

Table S1 Univariate cox analysis of genes in discovery dataset

ID	HR	HR.95L	HR.95H	P value
<i>GMPR2</i>	0.93928678	0.89133232	0.98982124	0.01914916
<i>HMGCL</i>	0.88829962	0.81878939	0.96371085	0.00438443
<i>LPCAT2</i>	1.12104977	1.02322958	1.22822151	0.01416989
<i>ACSL1</i>	1.02251285	1.00481533	1.04052208	0.01244644
<i>POLR3GL</i>	0.92258178	0.87554178	0.97214909	0.00254594
<i>TAT</i>	0.98671978	0.97509192	0.9984863	0.02707577
<i>LAP3</i>	0.96268921	0.9351051	0.99108702	0.0103606
<i>NAT1</i>	0.98885541	0.98116516	0.99660594	0.00490108
<i>RDH11</i>	1.05997457	1.00245807	1.12079111	0.04073542
<i>OCRL</i>	1.10241284	1.03560898	1.173526	0.00223553
<i>CYP3A5</i>	1.54701459	1.1033392	2.16910097	0.01139845
<i>CNDP1</i>	1.56878361	1.13940445	2.15997228	0.00578351
<i>GSTM1</i>	0.97351446	0.95791165	0.98937141	0.00112921
<i>ACMSD</i>	0.8281429	0.7151563	0.9589801	0.01174814
<i>ASS1</i>	1.01915058	1.0058305	1.03264704	0.00471235
<i>ADH1A</i>	0.68270431	0.49575891	0.94014481	0.01938552
<i>ACADM</i>	0.94144329	0.89812247	0.98685367	0.01205405
<i>GSTM2</i>	0.83311382	0.74841643	0.92739631	0.0008441
<i>GUK1</i>	1.04289432	1.00087553	1.08667714	0.04531997
<i>PGM2L1</i>	1.08428191	1.006178	1.16844857	0.0338852
<i>NME5</i>	0.86181536	0.78063704	0.95143541	0.00321654
<i>CA9</i>	1.04080906	1.01858663	1.06351632	0.00028082
<i>PAFAH2</i>	0.90134425	0.82804583	0.98113103	0.01638844
<i>PLCG1</i>	1.09016127	1.01760919	1.16788606	0.01402029
<i>GLUD1</i>	0.96724806	0.93647506	0.99903229	0.04352309
<i>GNE</i>	1.09174118	1.04707314	1.13831476	3.82E-05
<i>TYRP1</i>	1.05100977	1.00192209	1.10250243	0.04148504
<i>AKR1C1</i>	1.05313592	1.00777427	1.10053938	0.02118301
<i>MTR</i>	0.89726251	0.81262252	0.99071832	0.03199886
<i>TPH1</i>	0.94129425	0.89803004	0.98664278	0.01173185
<i>GSTM3</i>	0.97200339	0.95755327	0.98667157	0.00020256
<i>PFKFB4</i>	1.19741193	1.0139887	1.41401509	0.03369381
<i>NMRK1</i>	0.86923592	0.77560326	0.97417215	0.01595455
<i>IMPA1</i>	1.10914793	1.00462244	1.22454874	0.04023925
<i>B4GALT2</i>	1.05323052	1.0089475	1.09945714	0.01796139
<i>ENTPD4</i>	0.90257535	0.83825275	0.9718337	0.0065802
<i>RDH10</i>	1.01945397	1.00298738	1.03619091	0.02039572
<i>CYP4A11</i>	0.57608177	0.36329863	0.9134915	0.01904603
<i>ADCY3</i>	0.93409429	0.8747008	0.99752069	0.04194922
<i>AGPAT4</i>	1.32870351	1.04785103	1.68483206	0.01898843
<i>POLR2G</i>	0.96103293	0.92431615	0.99920822	0.04551999
<i>PGM3</i>	1.08695954	1.01249577	1.16689974	0.02128234
<i>PSAT1</i>	1.01840917	1.00160456	1.03549572	0.03164828
<i>FPGT</i>	0.84686858	0.75705006	0.94734342	0.00366545
<i>RRM2B</i>	1.06295583	1.0216939	1.10588415	0.00250756
<i>NME7</i>	0.7991865	0.6623959	0.96422557	0.01926806
<i>PPOX</i>	0.87457314	0.79530887	0.96173726	0.00569536
<i>TBXAS1</i>	0.82702663	0.72513526	0.94323513	0.0046384
<i>SULT2B1</i>	1.07518182	1.02523826	1.12755833	0.00281701
<i>WARS2</i>	0.89953354	0.83310456	0.97125933	0.00683072
<i>AHCYL1</i>	0.92908279	0.89476288	0.96471909	0.00012798
<i>PIP4K2C</i>	1.05155799	1.01085041	1.0939049	0.01257042
<i>GAD1</i>	0.87162412	0.7731162	0.9826836	0.02473992
<i>ALOX5</i>	0.92421569	0.87646165	0.97457161	0.00359656
<i>ACOX1</i>	1.08637668	1.0285938	1.14740561	0.00296868
<i>COMT</i>	1.03408292	1.0013122	1.06792616	0.04137281

Table S1 (continued)

Table S1 (continued)

ID	HR	HR.95L	HR.95H	P value
CHKB	0.61422262	0.44790989	0.84228869	0.00248394
SEPHS1	1.0465633	1.00901643	1.08550733	0.01462702
RDH16	1.12765272	1.00698942	1.26277459	0.03747166
NADSYN1	1.13588603	1.03221106	1.24997409	0.00907576
PNMT	1.00885599	1.00228806	1.01546697	0.0081505
POLD2	1.03756878	1.00255989	1.07380016	0.03520842
POLR2F	0.53889535	0.31789905	0.91352331	0.02168498
SGMS2	1.18190018	1.07738306	1.29655651	0.00040353
GSTT2	0.60859857	0.44134599	0.83923321	0.00245356
PYGB	1.03373864	1.00962457	1.05842866	0.00586311
IDO2	0.68875583	0.49249252	0.96323208	0.02934149
P4HA3	1.15348742	1.02460328	1.29858381	0.01817544
GALC	0.89102211	0.81770824	0.97090915	0.00844214
POLR2D	1.08685517	1.00016986	1.18105355	0.04953368
HAL	1.41455666	1.01713756	1.96725656	0.03930873
CHDH	0.92205973	0.86712027	0.98048007	0.00962845
GSTK1	0.94276428	0.9104742	0.97619953	0.00091754
CYP2J2	1.09368377	1.02862383	1.16285871	0.00421149
GNPDA1	0.936275	0.8766975	0.9999012	0.04965669
UPP1	1.14691292	1.05162324	1.25083699	0.00195268
ALDH2	0.97580175	0.95355556	0.99856694	0.03735676
SHMT2	1.05177226	1.01563809	1.08919202	0.00465612
CA7	0.55668819	0.37807641	0.81968018	0.00300493
FADS2	1.01561905	1.00052305	1.03094283	0.04251918
PLA2G2D	0.92605432	0.87532534	0.97972328	0.00752575
GLA	0.97667728	0.95677598	0.99699254	0.02465809
GYS2	0.72838824	0.55367255	0.95823683	0.02352314
NMNAT1	0.68889869	0.53956853	0.87955724	0.00279455
PFKP	1.04277858	1.01294843	1.07348721	0.00467287
FMO5	0.93111393	0.88864685	0.97561045	0.00272946
ABAT	0.94607714	0.91610165	0.97703346	0.00073991
ACER3	1.06462488	1.01366287	1.11814901	0.01234269
SPTLC2	1.0451376	1.00708258	1.08463063	0.01965323
GGCT	1.02864477	1.0029446	1.05500349	0.0286895
POLR2L	0.97794573	0.95739463	0.99893798	0.03958794
AK1	1.14543884	1.00394101	1.30687972	0.04354646
GSTM4	0.83595974	0.7772085	0.89915214	1.44E-06
GGT7	0.94951452	0.90433644	0.99694956	0.03727001
GUCY1A2	1.13844323	1.00380616	1.29113871	0.04347455
EPHX2	0.92294631	0.89037385	0.95671036	1.22E-05
NT5M	0.89598463	0.81512708	0.98486295	0.02284318
QPRT	1.04158053	1.00796645	1.07631559	0.01493098
PYGR1	1.03384775	1.01045857	1.05777833	0.0043569
RRM2	1.02672081	1.0001274	1.05402134	0.04889816
FBP1	0.98529453	0.97119271	0.9996011	0.04398756
ACSL5	0.9452098	0.90088727	0.99171295	0.02147281
SDS	1.06552834	1.00912736	1.12508162	0.02217183
PNPLA4	0.94247207	0.90373661	0.98286778	0.00565766
ALDH9A1	0.95800646	0.92365978	0.99363034	0.02127924
HMGCS1	1.04521207	1.01419307	1.07717979	0.00401677
PI4KB	0.94254539	0.88889393	0.99943513	0.04783173
AADAT	1.15029906	1.05426189	1.25508467	0.00164443
NOS3	1.24595442	1.06364633	1.45950996	0.00644152
AKR1B10	1.03216298	1.01163834	1.05310404	0.00200771
HADHB	0.92655013	0.88007659	0.97547777	0.00366547
ACY3	1.02498342	1.00795563	1.04229887	0.00388855

Table S1 (continued)

Table S1 (continued)

ID	HR	HR.95L	HR.95H	P value
ACYP1	0.79887278	0.68973981	0.92527313	0.00273286
APRT	1.03749206	1.01014782	1.06557649	0.00691599
HMGCS2	0.99105154	0.9826809	0.99949348	0.03779833
NUDT2	0.96662197	0.93463537	0.99970328	0.04801353
ACP5	0.98170868	0.96755126	0.99607326	0.0127446
G6PD	1.03562466	1.01666399	1.05493894	0.00020487
DNMT3B	1.19506933	1.0823914	1.31947712	0.00042045
BST1	0.83968975	0.72129957	0.97751185	0.02424086
CP	1.01042422	1.00069363	1.02024942	0.03569337
UGCG	0.97992958	0.9615458	0.99866485	0.03588462
AGXT	1.10230048	1.01999549	1.19124679	0.0138935
AMDHD1	0.83009727	0.70453085	0.97804302	0.02606257
GK	0.73427975	0.60138476	0.8965421	0.00242898
ENTPD5	0.96623398	0.93866183	0.99461603	0.02004828
UGDH	0.98241867	0.96552116	0.99961191	0.04508987
ACADSB	0.97188792	0.95574417	0.98830436	0.00084825
AOC2	1.43067831	1.10338094	1.85506233	0.00688751
AOC1	1.05276271	1.01370481	1.0933255	0.00768439
CTPS1	1.04789201	1.00190846	1.09598603	0.04102864
GNPNAT1	1.04398732	1.00604596	1.08335959	0.0226613
PNP	1.05394073	1.01174451	1.09789681	0.01173422
TSTA3	1.03149967	1.00764714	1.05591683	0.0093724
PTGDS	0.98448256	0.97101637	0.99813549	0.02604484
ACACB	0.96584968	0.93633514	0.99629454	0.02820576
GLUL	0.95632979	0.93520721	0.97792944	8.91E-05
ECI2	0.9511449	0.92298804	0.98016072	0.00108712
NMNAT3	0.90536339	0.83132083	0.98600063	0.02238173
AFMID	0.97273679	0.94826937	0.99783553	0.03344735
ALDH3A2	0.9649469	0.93303706	0.99794805	0.03755476
DGKA	0.83668554	0.73863889	0.94774685	0.00504891
ASAH1	0.96723393	0.94307976	0.99200673	0.00982467
CHST13	0.53275815	0.28411808	0.99899044	0.04963305
CAT	0.96910367	0.94085917	0.99819608	0.0375616
ALDH1A1	0.97702672	0.95897878	0.99541432	0.01456095
PTDSS1	1.04241309	1.00624335	1.07988297	0.02114443
AHCYL2	0.89157111	0.82179687	0.96726949	0.00577418
ACSM1	0.98046187	0.96453315	0.99665364	0.01822286
BDH2	0.93218544	0.87372685	0.99455533	0.033571
MAT2A	0.95816582	0.92048538	0.99738872	0.03682496
AGMAT	0.77934155	0.61212978	0.99222954	0.04304507
ADCY1	0.95712783	0.92801714	0.98715168	0.0054266
ADO	1.08818765	1.00905737	1.17352333	0.02823238
CHPT1	0.95003371	0.92659765	0.97406254	5.77E-05
NME6	1.20998713	1.02187239	1.43273159	0.02704048
ETNK1	0.94352226	0.89969099	0.98948892	0.01660481
MBOAT1	0.96294432	0.9403508	0.98608069	0.0018265
PDE6B	0.81705428	0.71034595	0.93979236	0.00466083
AGPAT2	1.02753505	1.00371354	1.05192192	0.02322649
LCT	1.47339319	1.0488791	2.06972139	0.02540505

Table S2 Coefficient of genes in metabolic prognostic table

Gene	Coefficient
LPCAT2	0.04095005
TAT	-0.0021002
OCRL	0.06942362
CNDP1	0.00608969
ADH1A	-0.0472956
GNE	0.06236155
AKR1C1	0.01225844
GSTM3	-0.0210316
CYP4A11	-0.0464556
AGPAT4	0.14475202
RRM2B	0.0147272
PPOX	-0.0389313
TBXAS1	-0.0096578
SULT2B1	0.05279369
WARS2	-0.0208845
CHKB	-0.0175868
NADSYN1	0.0820863
POLR2F	-0.6217342
SGMS2	0.05449231
GSTT2	-0.0555444
PYGB	0.00726802
HAL	0.26174843
CYP2J2	0.02452044
UPP1	0.05409782
ALDH2	-0.0167485
CA7	-0.5635596
PLA2G2D	-0.0239303
GYS2	-0.1563698
SPTLC2	0.00659571
POLR2L	-0.0184509
AK1	0.06426064
GSTM4	-0.0715992
GGT7	-0.007687
NT5M	-0.0130065
ALDH9A1	-0.0088336
NOS3	0.15157501
ACY3	0.01008885
ACYP1	-0.0814231
G6PD	0.00299901
BST1	-0.150993
AGXT	0.02307994
GK	-0.1001818
AOC1	0.01578934
TSTA3	0.00435417
GLUL	-0.0118676
AFMID	-0.0133855
DGKA	-0.1688997
CHST13	-0.0798251
AHCYL2	-0.0564555
MAT2A	-0.0198193
AGMAT	-0.2480762
ADCY1	-0.0022782
ADO	0.00781095
NME6	0.07458559
AOC1	0.01578934
TSTA3	0.00435417

Table S2 (continued)**Table S2** (continued)

Gene	Coefficient
GLUL	-0.0118676
AFMID	-0.0133855
DGKA	-0.1688997
CHST13	-0.0798251
AHCYL2	-0.0564555
MAT2A	-0.0198193

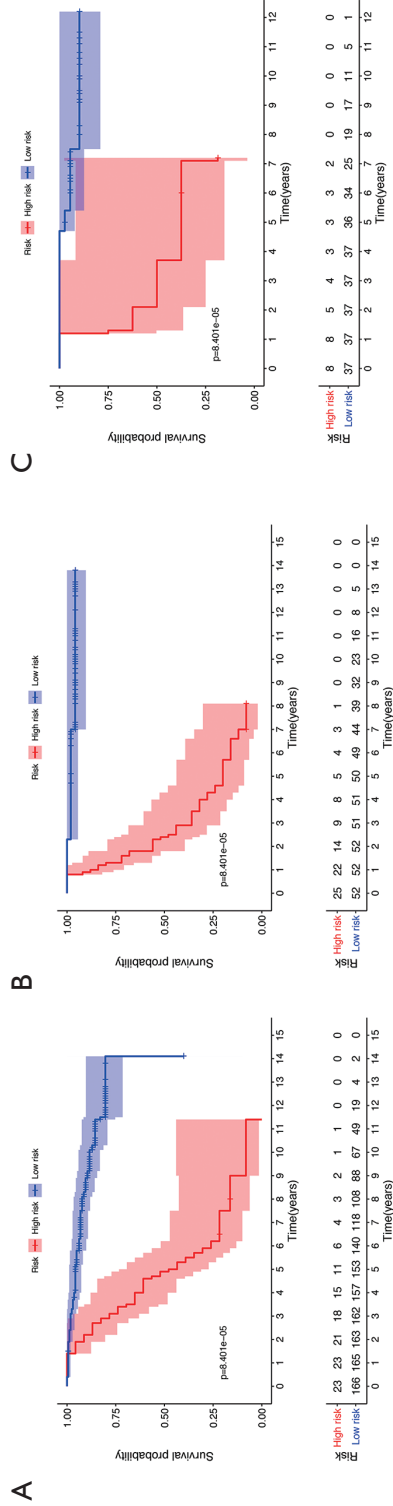


Figure S1 Kaplan-Meier plot of the risk score in different subtypes using a cutoff value from the ROC curve. Kaplan-Meier plot of the risk score in the luminal (A), HER2 (B), and basal (C) types in the discovery dataset. ROC, receiver operating characteristic.

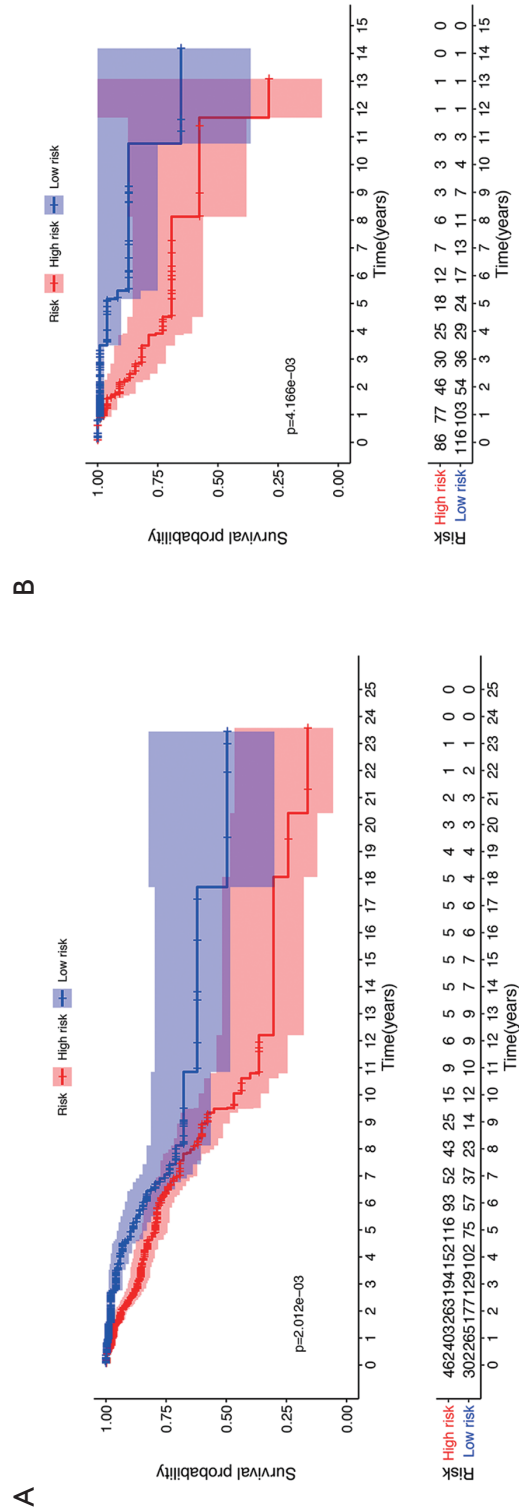


Figure S2 Kaplan-Meier plot of the risk scores in different pathological types. Kaplan-Meier plot of the risk scores in invasive ductal carcinoma (A) and invasive lobular carcinoma (B) in TCGA dataset. TCGA, The Cancer Genome Atlas.

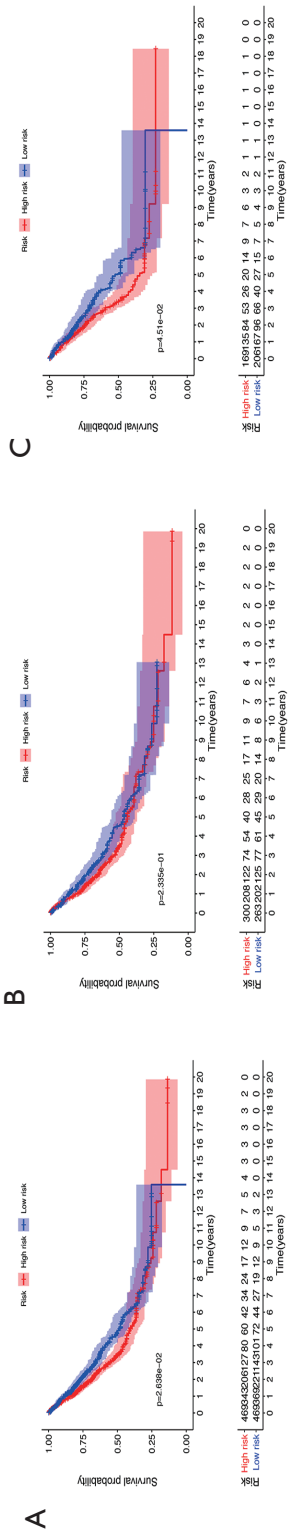


Figure S3 Kaplan-Meier plot of risk scores in lung cancer patients. Kaplan-Meier plot of the risk score in the entire dataset (A), males (B), and females (C).