

**Supplementary Information**

**Supplementary Table S1.** Regional distribution volume ( $V_T$ ) of [<sup>18</sup>F]SF51 in human brain.

Region	HAB (n=2)		MAB (n=3)		LAB (n=2)		HAB/MAB	HAB/LAB	MAB/LAB
	Mean	COV	Mean	COV	Mean	COV			
Whole Brain	0.64	0.05	0.94	0.04	0.40	0.15	0.69	1.62	2.36
Frontal Cortex	0.63	0.01	0.92	0.10	0.40	0.17	0.68	1.56	2.30
Cingulate Cortex	0.65	0.02	0.96	0.06	0.41	0.20	0.67	1.57	2.33
Hippocampus	0.74	0.03	1.05	0.03	0.47	0.05	0.70	1.58	2.25
Amygdala	0.69	0.06	1.05	0.02	0.42	0.05	0.65	1.64	2.50
Temporal Cortex	0.62	0.02	0.90	0.04	0.39	0.14	0.69	1.58	2.29
Parietal Cortex	0.61	0.04	0.88	0.06	0.36	0.21	0.69	1.66	2.40
Occipital Cortex	0.69	0.04	0.93	0.03	0.39	0.12	0.74	1.76	2.39
Striatum	0.59	0.10	0.93	0.05	0.40	0.21	0.63	1.48	2.35
Thalamus	0.77	0.04	1.11	0.05	0.46	0.15	0.69	1.66	2.39
Corpus callosum	0.63	0.05	0.96	0.03	0.43	0.18	0.66	1.45	2.20
Insula	0.64	0.02	0.98	0.05	0.41	0.16	0.66	1.55	2.37
Brain stem	0.82	0.14	1.21	0.06	0.48	0.07	0.68	1.71	2.53
White matter	0.65	0.07	0.98	0.06	0.43	0.16	0.67	1.52	2.27
Cerebellum grey matter	0.66	0.12	0.94	0.02	0.41	0.07	0.70	1.63	2.31
Cerebellum White matter	0.74	0.14	1.04	0.01	0.46	0.08	0.71	1.62	2.27

COV: coefficient of variation; HAB: high-affinity binder; MAB: mixed-affinity binder; LAB: low-affinity binder.

**Supplementary Table S2.** Time-integrated activity coefficients of source organs determined from whole-body imaging of two healthy volunteers injected with [<sup>18</sup>F]SF51.

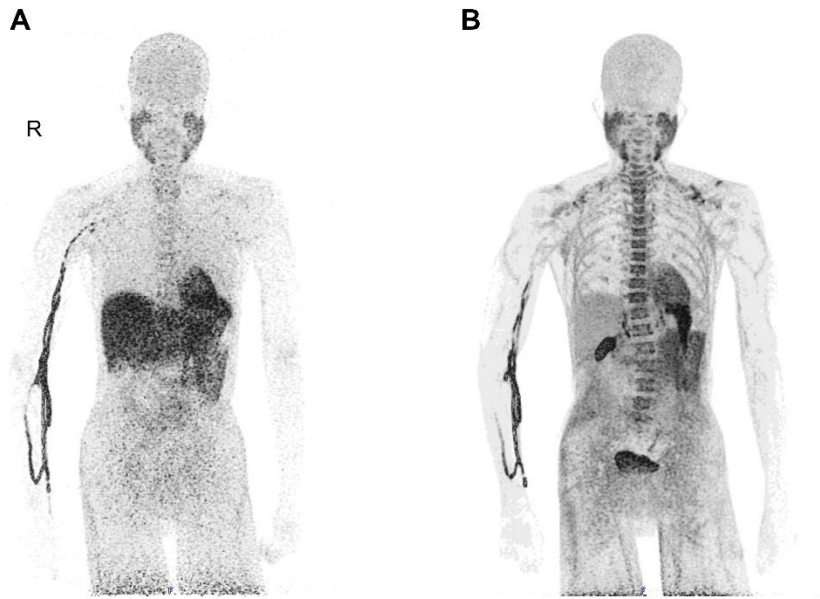
Organ	Time (hours)
Brain	0.0133 ± 0.0016
Heart	0.0101 ± 0.0042
Liver	0.0410 ± 0.0208
Kidneys	0.0133 ± 0.0058
Lungs	0.0274 ± 0.0191
Stomach	0.0055 ± 0.0006
Spleen	0.0038 ± 0.0015
Red Marrow	0.0206 ± 0.0013
Gall Bladder	0.0020 ± 0.0022
Intestine	0.0364 ± 0.0058
Urinary Bladder	0.0088 ± 0.0028
Remainder of body	0.7662 ± 0.0780

Data are presented as mean ± SD.

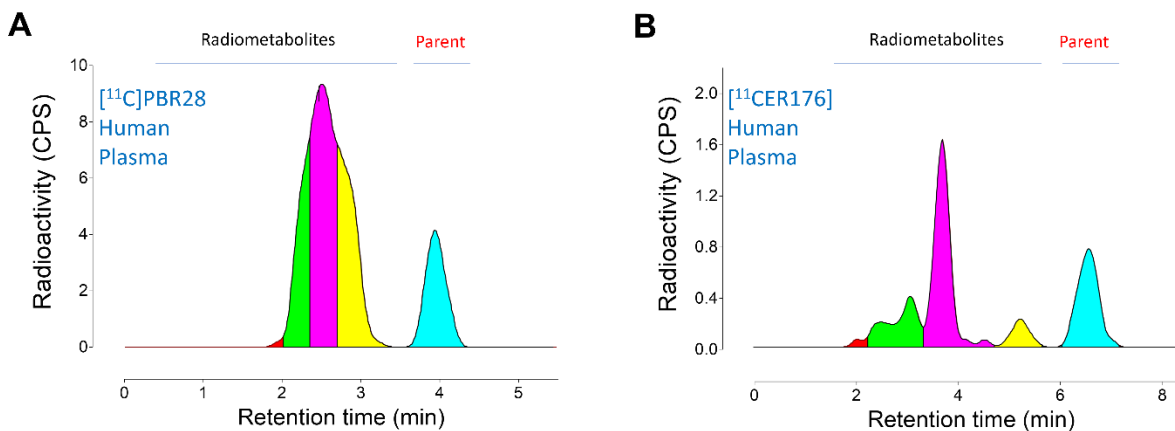
**Supplementary Table S3.** Radiation dosimetry estimates for [<sup>18</sup>F]SF51 were determined from two healthy volunteers.

Organ	Radiation dose (μSV/MBq)
Adrenals	15.2 ± 2.2
Brain	5.4 ± 0.6
Breasts	11.3 ± 1.9
Gallbladder Wall	18.1 ± 2.8
Lower Large Intestine Wall	16.5 ± 3.0
Small Intestine	22.8 ± 3.6
Stomach Wall	16.4 ± 2.7
Upper Large Intestine Wall	16.8 ± 2.9
Heart Wall	15.8 ± 1.5
Kidneys	16.8 ± 0.6
Liver	10.1 ± 2.9
Lungs	11.9 ± 1.8
Muscle	13.4 ± 2.2
Ovaries	14.7 ± 0.4
Pancreas	16.0 ± 2.4
Red Marrow	13.7 ± 1.9
Osteogenic Cells	22.2 ± 4.5
Skin	10.6 ± 1.8
Spleen	12.3 ± 3.3
Thymus	13.9 ± 2.7
Thyroid	13.6 ± 1.6
Urinary Bladder Wall*	16.6 ± 6.1
Uterus	17.6 ± 1.8
Total Body	15.0 ± 0.1
Effective Dose	13.8 ± 0.9

\*Dynamic urinary bladder model was not used; data are presented as mean ± SD.



**Supplementary Figure S1** Whole-body images of a healthy female at 10 minutes (**A**) and 90 minutes (**B**) after [ $^{18}\text{F}$ ]SF51 injection. The images are displayed in standardized uptake value (SUV) as a two-dimensional compression with maximal intensity projected (MIP) forward to emphasize contrast at the edge of organs. The images are decay-corrected to time of injection.



**Supplemental Figure S2.** Representative human arterial plasma radiochromatograms for [<sup>11</sup>C]PBR28 and [<sup>11</sup>C]ER176 at 90 minutes after radioligand administration. No radioactivity was detected eluting after the parent peak.