

**Table S1:** Patient characteristics of all tissues between the discovery and validation cohorts.

Abbreviations: HCV, hepatitis C virus; HBV, hepatitis B virus; ALD, alcohol-related liver disease; NASH, non-alcoholic steatohepatitis; AFP, alpha-fetoprotein; AJCC, American Joint Committee of Cancer.

Variables	Discovery Cohort (n = 25)	Validation Cohort (n = 12)
Age	68 (59-72)	58 (49-68)
Male sex	18/7 (72%/28%)	7/5 (58%/42%)
Etiology (HCV/HBV/ALD/NASH/Others)	7/11/3/2/2 (28%/44%/12%/8%/8%)	4/6/1/0/1 (33%/50%/8%/0%/8%)
AFP, ng/mL	52 (7-830)	6 (4-155)
Child-Pugh class (A/B/C)	21/2/1 (88%/8%/4%)	11/1/0 (92%/8%/0%)
AJCC T stage (T1/T2/T3/T4)	8/12/2/1 (35%/52%/9%/4%)	4/6/2/0 (33%/50%/17%/0%)
Hoshida HCC subtype (S1/S2/S3.1/S3.2)	6/4/4/11 (24%/16%/16%/44%)	5/2/1/4 (42%/17%/8%/33%)
Categorical variables are shown as n (%). Continuous variables are shown as median (IQR).		