

Table S1 Clinical information of the 30 HCC patients

Patient	Age	Sex	Smoking	Drinking	BCLC stage	CCLC stage	AFP	Tumor size (cm)	Tumor number	Liver cirrhosis	Hepatitis B	Microvascular invasion	Tumor location	Status
P01	57	M	N	N	B stage	Ila stage	NA	2.4×3.6	1	N	Y	N	DC	Alive
P02	49	M	N	Y	B stage	Ila stage	635.9	6.4×4.8	2-3	Y	Y	Y	SF	Alive
P03	65	M	N	N	B stage	Ila stage	72.9	10.7	2-3	N	Y	N	HF	Alive
P04	60	M	Y	Y	A stage	Ia stage	6.73	3.6×2.8×3.0	1	Y	Y	N	SF	Alive
P05	66	M	N	N	A stage	Ia stage	2676	3.4×3.9	1	Y	Y	N	C	Alive
P06	63	F	N	N	A stage	Ib stage	5172	6.3×5.2	1	Y	Y	N	SF	Alive
P07	63	M	N	Y	A stage	Ib stage	6.82	6.0×5.0×6.0	1	Y	N	N	C	Dead
P08	47	M	Y	N	B stage	Ila stage	15.41	2.5×2.0×2.4	>3	N	N	Y	HF	Alive
P09	46	M	N	N	B stage	Ila stage	3.77	10.1×9.2×9	2-3	N	Y	N	SF	Alive
P10	58	F	N	Y	A stage	Ila stage	551.40	4.3×4.0×3.5	2-3	Y	Y	N	DC	Alive
P11	67	M	N	Y	B stage	Ia stage	3846	4.4×3.5	1	Y	Y	N	SF	Alive
P12	65	F	Y	N	B stage	Ib stage	9.15	7.2×10.2×12	1	N	N	N	SF	Alive
P13	63	M	Y	N	A stage	Ib stage	NA	1.7×10.2×1	2-3	Y	Y	N	R	Dead
P14	54	M	N	N	A stage	Ia stage	883.6	3.2×3.1×3.9	1	Y	N	N	HF	Alive
P15	64	M	N	Y	B stage	Iib stage	582.2	2.0×2.0×2.0	Diffusion	Y	Y	Y	SF	Alive
P16	51	M	N	Y	B stage	Ia stage	37,404	9.2×6.0×7.9	1	N	Y	Y	R	Dead
P17	52	M	Y	N	B stage	Illa stage	78,487	10×7.3×8.4	>3	N	Y	N	DC	Alive
P18	48	M	N	Y	B stage	Ib stage	2,879	10×12×11	1	Y	Y	Y	HF	Alive
P19	45	M	N	N	NA	NA	4.7	NA	1	N	Y	N	SF	Alive
P20	54	M	N	N	B stage	Illa stage	3.6	8.6×7.1×10	>3	Y	Y	Y	HF	Dead
P21	44	M	N	N	A stage	Ia stage	1,438	4.3×3.6×4.0	1	Y	Y	N	DC	Alive
P22	34	M	N	N	A stage	Ia stage	4.98	1.7×1.3	1	N	Y	Y	C	Alive
P23	59	M	Y	Y	A stage	Ia stage	5.55	4.8×4.2×4.8	1	N	Y	N	SF	Alive
P24	51	M	N	Y	B stage	Illa stage	44.47	4.5×4.2×3.9	>3	N	Y	Y	HF	Alive
P25	69	M	N	N	B stage	Illa stage	600	6.0×5.2×6.0	1	N	Y	Y	DC	Dead
P26	47	F	N	Y	A stage	Ia stage	45.64	2.0×1.5×1.6	1	N	Y	N	SF	Alive
P27	58	M	Y	N	A stage	Ia stage	5.44	1.8×2.2×2.2	1	Y	Y	N	C	Alive
P28	61	M	N	Y	B stage	Ib stage	25,399	13×9.3×10	1	N	N	Y	HF	Alive
P29	68	M	N	N	B stage	Ib stage	75.69	7.0×6.6×6.5	1	Y	Y	N	HF	Alive
P30	57	M	N	N	B stage	Ila stage	NA	NA	NA	Y	Y	N	R	Dead

HCC, hepatocellular carcinoma; NA, not available; SF, sigmoid flexure; C, cecum; DC, descending colon; HF, hepatic flexure; R, rectum.

Table S2 Statistical information of variant and classification summary

ID	Variants	TMB	CNA_burden	wGII	ITH	SDI
P1_T1	11	7.587886698	22.75258576	0.415428647	3	0.73562194
P1_T2	14	9.657310342	92.43735571	0.803299206	2	0.636514168
P10_T2	34	23.45346797	89.70924974	0.376814385	6	1.386956371
P11_T2	1	0.689807882	5.381965054	0.909090909	2	0.666278442
P12_T1	10	6.898078816	15.09639084	0.863636364	2	0.295439192
P12_T2	10	6.898078816	92.00613737	0.658218235	1	0
P13_T1	15	10.34711822	0.154996755	0.274063861	3	0.212626824
P13_T2	63	43.45789654	53.23273409	0.727272727	4	0.534053922
P14_T2	13	8.967502461	0	0.590909091	3	0.907808692
P15_T1	8	5.518463053	4.963319722	0.545454545	2	0.202273002
P15_T2	3	2.069423645	8.27205916	0.258685651	3	0.923840706
P16_T2	5	3.449039408	0.818896847	0.545454545	1	0
P17_T2	5	3.449039408	0.076048791	0.909238851	2	0.693147181
P18_T2	10	6.898078816	9.867542383	1	2	0.661563238
P19_T1	0	0	6.55921377	0.467909025	1	0
P19_T2	4	2.759231526	7.479571355	0.97091043	2	0.579915171
P2_T1	12	8.277694579	0.343328663	0.369047515	4	0.939025933
P20_T2	13	8.967502461	37.57842333	1	2	0.376770161
P21_T1	29	20.00442857	0	0.181818182	2	0.286835983
P22_T1	7	4.828655171	26.64599302	1	1	0
P23_T2	7	4.828655171	27.8832033	0.408533033	2	0.562335145
P24_T1	7	4.828655171	0.002361299	0.090909091	2	0.636514168
P24_T2	9	6.208270934	19.71947899	0.397509469	2	0.636514168
P25_T1	1	0.689807882	0.471641359	0.303252167	1	0
P25_T2	2	1.379615763	64.76620467	0.590414607	1	0
P25_T3	1	0.689807882	0.154184895	0.409090909	1	0
P26_T1	6	4.13884729	0.417709133	0.727272727	4	1.308605387
P26_T2	9	6.208270934	0	0.045454545	2	0.636514168
P27_T1	10	6.898078816	26.00566056	0.673307614	3	0.907535294
P27_T2	9	6.208270934	2.069159892	0.365414961	1	0
P28_T1	22	15.1757734	11.14034432	0.56751439	2	0.15841057
P28_T2	0	0	0.886233424	0.473588193	1	0
P29_T2	4	2.759231526	40.23725906	0.84470306	3	0.979971182
P3_T2	9	6.208270934	33.80397322	0.65037642	2	0.686961577
P30_T1	4	2.759231526	38.60695234	0.818181818	2	0.636514168
P4_T2	12	8.277694579	51.32442012	1	1	0
P5_T1	0	0	4.389571242	0.818181818	1	0
P5_T2	5	3.449039408	2.260930815	0.403865147	1	0
P6_T1	6	4.13884729	2.956001221	0.784427944	1	0
P6_T2	7	4.828655171	13.25366971	0.361996109	2	0.429323022
P7_T1	7	4.828655171	0.002369745	0.363636364	1	0
P7_T2	17	11.72673399	25.75794218	0.454545455	2	0.462036909
P8_T2	13	8.967502461	5.695953604	1	3	1.026330633
P9_T1	10	6.898078816	1.853768256	0.954545455	2	0.590842246
P9_T2	15	10.34711822	86.3420099	0.954545455	3	0.848685558
P9_T3	0	0	0.25404093	0.093301692	1	0

GII, genomic instability index; ITH, intra-tumor heterogeneity; SDI, shannon diversity index.