Supplementary Information

Table S1. Pathology diagnosis of the patient-derived HCC models used in this study.

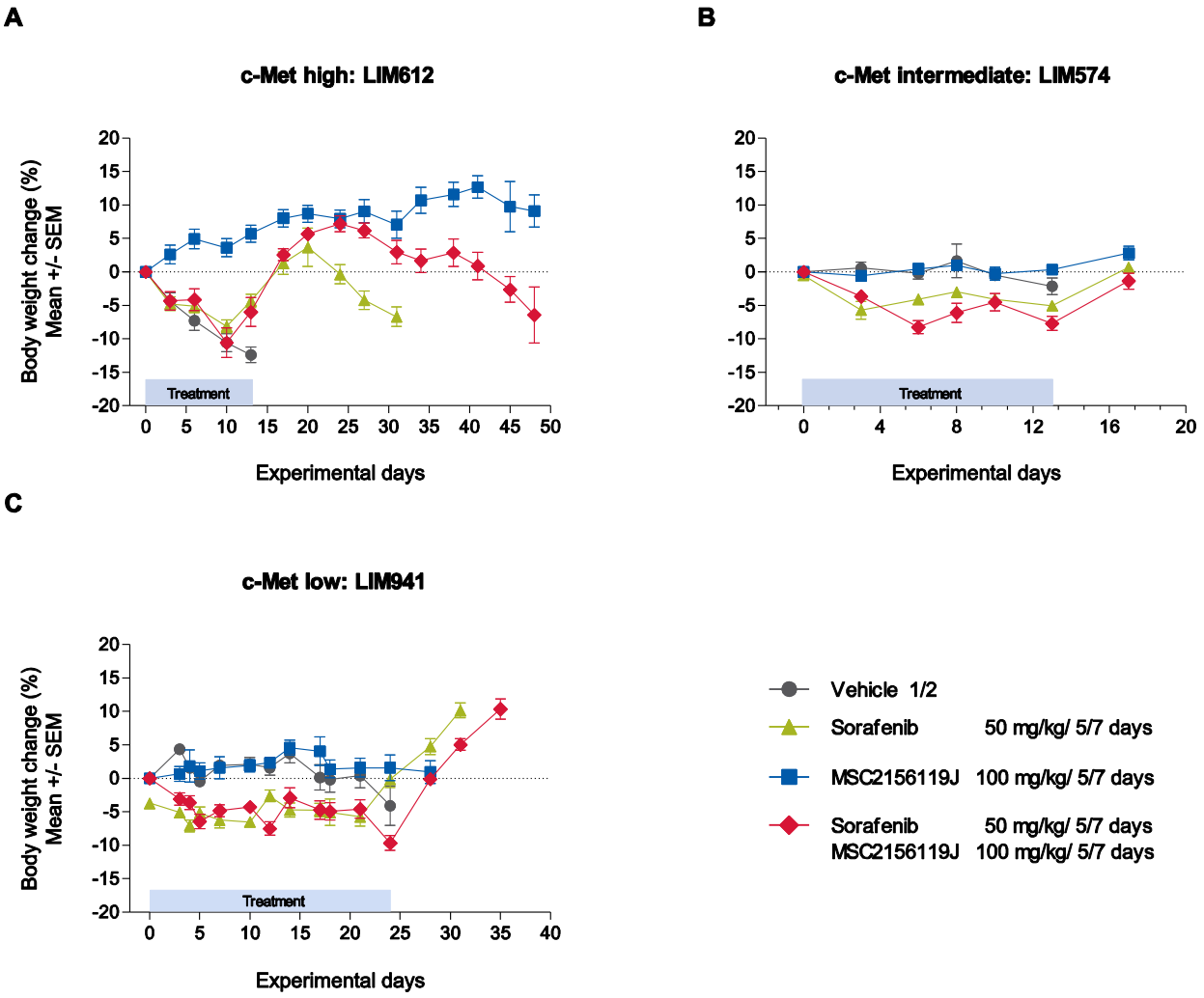
Model Name	Pathology Diagnosis (Provided by CrownBio)	Other
LIMsh050	Hepatocellular carcinoma from middle lobe of liver, grade IV, G4-S4, cancer emboli were observed in part of vessels, nodular cirrhosis presented in surrounding liver tissues, fatty degeneration (about 10%–15%) was observed.	HBV(−); HCV(−)
LIM334	Nodular cirrhosis with hepatocellular carcinoma, chronic cholecystitis.	HBV(+++); HCV(−)
LIM348	Postnecrotic cirrhosis with combined cell type carcinoma; postnecrotic cirrhosis with mixed carcinoma of liver.	Cachexia; HBV(−); HCV(−)
LIM574	Hepatocellular carcinoma.	HBV(±); HCV(−)
LIM612	Postnecrotic cirrhosis with hepatocellular carcinoma. Chronic cholecystitis.	Cachexia, HBV(+++); HCV(−)
LIM752	Hepatocellular carcinoma of right lobe of liver with massive necrosis, massive type, tumor mass: 14 cm × 12 cm × 10 cm. Chronic cholecystitis, cholelithiasis. IHC result: CK(++) CK7(−) CK18(++) CK19(++) CEA(−) AFP(−) Hepatocyte(−) Actin(−) Actin(SM)(−) CD34(+) F8(+).	HBV(−); HCV(−)
LIM801	Early hepatocirrhosis with hepatocarcinoma. Chronic cholecystitis. Cholelithiasis.	HBV(++); HCV(−)
LIM941	Hepatocirrhosis with hepatocarcinoma. Malignant cells invaded gall bladder wall.	Cachexia; HBV(±); HCV(−)
LIM1081	Hepatocellular carcinoma, diffuse in liver, cancer embolus in vessel. IHC results: AFP(<5% +), HEPA(100% +++), CD34(massive vessel), CK19(–), PDEC(10% +), P53(20% ++ − +++), EGFR(−), HER2(<5% +), KI-67(about 15% ++).	HBV(+++); HCV(−)
LIM1098	Hepatocellular carcinoma of right lobe, grade II, peripheral hepatic tissue G1S1.	Cachexia, HBV(−); HCV(−)
MHCC97H	Highly metastatic clone from parental HCC cell line LCI-D20, LCI-D20 model established from a highly metastatic patient-derived hepatocellular carcinoma.	[1]

Table S2. AFP plasma levels in xenograft models at the start and at end of treatment.

Liver Cancer Model	AFP Plasma Concentration (ng/mL)								
	Vehicle			Sorafenib			MSC2156119J		
	Before Start of Treatment	End of Treatment	Fold Change	Before Start of Treatment	End of Treatment	Fold Change	Before Start of Treatment	End of Treatment	Fold Change
LIM801	33	134	**4.1**	18	23	**1.3**	19	35	**1.8**
LIM574	7671	25638	**3.3**	5817	9017	**1.6**	5929	14922	**2.5**
LIM752	925	15995	**17.3**	1012	1629	**1.6**	847	16210	**19.1**
LIMsh050	4025	11944	**3.0**	4321	30815	**7.1**	4984	33916	**6.8**
MHCC97H	1	136	**136**	NA	NA	**NA**	24	6	**0.25**

No detectable AFP levels in model LIM334, LIM1081, LIM348, LIM1098. LIM941 and LIM612—subcutaneous tumor model; MHCC97H orthotopic tumor model.

Figure S1. Body weight change over time in response to MSC2156119J, sorafenib monotherapy, and combination treatment in three representative human explant xenograft models. Model LIM612 is a cachexia inducing model as seen by the body weight loss in vehicle group. Sorafenib treatment resulted in a similar body weight loss as observed in the vehicle group despite inhibiting tumor growth.



References

1. Sun, F.X.; Tang, Z.Y.; Lui, K.D.; Ye, S.L.; Xue, Q.; Gao, D.M.; Ma, Z.C. Establishment of a metastatic model of human hepatocellular carcinoma in nude mice via orthotopic implantation of histologically intact tissues. *Int. J. Cancer* **1996**, *66*, 239–243.