Supplementary Material

1 Supplementary Figures and Tables

1.1 Supplementary Figures

**Supplementary Figure 1.** Workflow of the identification and validation of the metabolism-related prognosis signature.

![Workflow Diagram](image)

- Colon cancer data from GEO database
- Training dataset (GSE39582)
- Validation dataset (GSE17538)
- Validation dataset (GSE41258)
- 1489 differentially expressed genes (log2Foldchange > 1 & FDR < 0.001)
- 43 differentially expressed metabolism-related genes
- 5 metabolism-related genes associated with patient outcome (univariate Cox proportional hazards model, P < 0.05)
- Prognostic analysis:
  - Log-rank test
  - Kaplan–Meier analysis
  - Univariate Cox analysis
  - Multivariate Cox analysis
  - Stage stratification analysis
- The risk score model:
  - Risk score = (0.4911 \times \text{expression of AARS}) + (0.2992 \times \text{expression of COL4A2}) + (0.2865 \times \text{expression of COL4A1}) + (-0.3543 \times \text{expression of PCNA}) + (-0.2377 \times \text{expression of MMP12})
- 5 metabolism-related genes prognosis signature of colon cancer
Supplementary Figure 2. Risk score analysis of the training cohort (GSE39582). The distribution of the metabolism-related risk score (Top); patients’ overall survival status and time (Middle); heatmap of the expression profiles of the five genes in the signature (Bottom).

Supplementary Figure 3. Survival analysis for gastro-intestinal tumors from TCGA. (A) Colon cancer. (B) Pancreatic cancer. (C) Liver cancer.
Supplementary Figure 4. Correlation analysis of the risk score and TNM stages. (A) Training cohort from GSE39582. (B) Validation cohort from GSE17538. (C) Validation cohort from GSE41258.

Supplementary Figure 5. Survival analysis for colon cancer patients stratified by TNM stage in GSE41258. The Kaplan–Meier estimates overall survival in stage I-II patients (A) and stage III-IV patients (B) from GSE41258.
**Supplementary Figure 6.** Kaplan-Meier estimates of the overall survival of patients using the five gene signature in GSE39582. (A) All samples with and without fluorouracil-based adjuvant chemotherapy (ACT). (B) Samples with ACT.