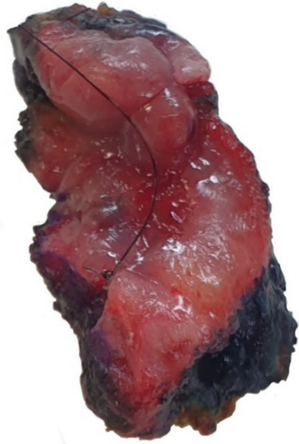
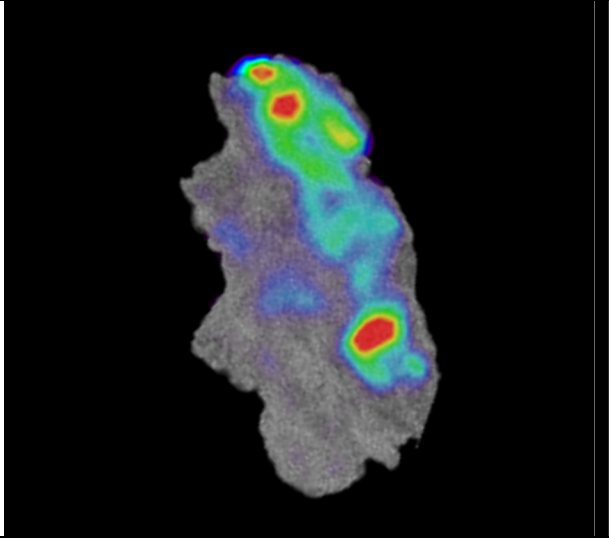
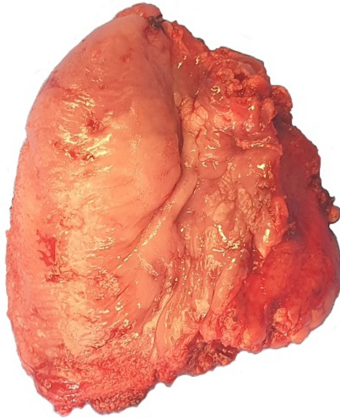
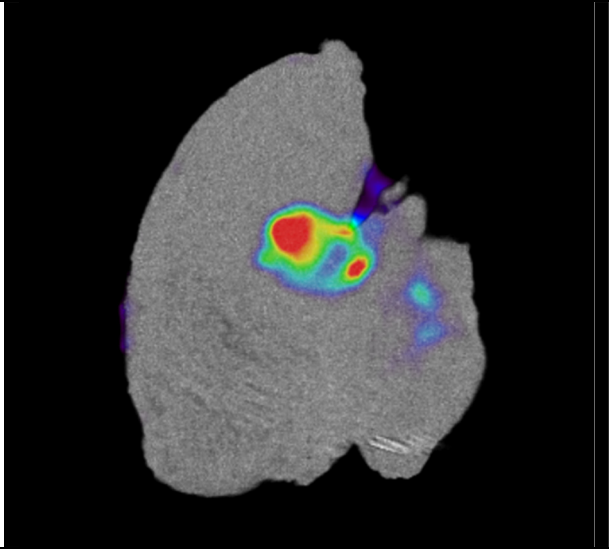

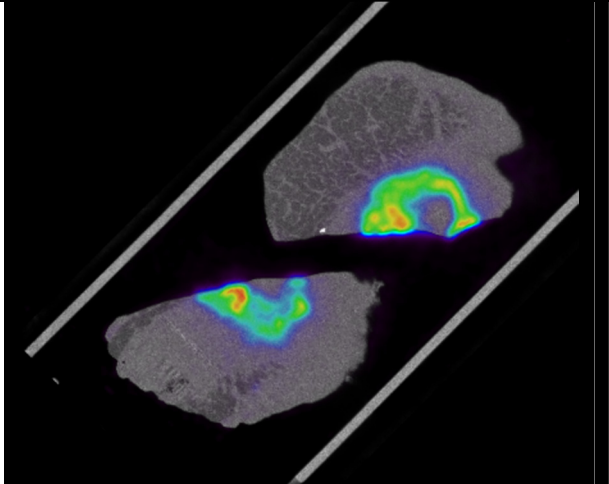
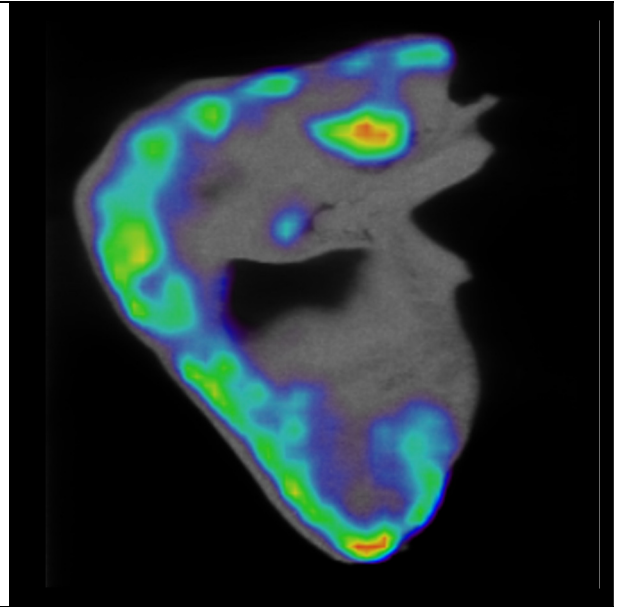
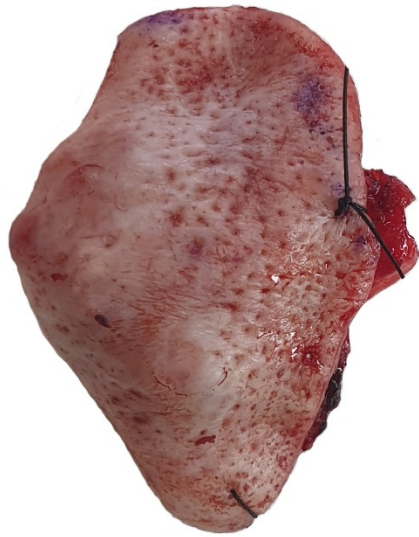


**Supplementary Material 1. PET/CT-imaging of the surgical specimens**

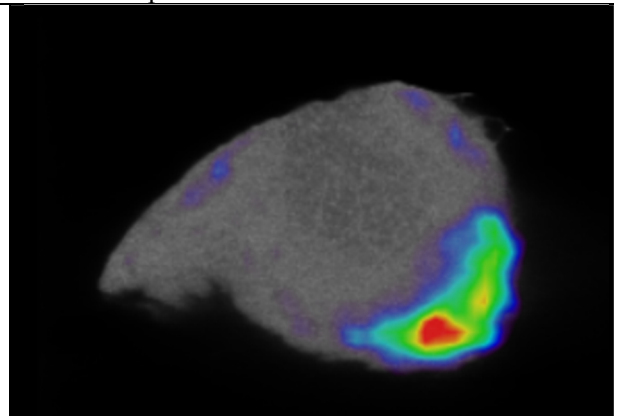
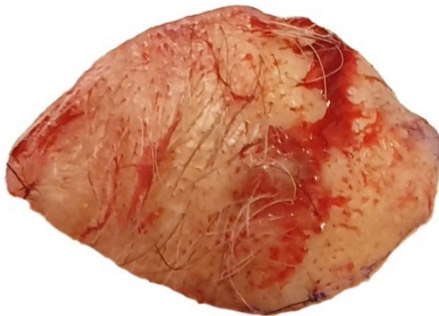
Specimen number	White light picture of the resected specimen	PET/CT-image of the resected specimen
1		
Patient 1: Mucosal squamous cell carcinoma of the floor of mouth.		
2		
Patient 2: Mucosal squamous cell carcinoma of the tongue.		
3		
Patient 3: Cutaneous squamous cell carcinoma of the scalp.		

4



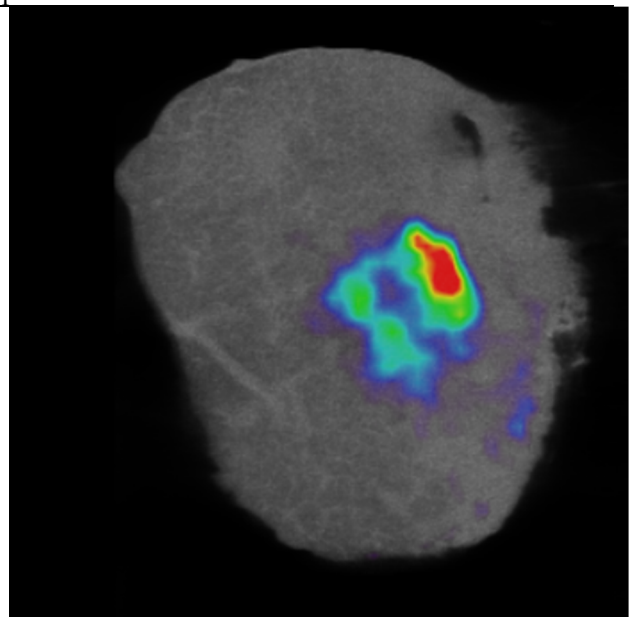
Patient 4: Angiosarcoma of the nasal tip.

5



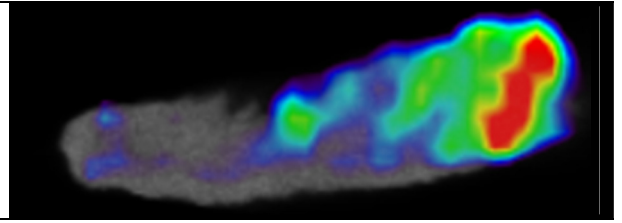
Patient 5: Cutaneous preauricular squamous cell carcinoma.

6



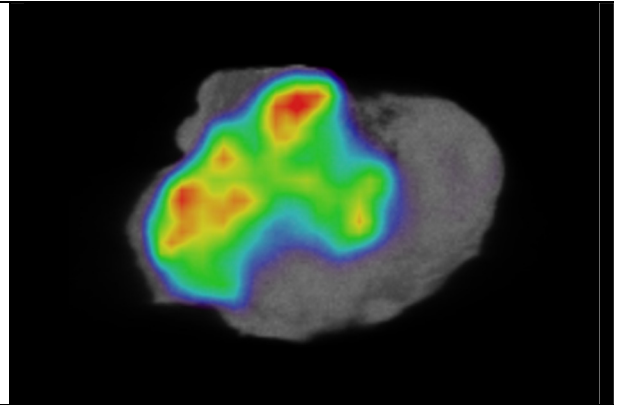
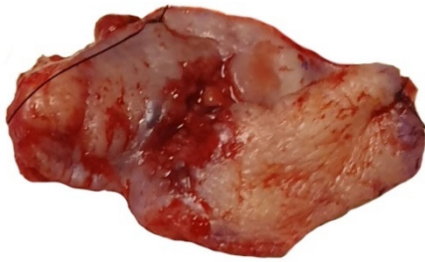
Patient 5: Cutaneous squamous cell carcinoma located on the scalp.

7



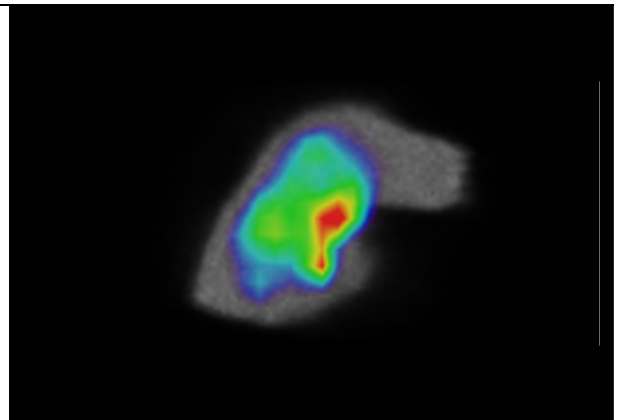
Patient 5: Cutaneous preauricular basocellular carcinoma .

8



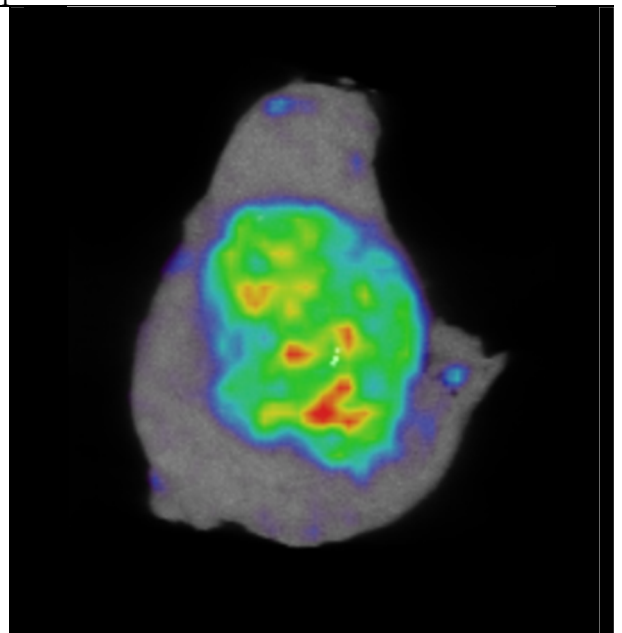
Patient 6: Cutaneous squamous cell carcinoma located on the external ear

9

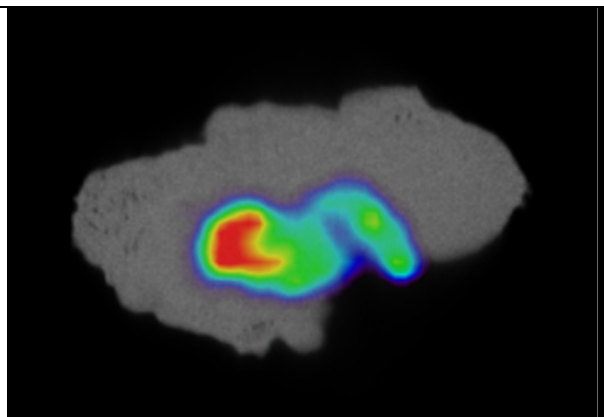


Patient 6: Cutaneous preauricular squamous cell carcinoma.

10



Patient 7: Medullary thyroid carcinoma.



Patient 8: Mucosal Squamous cell carcinoma of the tongue.

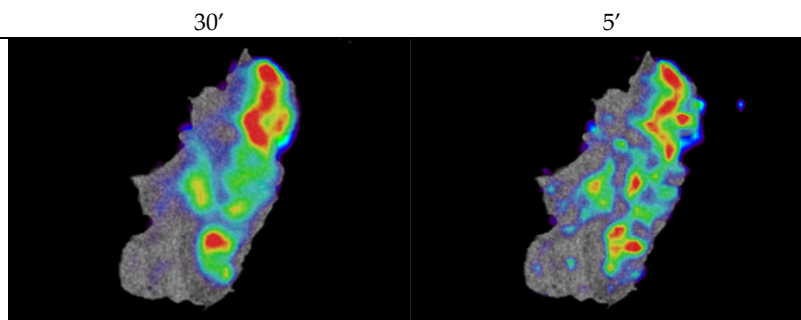
**Supplementary Material 2:** 3D video render of the PET/CT-imaging of specimen 2**Supplementary Material 3.** Simulation of PET-acquisition with lower administered  $^{18}\text{F}$ -FDG and shorter scanning protocol

For this study, patients were injected with approximately 4MBq/kg of  $^{18}\text{F}$ -FDG. The standard PET-acquisition time of the surgical specimens was always kept on 30 minutes for every scan. In order to simulate PET-scans with a lower acquisition time and a lower administered activity, a shorter time frame of only the first few minutes of the original PET acquisition was reconstructed. To simulate an administered dose of 1MBq/kg, using an acquisition time of 30 minutes, a time frame of 7.5 minutes was reconstructed. A time frame of 5 minutes was reconstructed to simulate a lower acquisition time of 5 minutes using a dose of 4MBq/kg. To simulate PET data using 1/4th of the activity and acquired during 5 minutes, a time frame of 1.25 minutes was reconstructed from the original 30 minutes PET-scan. The length of the time frames used during reconstruction are summarized in Table S1. For each tumoral specimen, a snapshot was taken with the different image reconstructions. The reconstructed images are provided in Figures S1–S11.

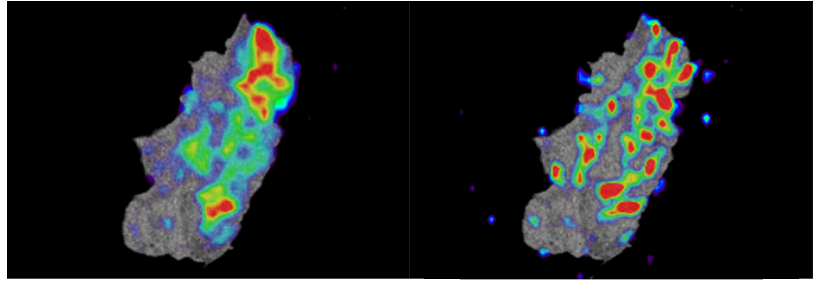
**Table S1.** Length of the reconstructed time frame used to simulate the decreased activity and acquisition time.

Simulated activity	Simulated acquisition time	Length time frame during reconstruction
Baseline (4MBq/kg)	30 minutes	30 minutes
$\frac{1}{4}$ activity (1MBq/kg)	30 minutes	7.5 minutes
Baseline (4MBq/kg)	5 minutes	5 minutes
$\frac{1}{4}$ activity (1MBq/kg)	5 minutes	1.25 minutes

Baseline activity

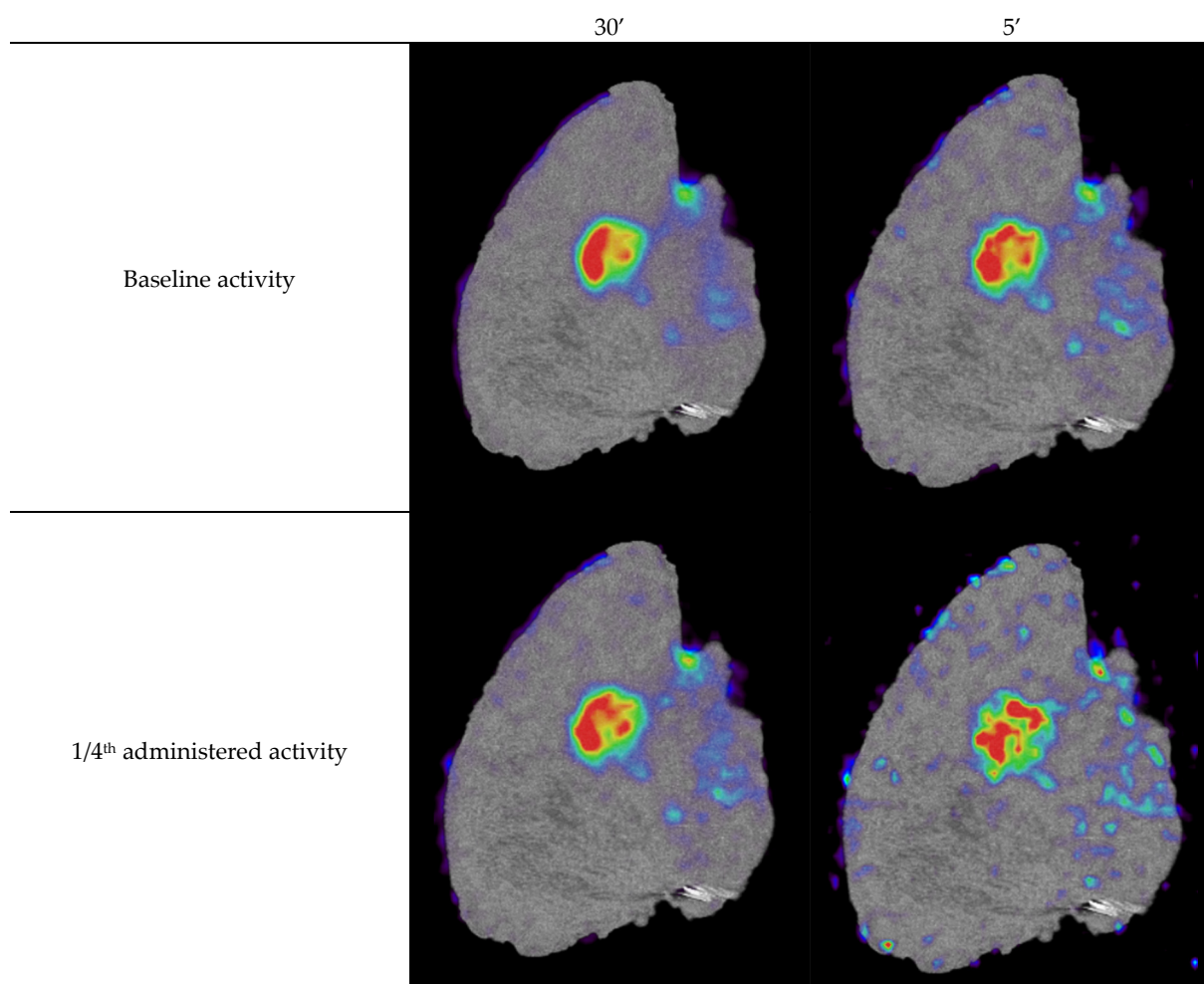


1/4<sup>th</sup> administered activity

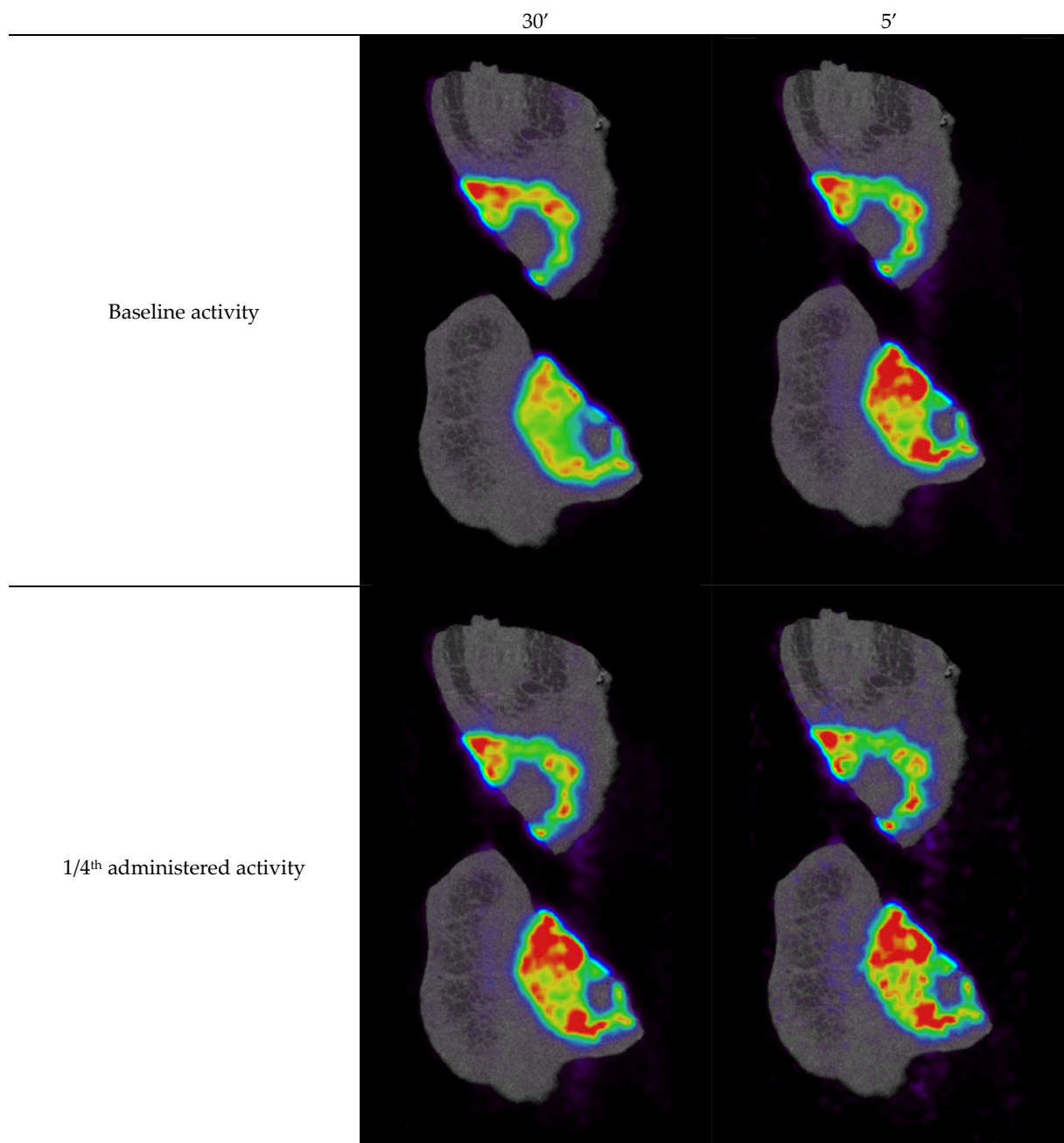


**Figure S1.** Original (top left) and simulated PET scans for specimen 1.



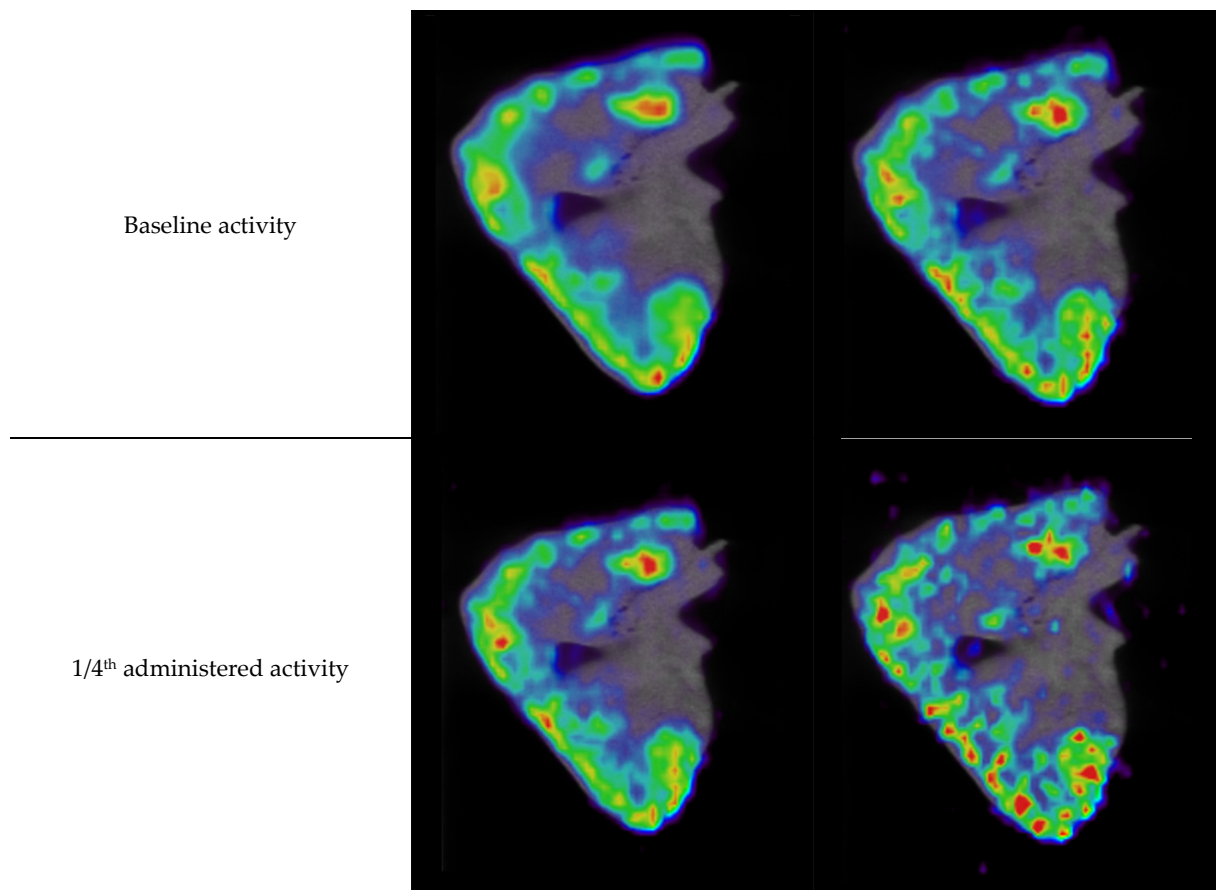


**Figure S2.** Original (top left) and simulated PET scans for specimen 2.

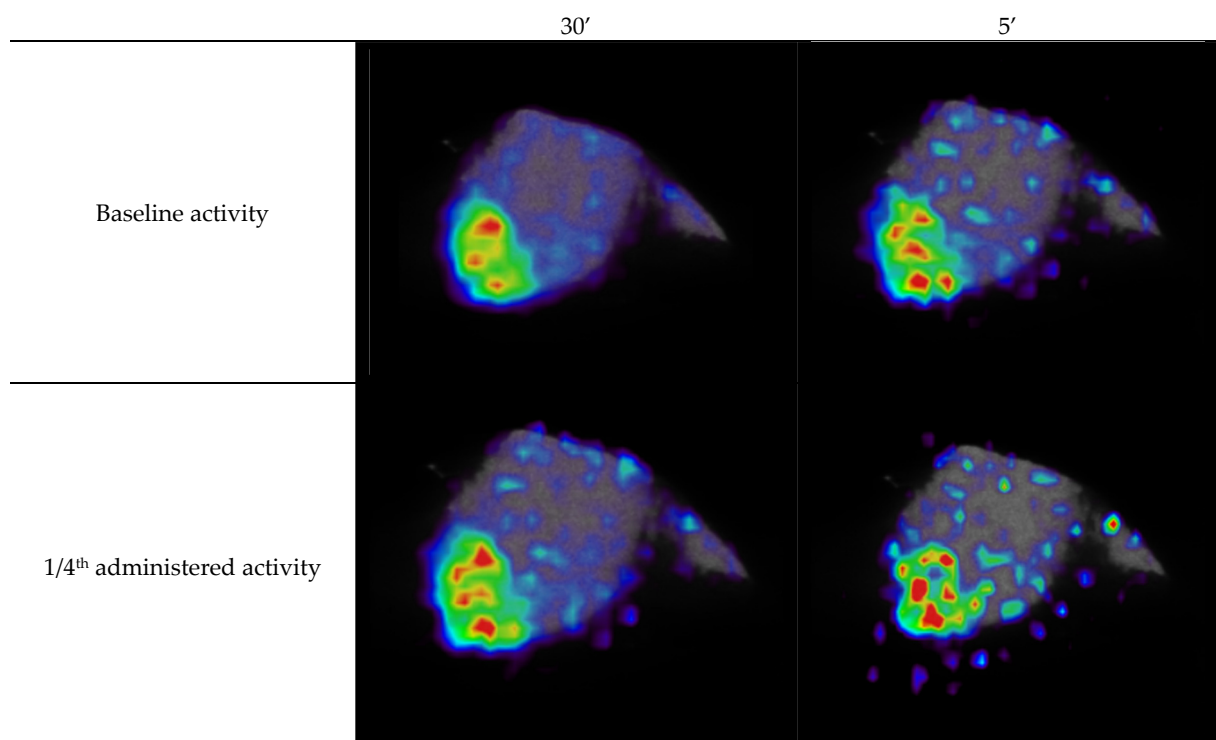


**Figure S3.** Original (top left) and simulated PET scans for specimen 3.

	30'	5'
--	-----	----

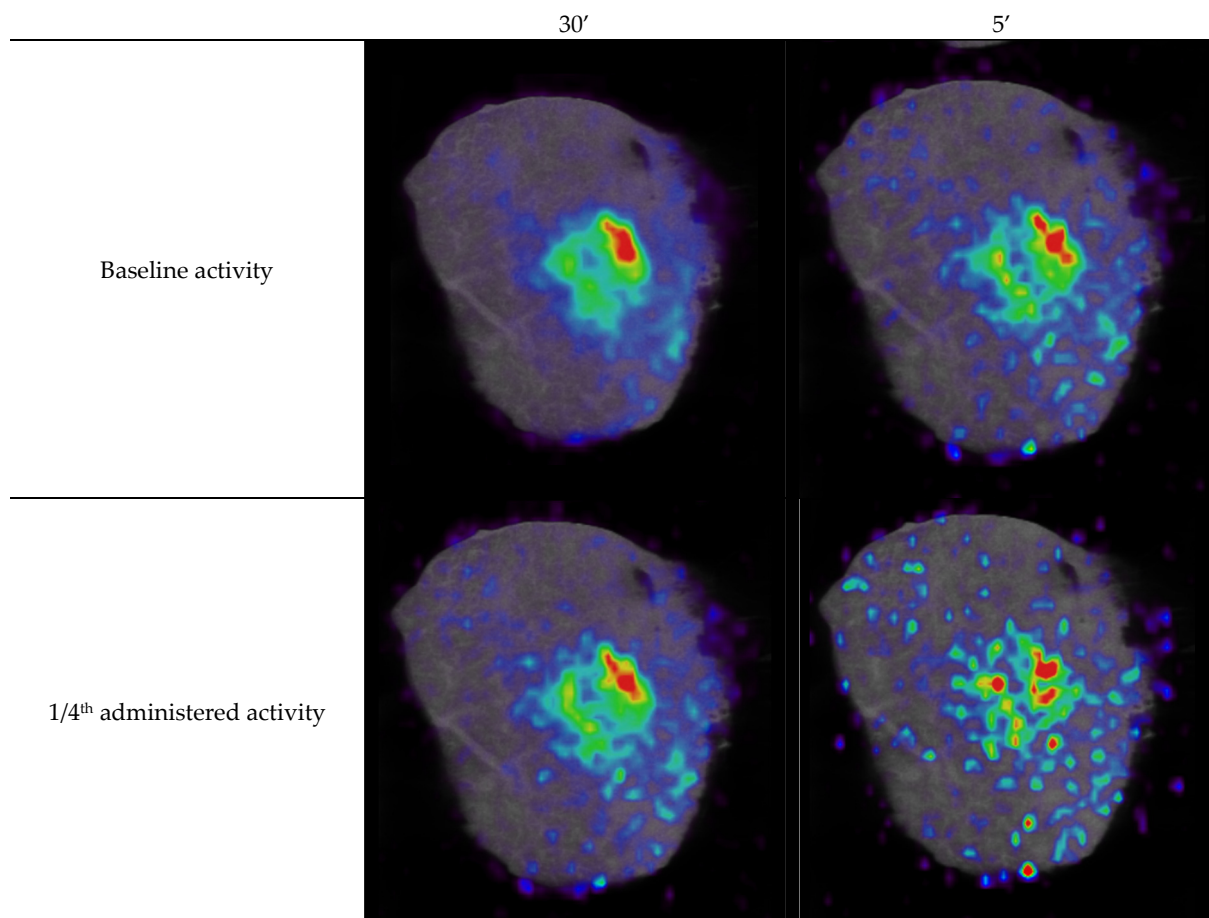


**Figure S4.** Original (top left) and simulated PET scans for specimen 4.



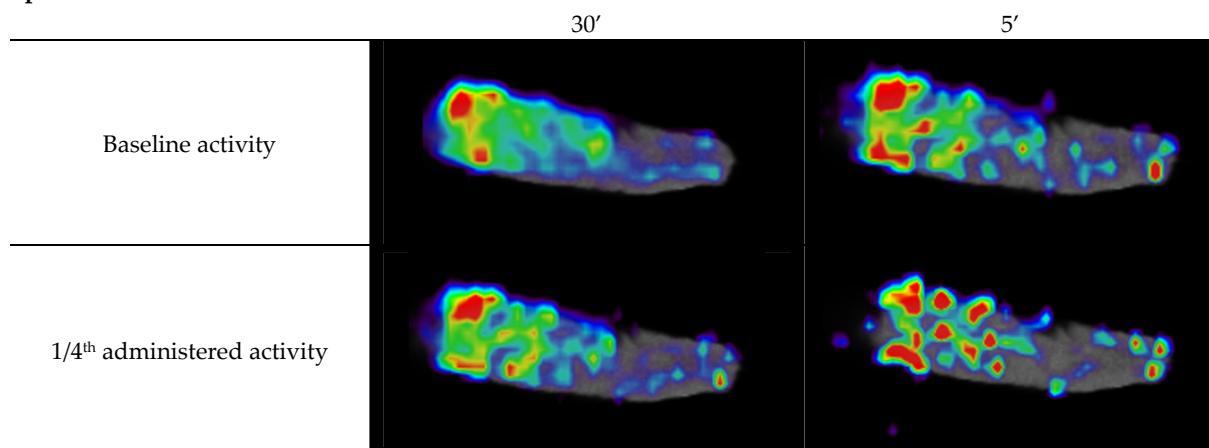
**Figure S5.** Original (top left) and simulated PET scans for specimen 5.



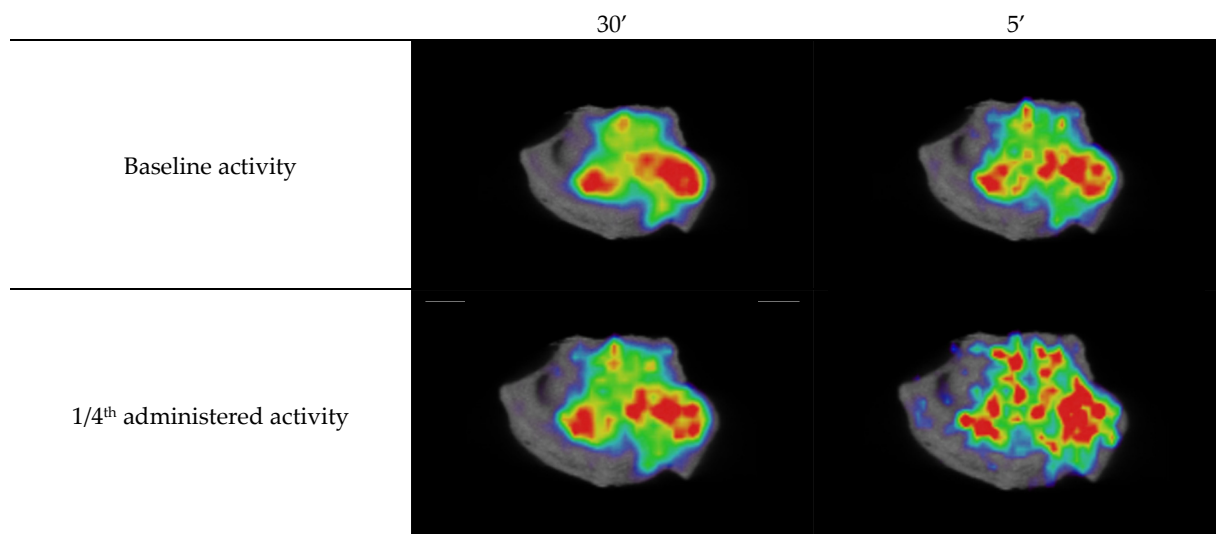


**Figure S6.** Original (top left) and simulated PET scans for specimen 6.

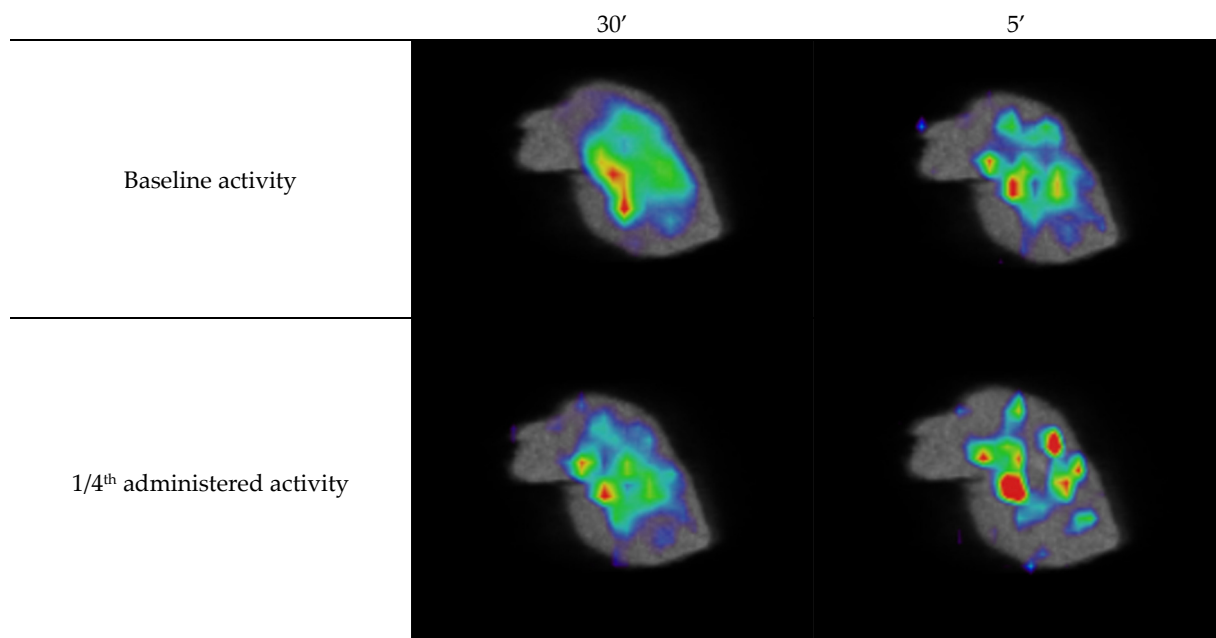
#### Specimen 7



**Figure S7.** Original (top left) and simulated PET scans for specimen 7.

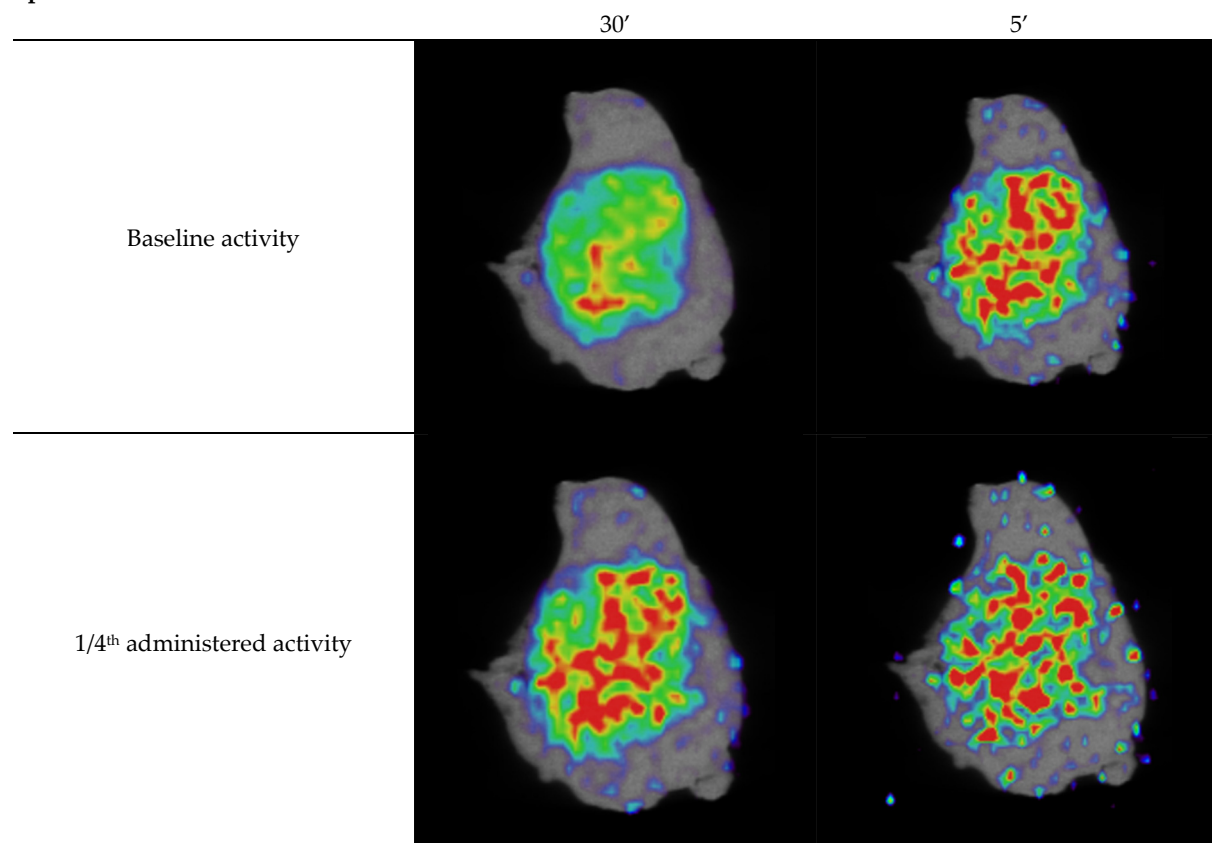


**Figure S8.** Original (top left) and simulated PET scans for specimen 8.

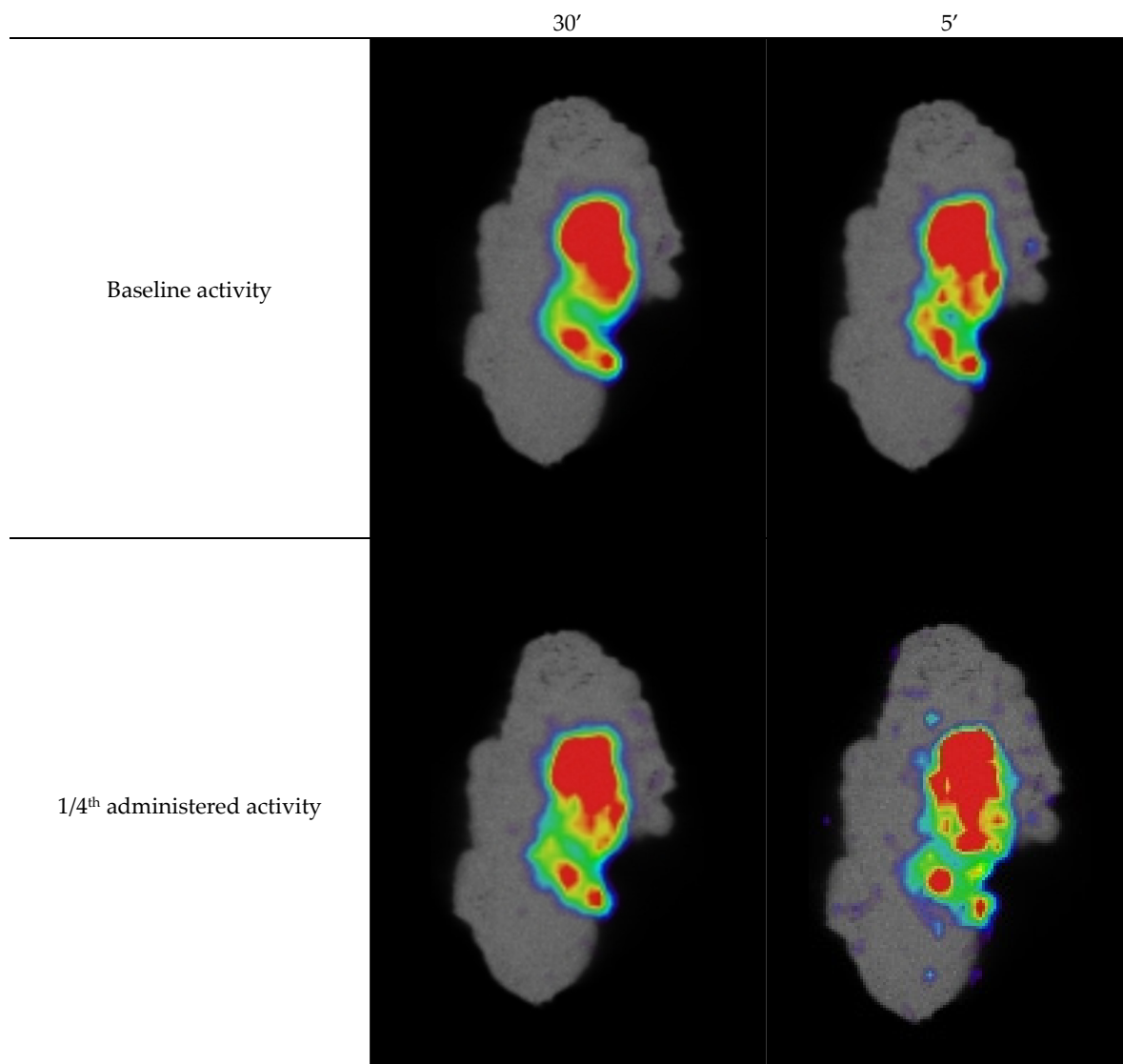


**Figure S9.** Original (top left) and simulated PET scans for specimen 9.

Specimen 10



**Figure S10.** Original (top left) and simulated PET scans for specimen 10.



**Figure S11.** Original (top left) and simulated PET scans for specimen 11.