Supplementary table 1. Patient characteristics of primary AML patient samples.

Patient	Age	Gender	Disease status	Cytogenetics	Bone marrow Blasts (%)	Gene mutation
1	67	Male	Relapsed	46,XY	32.9	NPM1
2	71	Male	Relapsed	46,XY	35	NPM1,FLT3
3	47	Female	Relapsed	NA	42	PML-RARA
4	70	Male	Relapsed	46,XY	57.5	WT1
5	54	Male	Relapsed	46,XY	45	PML-RARA
6	68	Male	Relapsed	46,XY	37	WT1
7	48	Male	Newly diagnosed	46,XY,inv16(p13q22)	39	CBFB-MYH11
8	65	Female	Newly diagnosed	NA	36	CSF3R, DNMT3A, NOTCH1
9	61	Male	Newly diagnosed	46,XY	92	WT1
10	59	Female	Newly diagnosed	50,XX,+4,+8	10.7	NA
11	80	Male	Newly diagnosed	NA	41.1	WT1
12	46	Male	Newly diagnosed	46,XY	34.9	WT1

Supplementary table 1. Patient characteristics of primary AML patient samples.

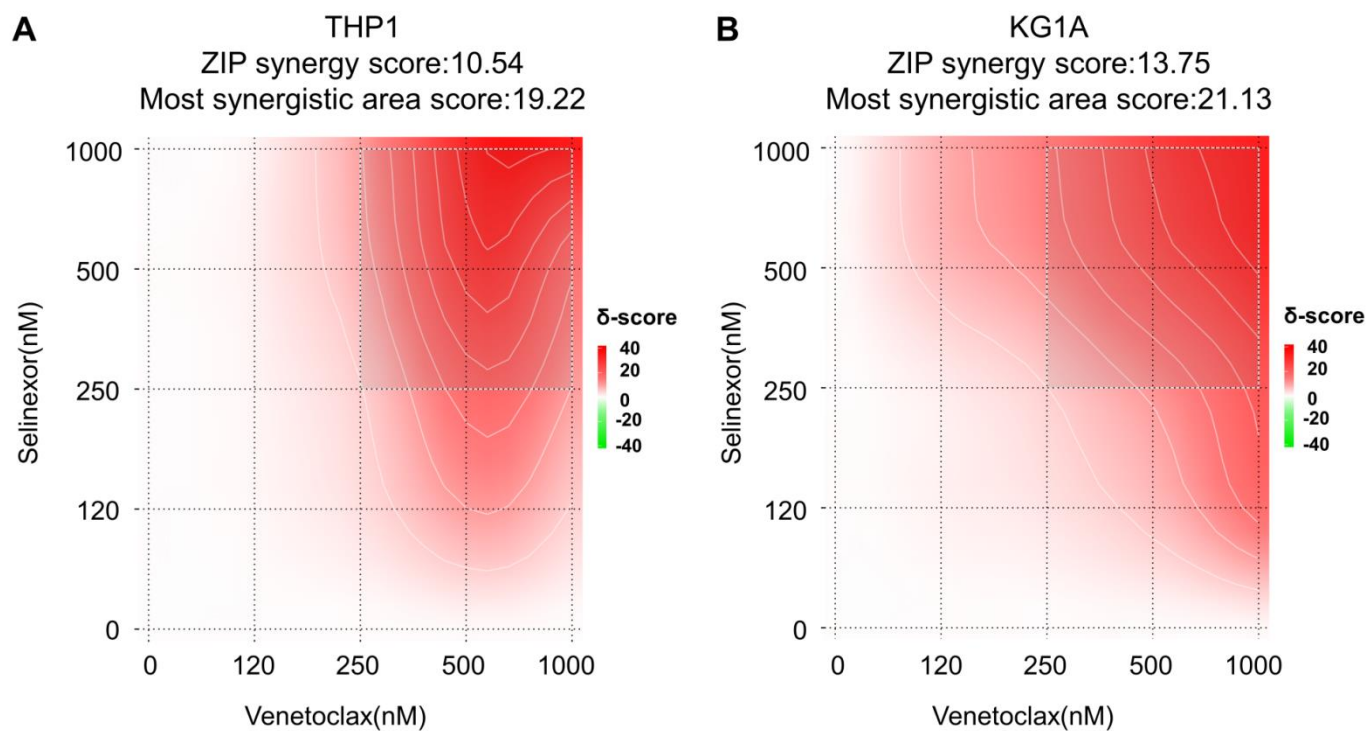| Patient	Age	Gender	Disease status	Cytogenetics	Bone marrow Blasts(%)	Gene mutation
13	68	Male	Newly diagnosed	46,XY	32	WT1
14	41	Male	Newly diagnosed	46,XY	30	WT1
15	58	Male	Newly diagnosed	46,XY	43	CBFB-MYH11
16	71	Male	Newly diagnosed	46,XY	57	WT1
17	83	Female	Newly diagnosed	NA	47	WT1
18	67	Female	Newly diagnosed	46,XX	87.5	NPM1,FLT3
19	42	Femlae	Newly diagnosed	46,XX,t(11,17)	93.5	WT1
20	87	Female	Newly diagnosed	NA	54	WT1

NA: not available

Supplementary formula 1

$$NK\ cell\ cytotoxicity(\%) =$$

$$100 \times \frac{(\%\text{Annxin V positive target cells pretreated with VEN or SEL in coculture with NK cells} - \%\text{Annxin V positive target cells in cell death with VEN or SEL pretreated})}{(100 - \%\text{Annxin V positive target cells in cell death with VEN or SEL pretreated})}$$
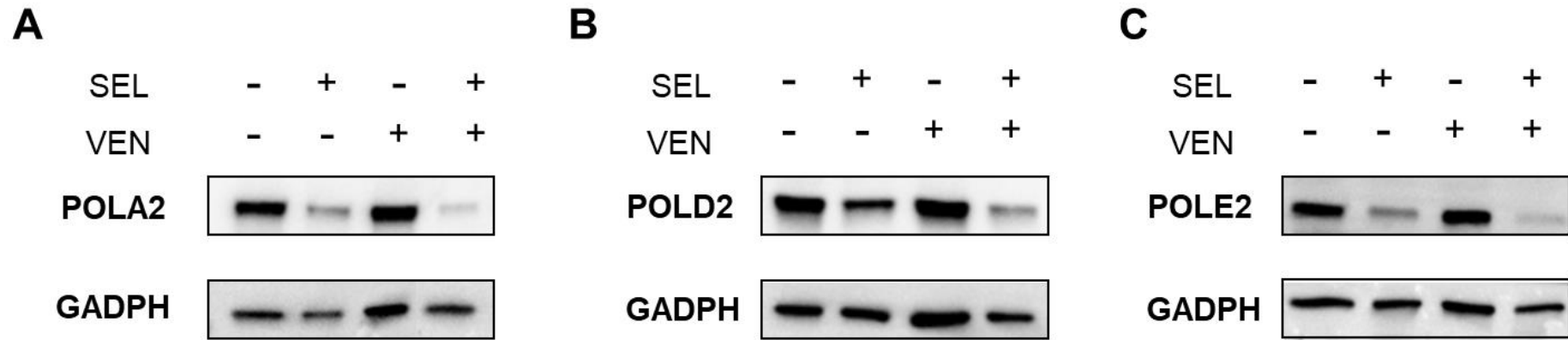
Supplementary figure 1 Selinexor synergistically enhances the cytotoxicity of venetoclax against AML cells.

Heatmaps of drug combination responses. Selinexor and venetoclax acted synergistically on THP-1 (A) and KG-1A (B) cells. Selinexor and venetoclax at the indicated concentrations were applied to treat cells for 24 h, and inhibition was assessed by apoptosis assays. ZIP synergy scores were calculated using SynergyFinder software.

Supplementary figure 2 The protein levels of DNA replication proteins POLA2(A), POLD2(B) and POLE2(C) were determined by western blot.
DNA replication-related proteins of THP1 are downregulated with selinexor and venetoclax cotreatment.