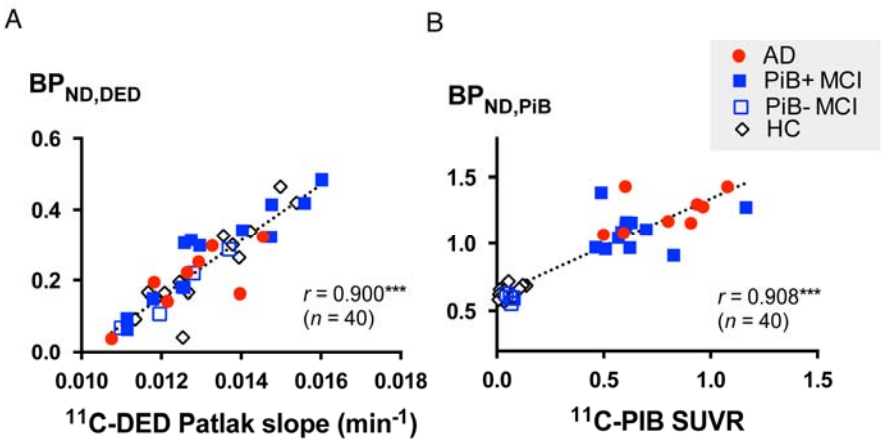
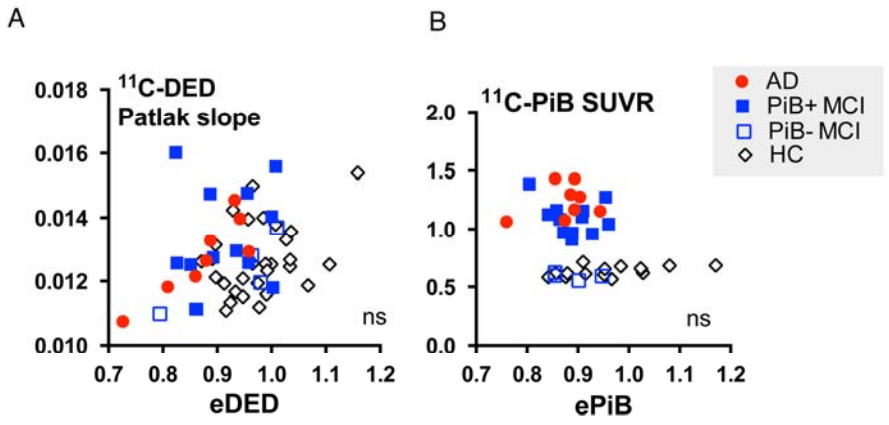


SUPPLEMENTAL FIGURE 1. Inter-subject correlations of (A) ^{11}C-DED and (B) ^{11}C-PiB PET quantification approaches, performed in a neocortical (frontal, temporal, parietal) composite region; ***p < 0.001.

AD = Alzheimer's disease; $BP_{ND,DED}$ = ^{11}C-DED binding potential; $BP_{ND,PiB}$ = ^{11}C-PiB binding potential; ^{11}C-DED = ^{11}C-deuterium-L-deprenyl; HC = healthy control; MCI = mild cognitive impairment; ^{11}C-PiB = ^{11}C-Pittsburgh compound-B; SRTM = simplified reference tissue model; SUVR = standardized uptake value ratio.



SUPPLEMENTAL FIGURE 2. Inter-subject correlations of (A) eDED vs ^{11}C-DED Patlak slope and (B) ePiB vs ^{11}C-PiB SUVR in a neocortical (frontal, temporal, parietal) composite region; ***p<0.001.

AD = Alzheimer's disease; ^{11}C-DED = ^{11}C-deuterium-L-deprenyl; ^{11}C-PiB = ^{11}C-Pittsburgh compound-B; eDED = early-phase ^{11}C-DED; ePiB = early-phase ^{11}C-PiB; HC = healthy control; MCI = mild cognitive impairment; ns = non-significant; SUVR = standardized uptake value ratio.

SUPPLEMENTAL TABLE 1. Comparison of ^{11}C-DED and ^{11}C-PIB quantification methods.

	Inter-subject regional correlations (Pearson's *r*), *n* = 40	
	^{11}C-DED Patlak slope vs $BP_{ND,DED}$	^{11}C-PiB SUVR vs $BP_{ND,PiB}$
Cortical regions		
Frontal	0.813***	0.874***
Parietal	0.870***	0.858***
Temporal	0.909***	0.836***
Occipital	0.859***	0.741***
Anterior cingulate	0.848***	0.903***
Posterior cingulate	0.810***	0.896***
Insula	0.933***	0.875***
Parahippocampus	0.942***	0.588***
Subcortical regions		
Caudate	0.857***	0.686***
Putamen	0.880***	0.860***
Thalamus	0.873***	0.569***
Hippocampus	0.892***	0.487**

**p<0.004, ***p<0.001

$BP_{ND,DED}$ = ^{11}C-DED binding potential; $BP_{ND,PiB}$ = ^{11}C-PiB binding potential; ^{11}C-DED = ^{11}C-deuterium-L-deprenyl; ^{11}C-PiB = ^{11}C-Pittsburgh compound-B; SRTM = simplified reference tissue model; SUVR = standardized uptake value ratio.

SUPPLEMENTAL TABLE 2. Regional distribution of significant voxelwise positive Pearson's correlations (maximum C values) by biological parametric mapping, corrected by family-wise error (FWE) multiple comparisons at p < 0.05.

	eDED vs ^{18}F-FDG SUVR positive correlations				eDED vs ^{11}C-DED Patlak slope positive correlations			
	Left hemisphere		Right hemisphere		Left hemisphere		Right hemisphere	
	Num. of voxels	Max. C value	Num. of voxels	Max. C value	Num. of voxels	Max. C value	Num. of voxels	Max. C value
Superior parietal gyrus			24	0.78				
Inferiolateral remainder of parietal lobe	558	0.88	629	0.85				
Superior temporal gyrus, posterior part			61	0.79				
Posterior temporal lobe	140	0.84	1434	0.86			31	0.76
Middle and inferior temporal gyrus	60	0.84	370	0.85				
Posterior cingulate	53	0.80	26	0.77				
Anterior cingulate	257	0.87	128	0.85				
Middle frontal gyrus	200	0.80						
Inferior frontal gyrus	149	0.80	82	0.82	26	0.79	13	0.78
Superior frontal gyrus	407	0.91	140	0.86				
Posterior orbital gyrus			79	0.84				
Thalamus	52	0.83			23	0.77	23	0.85
Caudate nucleus	35	0.80			81	0.83	144	0.86
Insula			147	0.86				

eDED = early-phase ^{11}C-DED; ^{11}C-DED = ^{11}C-deuterium-L-deprenyl; ^{18}F-FDG = ^{18}F-fluorodeoxyglucose; SUVR = standardized uptake value ratio.

SUPPLEMENTAL TABLE 3. Regional distribution of significant voxelwise hypoperfusion and hypometabolism in the PiB+ MCI group compared to healthy controls by statistical parametric mapping (maximum T values), corrected by family-wise error (FWE) multiple comparisons at p < 0.05.

	Hypoperfusion in PiB+ MCI				**Hypometabolism in PiB+ MCI**			
	Left hemisphere		Right hemisphere		Left hemisphere		Right hemisphere	
	Num. of voxels	Max. T value	Num. of voxels	Max. T value	Num. of voxels	Max. T value	Num. of voxels	Max. T value
Superior parietal gyrus							21	6.13
Inferiolateral remainder of parietal lobe	145	7.45			102	6.50	180	7.24
Superior temporal gyrus, posterior part					95	6.62	77	6.53
Middle and inferior temporal gyrus	28	6.95			229	6.80	456	7.17
Posterior temporal lobe	55	7.58			98	6.60	444	8.21
Posterior cingulate					27	6.12	164	6.90
Middle frontal gyrus							125	6.16
Superior frontal gyrus					42	6.10		
Lateral remainder of occipital lobe								
Postcentral gyrus								
Thalamus					23	6.16		
Parahippocampal and ambient gyri			25	7.84				

PiB+ MCI = PiB positive mild cognitive impairment.

SUPPLEMENTAL TABLE 4. Regional distribution of significant voxelwise hypoperfusion and hypometabolism in the AD group compared to healthy controls by statistical parametric mapping (maximum T values), corrected by family-wise error (FWE) multiple comparisons at $p < 0.05$.

	Hypoperfusion in AD				Hypometabolism in AD			
	Left hemisphere		Right hemisphere		Left hemisphere		Right hemisphere	
	Num. of voxels	Max. T value	Num. of voxels	Max. T value	Num. of voxels	Max. T value	Num. of voxels	Max. T value
Superior parietal gyrus	38	7.46			150	7.57	179	7.89
Inferiolateral remainder of parietal lobe	800	11.17	77	6.99	1098	8.77	495	9.39
Superior temporal gyrus, posterior part								
Middle and inferior temporal gyrus	67	7.99			433	8.33	177	6.89
Posterior temporal lobe	514	9.54	41	7.36	841	8.23	606	10.15
Posterior cingulate							75	6.70
Middle frontal gyrus								
Superior frontal gyrus					54	7.41		
Lateral remainder of occipital lobe	91	8.63			37	6.68		
Postcentral gyrus	22	7.53						
Thalamus					27	7.27		
Parahippocampal and ambient gyri								

AD = Alzheimer's disease.

SUPPLEMENTAL TABLE 5. Discriminative ability of eDED, ePiB and ^{18}F-FDG SUVR by ROC analyses.

	AUC from ROC analyses [95% CI]			Statistical comparison of AUC values (DeLong's test p-values)	
AD vs HC	**^{18}F-FDG SUVR**	**eDED**	**ePiB**	**eDED vs ^{18}F-FDG SUVR p-value**	**eDED vs ePiB p-value**
Parietal	0.97 [0.83-1]	0.93 [0.83-1]	0.84 [0.66-1]	0.43	0.37
Temporal	0.97 [0.91-1]	0.93 [0.82-1]	0.90 [0.76-1]	0.43	0.72
PiB+ MCI vs HC					
Parietal	0.90 [0.77-1]	0.78 [0.61-0.96]	0.77 [0.59-0.96]	0.22	0.96
Temporal	0.96 [0.90-1]	0.87 [0.74-0.1]	0.77 [0.58-0.95]	0.20	0.25

AD = Alzheimer's disease patients (*n*=8); AUC = area under the curve; eDED = early-phase ^{11}C-deuterium-L-deprenyl; ePiB = early-phase ^{11}C-Pittsburgh compound-B; ^{18}F-FDG = ^{18}F-fluorodeoxyglucose; HC = healthy control group (*n*=16); PiB+ MCI = PiB-positive mild cognitive impairment patients (*n*=13); ROC = receiver operating characteristic; SUVR = standardized uptake value ratio.