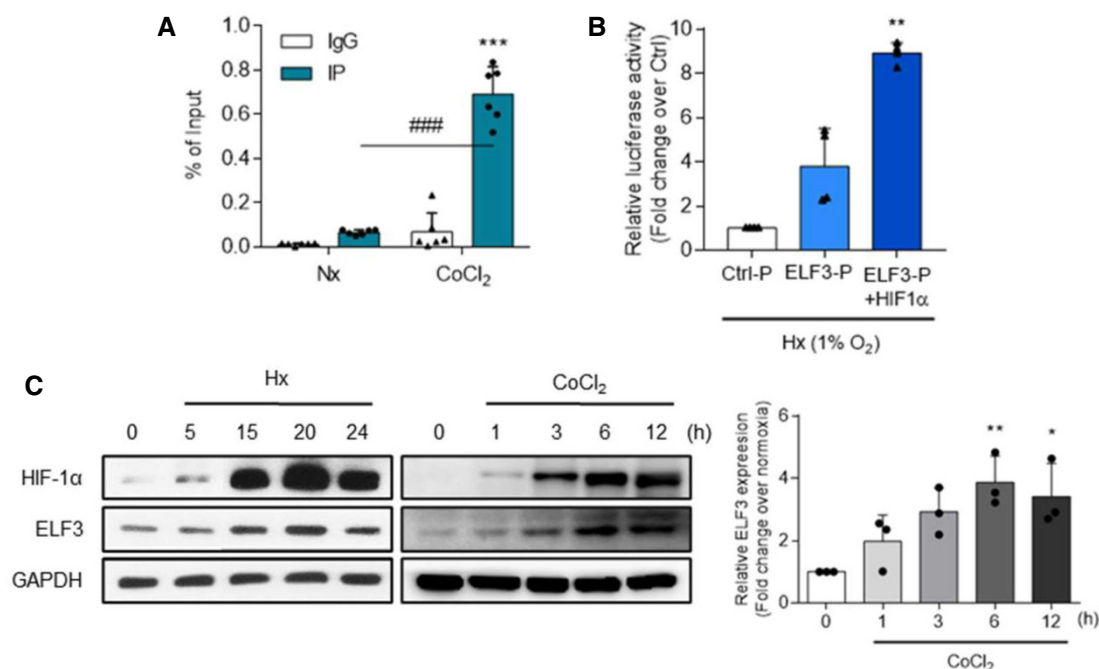


Figure EV4. HIF-1α served as a direct positive regulator of ELF3.

A ChIP analysis was performed to identify that HIF-1α directly binds to the *ELF3* promoter. DNA binding affinity was investigated by qPCR analysis ($n = 5$ independent repetitions).

B Luciferase reporter assay confirmed that HIF-1α bonded to *ELF3* promoter (ELF3-P) and regulated *ELF3* expression. Transfection efficiency was normalized by β -galactosidase activities ($n = 4$ independent repetitions).

C Endogenous ELF3 and HIF-1α altered by hypoxic conditions were analyzed by Western blotting. This blotting was performed and quantified in three independent experiments.

Data information: For all panels, data are expressed as mean $\pm$ SD. (A) *** $P < 0.001$ vs. IgG; ### $P < 0.001$ vs. Nx:IP (two-way ANOVA, Tukey's). (B) ** $P < 0.01$ vs. Ctrl-P (Kruskal–Wallis test, Dunn's). (C) * $P < 0.05$, ** $P < 0.01$ vs. 0 h (normoxic conditions) (one-way ANOVA, Tukey's).

Source data are available online for this figure.

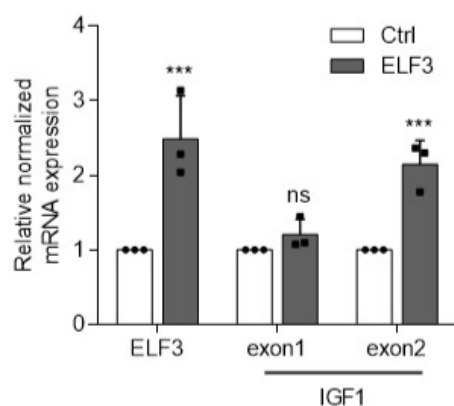


Figure EV5. ELF3 upregulates IGF1 expression by binding to promoter2 of IGF1.

RT-qPCR was performed with primers targeting exon1 and exon2 of IGF1 to measure mRNA levels of IGF1 in SKOV3 cells transfected ELF3 ($n = 3$ independent repetitions).

Data information: Data are expressed as mean $\pm$ SD. *** $P < 0.001$ vs. Ctrl; ns—not significant (two-way ANOVA, Sidak's).