

Supplementary Material

1 SUPPLEMENTARY DATA

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Please obtain the original data and code through the following account number

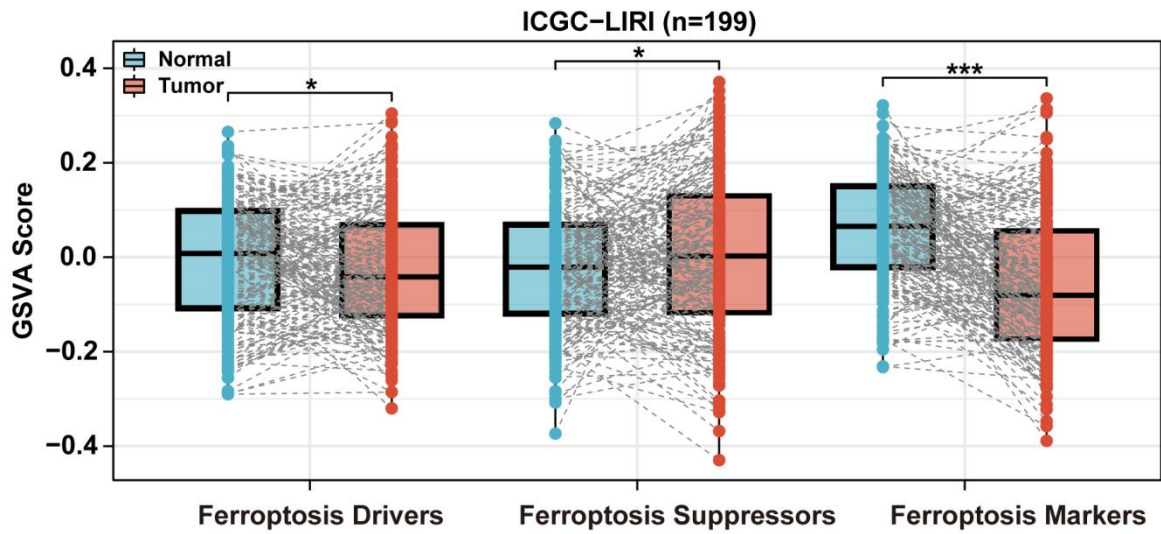
Account: drlgh1124@sina.com Password: z5227218

https://www.jianguoyun.com/p/DdYUffUQ_e7BChiro7oEIAA

2 SUPPLEMENTARY FIGURES AND TABLES

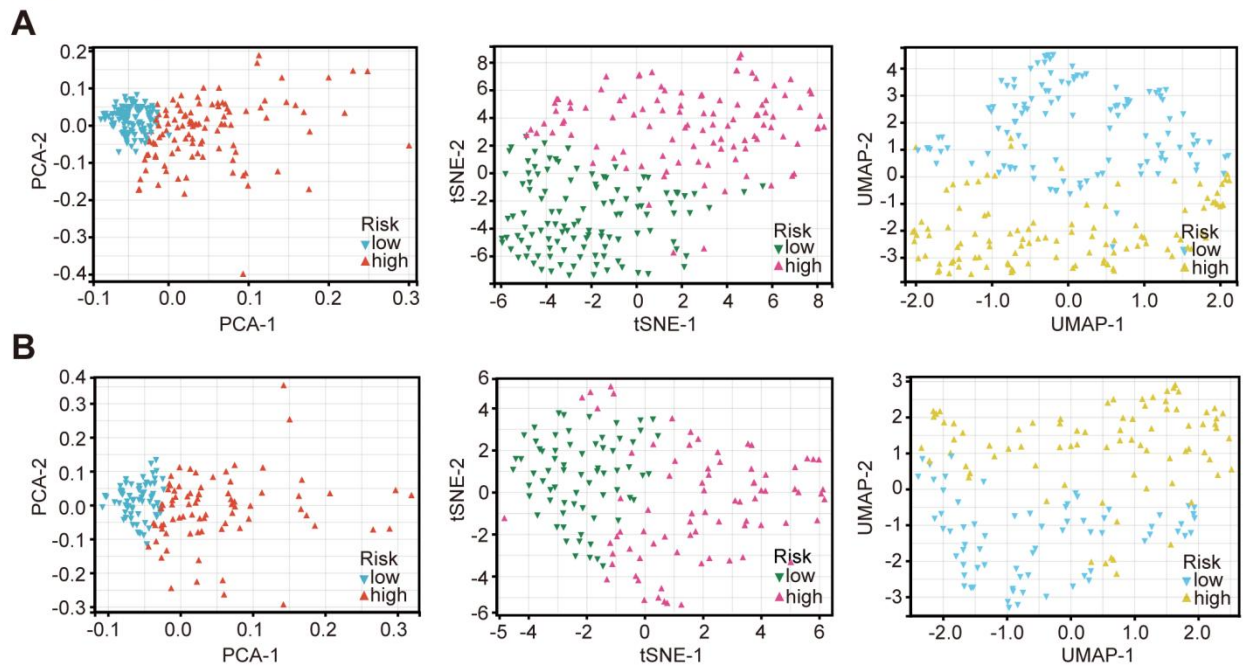
2.1 SUPPLEMENTARY FIGURES

Figure S1



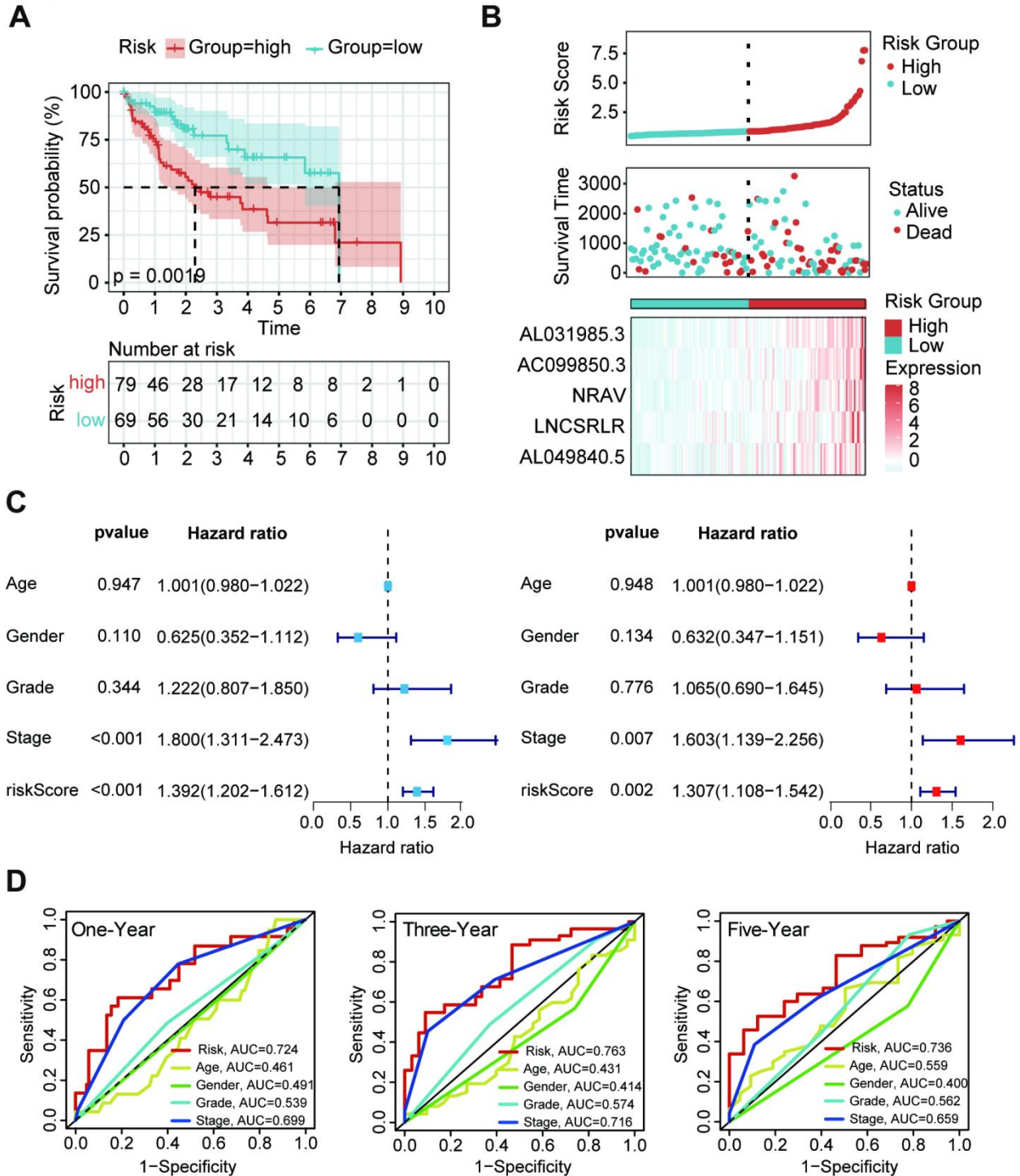
Supplementary Figure 1. GSVAscore of ferroptosis drive, ferroptosis suppressor and ferroptosis maker in paired samples of ICGC-LIRI cohort.

Figure S2



Supplementary Figure 2. (A) PCA, t-SNE and UMAP analysis of patients in training cohort based on the expression profiles of the 5 signature lncRNAs. **(B)** PCA, t-SNE and UMAP analysis of patients in testing cohort based on the expression profiles of the 5 signature lncRNAs.

Figure S3

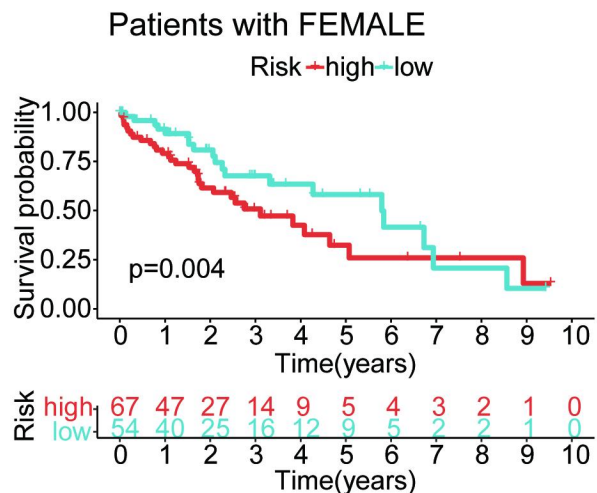
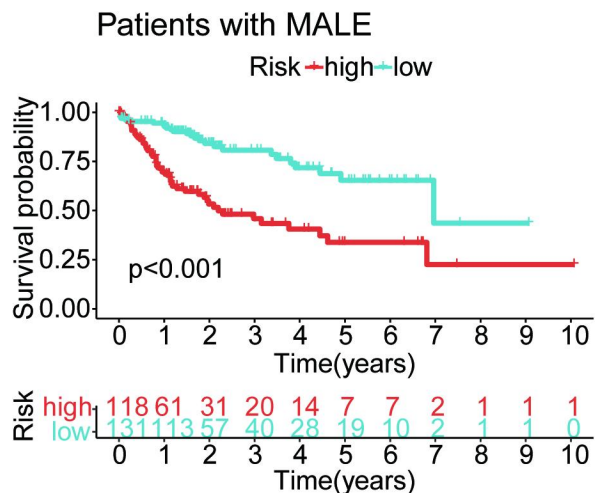
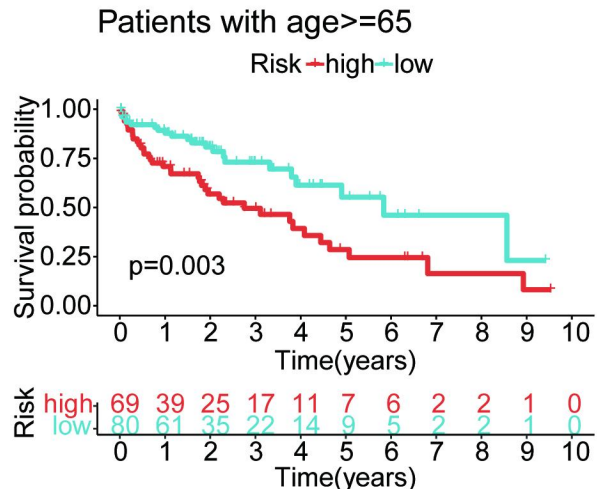
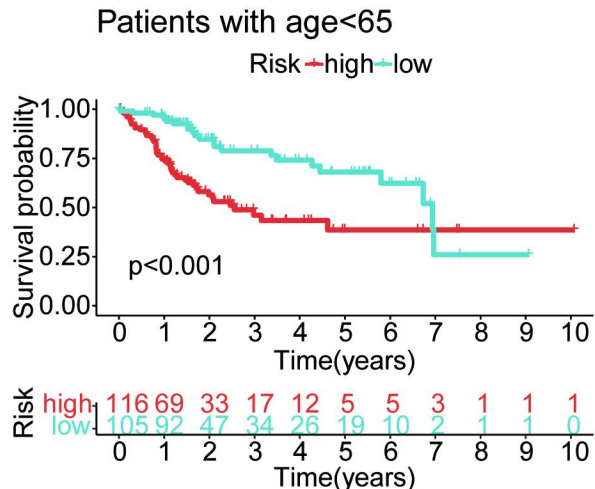


Supplementary Figure 3. (A) Kaplan-Meier curves for the OS of patients in different groups

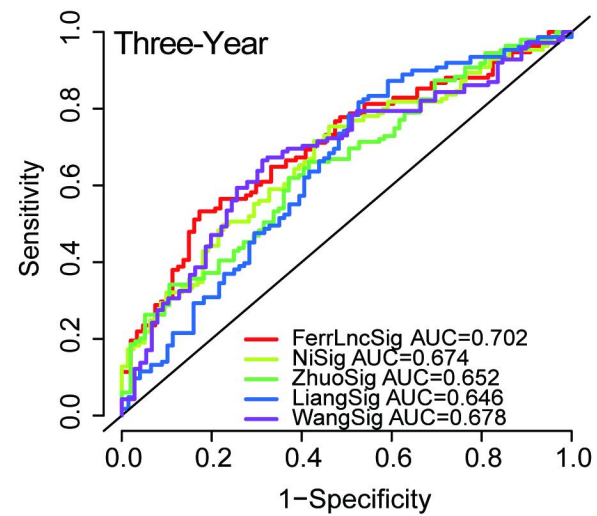
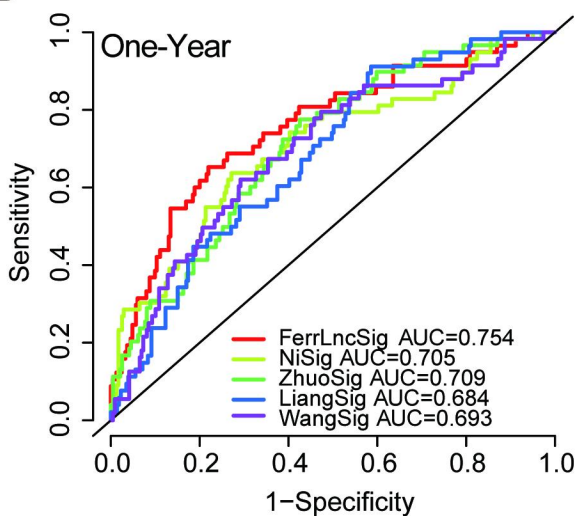
($p=0.0019$). **(B)** Risk curve of the risk score rank, scatter plot for the survival status distribution, and expression profiles of 5 ferroptosis-associated lncRNAs. **(C)** Univariate and multivariate Cox analyses for the independent prognostic predictor in the testing cohort. **(E)** Multivariate ROC curves to predict the sensitivity and specificity of 1, 3, and 5 years survival in the testing cohort.

Figure S4

A



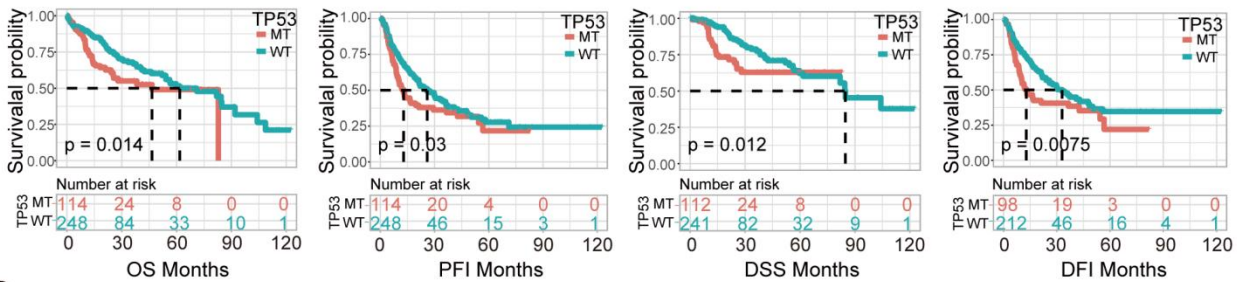
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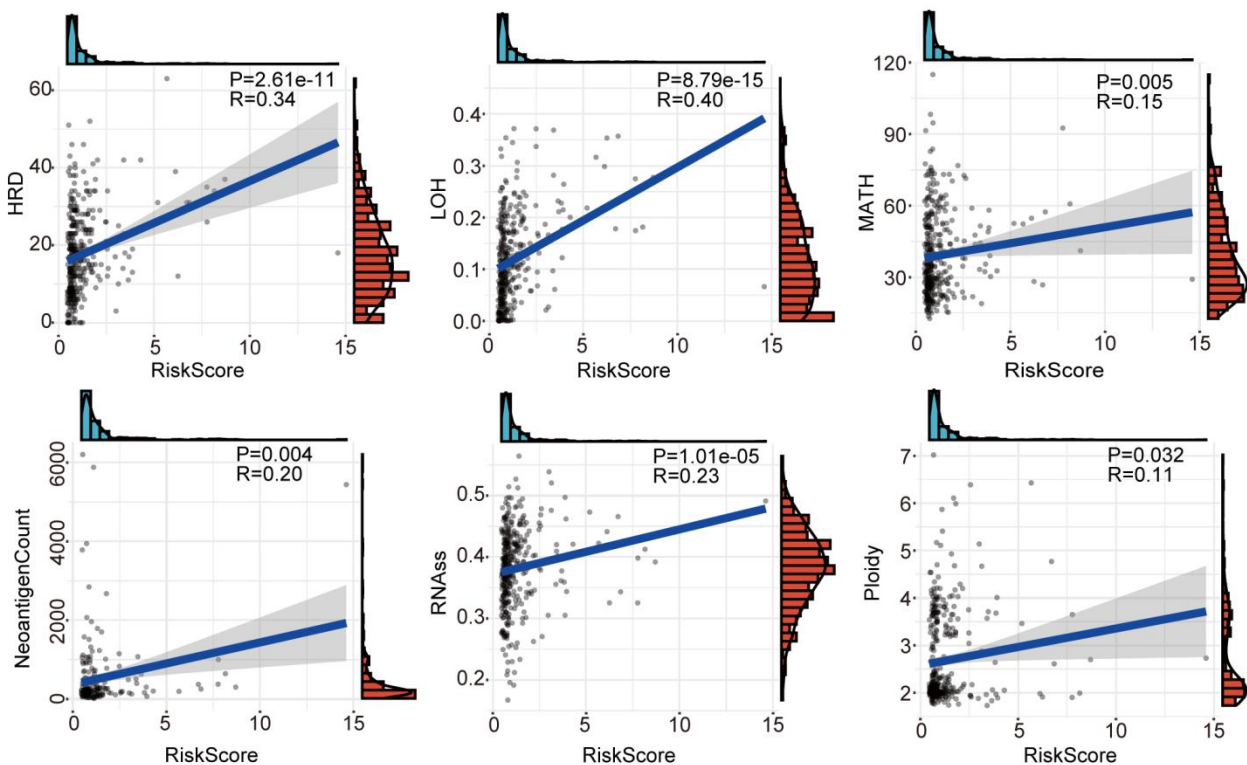
Supplementary Figure 4. (A) Kaplan-Meier analyses of the signature stratified by age and gender. **(B)** Multivariate ROC curves of different HCC signatures to predict the sensitivity and specificity of 1 and 3 years survival.

Figure S5

A



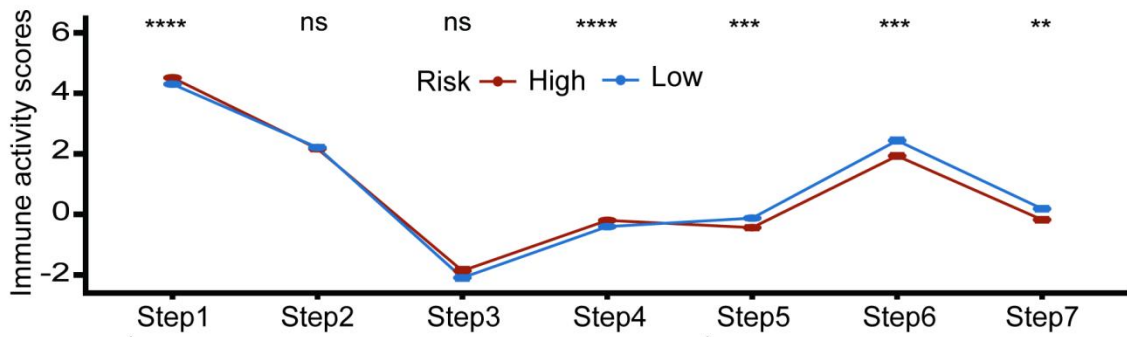
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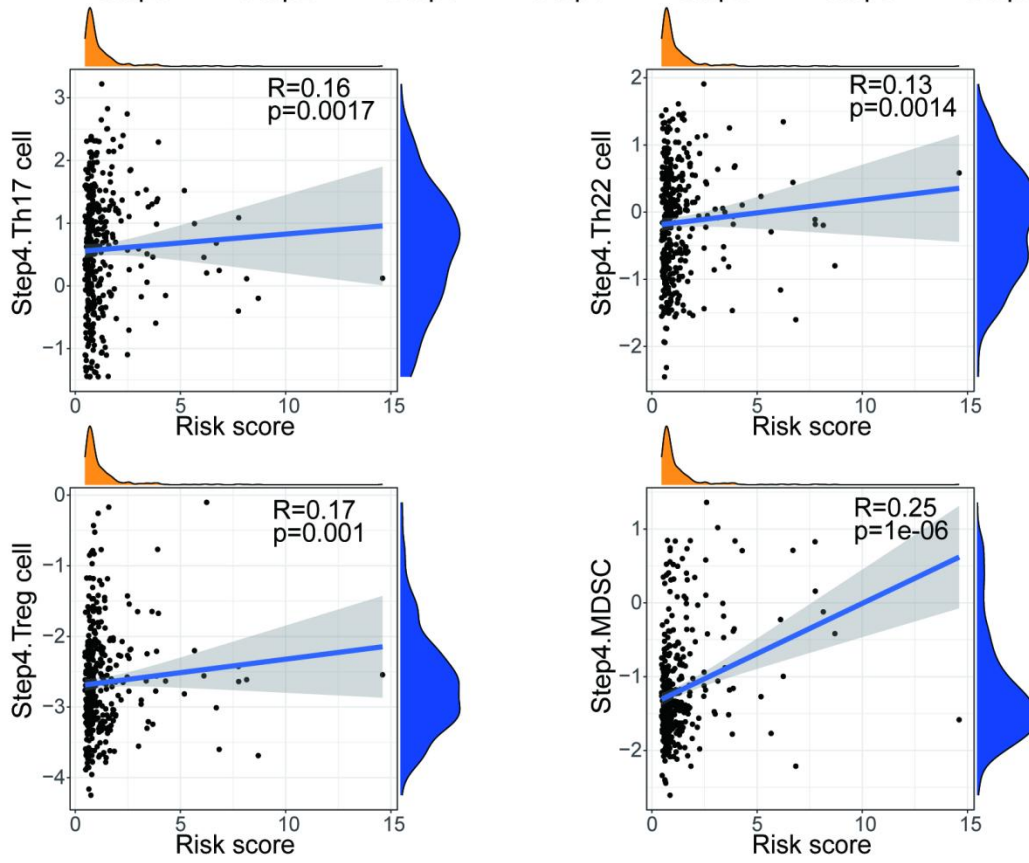
Supplementary Figure 5. (A) OS, PFI, DSS, and DFI of patients stratified by TP53 mutation status in TCGA-LIHC cohort. WT, wild-type TP53; Mut, TP53 mutation. OS, overall survival; DSS, disease-specific survival; PFI, progression-free interval; DFI, disease-free interval. **(B)** Correlations between risk score and HRD, LOH, MATH, ploidy, neoantigen count and RNAss.

Figure S6

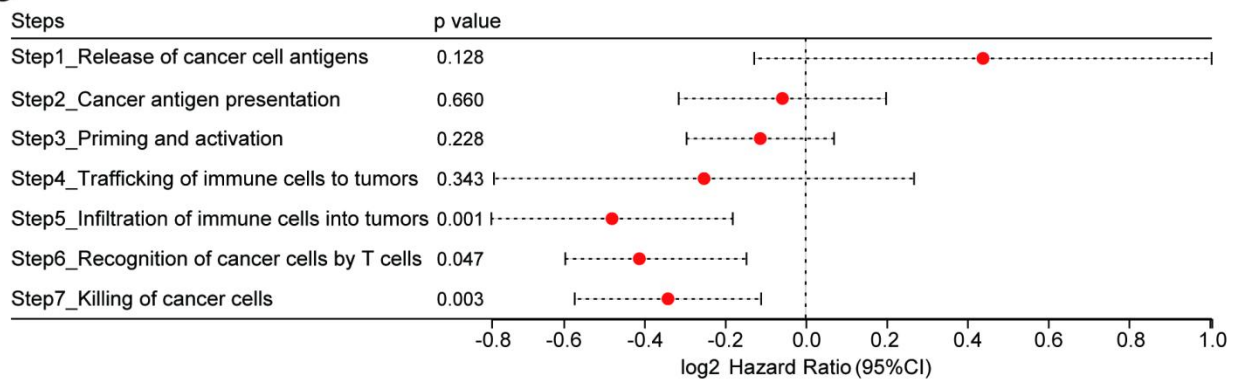
A



B

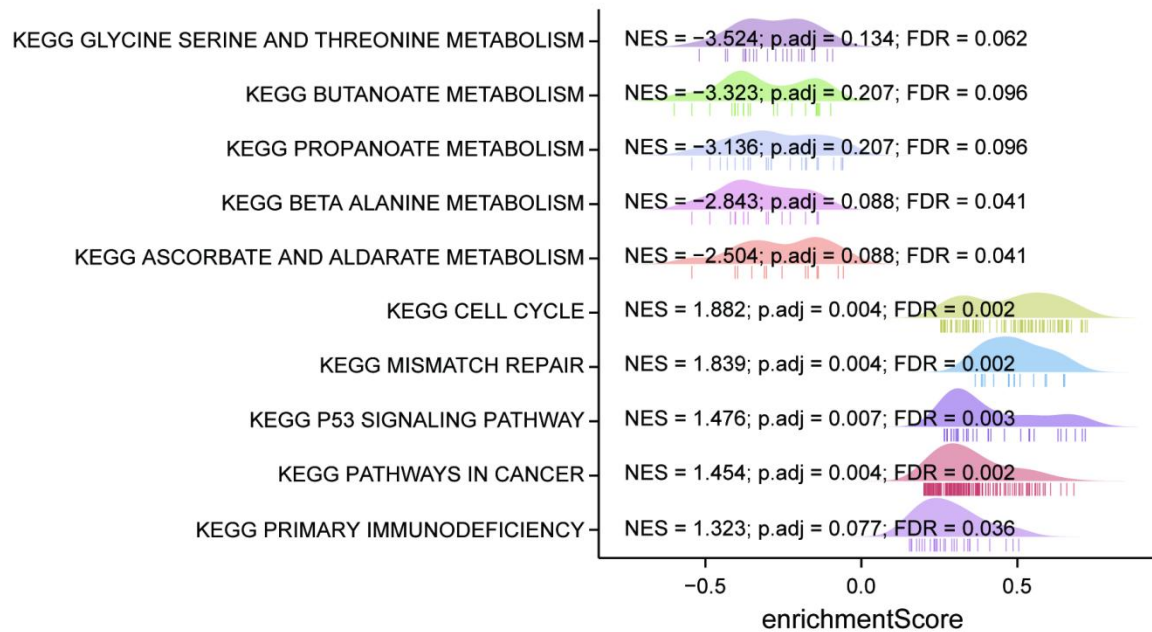


C



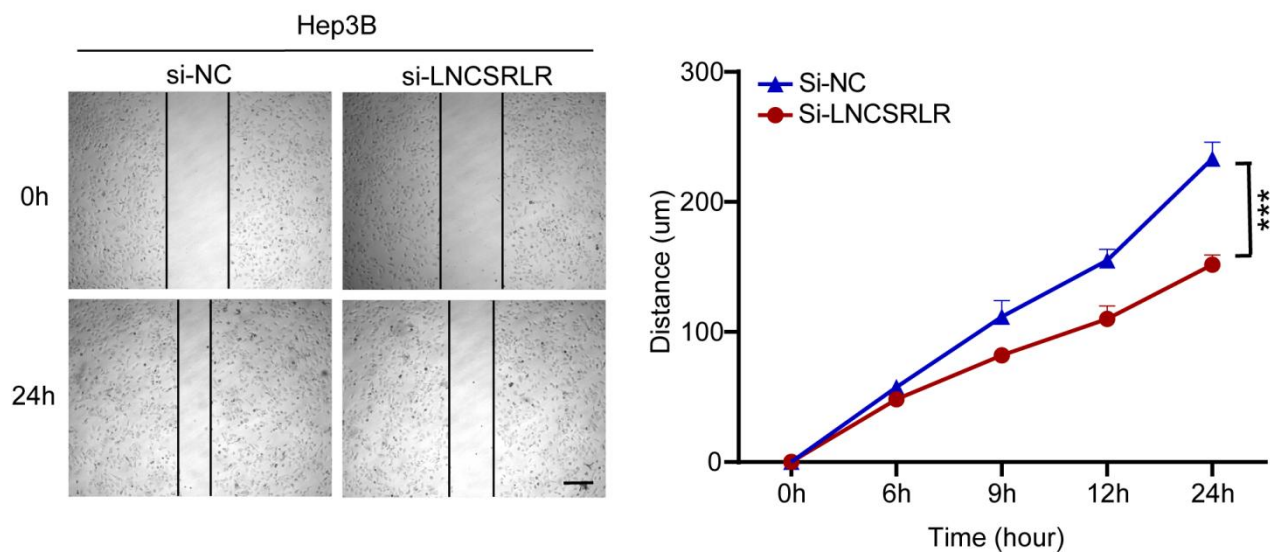
Supplementary Figure 6. (A) Line chart showing the differences of seven-step cancer-immunity cycle between the different risk groups. (B) Correlations between risk score and the cell recruitments of Th17, Th22, Treg and MDSC. (C) Survival analysis of seven-step cancer-immunity cycle.

Figure S7



Supplementary Figure 7. Gene set enrichment analysis of ferroptosis-associated lncRNA signature based on KEGG database.

Figure S8



Supplementary Figure 8. Migration was determined by scratch experiments.

2.2 SUPPLEMENTARY TABLES

Supplementary Figure 1. ferroptosis-associated genes obtained from the FerrDb website.

Symbol	Name
PTGS2	Prostaglandin-endoperoxide synthase 2
DUSP1	Dual specificity phosphatase 1
NOS2	Nitric oxide synthase 2
NCF2	Neutrophil cytosolic factor 2
MT3	Metallothionein 3
UBC	Ubiquitin C
ALB	Albumin
TXNRD1	Thioredoxin reductase 1

SRXN1	Sulfiredoxin 1
GPX2	Glutathione peroxidase 2
BNIP3	BCL2 interacting protein 3
OXSRI	Oxidative stress responsive kinase 1
SELENOS	Selenoprotein S
ANGPTL7	Angiopoietin like 7
CHAC1	ChaC glutathione specific gamma-glutamylcyclotransferase 1
SLC7A11	Solute carrier family 7 member 11
DDIT4	DNA damage inducible transcript 4
LOC284561	_NA_
ASNS	Asparagine synthetase (glutamine-hydrolyzing)
TSC22D3	TSC22 domain family member 3
DDIT3	DNA damage inducible transcript 3
JDP2	Jun dimerization protein 2
SESN2	Sestrin 2
SLC1A4	Solute carrier family 1 member 4
PCK2	Phosphoenolpyruvate carboxykinase 2, mitochondrial
TXNIP	Thioredoxin interacting protein
VLDLR	Very low density lipoprotein receptor
GPT2	Glutamic--pyruvic transaminase 2

PSAT1	Phosphoserine aminotransferase 1
LURAP1L	Leucine rich adaptor protein 1 like
SLC7A5	Solute carrier family 7 member 5
HERPUD1	Homocysteine inducible ER protein with ubiquitin like domain 1
XBP1	X-box binding protein 1
ATF3	Activating transcription factor 3
SLC3A2	Solute carrier family 3 member 2
CBS	Cystathionine beta-synthase
ATF4	Activating transcription factor 4
ZNF419	Zinc finger protein 419
KLHL24	Kelch like family member 24
TRIB3	Tribbles pseudokinase 3
ZFP69B	ZFP69 zinc finger protein B
ATP6V1G2	ATPase H ⁺ transporting V1 subunit G2
VEGFA	Vascular endothelial growth factor A
GDF15	Growth differentiation factor 15
TUBE1	Tubulin epsilon 1
ARRDC3	Arrestin domain containing 3
CEBPG	CCAAT enhancer binding protein gamma
SNORA16A	Small nucleolar RNA, H/ACA box 16A

RGS4	Regulator of G protein signaling 4
BLOC1S5- TXNDC5	BLOC1S5-TXNDC5 readthrough (NMD candidate)
LOC390705	_NA_
EIF2S1	Eukaryotic translation initiation factor 2 subunit 1
KIM-1	Kidney injury molecule-1
IL6	Interleukin 6
CXCL2	C-X-C motif chemokine ligand 2
RELA	RELA proto-oncogene, NF-kB subunit
HSD17B11	Hydroxysteroid 17-beta dehydrogenase 11
AGPAT3	1-acylglycerol-3-phosphate O-acyltransferase 3
SETD1B	SET domain containing 1B, histone lysine methyltransferase
HMOX1	Heme oxygenase 1
TF	Transferrin
FTL	Ferritin light chain
RPL8	Ribosomal protein L8
ATP5MC3	ATP synthase membrane subunit c locus 3
TFRC	Transferrin receptor
MAFG	MAF bZIP transcription factor G
IL33	Interleukin 33
FTH1	Ferritin heavy chain 1

SLC40A1	Solute carrier family 40 member 1
TF	Transferrin
TFRC	Transferrin receptor
FTH1	Ferritin heavy chain 1
GPX4	Glutathione peroxidase 4
HAMP	Hepcidin antimicrobial peptide
HSPB1	Heat shock protein family B (small) member 1
NFE2L2	Nuclear factor, erythroid 2 like 2
STEAP3	STEAP3 metalloredutase
DRD5	Dopamine receptor D5
GPX4	Glutathione peroxidase 4
DRD4	Dopamine receptor D4
MAP3K5	Mitogen-activated protein kinase kinase kinase 5
MAPK14	Mitogen-activated protein kinase 14
SLC2A1	Solute carrier family 2 member 1
SLC2A3	Solute carrier family 2 member 3
SLC2A6	Solute carrier family 2 member 6
SLC2A8	Solute carrier family 2 member 8
SLC2A12	Solute carrier family 2 member 12
GLUT13	_NA_
SLC2A14	Solute carrier family 2 member 14

EIF2AK4	Eukaryotic translation initiation factor 2 alpha kinase 4
EIF2S1	Eukaryotic translation initiation factor 2 subunit alpha
ATF4	Activating transcription factor 4
ALOX5	Arachidonate 5-lipoxygenase
ALOX12	Arachidonate 12-lipoxygenase, 12S type
ALOX15	Arachidonate 15-lipoxygenase
ALOX5	Arachidonate 5-lipoxygenase
ACSF2	Acyl-CoA synthetase family member 2
IREB2	Iron responsive element binding protein 2
GPX4	Glutathione peroxidase 4
HMGB1	High mobility group box 1
HMOX1	Heme oxygenase 1
NFE2L2	Nuclear factor, erythroid 2 like 2
ELAVL1	ELAV like RNA binding protein 1
SLC3A2	Solute carrier family 3 member 2
SLC7A11	Solute carrier family 7 member 11
TFAP2C	Transcription factor AP-2 gamma
SP1	Sp1 transcription factor
HBA1	Hemoglobin subunit alpha 1
NNMT	Nicotinamide N-methyltransferase

PLIN4	Perilipin 4
HIC1	HIC ZBTB transcriptional repressor 1
STMN1	Stathmin 1
RRM2	Ribonucleotide reductase regulatory subunit M2
CAPG	Capping actin protein, gelsolin like
HNF4A	Hepatocyte nuclear factor 4 alpha
NG2	Neuroglobin
YWHAE	Tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein epsilon
GABPB1	GA binding protein transcription factor subunit beta 1
AURKA	Aurora kinase A
MIR4715	microRNA 4715
RIPK1	Receptor interacting serine/threonine kinase 1
PRDX1	Peroxiredoxin 1
MIR30B	microRNA 30b

Supplementary Figure 2. Primer sequences of four ferroptosis-related lncRNAs for quantitative real-time PCR.

lncRNA	Forward primer	Backward primer
LNCSSLR	5'-CACTGTTCCAGGCACCAAGG-3'	5'-TGTCGCCAAAGAAGAGAACAGG-3'