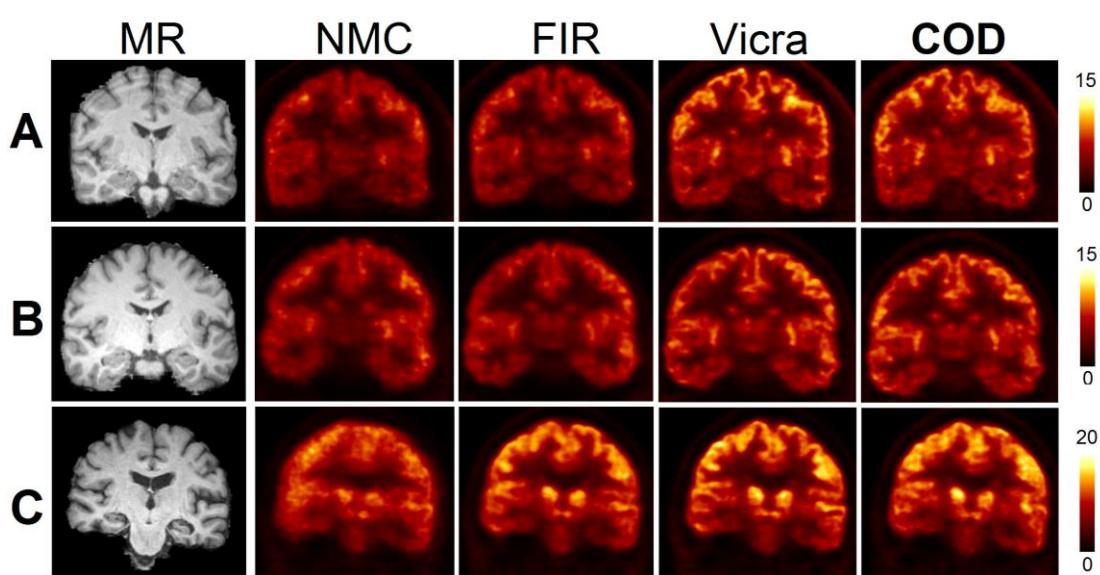
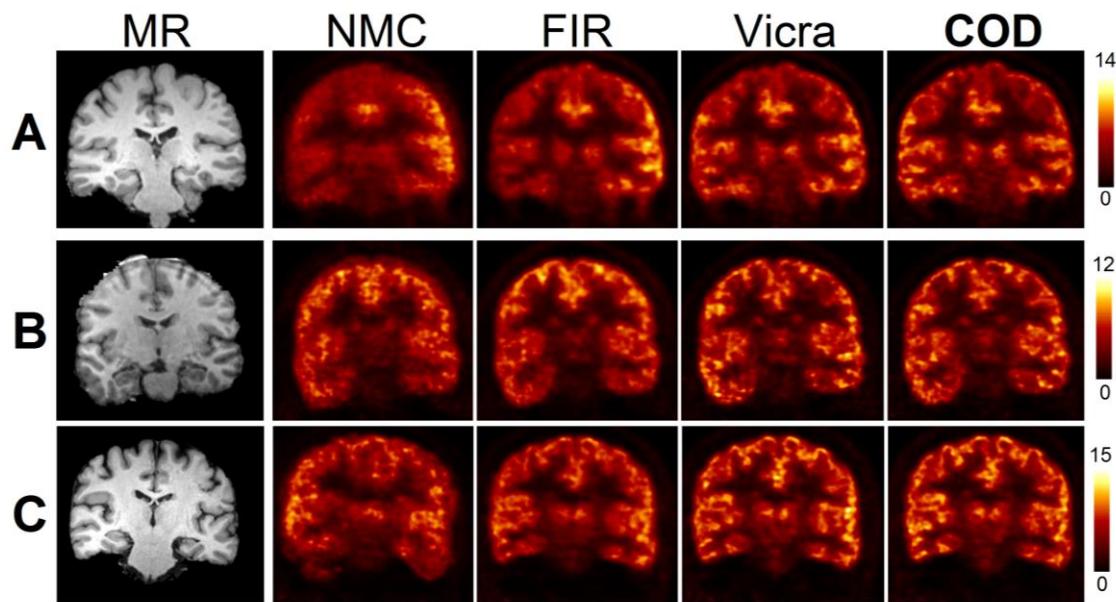


SUPPLEMENTAL FIGURE 1. (A) Forward difference of Figure 1(B) used in automatic MTP detection with the motion threshold set to 0.09. (D) Averaged coordinates absolute distance of the eight vertices of the reference cube in Z direction, which were computed based on the Vicra motion information.



SUPPLEMENTAL FIGURE 2. Same as Figure 2 in coronal orientation.



SUPPLEMENTAL FIGURE 3. Same as Figure 4 in coronal orientation.

Supplemental Table 1. ^{18}F -FDG SUV difference (%) compared to Vicra.

Time(min)	No Motion Correction (NMC)		Frame-based Image Registration (FIR)		Centroid of Distribution (COD)	
	0-10	60-90	0-10	60-90	0-10	60-90
Amygdala	-1.9 \pm 3.6	-9.7 \pm 13.3	-1.5 \pm 3.5	-5.7 \pm 7.0	-2.9 \pm 4.1	1.8 \pm 2.6
Caudate	-3.7 \pm 4.0	-22.8 \pm 10.0	-3.2 \pm 3.4	-6.5 \pm 8.7	-2.4 \pm 3.7	-2.6 \pm 4.6
Cerebellum	-2.4 \pm 1.7	-14.6 \pm 16.1	-2.3 \pm 1.7	-5.4 \pm 6.0	-2.8 \pm 2.4	0.8 \pm 2.4
Frontal	-3.8 \pm 3.0	-25.3 \pm 9.9	-3.3 \pm 2.3	-4.0 \pm 6.6	-2.2 \pm 2.7	0.2 \pm 3.4
Hippocampus	-2.0 \pm 1.6	-11.4 \pm 10.6	-1.7 \pm 1.5	-6.0 \pm 6.8	-2.2 \pm 4.9	-1.8 \pm 1.8
Insula	-2.2 \pm 2.2	-10.7 \pm 11.1	-2.3 \pm 2.0	-4.1 \pm 5.4	-1.3 \pm 2.9	1.6 \pm 1.8
Occipital	-2.9 \pm 2.6	-12.1 \pm 9.9	-2.9 \pm 2.2	-2.1 \pm 7.6	-2.4 \pm 2.4	4.7 \pm 6.9
Pallidum	-1.5 \pm 2.9	-0.7 \pm 17.4	-1.9 \pm 2.9	-2.3 \pm 7.2	-2.6 \pm 3.5	4.8 \pm 3.2
Parietal	-3.4 \pm 2.6	-17.7 \pm 11.4	-3.1 \pm 2.2	-4.7 \pm 7.3	-2.8 \pm 2.6	0.4 \pm 4.1
Putamen	-3.9 \pm 3.1	-22.5 \pm 11.8	-3.6 \pm 2.8	-4.4 \pm 5.7	-3.3 \pm 3.2	1.7 \pm 2.9
Temporal	-3.1 \pm 2.0	-22.0 \pm 12.8	-2.9 \pm 1.8	-4.8 \pm 5.9	-2.7 \pm 2.5	0.9 \pm 2.6
Thalamus	-2.3 \pm 2.4	-18.5 \pm 12.7	-2.1 \pm 2.3	-6.5 \pm 7.9	-2.5 \pm 3.5	-0.5 \pm 1.8
Average difference (%)	-2.8	-15.7	-2.6	-4.7	-2.5	1.0
Average SD (%)	2.6	12.2	2.4	6.9	3.2	3.2

Mean \pm standard deviation across subjects.

Supplemental Table 2. ^{11}C -UCB-J SUV difference (%) compared to Vicra.

Time(min)	No Motion Correction (NMC)		Frame-based Image Registration (FIR)		Centroid of Distribution (COD)	
	0-10	60-90	0-10	60-90	0-10	60-90
Amygdala	-2.5±4.6	-23.1±15.1	-2.4±4.1	-7.0±10.5	-0.6±1.9	4.5±5.2
Caudate	-5.0±6.9	-24.2±15.7	-4.6±5.5	-5.8±10.1	-1.3±1.3	6.4±6.3
Cerebellum	-2.8±1.5	-12.7±13.8	-2.7±1.3	-6.4±10.2	-2.0±1.4	2.6±4.7
Frontal	-4.4±7.3	-39.0±14.9	-4.0±6.2	-6.3±12.0	-0.6±1.2	3.9±3.4
Hippocampus	-3.6±5.3	-12.8±8.9	-3.5±4.8	-7.8±11.5	-0.8±1.4	1.6±6.7
Insula	-2.9±2.9	-22.4±18.2	-2.7±2.9	-7.2±8.4	-1.3±1.0	1.9±3.3
Occipital	-2.9±2.0	-14.3±15.2	-2.9±2.0	-2.3±11.7	-2.4±2.2	6.4±7.4
Pallidum	-2.5±4.6	5.9±23.0	-2.2±4.6	-4.1±12.3	-1.1±1.6	1.3±7.1
Parietal	-4.1±4.2	-28. ±15.1	-4.1±3.7	-3.5±12.7	-2.5±1.8	4.3±6.4
Putamen	-3.6±4.6	-30.2±13.9	-3.3±3.9	-7.6±8.4	-1.6±1.6	3.2±3.7
Temporal	-3.8±2.9	-27.9±17.3	-3.7±2.7	-7.4±12.4	-1.5±1.0	4.4±4.6
Thalamus	-4.4±4.8	-16.9±18.4	-4.2±4.2	-9.4±11.8	-2.0±1.5	3.7±5.5
Average difference (%)	-3.5	-20.5	-3.4	-6.2	-1.5	3.7
Average SD (%)	4.3	15.8	3.8	11.0	1.5	5.4

(SD: standard deviation across all subjects)

Supplemental Table 3. ^{18}F -FDG Patlak-model fitting residual error (averaged over subjects).

	No Motion Correction (NMC)	Frame-based Image Registration (FIR)	Vicra	Centroid of Distribution (COD)
Amygdala	4.8%	4.0%	2.6%	3.4%
Caudate	5.2%	3.8%	1.4%	2.3%
Cerebellum Cortex	4.2%	1.7%	0.7%	0.7%
Frontal	4.5%	3.2%	0.7%	1.6%
Hippocampus	4.2%	2.4%	1.6%	2.0%
Insula	3.6%	1.8%	0.8%	1.1%
Occipital	2.7%	1.8%	1.0%	1.0%
Pallidum	6.6%	2.4%	2.0%	1.7%
Parietal	3.3%	2.2%	0.7%	1.1%
Putamen	6.1%	2.9%	1.1%	1.4%
Temporal	4.9%	2.3%	0.8%	0.8%
Thalamus	5.2%	2.4%	1.0%	1.2%
Average	4.6%	2.6%	1.2%	1.5%

Supplemental Table 4. ^{11}C -UCB-J 1T-model fitting residual error (averaged over subjects).

	No Motion Correction (NMC)	Frame-based Image Registration (FIR)	Vicra	Centroid of Distribution (COD)
Amygdala	8.4%	6.0%	5.1%	4.2%
Caudate	11.2%	5.4%	2.8%	2.9%
Cerebellum Cortex	4.8%	3.4%	2.2%	2.1%
Frontal	9.2%	5.7%	1.5%	1.7%
Hippocampus	7.7%	5.1%	4.5%	4.1%
Insula	5.7%	3.8%	2.1%	2.1%
Occipital	5.2%	3.5%	2.2%	1.5%
Pallidum	6.1%	4.8%	3.9%	3.6%
Parietal	7.2%	4.3%	2.1%	1.5%
Putamen	7.6%	4.2%	2.1%	1.8%
Temporal	6.9%	4.3%	2.0%	1.4%
Thalamus	7.1%	4.4%	2.5%	2.5%
Average	7.3%	4.6%	2.8%	2.5%