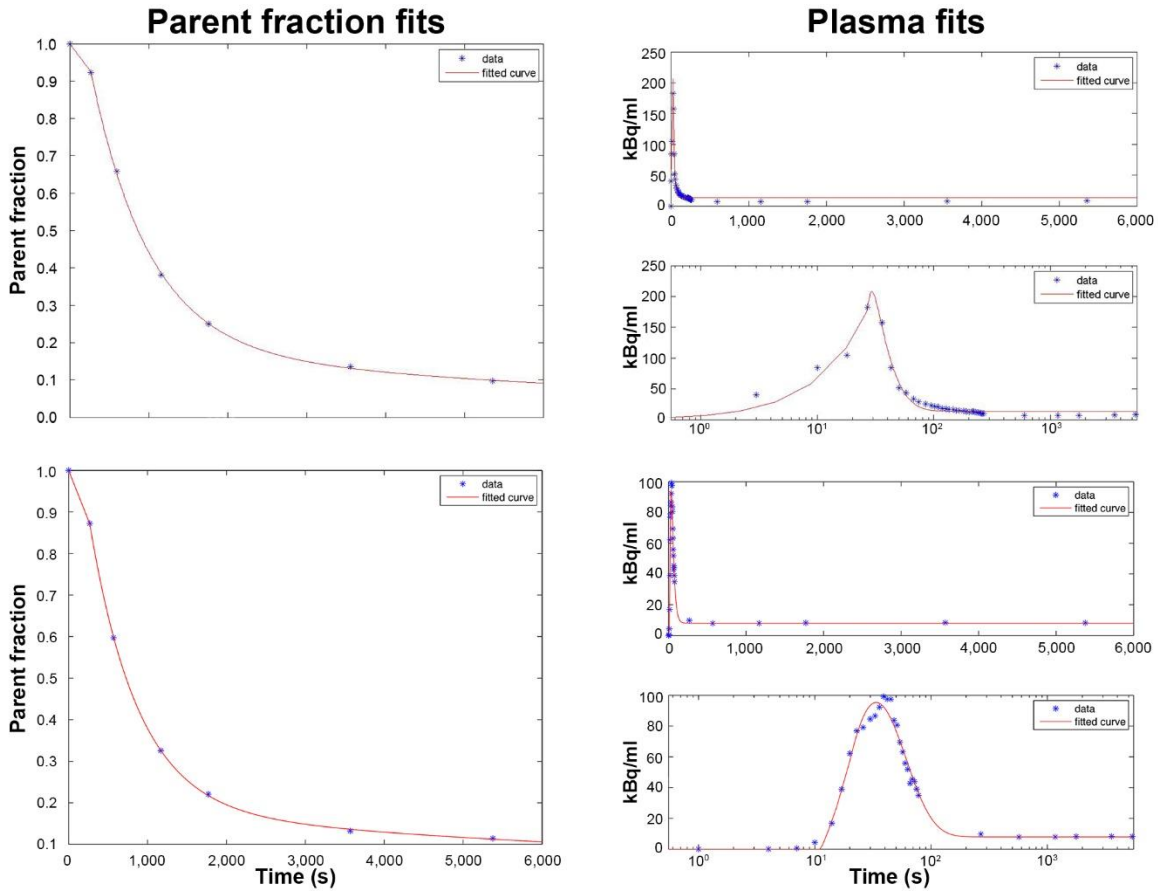
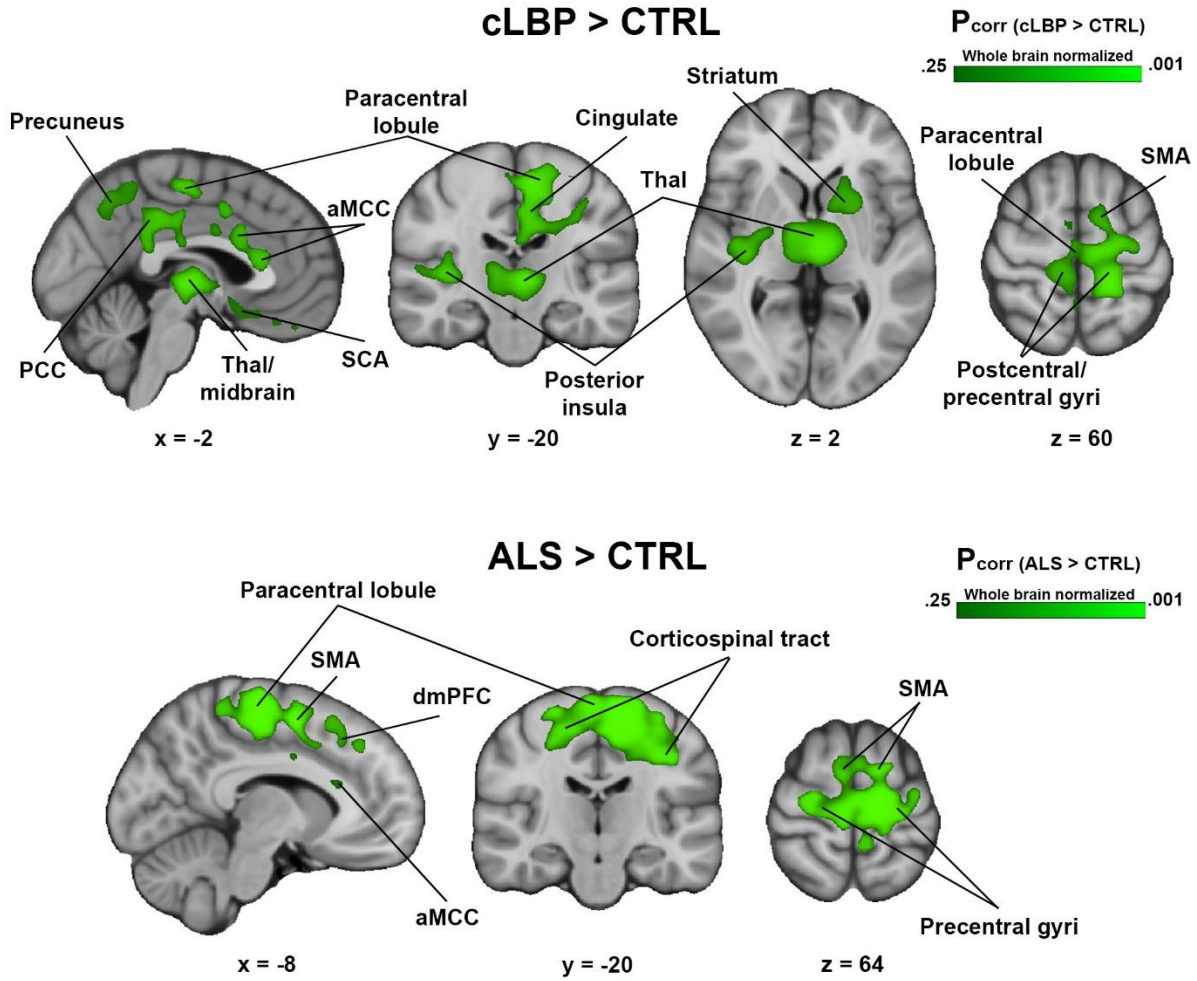
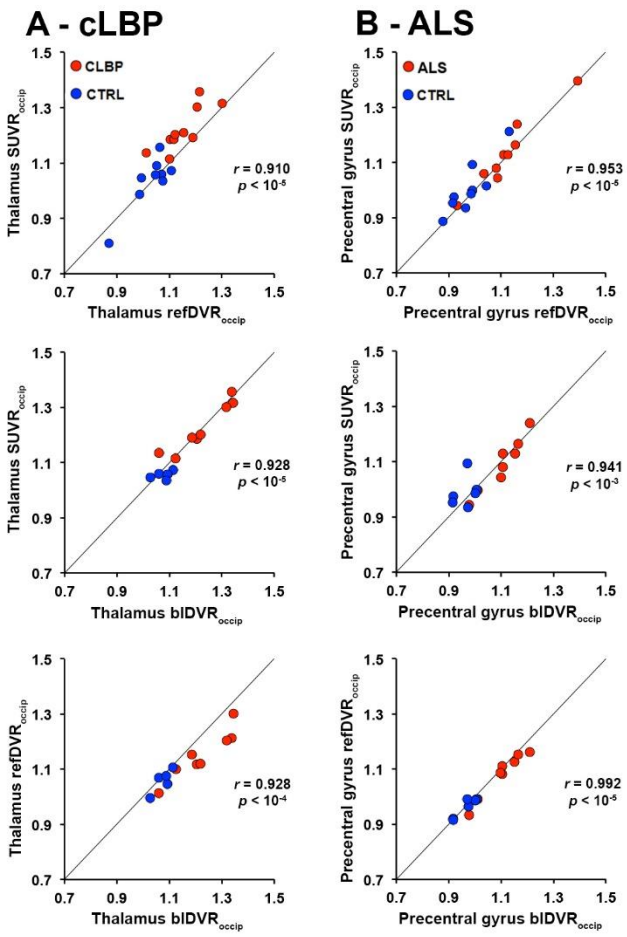


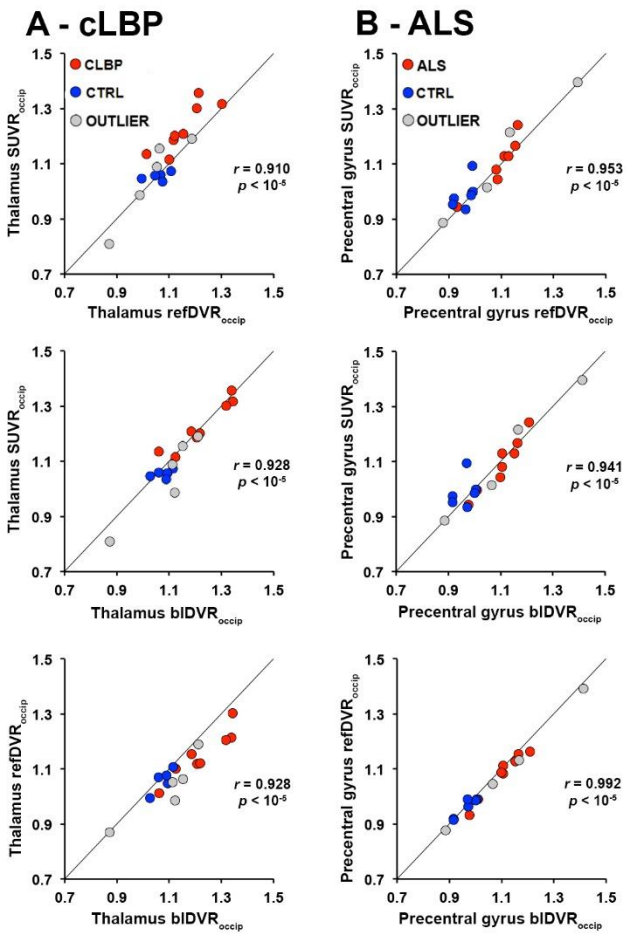
SUPPLEMENTAL FIGURE 1. Examples of model fitting for parent fraction and plasma activity for two representative subjects. Actual datapoints are shown as blue stars, exponential model fit of the data is shown as a red line. Left: parent fraction fits for a control subject (top) and patient (bottom). Right: plasma activity fits for a control subject (top) and patient (bottom). The bottom subpanel is on a logarithmic scale to show fitting of the peak.



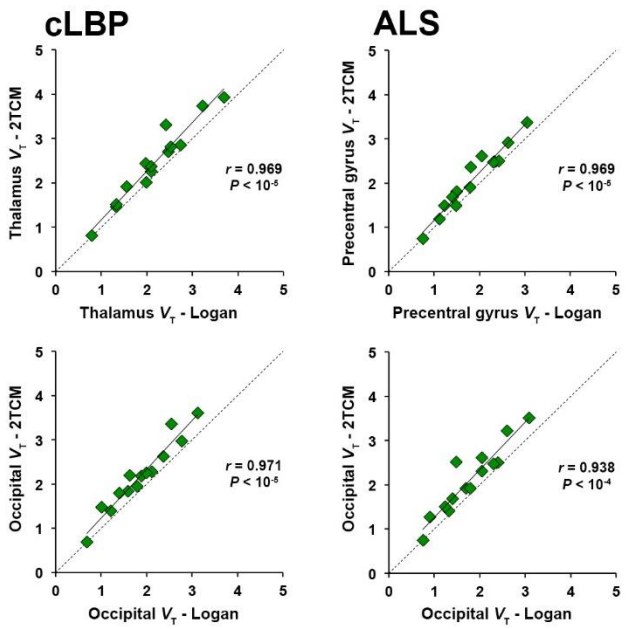
SUPPLEMENTAL FIGURE 2. Regions of elevated ^{11}C-PBR28 $SUVR_{WB}$ in patients compared to controls, visualized at an extremely lenient statistical threshold ($p<0.25$). These results show group differences highly overlapping with those observed at strict threshold with the $SUVR_{occip}$ analyses (Fig. 5). Top: cLBP > controls. Bottom: ALS > controls. No region was significant in either the cLBP < controls or ALS < controls contrasts.



SUPPLEMENTAL FIGURE 3. Relationship between target $SUVR_{occip}$, $refDVR_{occip}$, and $blDVR_{occip}$. Line of identity is shown in black.



SUPPLEMENTAL FIGURE 4. Relationship between target $SUVR_{occip}$, $refDVR_{occip}$, and $blDVR_{occip}$, plasma outliers included and identified. Line of identity is shown in black.



SUPPLEMENTAL FIGURE 5. Relationship between Logan and 2TCM estimations of target and occipital cortex V_T. Line of identity is shown as a dotted diagonal line. Plasma outliers are not included.

SUPPLEMENTAL TABLE 1. Subject demographics

	cLBP	CON (cLBP)	ALS	CON (ALS)
N	10	9	10	10
Sex	5M/5F	5M/4F	6M/4F	6M/4F
TSPO Genotype	7 Ala/Ala; 3 Ala/Thr	7 Ala/Ala; 2 Ala/Thr	6 Ala/Ala; 4 Ala/Thr	6 Ala/Ala; 4 Ala/Thr
Age (years)	48.9 (12)	49.6 (12)	53.2 (11)	51.1 (11)
Injected Dose (MBq)	409.5 (27.9)	407.4 (15.4)	429.7 (33.8)	424.5 (42)
Injected mass (nmol/kg)	0.06 (0.02)	0.10 (0.07)	0.06 (0.02)	0.11 (0.07)

Values shown are mean ± standard deviation.

SUPPLEMENTAL TABLE 2. Regions of voxelwise increases in [^{11}C]PBR28 $SUVR_{occip}$ in cLBP patients compared to controls.

		MNI coordinates (mm)			
Region	*P*-value (corr)	X	Y	Z	Cluster size (# voxels)
L Thalamus	0.006	-4	-18	0	1871
R Thalamus	0.016	2	-18	0	
L Putamen	0.021	-22	6	2	
L Caudate	0.029	-14	14	6	
L Subcallosal area	0.033	-4	14	-16	
L Ventral striatum	0.035	-6	8	-6	
L Paracentral lobule	0.008	-8	-22	50	7236
L Postcentral gyrus	0.008	-18	-38	64	
L Posterior midcingulate cortex	0.012	-6	-20	44	
L Precentral gyrus	0.016	-26	-12	56	
R Paracentral lobule	0.016	6	-32	58	
L/R Posterior cingulate cortex	0.018	0	-40	30	
R Precuneus	0.018	6	-58	50	
L Precuneus	0.020	-4	-60	38	
R Postcentral gyrus	0.020	24	-30	66	
R Precentral gyrus	0.021	20	-28	64	
R Supramarginal gyrus	0.021	36	-50	38	
L Internal capsule	0.021	-16	12	2	
L Pre-supplementary motor area	0.027	-8	2	48	
R Angular gyrus	0.029	30	-70	28	
Ventral tegmental area	0.033	0	-18	-8	

R Pre-supplementary motor area	0.035	6	12	48	
L Anterior midcingulate cortex	0.035	-4	14	28	
Corpus callosum	0.035	-4	22	14	
L Supramarginal gyrus	0.049	-36	-42	40	
R Posterior Insula	0.018	36	-20	6	747
S2	0.027	36	-28	18	

SUPPLEMENTAL TABLE 3. Regions of voxelwise increases in [^{11}C]PBR28 $SUVR_{occip}$ in ALS patients compared to controls.

		MNI coordinates (mm)			
Region	*P*-value (corr)	X	Y	Z	Cluster size (# voxels)
L Precentral gyrus	0.000	-12	-20	62	21809
L Superior frontal gyrus	0.002	-16	-6	58	
L Paracentral lobule	0.003	-2	-12	52	
L Postcentral gyrus	0.003	-26	-30	52	
L Supplementary motor area	0.003	-4	2	54	
R Precentral gyrus	0.004	24	-14	60	
R Paracentral lobule	0.004	4	-20	64	
R Supplementary motor area	0.004	10	2	60	
R Superior frontal gyrus	0.004	22	8	46	
L Corticospinal tract	0.004	-24	-24	42	
L Middle frontal gyrus	0.007	-26	14	46	
L Ventrolateral prefrontal cortex	0.007	-24	56	-2	
L Orbital gyrus	0.008	-30	26	-20	
L Dorsolateral prefrontal cortex	0.008	-34	40	26	
L Anterior midcingulate cortex/corpus callosum	0.008	-6	24	18	
L Frontoinsular cortex	0.010	-34	24	0	
R Anterior midcingulate cortex	0.013	6	14	32	
L Ventromedial prefrontal cortex	0.014	-4	42	-12	
Dorsomedial prefrontal cortex	0.016	0	60	18	

R Pregenual anterior cingulate cortex	0.019	12	44	-2	
R Orbital gyrus	0.047	14	26	-22	28

SUPPLEMENTAL TABLE 4. Interregional correlations between target and reference SUV and V_T.

Correlation between target and reference region SUV and V_T					
Target and reference SUV					
Target region	Reference region	**Control**		**Patient**	
		r-value	*p*-value	*r*-value	*p*-value
Thalamus (CLBP dataset)	Occipital cortex	0.956	1.6×10^{-5}	0.988	$< 1 \times 10^{-6}$
	Whole brain	0.922	1.4×10^{-4}	0.961	1×10^{-5}
	Cerebellum	0.881	7.5×10^{-4}	0.948	3×10^{-5}
Precentral gyrus (ALS dataset)	Occipital cortex	0.941	4.8×10^{-4}	0.931	9.3×10^{-5}
	Whole brain	0.962	9.0×10^{-6}	0.950	2.6×10^{-5}
	Cerebellum	0.829	3.0×10^{-3}	0.873	9.7×10^{-4}
Target and reference V_T					
Target region	Reference region	**Control**		**Patient**	
		r-value	*p*-value	*r*-value	*p*-value
Thalamus (CLBP dataset)	Occipital cortex	0.947	4.1×10^{-3}	0.956	2.0×10^{-4}
	Whole brain	0.992	1.1×10^{-4}	0.962	1.4×10^{-4}
	Cerebellum	0.949	3.8×10^{-3}	0.904	2.0×10^{-3}
Precentral gyrus (ALS dataset)	Occipital cortex	0.974	1.0×10^{-3}	0.949	3.2×10^{-4}
	Whole brain	0.996	2.6×10^{-5}	0.952	2.7×10^{-4}
	Cerebellum	0.925	8.2×10^{-3}	0.975	3.6×10^{-5}