

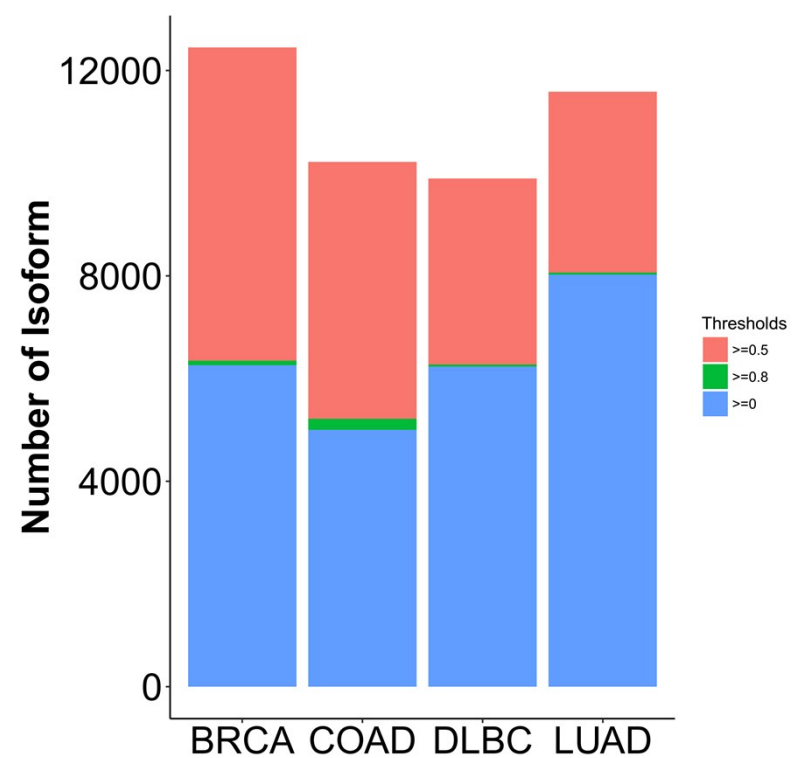


Figure 1S. Number of isoforms filtered by different thresholds of connection score in the CCLE-based network.

Figure 2S. The isoform expression values in both datasets were near $4 \log_2(\text{FPKM}+1)$.

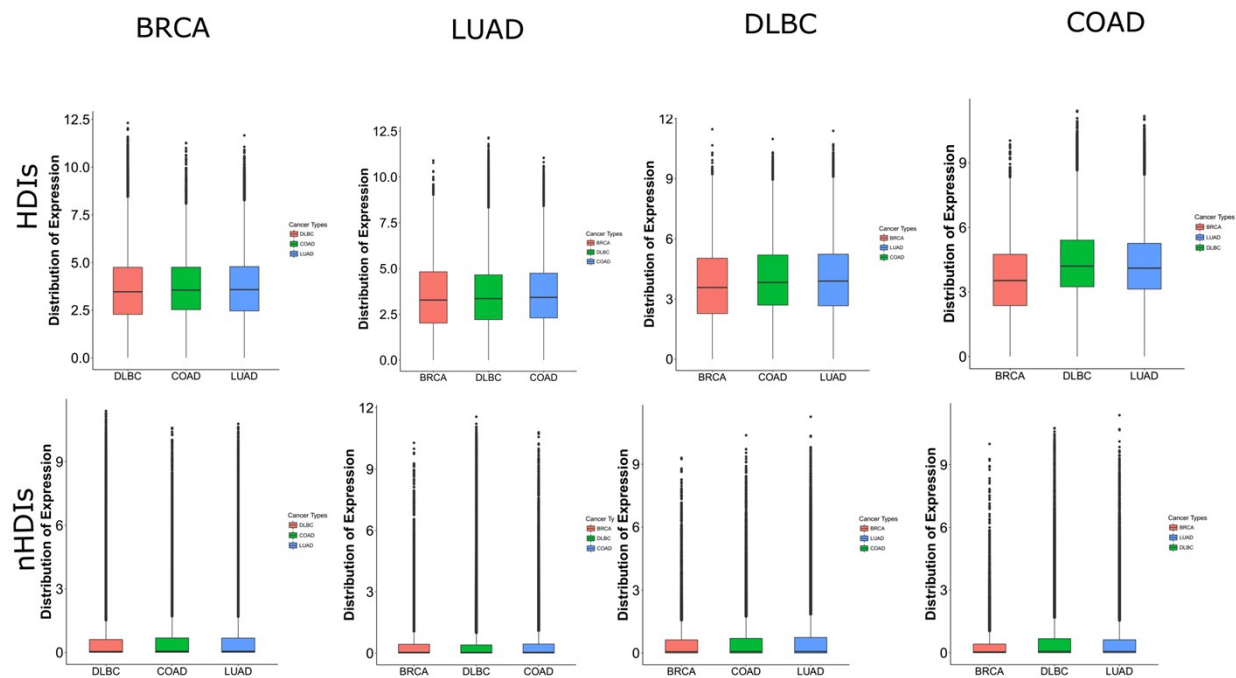


Figure 3S. Expression distribution of cancer-type HDIs and nHDIs across other three cancer types.

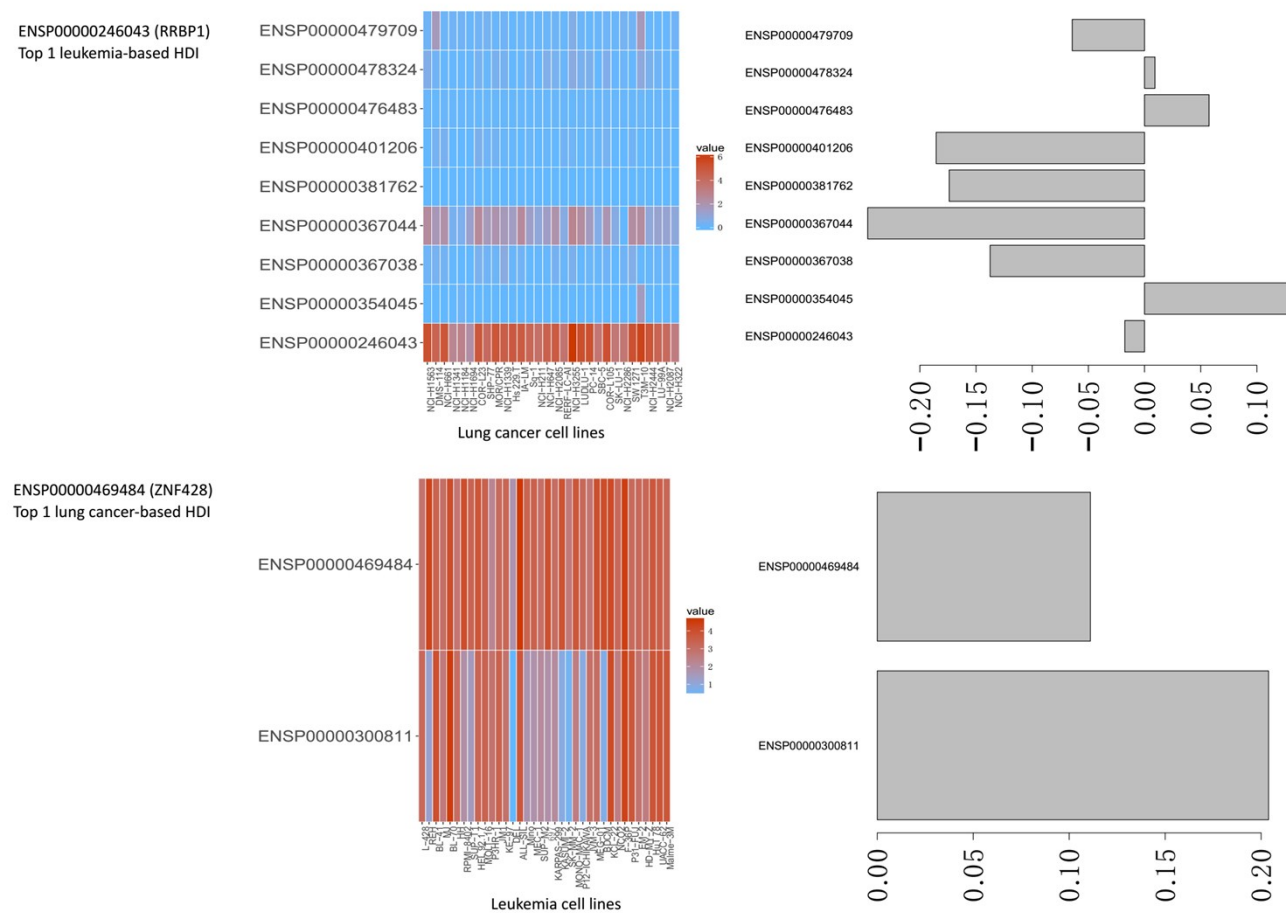


Figure 4S. HDI expression of two cancer types in lung cancer and leukemia cell lines and its association with drug response. *Top 1* means the association value between drug response and expression value of cancer-type HDI is the biggest.

Table 1S. HDIs unique to one of the four cancer types

proteinid	ensembl_transcript_id	hgnc_symbol	ensembl_gene_id	cancer types
ENSP00000265748	ENST00000265748	ANLN	ENSG00000011426	BRCA LUAD
ENSP00000400777	ENST00000446635	ANLN	ENSG00000011426	LUAD
ENSP00000413522	ENST00000428612	ANLN	ENSG00000011426	LUAD
ENSP00000411352	ENST00000421017	ANXA2	ENSG00000182718	BRCA LUAD
ENSP00000453925	ENST00000558998	ANXA2	ENSG00000182718	BRCA
ENSP00000452958	ENST00000557904	ANXA2	ENSG00000182718	LUAD
ENSP00000420978	ENST00000507081	BTF3	ENSG00000145741	BRCA
ENSP00000338516	ENST00000335895	BTF3	ENSG00000145741	LUAD
ENSP00000362146	ENST00000373055	CDCA8	ENSG00000134690	BRCA COAD DLBC LUAD
ENSP00000316121	ENST00000327331	CDCA8	ENSG00000134690	DLBC
ENSP00000246554	ENST00000246554	COX6B1	ENSG00000126267	BRCA
ENSP00000467776	ENST00000590618	COX6B1	ENSG00000126267	BRCA LUAD
ENSP00000435306	ENST00000534779	GANAB	ENSG00000089597	BRCA
ENSP00000349053	ENST00000356638	GANAB	ENSG00000089597	DLBC
ENSP00000325875	ENST00000353801	HSP90AB1	ENSG00000096384	DLBC
ENSP00000360709	ENST00000371646	HSP90AB1	ENSG00000096384	BRCA
ENSP00000299157	ENST00000299157	IKBIP	ENSG00000166130	BRCA LUAD
ENSP00000343471	ENST00000342502	IKBIP	ENSG00000166130	LUAD
ENSP00000447705	ENST00000548563	NACA	ENSG00000196531	BRCA LUAD
ENSP00000446933	ENST00000546862	NACA	ENSG00000196531	LUAD
ENSP00000453475	ENST00000557912	NOP10	ENSG00000182117	BRCA DLBC
ENSP00000332198	ENST00000328848	NOP10	ENSG00000182117	LUAD
ENSP00000215919	ENST00000215919	PATZ1	ENSG00000100105	BRCA
ENSP00000337520	ENST00000351933	PATZ1	ENSG00000100105	LUAD

ENSP00000346027	ENST00000311549	RPL21	ENSG00000122026	BRCA LUAD
ENSP00000351021	ENST00000272274	RPL21	ENSG00000122026	DLBC
ENSP00000370569	ENST00000326092	RPL21	ENSG00000122026	DLBC
ENSP00000473246	ENST00000483765	RPL21	ENSG00000122026	DLBC
ENSP00000391610	ENST00000423431	SPCS1	ENSG00000114902	BRCA
ENSP00000478310	ENST00000619898	SPCS1	ENSG00000114902	DLBC
ENSP00000314727	ENST00000323224	TYMS	ENSG00000176890	LUAD
ENSP00000315644	ENST00000323274	TYMS	ENSG00000176890	BRCA
ENSP00000478601	ENST00000615884	UHRF1	ENSG00000276043	BRCA
ENSP00000478171	ENST00000620565	UHRF1	ENSG00000276043	COAD
ENSP00000332887	ENST00000330029	UQCR10	ENSG00000184076	BRCA
ENSP00000384962	ENST00000401406	UQCR10	ENSG00000184076	DLBC
ENSP00000209728	ENST00000209728	CDC6	ENSG00000094804	COAD DLBC
ENSP00000463004	ENST00000577249	CDC6	ENSG00000094804	COAD
ENSP00000436904	ENST00000534488	MRPL11	ENSG00000174547	COAD
ENSP00000308897	ENST00000310999	MRPL11	ENSG00000174547	DLBC
ENSP00000403172	ENST00000424576	RPL6	ENSG00000089009	COAD LUAD
ENSP00000448570	ENST00000550238	RPL6	ENSG00000089009	DLBC
ENSP00000247843	ENST00000247843	YEATS4	ENSG00000127337	DLBC
ENSP00000446985	ENST00000552955	YEATS4	ENSG00000127337	COAD
ENSP00000185150	ENST00000185150	ERLEC1	ENSG00000068912	DLBC LUAD
ENSP00000367485	ENST00000378239	ERLEC1	ENSG00000068912	DLBC
ENSP00000357430	ENST00000368445	SHC1	ENSG00000160691	DLBC
ENSP00000357435	ENST00000368450	SHC1	ENSG00000160691	LUAD
ENSP00000387858	ENST00000455785	STMN1	ENSG00000117632	DLBC

ENSP00000350531	ENST00000357865	STMN1	ENSG00000117632	LUAD
ENSP00000382633	ENST00000399728	STMN1	ENSG00000117632	LUAD

Table 2S Overlapping of Breast cancer-based HDIs with other datasets.

Datasets	Tested MIGs ^a	Shared ^b (Ratio, P-value via random permutation)	By chance
APPRIS principal isoforms	248	205 (0.8266129, P=0.001)	41.096±5
STRING longest isoforms	244	169 (0.6926230, P=0.001)	41.236±5
Sensitivity isoforms	110	101 (0.9181818, P=0.001)	41.477±4

Table 3S Overlapping of lung cancer-based HDIs with other datasets.

Datasets	Tested MIGs ^a	Shared ^b (Ratio, P-value via random permutation)	By chance
APPRIS principal isoforms	320	284 (0.8875000, P=0.001)	44.886±5
STRING longest isoforms	314	214 (0.6815287, P=0.001)	44.185±5
Sensitivity isoforms	135	118 (0.8740741, P=0.001)	44.742±5

Table 4S Overlapping of leukemia-based HDIs with other datasets.

Datasets	Tested MIGs ^a	Shared ^b (Ratio, P-value via random permutation)	By chance
APPRIS principal isoforms	243	208 (0.8559671, P=0.001)	44.42±5
STRING longest isoforms	241	181 (0.7510373, P=0.001)	44.131±5
Sensitivity isoforms	126	117 (0.9285714, P=0.001)	44.471±5

Table 5S Overlapping of colon cancer-based HDIs with other datasets.

Datasets	Tested MIGs ^a	Shared ^b (Ratio, P-value via random permutation)	By chance
APPRIS principal isoforms	194	181 (0.9329897, P=0.001)	31.679±4
STRING longest isoforms	193	152 (0.7875648, P=0.001)	31.891±4
Sensitivity isoforms	100	93 (0.9300000, P=0.001)	32.348±4