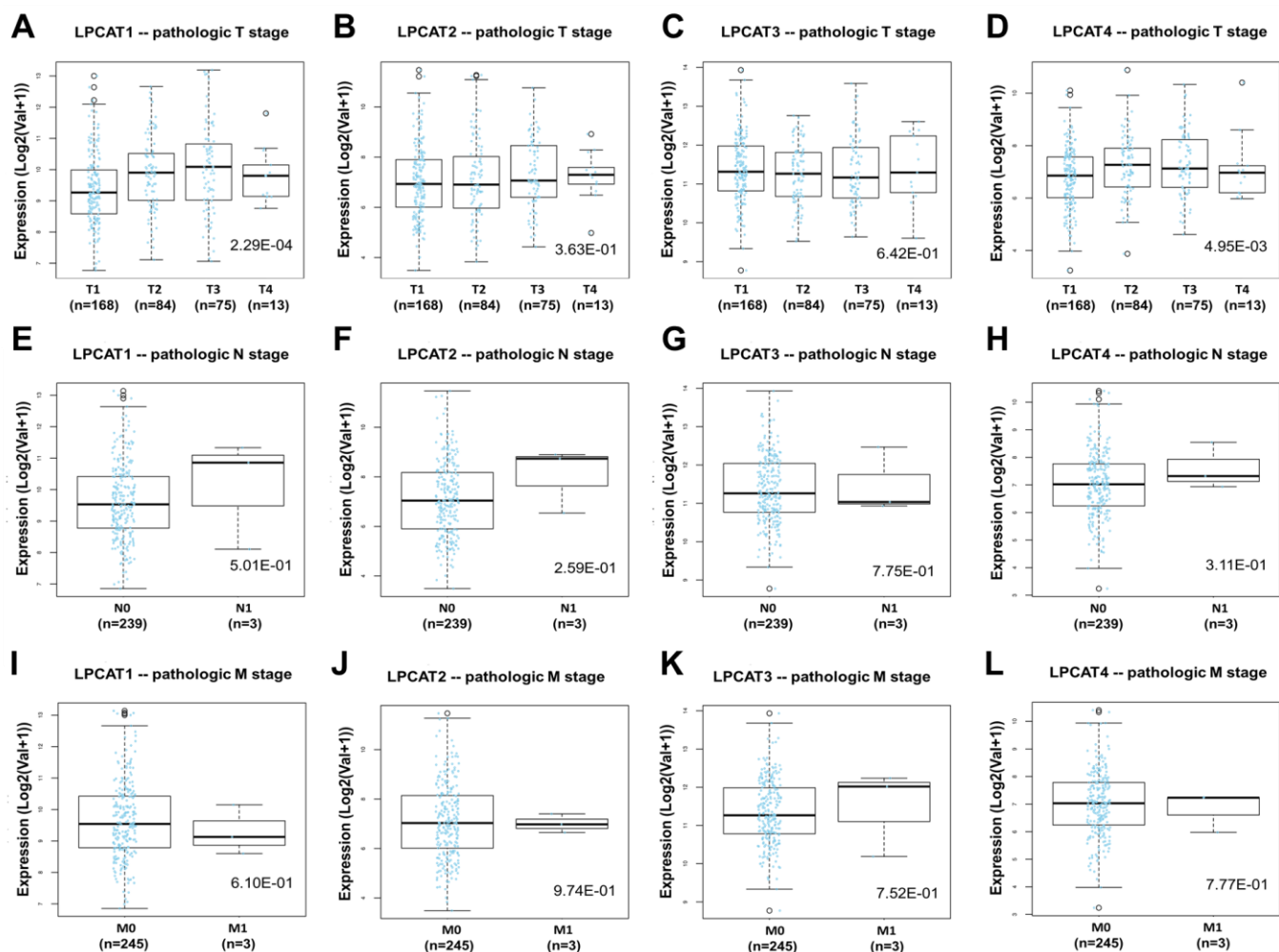
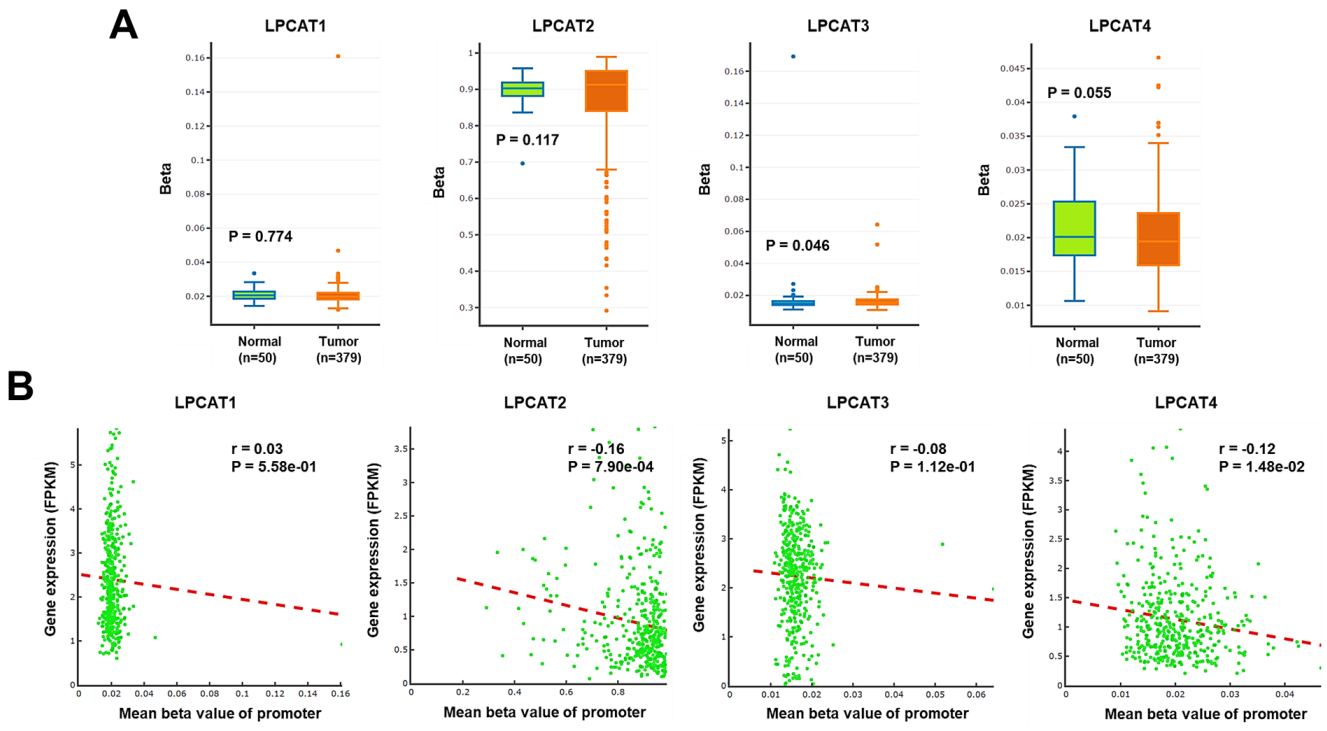


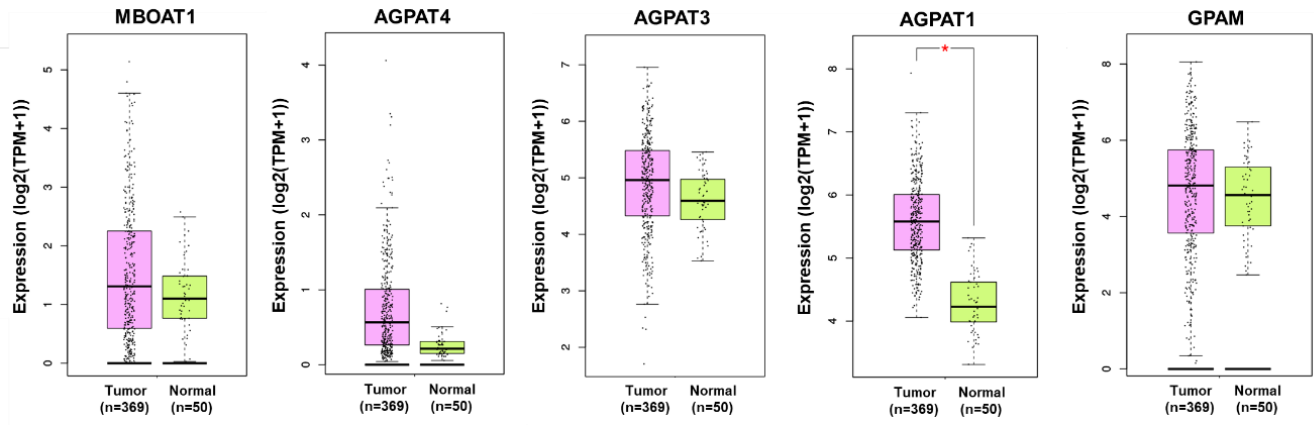
Supplementary Figure 1 LPCAT proteins expression in normal liver and HCC specimens. The antibodies for (A) LPCAT1, (B) LPCAT2, and (C) LPCAT4 are HPA022268, HPA007891, and HPA057321 respectively. The data of LPCAT3 is still pending (HPA database).



Supplementary Figure 2 Associations between LPCATs' expression and pathologic TNM stages of HCC patients. The expression of *LPCAT1-4* in HCC patients with different (**A-D**) T stages, (**E-H**) N stages, and (**I-L**) M stages (LinkedOmics).



Supplementary Figure 3 DNA methylation of LPCATs in HCC. **(A)** Global DNA methylation levels of LPCATs in HCC and normal liver samples. **(B)** Correlations between the global DNA methylation levels and expression levels of LPCATs in HCC samples (DNM1VD).



Supplementary Figure 4 The mRNA expression of the five core genes in the PPI network in HCC (GEPIA). * $P < 0.05$; TPM, transcript per million.

Supplementary Table 1 Significantly Differential Methylation-Related Functional Elements of LPCATs in

HCC

Gene Symbol	CpG (probe ID)	Group	Relation to island	Average level in tumor samples	Average level in normal samples	Delta value	Fold change	<i>P</i> value
LPCAT1	cg05255351	Body	OpenSea	0.71	0.67	0.05	1.07	4.47E-02
LPCAT1	cg00287915	Body	OpenSea	0.71	0.67	0.04	1.06	3.04E-02
LPCAT1	cg09849319	Body	Island	0.81	0.77	0.04	1.05	1.29E-02
LPCAT1	cg07479711	TSS1500	S_Shore	0.88	0.90	-0.02	0.98	1.69E-03
LPCAT1	cg09121930	Body	OpenSea	0.92	0.95	-0.02	0.98	4.69E-02
LPCAT1	cg13042527	Body	N_Shore	0.92	0.94	-0.03	0.97	1.51E-02
LPCAT1	cg25985480	Body	Island	0.92	0.95	-0.03	0.97	1.38E-02
LPCAT1	cg17437086	Body	OpenSea	0.89	0.92	-0.03	0.97	5.17E-03
LPCAT1	cg22938488	Body	OpenSea	0.87	0.90	-0.03	0.97	1.33E-04
LPCAT1	cg12210878	Body	N_Shore	0.92	0.95	-0.03	0.97	3.34E-02
LPCAT1	cg20558160	Body	Island	0.88	0.92	-0.03	0.96	9.70E-03
LPCAT1	cg02599626	Body	OpenSea	0.86	0.89	-0.03	0.96	3.91E-02
LPCAT1	cg21747442	Body	N_Shelf	0.89	0.93	-0.04	0.96	2.39E-02
LPCAT1	cg05580512	3'UTR	N_Shore	0.88	0.92	-0.04	0.96	1.87E-02
LPCAT1	cg22305129	Body	Island	0.83	0.87	-0.03	0.96	1.85E-02
LPCAT1	cg09485506	Body	OpenSea	0.89	0.93	-0.04	0.96	6.83E-03
LPCAT1	cg16533510	Body	OpenSea	0.90	0.94	-0.04	0.96	3.22E-02
LPCAT1	cg17222401	Body	N_Shore	0.87	0.91	-0.04	0.96	6.78E-03
LPCAT1	cg06977900	Body	OpenSea	0.83	0.87	-0.04	0.96	1.11E-03
LPCAT1	cg17265576	Body	OpenSea	0.93	0.97	-0.04	0.95	3.04E-02
LPCAT1	cg06984201	Body	OpenSea	0.89	0.93	-0.04	0.95	2.79E-02
LPCAT1	cg24093182	Body	OpenSea	0.90	0.94	-0.04	0.95	1.93E-02
LPCAT1	cg18191138	Body	N_Shelf	0.94	0.98	-0.05	0.95	4.28E-02
LPCAT1	cg14093365	Body	Island	0.86	0.91	-0.05	0.95	6.47E-03
LPCAT1	cg08282812	Body	OpenSea	0.54	0.57	-0.03	0.94	4.43E-02
LPCAT1	cg11468199	Body	OpenSea	0.80	0.85	-0.05	0.94	1.49E-04
LPCAT1	cg01259891	Body	N_Shore	0.86	0.92	-0.06	0.94	5.54E-03
LPCAT1	cg09885622	Body	OpenSea	0.74	0.79	-0.05	0.94	4.51E-02
LPCAT1	cg26110675	Body	N_Shore	0.85	0.91	-0.06	0.94	1.24E-03
LPCAT1	cg05538406	Body	OpenSea	0.84	0.90	-0.06	0.93	1.62E-03
LPCAT1	cg11468635	Body	OpenSea	0.87	0.93	-0.06	0.93	7.60E-03
LPCAT1	cg20962974	Body	OpenSea	0.70	0.75	-0.05	0.93	1.19E-02
LPCAT1	cg02455827	Body	N_Shore	0.80	0.87	-0.06	0.93	2.31E-05
LPCAT1	cg01900358	Body	OpenSea	0.78	0.84	-0.06	0.93	1.05E-02
LPCAT1	cg09809922	Body	OpenSea	0.85	0.91	-0.07	0.93	2.70E-03
LPCAT1	cg11960719	Body	OpenSea	0.79	0.85	-0.06	0.93	1.93E-03
LPCAT1	cg26225478	Body	OpenSea	0.81	0.87	-0.07	0.92	1.14E-03
LPCAT1	cg06859187	3'UTR	Island	0.81	0.88	-0.07	0.92	2.16E-05
LPCAT1	cg05681827	Body	OpenSea	0.82	0.88	-0.07	0.92	1.09E-03
LPCAT1	cg07148919	Body	Island	0.87	0.95	-0.07	0.92	6.78E-03
LPCAT1	cg02661034	Body	OpenSea	0.74	0.80	-0.06	0.92	4.71E-03
LPCAT1	cg08610563	Body	OpenSea	0.82	0.89	-0.07	0.92	5.04E-03
LPCAT1	cg12412255	Body	N_Shore	0.69	0.75	-0.06	0.92	1.03E-03
LPCAT1	cg19101154	TSS200	Island	0.03	0.03	0.00	0.92	4.47E-03
LPCAT1	cg16194544	Body	S_Shore	0.78	0.86	-0.08	0.91	3.40E-04
LPCAT1	cg16474722	Body	OpenSea	0.79	0.87	-0.08	0.91	8.40E-05

LPCAT1	cg04843690	Body	OpenSea	0.77	0.85	-0.08	0.90	3.49E-06
LPCAT1	cg06661456	Body	OpenSea	0.71	0.80	-0.09	0.89	4.33E-05
LPCAT1	cg07151155	Body	OpenSea	0.73	0.83	-0.09	0.89	4.04E-06
LPCAT1	cg16658337	Body	S_Shore	0.77	0.88	-0.11	0.88	2.25E-04
LPCAT1	cg04005843	3'UTR	N_Shore	0.74	0.85	-0.11	0.87	2.78E-05
LPCAT1	cg05365670	TSS1500	Island	0.43	0.49	-0.07	0.86	1.15E-02
LPCAT1	cg07324729	Body	S_Shelf	0.71	0.88	-0.18	0.80	3.81E-10
LPCAT1	cg19756358	Body	N_Shelf	0.27	0.38	-0.11	0.72	6.47E-05
LPCAT1	cg09221037	Body	Island	0.12	0.17	-0.05	0.68	7.74E-04
LPCAT2	cg01751134	1stExon	Island	0.11	0.02	0.08	4.44	2.24E-17
LPCAT2	cg09793988	5'UTR;1stExon	Island	0.17	0.09	0.08	1.94	1.74E-17
LPCAT2	cg08416650	5'UTR;1stExon	Island	0.06	0.03	0.03	1.73	1.70E-07
LPCAT2	cg16176379	5'UTR;1stExon	Island	0.19	0.13	0.06	1.50	8.67E-05
LPCAT2	cg27458265	5'UTR;1stExon	Island	0.34	0.27	0.07	1.25	3.42E-06
LPCAT2	cg00427604	TSS200	N_Shore	0.81	0.83	-0.02	0.97	3.89E-03
LPCAT2	cg03736685	Body	S_Shelf	0.83	0.93	-0.10	0.89	1.27E-28
LPCAT2	cg00495811	3'UTR	OpenSea	0.55	0.78	-0.23	0.71	1.01E-37
LPCAT2	cg07627639	Body	S_Shore	0.20	0.34	-0.14	0.58	1.85E-28
LPCAT3	cg07380405	TSS1500	S_Shore	0.05	0.04	0.01	1.14	2.05E-05
LPCAT3	cg17842066	Body	N_Shore	0.03	0.02	0.00	1.14	2.66E-03
LPCAT3	cg10044431	Body	OpenSea	0.92	0.94	-0.02	0.98	8.27E-10
LPCAT3	cg12063138	Body	OpenSea	0.90	0.93	-0.03	0.97	7.97E-09
LPCAT3	cg26651188	Body	OpenSea	0.86	0.92	-0.06	0.93	3.40E-27
LPCAT3	cg00294658	TSS1500	Island	0.03	0.04	0.00	0.92	2.15E-02
LPCAT3	cg01941018	5'UTR;1stExon	Island	0.14	0.15	-0.01	0.91	4.25E-02
LPCAT3	cg01163066	TSS1500	Island	0.04	0.05	-0.01	0.87	2.22E-05
LPCAT4	cg01853219	Body	N_Shore	0.02	0.02	0.00	1.22	4.04E-02
LPCAT4	cg23441018	Body	N_Shelf	0.76	0.80	-0.03	0.96	6.42E-04
LPCAT4	cg16108253	TSS1500	Island	0.02	0.03	0.00	0.91	2.14E-06
LPCAT4	cg12450255	5'UTR;1stExon	N_Shore	0.04	0.05	0.00	0.91	1.09E-03
LPCAT4	cg03454375	TSS1500	S_Shore	0.04	0.04	-0.01	0.87	9.85E-04

Note: The information was obtained from DNMIVD and SurvivalMeth databases.