

SUPPLEMENTARY TABLES

Supplementary Table 1. Univariate and multivariate cox regression analysis to identify prognosis-related metabolic genes.

| ID | Univariate Cox regression analysis | | Multivariate Cox regression analysis | | |
|---------|------------------------------------|---------|--------------------------------------|-------------------------|---------|
| | HR (95%CI) | P-value | coef | HR (95%CI) | P-value |
| AGPAT4 | 1.2452 (1.0732, 1.4448) | 0.0038 | 0.2777 | 1.3201 (1.0961, 1.5899) | 0.0034 |
| ALOX12B | 0.8876 (0.7987, 0.9864) | 0.0269 | -0.0964 | 0.9081 (0.8144, 1.0126) | 0.0828 |
| GNG8 | 0.5753 (0.3771, 0.8778) | 0.0103 | -0.5325 | 0.5871 (0.3823, 0.9017) | 0.0150 |
| HCCS | 0.9420 (0.8981, 0.9882) | 0.0144 | -0.1019 | 0.9031 (0.8516, 0.9577) | 0.0007 |
| LDHC | 0.5612 (0.3923, 0.8028) | 0.0016 | -0.5540 | 0.5746 (0.4091, 0.8071) | 0.0014 |
| LIPG | 1.2120 (1.1059, 1.3282) | 0.0000 | 0.1157 | 1.1227 (1.0139, 1.2431) | 0.0260 |
| MSMO1 | 1.0256 (1.0127, 1.0386) | 0.0001 | 0.0205 | 1.0207 (1.0063, 1.0353) | 0.0047 |
| NPR2 | 1.1327 (1.0222, 1.2552) | 0.0174 | 0.1074 | 1.1134 (0.9877, 1.2551) | 0.0788 |
| PGK1 | 1.0048 (1.0023, 1.0072) | 0.0001 | 0.0032 | 1.0032 (1.0004, 1.0060) | 0.0258 |
| PLA2G7 | 0.8987 (0.8259, 0.9778) | 0.0131 | -0.1140 | 0.8923 (0.8088, 0.9844) | 0.0229 |
| PTGDS | 0.9824 (0.9670, 0.9981) | 0.0286 | -0.0118 | 0.9883 (0.9717, 1.0051) | 0.1705 |
| SULT1A3 | 0.0002 (0.0000, 0.2583) | 0.0195 | -6.7515 | 0.0012 (0.0000, 1.0095) | 0.0503 |
| SULT1E1 | 0.8769 (0.7756, 0.9915) | 0.0360 | -0.1188 | 0.8880 (0.7811, 1.0096) | 0.0697 |
| TUBB4B | 0.9970 (0.9945, 0.9995) | 0.0190 | -0.0039 | 0.9961 (0.9930, 0.9993) | 0.0182 |
| TYMS | 0.9796 (0.9622, 0.9973) | 0.0242 | -0.0134 | 0.9867 (0.9682, 1.0055) | 0.1635 |

Abbreviations: HR: hazard ratio; CI: confidence interval.

Supplementary Table 2. Clinicopathological characteristics statistics of CC patients.

| Characteristics | No. of patients (%) | Risk group (No. of patients) | |
|-----------------|---------------------|------------------------------|----------------|
| | | Low (N = 147) | High (N = 146) |
| Age (years) | ≤65 | 134 (91.2%) | 126 (86.3%) |
| | >65 | 13 (8.8%) | 20 (13.7%) |
| Stage | I | 84 (57.1%) | 75 (51.4%) |
| | II | 36 (24.5%) | 28 (19.2%) |
| | III | 19 (12.9%) | 23 (15.8%) |
| | IV | 6 (4.1%) | 16 (11.0%) |
| | Unknown | 2 (1.4%) | 4 (2.7%) |
| T stage | T1 | 80 (54.4%) | 57 (39.0%) |

| | | | | |
|------------------------|---------|-----------------|-----------------|---------------|
| | T2 | 68 (23.2%) | 40 (27.2%) | 28 (19.2%) |
| | T3 | 17 (5.8%) | 5 (3.4%) | 12 (8.2%) |
| | T4 | 10 (3.4%) | 2 (1.4%) | 8 (5.5%) |
| | Unknown | 61 (6.1%) | 20 (13.6%) | 41 (28.1%) |
| M stage | M0 | 107 (36.5%) | 66 (44.9%) | 41 (28.1%) |
| | M1 | 11 (3.8%) | 5 (3.4%) | 6 (4.1%) |
| | Unknown | 175 (59.7%) | 66 (44.9%) | 99 (67.8%) |
| N stage | N0 | 129 (44.0%) | 78 (53.1%) | 51 (34.9%) |
| | N1 | 56 (19.1%) | 30 (20.4%) | 26 (17.8%) |
| | Unknown | 108 (36.9%) | 39 (26.5%) | 69 (47.3%) |
| Survival status | Alive | 220 (75.1%) | 135 (91.8%) | 85 (58.2%) |
| | Dead | 73 (24.9%) | 12 (8.2%) | 61 (41.8%) |
| Survival time | | 1072.9 ± 1145.6 | 1247.4 ± 1282.4 | 897.3 ± 957.4 |

Supplementary Table 3. Univariate and multivariate cox regression analysis of clinical parameters.

| ID | Univariate Cox regression analysis | | Multivariate Cox regression analysis | |
|--------------------------------|---|----------------|---|----------------|
| | HR (95%CI) | P-value | HR (95%CI) | P-value |
| TCGA dataset (<i>N</i> = 293) | | | | |
| Age | 1.8986 (1.0407, 3.4639) | 0.03661443 | 1.4242 (0.7599, 2.6692) | 0.26988095 |
| Stage | 1.3209 (1.0834, 1.6109) | 0.005903701 | 1.2284 (0.9726, 1.5514) | 0.084245145 |
| T | 1.2524 (1.0968, 1.4300) | 0.00088526 | 1.0215 (0.8279, 1.2605) | 0.842492879 |
| M | 1.3454 (1.0393, 1.7417) | 0.024323173 | 1.1211 (0.7997, 1.5717) | 0.507094822 |
| N | 1.6765 (1.2814, 2.1934) | 0.000164465 | 1.3432 (0.8721, 2.0688) | 0.180549318 |
| riskScore | 1.0704 (1.0539, 1.0871) | 7.85E-18 | 1.0785 (1.0584, 1.0990) | 3.62E-15 |