

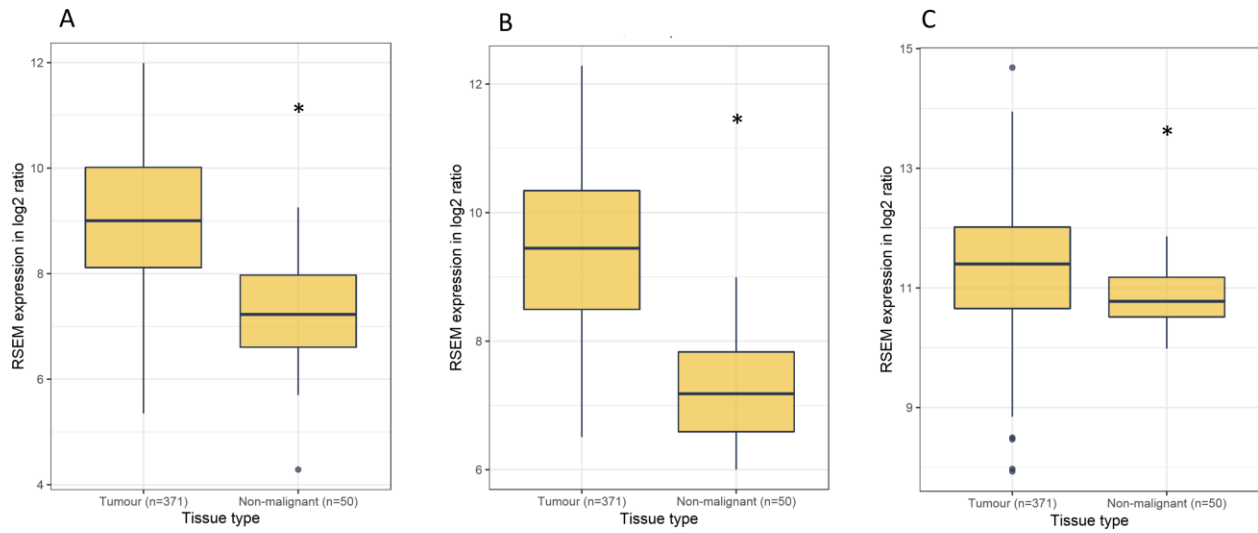
Supplemental Appendix 1

Prospective Study Design

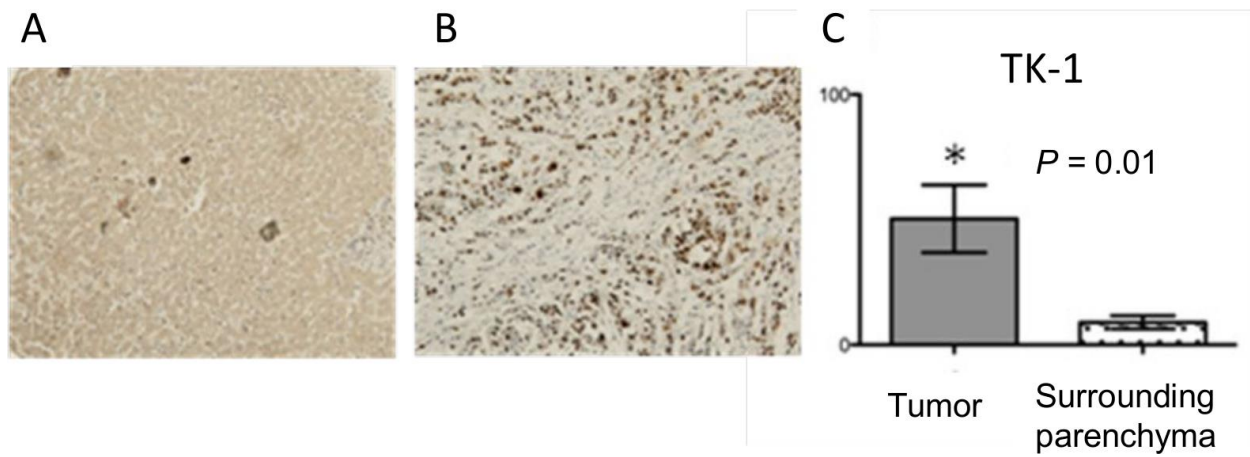
Eligible patients were aged 18-85 years with histological diagnosis HCC or a diagnosis of HCC based on American Association for the Study of Liver Diseases (AASLD) criteria, had intermediate stage disease suitable for TACE, disease evaluable by modified Response Evaluation Criteria in Solid Tumours (mRECIST) and at least 1 target lesion ≥ 20 mm, an Eastern Cooperative Oncology group performance status (PS) of 2 or less, and a life expectancy of at least 6 months (14).

Patients had to have adequate bone marrow function (haemoglobin concentration >90 g/L, neutrophils >1500 cells per μL , platelets $>100\,000$ cells per μL), kidney function (creatinine <1.5 times the normal upper limit; calculated creatinine clearance ≥ 50 mL/min), and liver function (aspartate aminotransferase or alanine aminotransferase ≤ 2.5 times the normal upper limit, alkaline phosphatase ≤ 2.5 -times the normal upper limit, total bilirubin ≤ 1.5 times the normal upper limit).

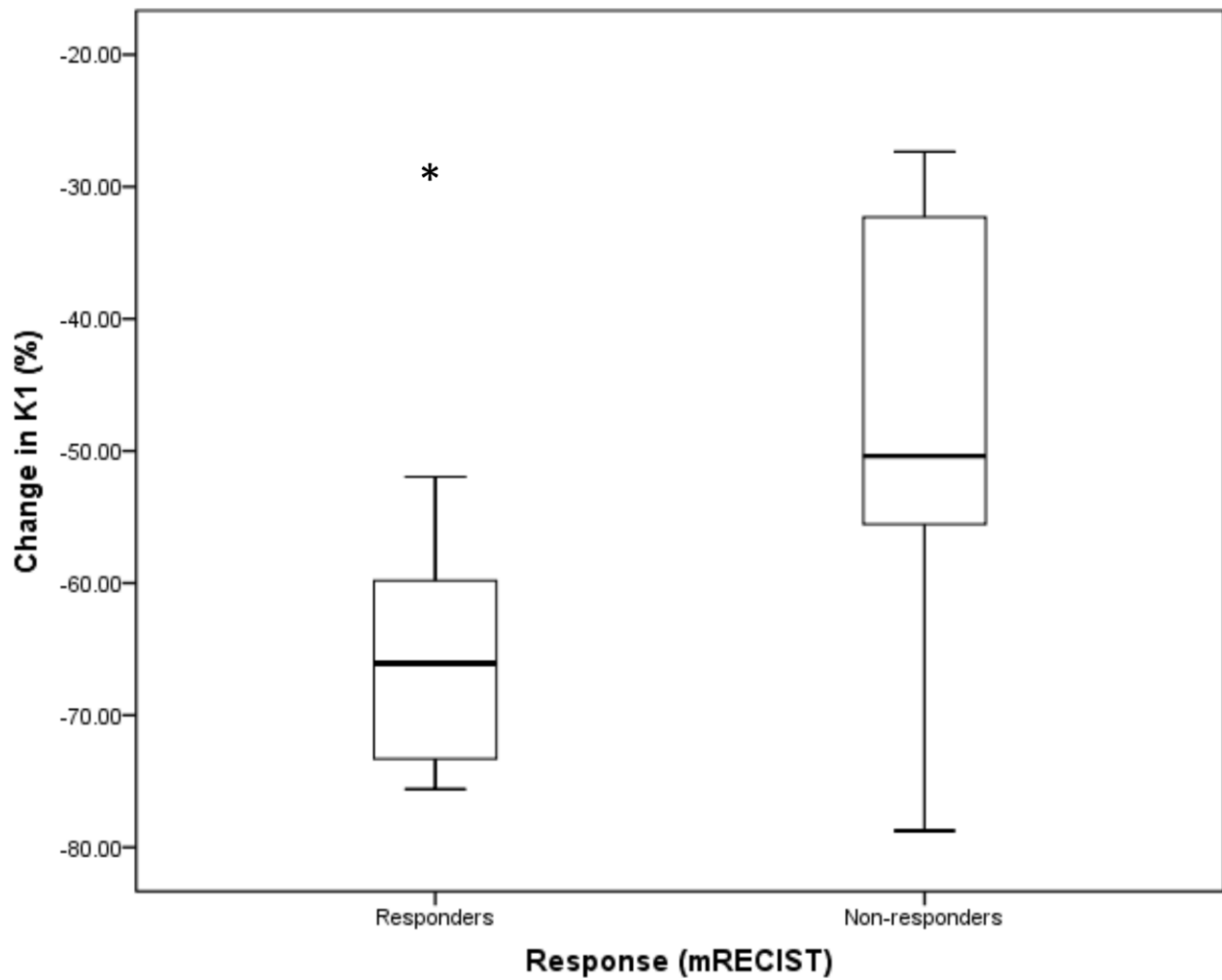
Patients were recruited from Hammersmith Hospital, ICHNT. The study was approved by the London Bridge research ethics committee, ethics number 13/LO/1011. All the patients provided written informed consent. The study was conducted in compliance with the declaration of Helsinki.



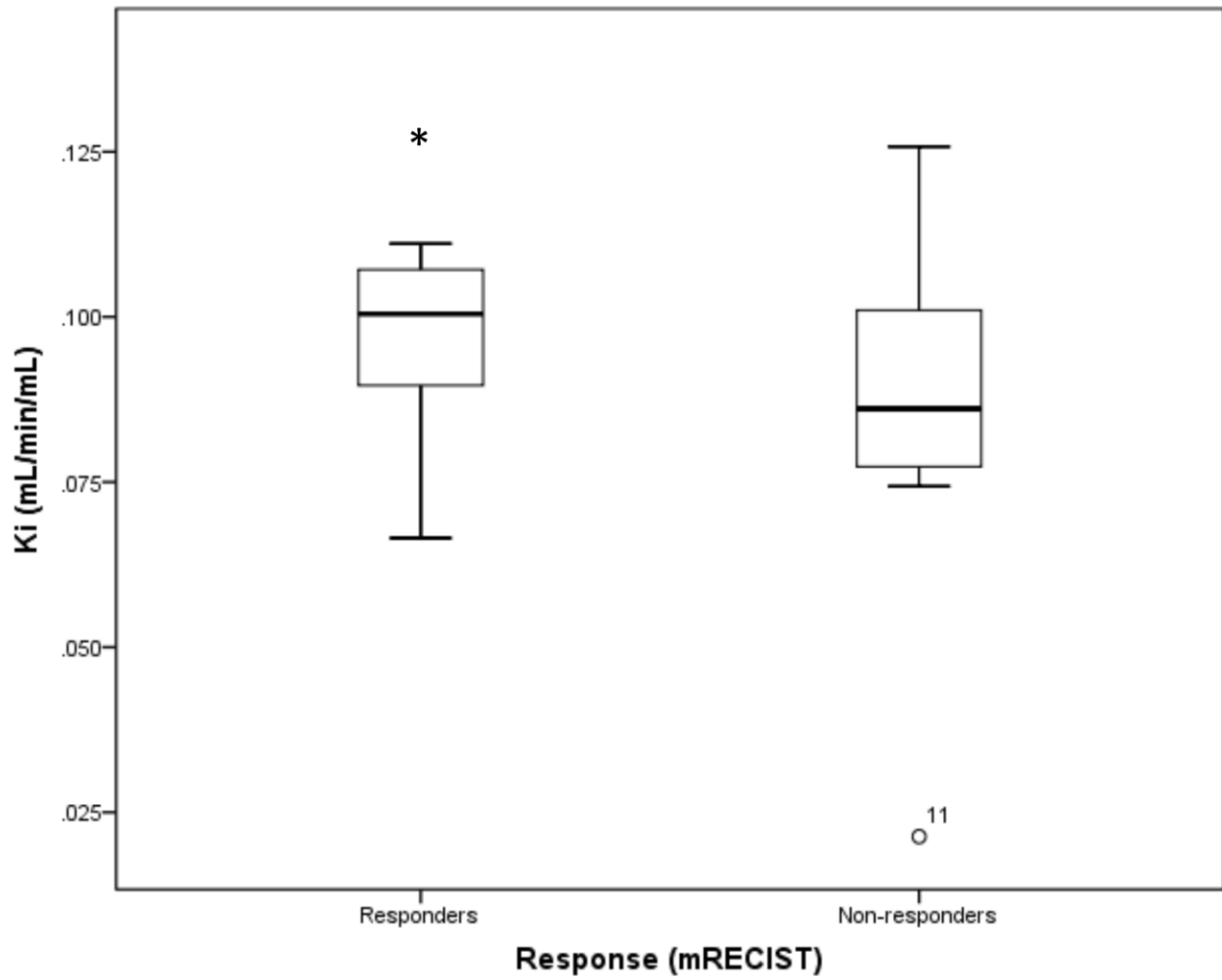
Supplemental Figure 1. Relative RNA expression of *TYMS* (A), *TK-1* (B) and *SLC29A1* (C) in HCC (n=371) and non-malignant tissue (n=50), Cancer Genome Atlas, * p<0.05



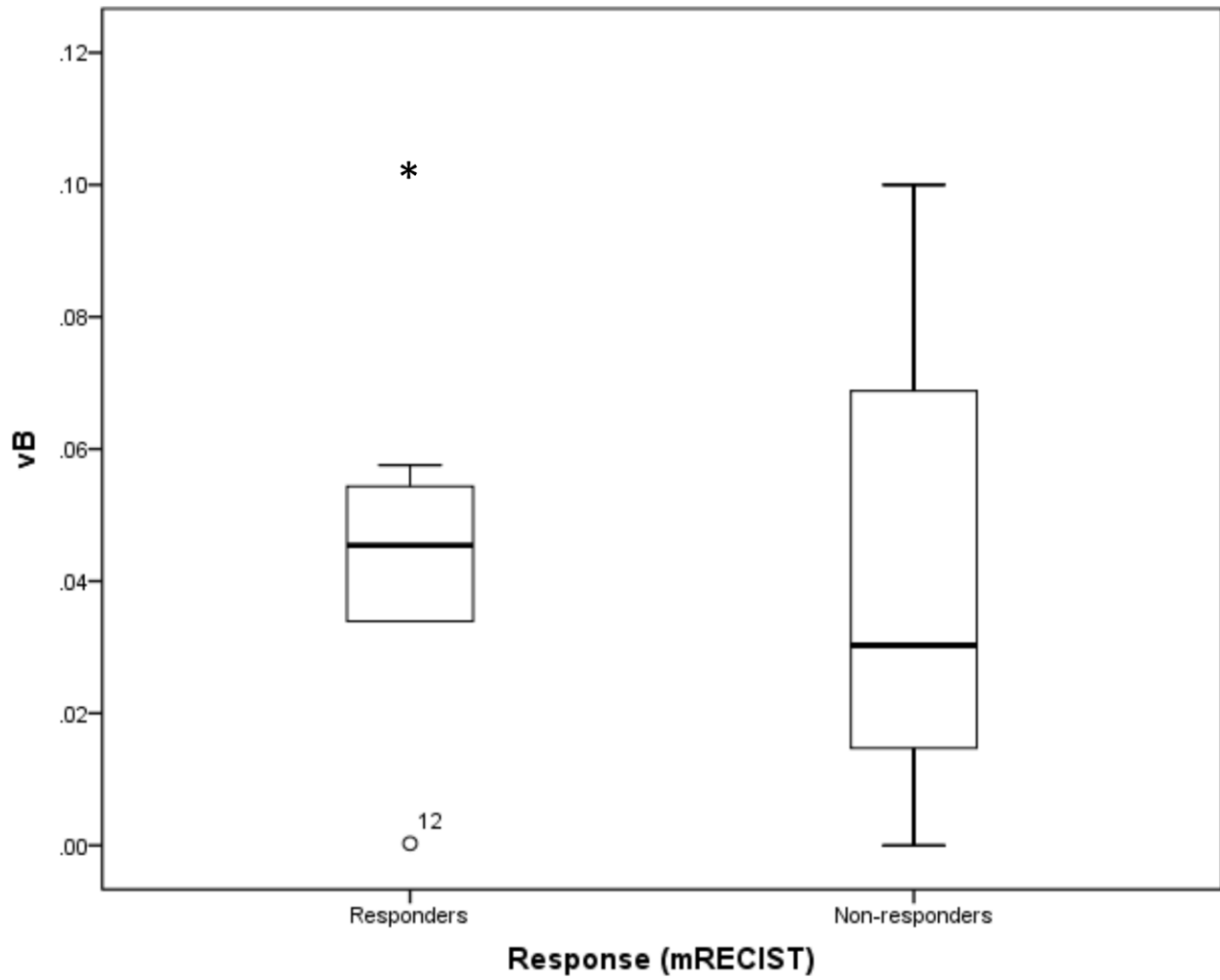
Supplemental Figure 2. Represented sections illustrating TK-1 expression by immunohistochemistry (1:100, AbCam, Cambridge) on **(A)** liver parenchyma and **(B)** HCC. A significant increase in the expression of TK-1 (histoscore) was observed in HCC compared to surrounding liver parenchyma **(C)** * $p=0.01$



Supplemental Figure 3A: Percentage change in K₁ in responders and non-responders, * p<0.05,



Supplemental Figure 3B: Baseline K_i in responders and non-responders, * $p < 0.05$



Supplemental Figure 3C: Baseline v_B in responders and non-responders, * $p < 0.05$