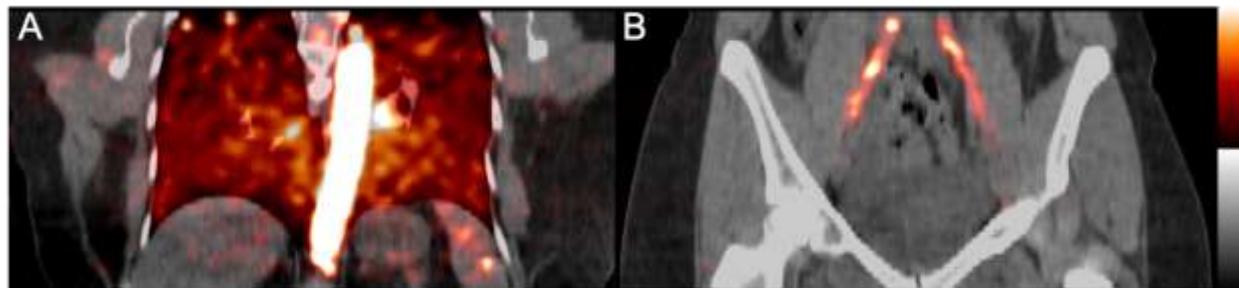
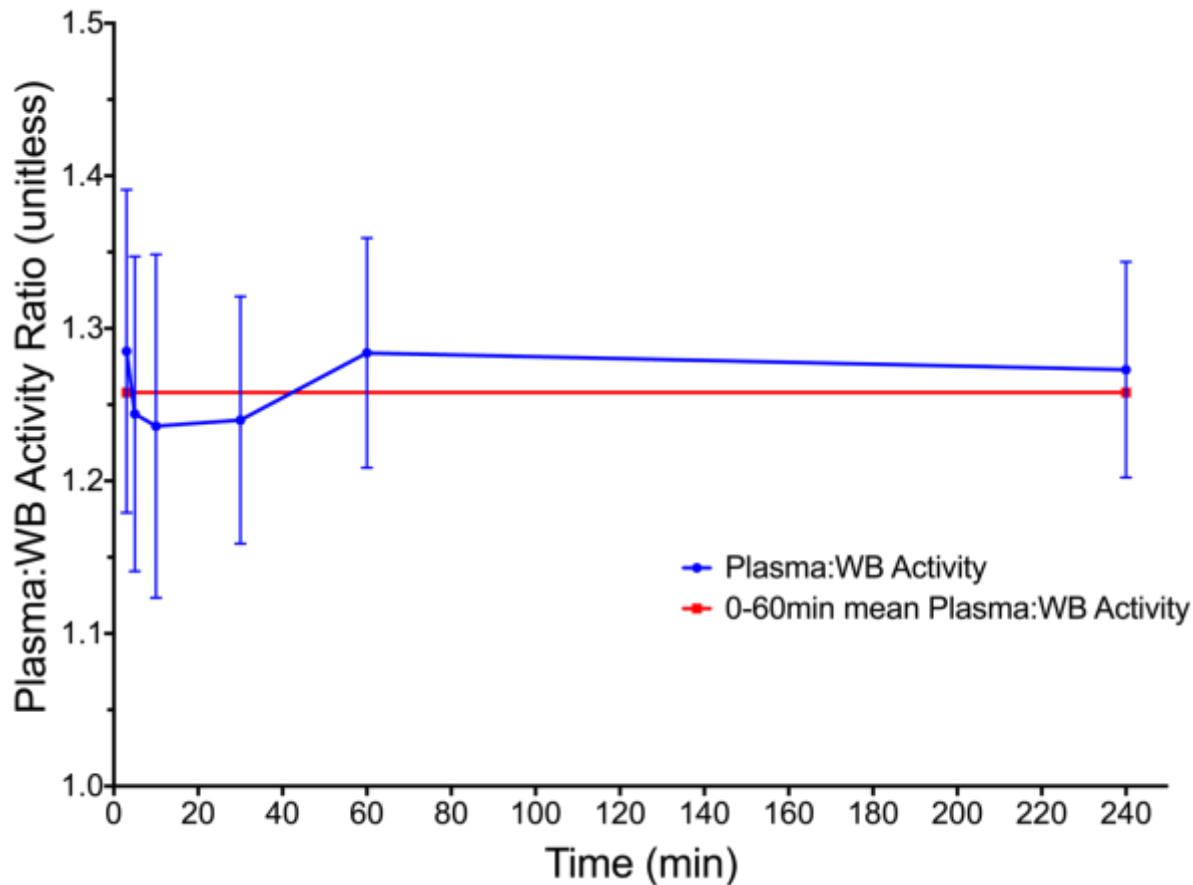


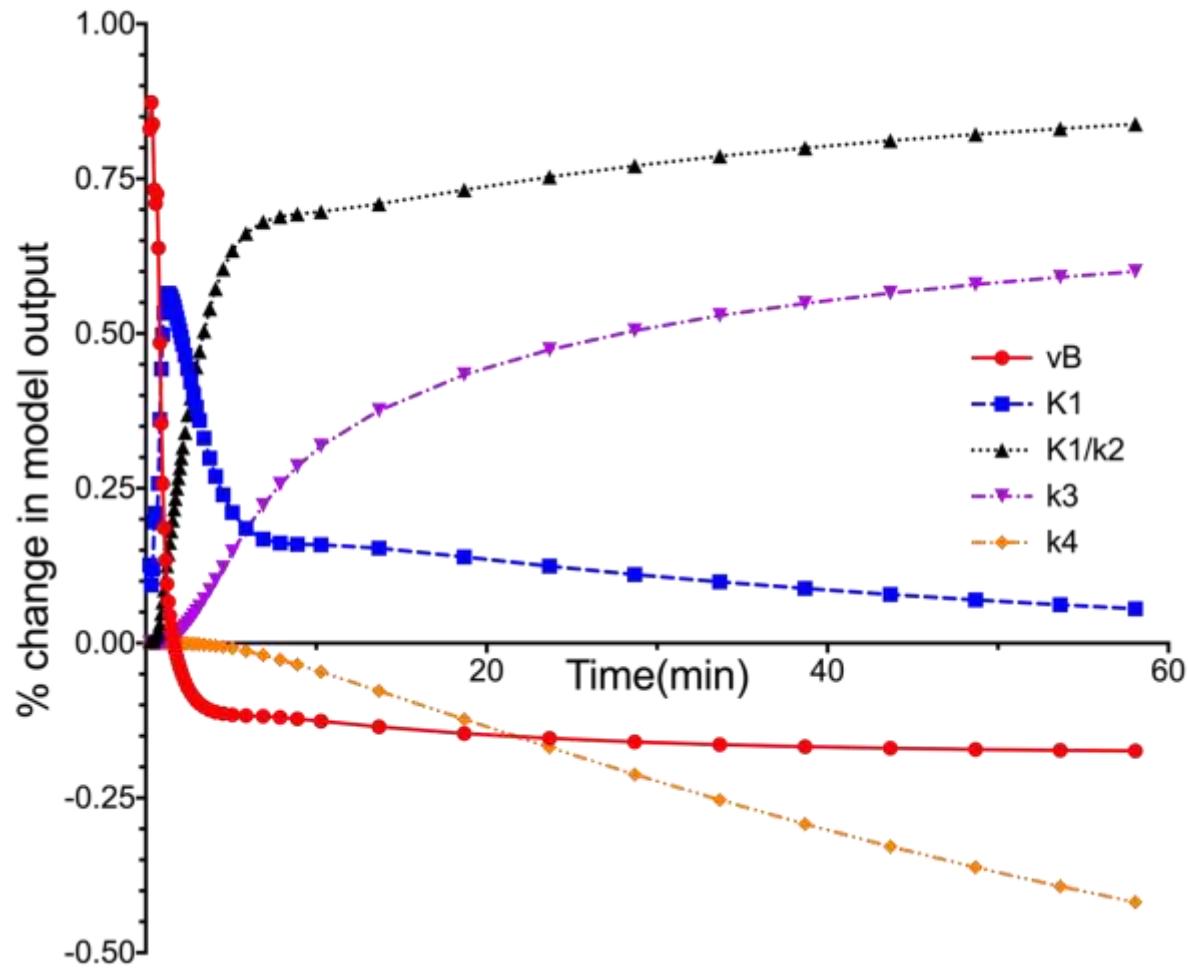
Supplemental Figure 1: Representative HPLC radiochromatogram from a 30 minute post-injection blood sample. Major metabolites were eluted at ~3 minutes, ¹⁸F-FTT parent was eluted at ~8-9 minutes.



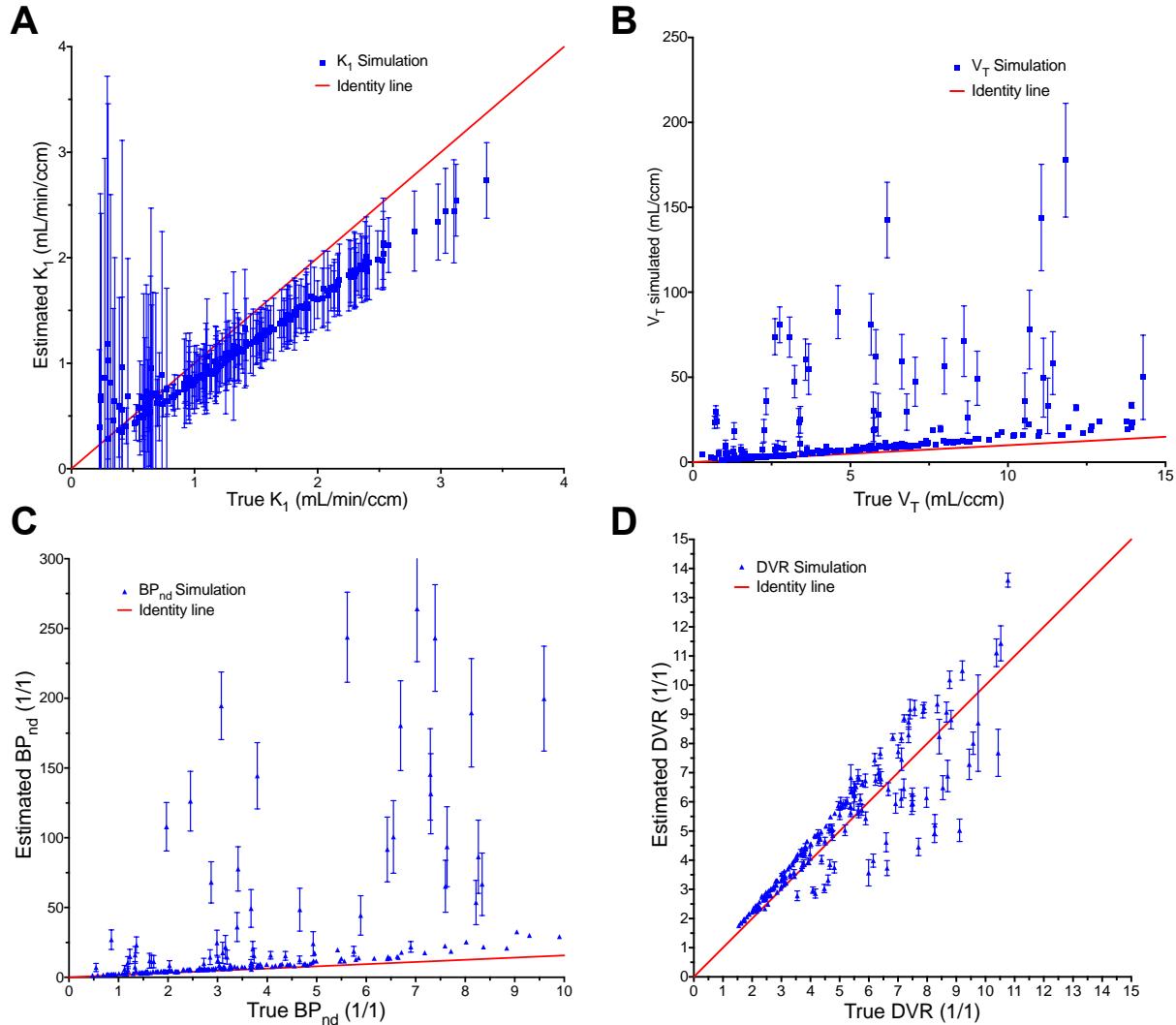
Supplemental Figure 2: Image blood pools in fused PET/CT images acquired at 30-35s post-injection of ¹⁸F-FTT. Descending aorta in panel A and iliac artery in panel B VOIs were used for image derived input functions. PET images are scaled from 0-20 g/mL, CT images scaled from -160 to +240 HU.



Supplemental Figure 3: Plasma to whole blood activity ratio for ^{18}F -FTT for 16 patients with venous blood sampling. Data from 240 minutes post-injection was excluded from population average data due to low signal. Values are mean \pm standard deviation. Average activity ratio from 0-60 minutes is plotted in red, and was used for correcting blood input functions in kinetic modeling.



Supplemental Figure 4: Parameter sensitivity curves for two tissue compartment model of tumor SUV_{peak} using a population average time activity curve and blood input function.



Supplemental Figure 5: Bias and precision plots of two-tissue compartment model K_1 in A, V_T in B, and nondisplaceable binding potential ($BP_{nd} = k_3/k_4$) in C. Logan reference tissue DVR in D with standard error of the mean error bars ($n=200$).

SUPPLEMENTAL TABLES:

Supplemental Table 1: 2 tissue compartment model fitting parameters

Model Parameter	Initial	Lower Bound	Upper bound
vB (1/1)	0.04	0.01	0.40
K ₁ (mL/ccm/min)	1.50	0.0001	10
K ₁ /k ₂ (mL/ccm)	1.10	0.0001	20
k ₃ (1/min)	0.10	0.0001	1
k ₄ (1/min)	0.02	0.0001	1

Supplemental Table 2: Parp-1 tissue assays and 55-60 minute PET SUVs.

Patient ID	PARP-1 immunofluorescence (Relative Fluorescence Units)	Mean Tumor Diameter (cm)	SUV _{max} (g/mL)	SUV _{peak} (g/mL)	PVC SUV _{max} (g/mL)	PVC SUV _{peak} (g/mL)
823234-02	42.7	3.10	4.06	3.26	4.34	3.45
823234-04	40.1	3.55	5.39	4.41	5.82	4.73
823234-07	59.2	2.3	8.78	7.13	9.66	7.81
823234-09	26.8	3.01	3.24	2.41	3.48	2.56
823234-10		6.15	4.15	3.65	4.40	3.84
823234-11	25.4	2.60	2.40	1.68	2.53	1.72
823234-12	22.2	2.90	4.43	3.81	4.76	4.07
823234-13	34.3	9.25	2.16	1.89	2.23	1.93
823234-15		6.55	4.81	3.92	5.15	4.16
823234-18		1.85	2.31	1.90	2.28	1.78
Mean	35.8	4.13	4.17	3.41	4.47	3.61
Standard Deviation	12.8	2.39	1.96	1.63	2.21	1.84
Median	34.3	3.05	4.11	3.46	4.37	3.65
Maximum	59.2	9.25	8.78	7.13	9.66	7.81
Minimum	22.2	1.85	2.16	1.68	2.23	1.72