

Supplementary Material

SUPPLEMENTARY TABLE 1. *Demographic characteristics of included subjects*

Group		PIB+(n = 15)	PIB-(n = 15)
Sex	Male	11	10
	Female	4	5
Diagnosis	AD	8	0
	MCI with AD pathology	7	0
	MCI without AD pathology	0	4
	HC	0	11
Age(y)		68.07 ± 9.80	68.13 ± 3.90
Weight (kg)		77.67 ± 10.18	78.53 ± 13.43
MMSE score		25.53 ± 2.69	28.20 ± 2.43

SUPPLEMENTARY TABLE 2. *Description of the VOIs used for estimating k'_2 values*

Name	Origin
Whole Brain	All voxels on the image
Cerebrum + Brainstem	All voxels of cortical and white matter tissue from the cerebrum and the brainstem
Gray Matter	All cortical tissue from the cerebrum
Frontal Lobe	Superior frontal gyrus, middle frontal gyrus, inferior frontal gyrus, precentral gyrus, straight gyrus, anterior orbital gyrus, lateral orbital gyrus, medial orbital gyrus, posterior orbital gyrus, subcallosal area, subgenual frontal cortex, and pre-subgenual frontal cortex
Parietal Lobe	Postcentral gyrus, superior parietal gyrus, and inferiolateral remainder of parietal lobe
Temporal Lobe	Hippocampus, amygdala, anterior temporal lobe lateral part, anterior temporal lobe medial part, parahippocampal and ambient gyri, superior temporal gyrus anterior part, superior temporal gyrus posterior part, middle and inferior temporal gyrus, fusiform gyrus, posterior temporal lobe
White Matter	All white matter tissue from the cerebrum
Brainstem	VOI from the Hammer's atlas
White Matter + Brainstem	Union of white matter tissue from the cerebrum and brainstem
Threshold	Drawn by fixing a lower limit on the BP_{ND}^{SRTM} parametric map and taking all voxels that were above the limit (threshold chosen for this study: 0.01, 0.05, and 0.1)
SPM	Voxels that presented statistically significant differences between PIB+ and PIB- groups using a two-sample t-test in SPM12

SUPPLEMENTARY TABLE 3. *Mean and standard deviation from estimated k'_2 values per group, and p-values of difference between groups*

Method	PIB+ (Mean $\pm$ SD)	PIB- (Mean $\pm$ SD)	p-value
Whole Brain	0.05 $\pm$ 0.01	0.06 $\pm$ 0.01	0.03*
Cerebrum + Brainstem	0.06 $\pm$ 0.01	0.07 $\pm$ 0.01	0.04*
Gray Matter	0.05 $\pm$ 0.01	0.08 $\pm$ 0.02	<0.01*
Frontal Lobe	0.05 $\pm$ 0.01	0.07 $\pm$ 0.02	<0.01*
Parietal Lobe	0.05 $\pm$ 0.01	0.07 $\pm$ 0.02	0.01*
Temporal Lobe	0.06 $\pm$ 0.01	0.10 $\pm$ 0.02	<0.01*
White Matter	0.07 $\pm$ 0.01	0.06 $\pm$ 0.01	0.16
Brainstem	0.08 $\pm$ 0.01	0.08 $\pm$ 0.01	0.60
White Matter + Brainstem	0.07 $\pm$ 0.01	0.06 $\pm$ 0.01	0.20
Threshold 0.01	0.05 $\pm$ 0.01	0.06 $\pm$ 0.01	0.11
Threshold 0.05	0.05 $\pm$ 0.01	0.06 $\pm$ 0.01	0.27
Threshold 0.1	0.05 $\pm$ 0.01	0.06 $\pm$ 0.01	0.71
SPM	0.05 $\pm$ 0.01	0.08 $\pm$ 0.02	<0.01*

* $p < 0.05$

SUPPLEMENTARY TABLE 4. *Results from the paired t-test comparing the differences between Whole Brain method and other methods for PIB+ and PIB- subjects on the k'_2 estimation*

Method	Group	Mean of the differences	Confidence Interval	p-value
Cerebrum + Brainstem	PIB+	-0.006	[-0.008, -0.004]	<0.001*
	PIB-	-0.008	[-0.011, -0.005]	<0.001*
Gray Matter	PIB+	0.001	[-0.001, 0.003]	0.643
	PIB-	-0.018	[-0.025, -0.011]	<0.001*
Frontal Lobe	PIB+	0.006	[0.003, 0.010]	0.001*
	PIB-	-0.009	[-0.019, 0.000]	0.053
Parietal Lobe	PIB+	0.003	[-0.001, 0.007]	0.157
	PIB-	-0.009	[-0.017, 0.000]	0.049*
Temporal Lobe	PIB+	-0.010	[-0.016, -0.005]	0.001*
	PIB-	-0.037	[-0.045, -0.029]	<0.001*
White Matter	PIB+	-0.015	[-0.018, -0.013]	<0.001*
	PIB-	-0.003	[-0.006, -0.001]	0.013*
Brainstem	PIB+	-0.025	[-0.028, -0.022]	<0.001*
	PIB-	-0.019	[-0.023, -0.015]	<0.001*
White Matter + Brainstem	PIB+	-0.016	[-0.018, -0.014]	<0.001*
	PIB-	-0.003	[-0.007, 0.000]	0.045*
Threshold 0.01	PIB+	-0.001	[-0.003, 0.001]	0.189
	PIB-	0.001	[-0.002, 0.003]	0.622
Threshold 0.05	PIB+	-0.001	[-0.003, 0.001]	0.153
	PIB-	0.002	[0.000, 0.005]	0.071
Threshold 0.1	PIB+	-0.001	[-0.003, 0.001]	0.148
	PIB-	0.005	[0.001, 0.008]	0.013*
SPM	PIB+	0.0014	[-0.001, 0.004]	0.286
	PIB-	-0.016	[-0.023, -0.009]	<0.001*

* $p < 0.05$

SUPPLEMENTARY FIGURE 1. Plot of the relative changes in BPND SRTM2 with relative increment of k_2' . In the x-axis is the fixed value of k_2' (which varied from 0.005 to 0.09 with a step of 0.005), and in the y-axis is the BPND SRTM2 of the fixed value of a specific brain region. The dashed line represents a possible lower threshold for k_2' estimation. Black dots represent data from the Superior Parietal Gyrus left region (a region with high PIB binding), in dark gray, the Inferior Frontal Gyrus right (a region with medium binding), and in light gray, the Lateral Remainder of Occipital Lobe right (a region with low binding of PIB).

