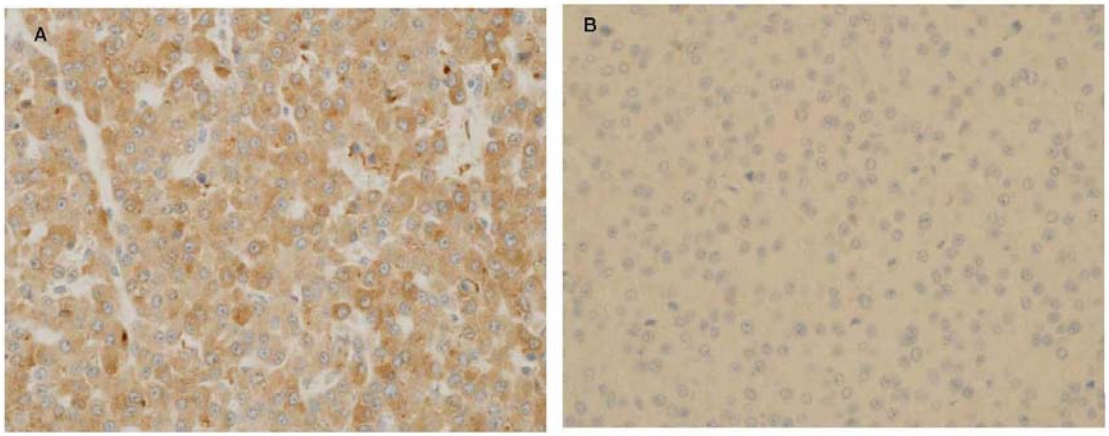
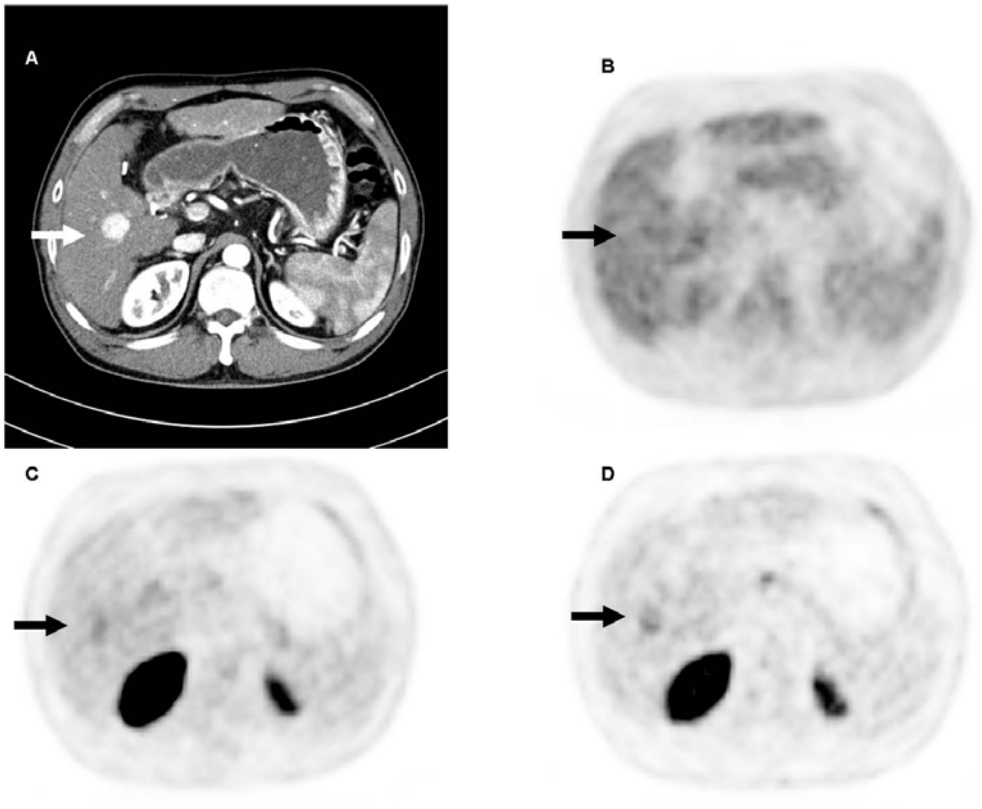
Supplemental Video Legends

Supplemental Video 1. Maximum-intensity projections of [^{18}F]FDG (S1A) and [^{18}F]FSPG PET (S1B) at 60 min after injection in a hepatocellular carcinoma patient (Patient 1).

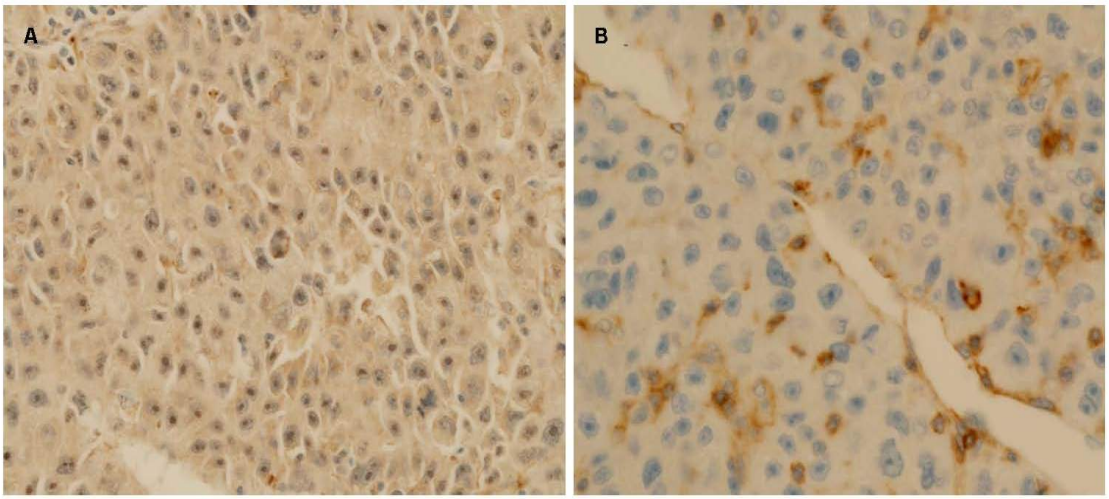
Supplemental Video 2. Maximum-intensity projections of [^{18}F]FDG (S2A) and [^{18}F]FSPG PET (S2B) at 60 min after injection in a hepatocellular carcinoma patient (Patient 2).



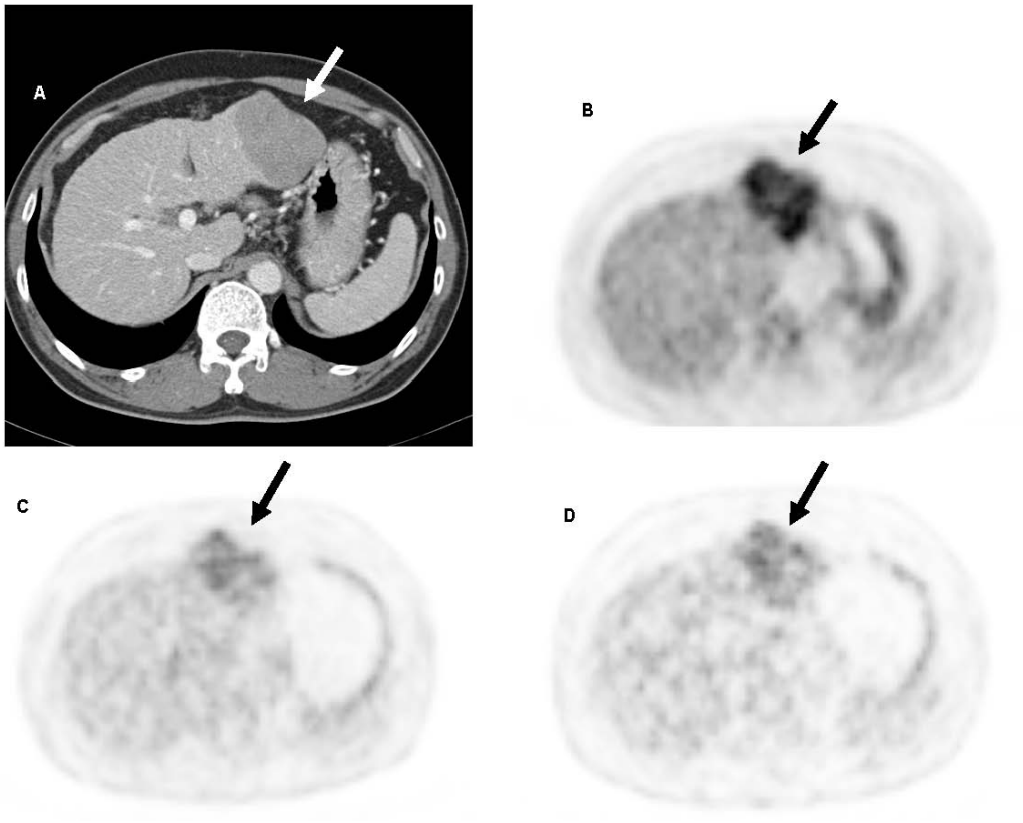
Supplemental Figure 1. A 50-year-old man with well differentiated HCC (Patient 1). Immunohistochemical evaluation shows moderate staining (2+) of xCT in the cell membrane and cytoplasm (A, 400 x), but no CD44 expression (B, 400 x). Note that the result of the pathological and immunohistochemical study does not represent the focus of high [^{18}F]FSPG uptake.



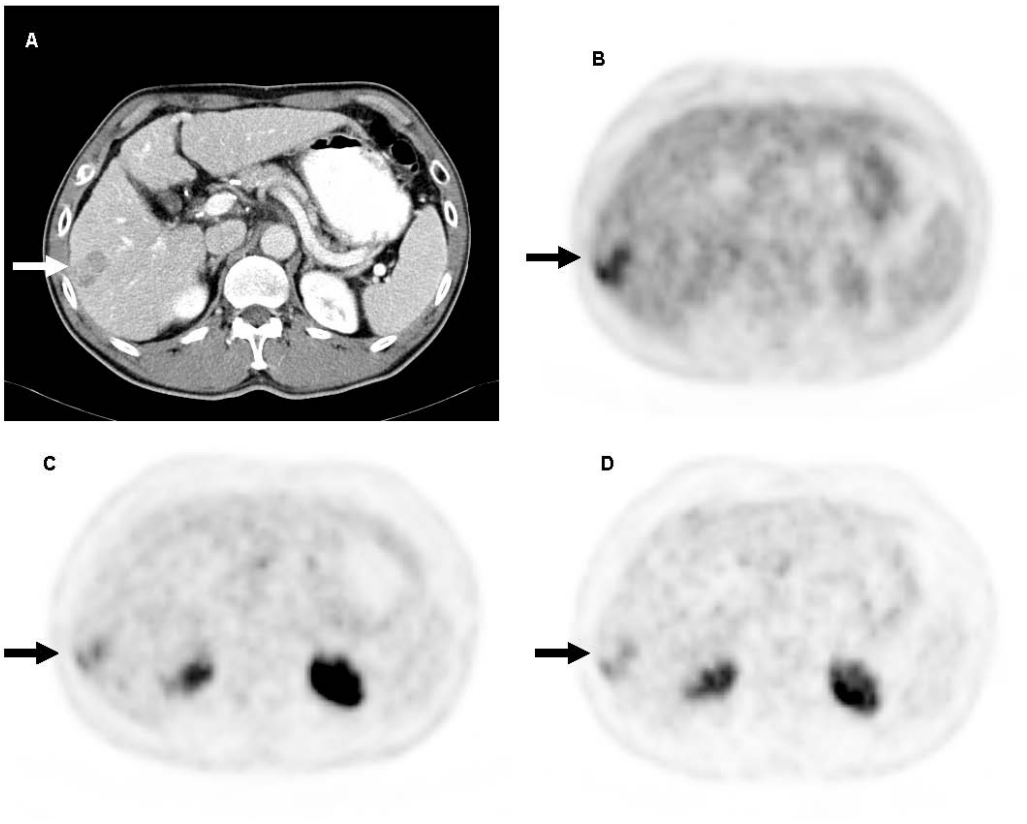
Supplemental Figure 2. Transverse CT image with contrast enhancement of a 56-year-old man (Patient 5) shows a 2.4 cm-sized nodular enhancing lesion (arrow) in -segment VI of the right lobe (A). There is no significant uptake of [^{18}F]FDG in the lesion compared to the surrounding noncancerous liver tissue (B). Transverse [^{18}F]FSPG image obtained at 60 min (C) and 105 min (D) after injection show a focal lesion with minor accumulation (arrow). Diagnosis of HCC was made on the basis of CT and magnetic resonance imaging, which showed typical arterial hyperenhancement and wash-out in the venous phase.



Supplemental Figure 3. Immunohistochemical evaluation of Patient 2 shows weak staining (1+) of xCT (A, 400 x) and medium intensity (2+) of CD44 expression (B, 400 x).



Supplemental Figure 4. Transverse CT (A), [^{18}F]FDG (B), and [^{18}F]FSPG PET images at 60 min (C) and 105 min (D) after intravenous administration of [^{18}F]FSPG of a 52-year-old man (Patient 3) with poorly differentiated HCC. A low attenuated mass with major accumulation of [^{18}F]FDG and [^{18}F]FSPG uptake in the lateral segment of the liver (arrow) is seen. Immunohistochemical evaluation showed weak staining (1+) of xCT and medium intensity (2+) of CD44 expression.



Supplemental Figure 5. Transverse CT (A), [^{18}F]FDG (B), and [^{18}F]FSPG PET images at 60 min (C) and 105 min (D) after intravenous administration of [^{18}F]FSPG of a 56 year-old man (Patient 4) with moderately differentiated HCC. A hypervascular mass with [^{18}F]FDG in S5-6 of the right lobe (arrows) is seen. The tumor has minor accumulation of [^{18}F]FSPG. Immunohistochemical evaluation showed weak staining (1+) of xCT but no CD44 expression.