

Table S1 The sequence of primers and probes for qPCR

RNA	Primer/Probe	Sequence
GAPDH	Forward primer	TCAGCCGCATCTTCTTTTGC
	Reverse primer	GCCCAATACGACCAAATCCG
	Probe	TCGCCAGCCGAGCCACATC
RPS29	Forward primer	CTCGCTCTTGTCGTGTCTG
	Reverse primer	GCAGTGCCAAGGAAGACAG
	Probe	TGCCGCCAGTGTTCGGTCAG
NFKBIA	Forward primer	TACCTGGGCATCGTGGAG
	Reverse primer	TGGCAGCATCTGAAGTTTT
	Probe	CTTCACCTCGCAGTGGACCTGCA
NDUFB10	Forward primer	CAGCCCAATCCCATCGTC
	Reverse primer	GAAGTGTCTCCACTTCCTTGAT
	Probe	TAGAGCGGCAGCACGCAAAG
SLC7A7	Forward primer	CATCGTTGCAGGCATTGTTAG
	Reverse primer	GAGCCCACAAAGAAAAGCCT
	Probe	CACTGTACTCAGCTCTGTTCTCCTACT
ARPC5	Forward primer	CGAGGTGGACTCCTGCCT
	Reverse primer	CTGCCCGGTCCTTCACTG
	Probe	ACTCTTGGTGTTGATAGGGGGGTTTC
SEPTIN9	Forward primer	CAGAGCGGCTTGGGTAAA
	Reverse primer	CCTTGCTCAGGCGTTTCA
	Probe	CGAGATCAAGTCCATCACGCACGATAT
HMGN1	Forward primer	AAGGCAGCAGCGAAGGATAAA
	Reverse primer	CTTCGTTTCCCCGTTTTCCG
	Probe	TTGGTTAGCCACTTCGGCCTGT
H4C2	Forward primer	CGGTAAGGTTTGGGTAAGGG
	Reverse primer	ACCTTGAGAACGCCACGA
	Probe	TGCGGGATAACATCCAAGGCATCAC
lnc-PLA2G1B-2:3	Forward primer	AATGAGGTTTATCCGAGGCG
	Reverse primer	AATTGCCAATGCCGACTATATTTTC
	Probe	CCAATACCCCGCCATGACGAC

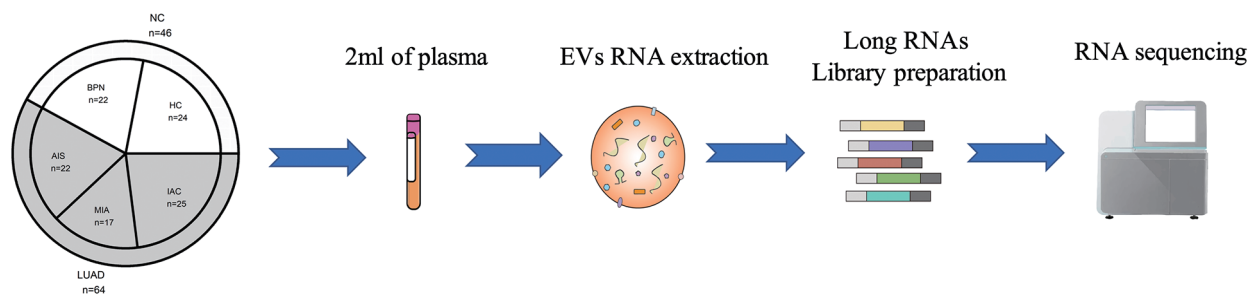


Figure S1 Workflow of exLR-seq of human plasma in this study. ExLR, EV long RNA.

Table S2 One hundred and seventeen differentially expressed exLRs in LUAD compared to noncancerous control cases

#ID	P value	log ₂ FC	Regulated
lnc-PLA2G1B-2:3	1.27E-06	-1.947594983	Down
lnc-LRR1-1:3	4.43E-06	-1.290133005	Down
H4C2	5.23E-05	-0.679950289	Down
lnc-ELFN1-2:1	8.50E-05	-2.155749488	Down
lnc-KCNE1B-156:1	0.000191614	-5.279607479	Down
lnc-GIMAP7-1:1	0.000221219	-1.998927029	Down
lnc-BTD-2:1	0.000232007	-0.817666808	Down
ALB	0.000379291	-2.532450745	Down
UGT2B7	0.000745449	-5.731823213	Down
lnc-LRR1-1:2	0.00088795	-0.984806657	Down
HBA1	0.001010969	-0.845812602	Down
lnc-RAP2C-4:1	0.001055362	-1.136081083	Down
lnc-MOV10-2:1	0.001149605	-2.870689542	Down
lnc-KCNE1B-155:1	0.002189525	-6.323745542	Down
lnc-CUL1-5:1	0.002279872	-5.162244469	Down
lnc-ARHGEF39-1:4	0.005669443	-0.673759811	Down
lnc-LASP1-3:1	0.005775693	-1.064980339	Down
WDR74	0.006218877	-1.044515707	Down
lnc-FRAT1-7:1	0.006334353	-2.616493318	Down
lnc-C15orf48-1:18	0.009087213	-0.715656199	Down
CPOX	0.010642687	-0.714290066	Down
lnc-SIDT2-2:2	0.011406974	-0.906362407	Down
CENPF	0.013534758	-0.790292357	Down
MAN1A2	0.016005888	-0.592540108	Down
lnc-MACC1-1:6	0.019805966	-0.62982731	Down
PITPNB	0.022517405	-0.635265694	Down

Table S2 (continued)

Table S2 (continued)

#ID	P value	log ₂ FC	Regulated
TMEM56	0.023990236	-0.854854592	Down
Inc-EPN2-3:3	0.024757482	-0.936371357	Down
CHD2	0.02594818	-0.633049559	Down
Inc-HMGN1-1:12	0.027612576	-0.910825169	Down
Inc-SLC5A10-3:2	0.040242465	-1.04449215	Down
Inc-SAG-4:1	0.043915914	-0.864991931	Down
Inc-GRAP-1:2	0.047189731	-1.111299222	Down
Inc-HMGA1-2:1	0.048555554	-0.796757742	Down
NDUFAF3	1.76E-05	0.675158886	Up
LRRC37A2	1.81E-05	1.034807696	Up
NFKBIA	7.88E-05	0.776008413	Up
YPEL2	0.000101332	1.064127987	Up
PPP4C	0.000103891	0.822125754	Up
NBR1	0.000150392	0.69037815	Up
TMEM71	0.000165763	0.829743161	Up
MTPN	0.000182603	0.997584233	Up
IL1B	0.000293754	0.940909436	Up
CALM3	0.000388126	0.616498789	Up
TBC1D31	0.000455562	0.66365715	Up
ARPC5	0.000466044	0.930508297	Up
CCL4	0.000487686	0.62859341	Up
WDR11	0.000610666	0.701553371	Up
SNHG5:43	0.000610666	1.064122267	Up
MBOAT2	0.000697721	0.758868625	Up
PSMA1	0.000729213	0.659244163	Up
U2AF1	0.000729213	0.693503644	Up
RABGAP1L	0.000968311	0.801530912	Up
TESC	0.001078228	0.741514113	Up
HAX1	0.001101552	0.625045749	Up
HERPUD2	0.001305635	0.659136837	Up
TRMT112	0.001420274	0.634532903	Up
CDA	0.001748654	1.327307668	Up
FUT8	0.001822181	1.019055174	Up
RNF11	0.002018601	0.638862541	Up
GOSR2	0.002060144	0.653492812	Up

Table S2 (continued)

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#ID	P value	log ₂ FC	Regulated
EXOC6	0.002145593	0.637675218	Up
TES	0.00242181	0.655522466	Up
LRMP	0.004035314	0.70351741	Up
LTB	0.004113448	0.705484454	Up
ICAM3	0.004699963	0.650698722	Up
TAGLN2	0.004880917	0.597136552	Up
CHMP4A	0.004973736	0.662997942	Up
VPS13A	0.005775693	0.983889732	Up
MYL9	0.005993595	1.05288056	Up
POM121	0.0061053	0.818808257	Up
TBPL1	0.006218877	0.847739283	Up
UFM1	0.006334353	0.596922447	Up
UIMC1	0.006571111	0.695665159	Up
DGUOK	0.006692448	0.605455503	Up
CYFIP2	0.007599735	0.647849128	Up
PIAS1	0.007737977	0.626736261	Up
FBXL17	0.008021242	0.674537893	Up
COA3	0.008021242	0.9783731	Up
KLRF1	0.008166327	0.627481185	Up
CMC1	0.008166327	0.83966341	Up
LSM7	0.008313757	0.605982637	Up
ACTN1	0.008463563	0.60650826	Up
VAPB	0.008615778	0.859341203	Up
PRUNE1	0.008615778	0.80041944	Up
SLC44A2	0.008770436	0.632267582	Up
PTPN4	0.009751571	0.70923632	Up
lnc-RPL21-7:1	0.010458878	0.919149245	Up
ZCCHC17	0.0124306	0.600478779	Up
PSMD8	0.01423808	0.652003555	Up
PPP6R1	0.01423808	0.681283536	Up
NDUFA7	0.01497345	0.810534045	Up
FCGR3B	0.015225903	0.665744859	Up
RASA2	0.015482097	0.595764612	Up
CD226	0.016005888	1.040176054	Up
ASCC2	0.016820786	0.642242932	Up

Table S2 (continued)

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#ID	P value	log ₂ FC	Regulated
MFSD1	0.020455634	1.120830994	Up
ANXA3	0.021123812	0.604265822	Up
PF4V1	0.022161717	1.103314874	Up
YAF2	0.023990236	0.712171918	Up
SLC7A7	0.024371242	0.650284795	Up
MAPRE2	0.024757482	0.60050882	Up
SUSD1	0.025545893	0.904972245	Up
PIGN	0.02594818	1.301874324	Up
GZMA	0.026769209	0.659074344	Up
GNAQ	0.026769209	0.89624002	Up
ACVR2A	0.02718807	1.426062627	Up
CDKAL1	0.027612576	0.65905202	Up
NCOA2	0.028920561	0.610036193	Up
RBM5	0.02936825	0.616279521	Up
POC1B	0.029821887	0.699172491	Up
ZFAS1:27	0.03074726	1.350409921	Up
ITM2B	0.03121912	0.587357716	Up
RNH1	0.03169718	0.621070636	Up
MGST2	0.036832991	0.742890258	Up
LRBA	0.04266117	1.131761547	Up
YWHAZ	0.044554882	0.596115918	Up

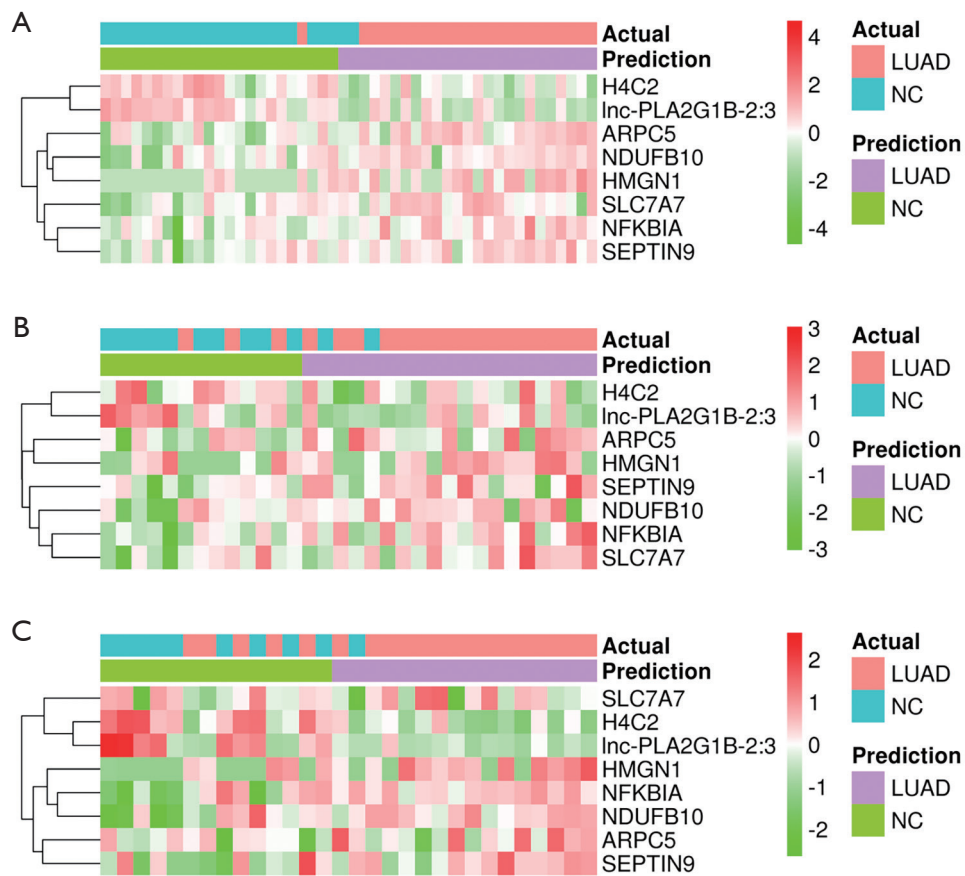


Figure S2 Heatmap of 8 exLR markers selected for diagnostic prediction model in the training cohort (A), internal validation cohort (B) and external validation cohort (C). ExLR, EV long RNA.