

**Supplementary Table 1.** Characteristics of the study subjects.

Characteristic	<u>Training Set</u>		<u>Validation Set 1</u>	
	No.	%/Value	No.	%/Value
<b>Healthy Subjects</b>	269		124	
Age - yr		48.1±11.1		47.8±12.0
Sex				
Male	169	62.8%	79	63.7%
Female	100	37.2%	45	36.3%
AFP				
>400 ng/mL	0	0%	0	0%
≤400 ng/mL	257	95.5%	119	96.0%
Missing	12	4.5%	5	4.0%
<b>Benign Lesions</b>	253		132	
Age - yr		50.0±12.8		52.2±11.7
Sex				
Male	98	62.8%	51	38.6%
Female	155	37.2%	81	61.4%
AFP				
> 400 ng/mL	0	0%	1	0.9%
≤ 400 ng/mL	251	99.2%	131	99.2%
Missing	2	0.8%	0	0%
<b>CHB</b>	190		96	
Age - yr		35.8±10.2		35.7±10.7
Sex				
Male	131	68.9%	62	64.6%
Female	59	31.0%	34	35.4%
AFP				
> 400 ng/mL	2	1.1%	4	4.2%
≤ 400 ng/mL	90	47.4%	51	53.1%
Missing	98	51.6%	41	42.7%
<b>LC</b>	73		33	
Age - yr		54.0±11.3		52.7±11.2
Sex				
Male	50	68.5%	22	66.7%
Female	23	31.5%	11	33.3%
AFP				
> 400 ng/mL	2	2.7%	1	3.0%
≤ 400 ng/mL	68	93.2%	32	97.0%
Missing	3	4.1%	0	0%
<b>HCC</b>	335		809	
Age - yr		56.0±10.0		57.4±11.3
Sex				
Male	282	84.1%	675	83.4%
Female	53	15.8%	134	16.6%

BMI		23.7±3.0		23.5±3.1
Smoking				
Yes	26	7.8%	47	5.8%
No	46	13.7%	119	14.7%
Missing	263	78.5%	643	79.5%
Alcohol				
Yes	22	6.6%	40	4.9%
No	49	14.6%	127	15.7%
Missing	264	78.8%	642	79.4%
AFP				
> 400 ng/mL	72	21.5%	273	33.7%
≤ 400 ng/mL	261	77.9%	529	65.4%
Missing	2	0.6%	7	0.9%
CHB History				
Yes	327	97.6%	667	82.4%
No	8	2.4%	139	17.2%
Missing	0	0%	3	0.4%
LC History				
Yes	236	70.4%	518	64.0%
No	99	29.6%	288	35.6%
Missing	0	0%	3	0.4%
Tumor Size				
> 2.0 cm	215	64.2%	637	78.7%
≤ 2.0 cm	116	34.6%	104	12.9%
Missing	4	1.2%	68	8.4%
BCLC Stage				
0	98	29.2%	46	5.7%
A	237	70.7%	174	21.5%
B	0	0%	294	36.3%
C	0	0%	148	18.3%
Missing	0	0%	147	18.2%
Pathology Availability				
Yes	311	92.8%	580	71.7%
No	24	7.2%	229	28.3%

Notes: The training set and validation set 1 are comprised of HCC patients and controls recruited from Zhongshan Hospital, Fudan University and the Eastern Hepatobiliary Surgery Hospital, as well as the combined patients with a history of CHB infection or LC from all participating hospitals. AFP:  $\alpha$ -fetoprotein; BCLC: Barcelona Clinic Liver Cancer staging system; BMI: body mass index; CHB: chronic hepatitis B virus infection; HCC: hepatocellular carcinoma; LC: liver cirrhosis.