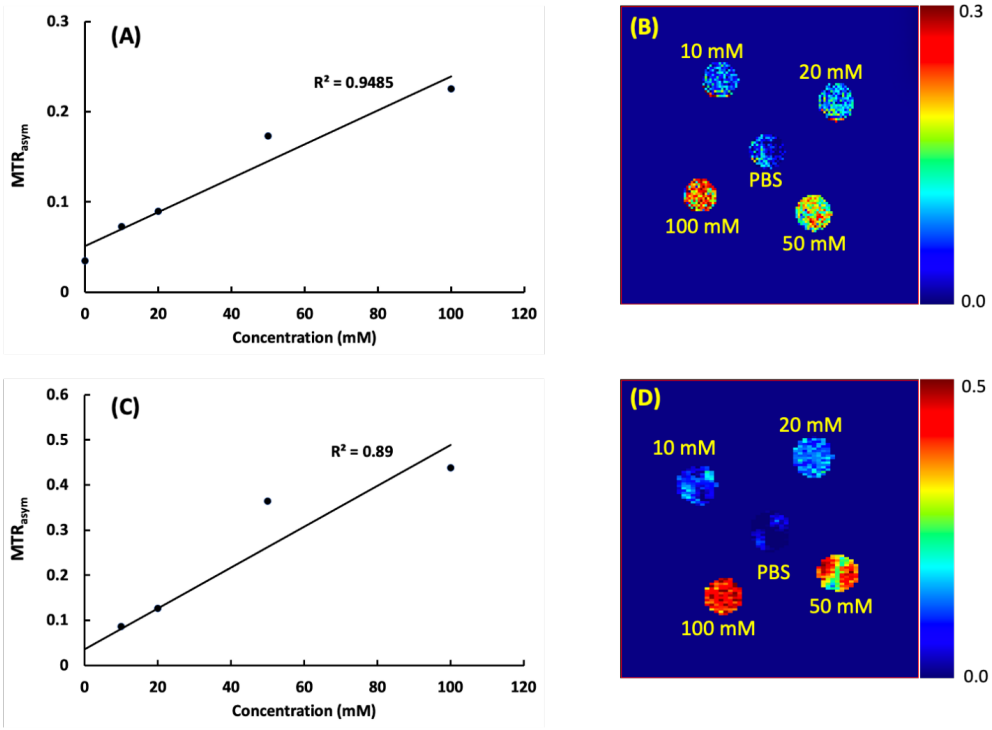
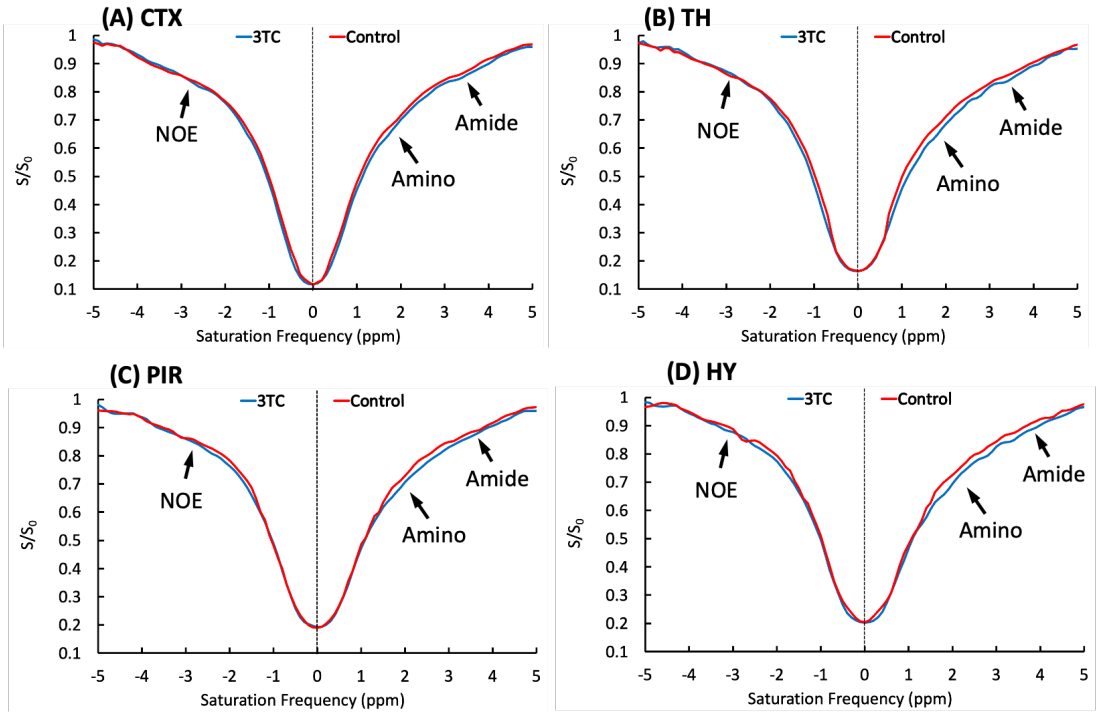
Supplementary Information

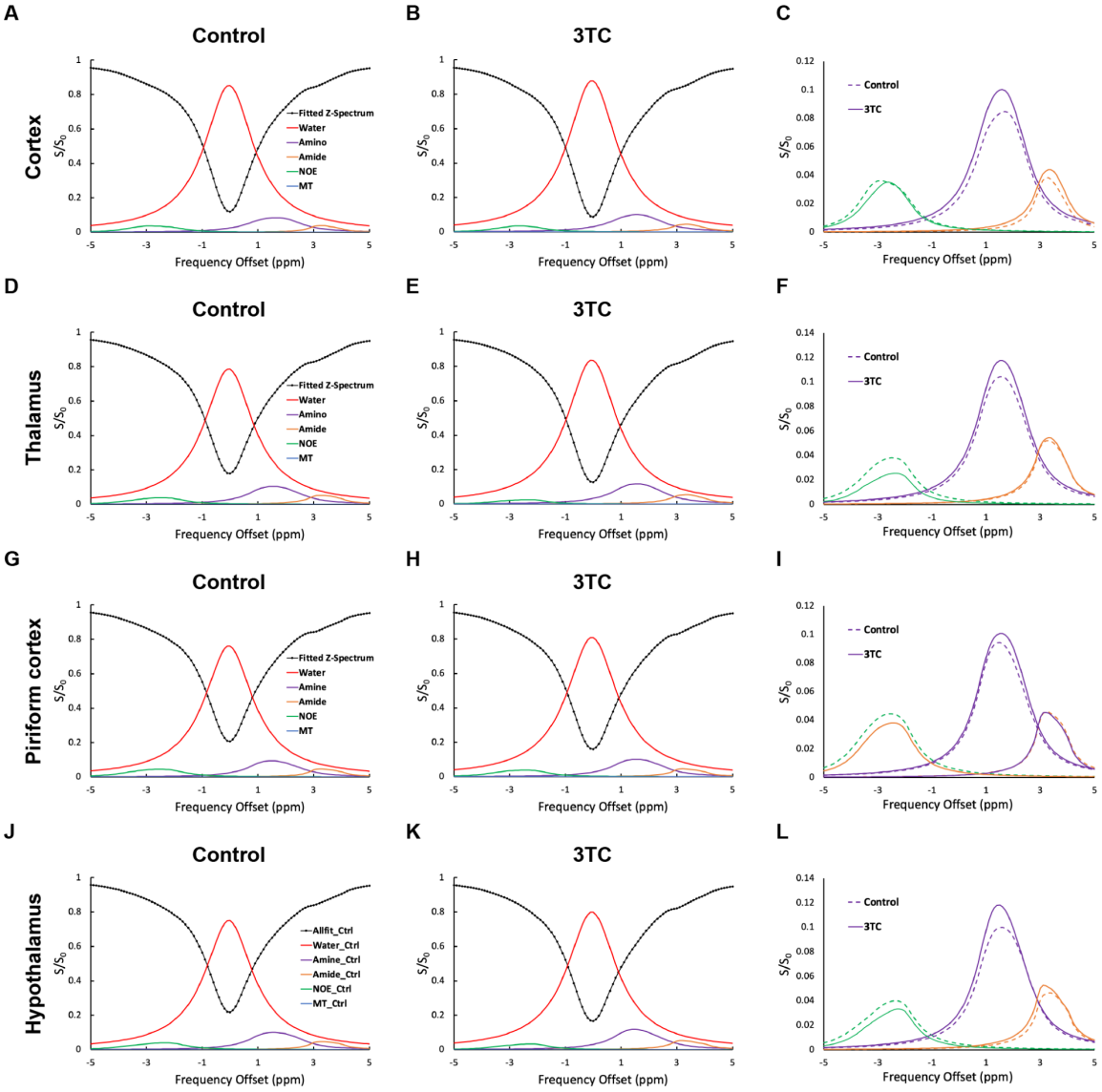
Supplementary Figures



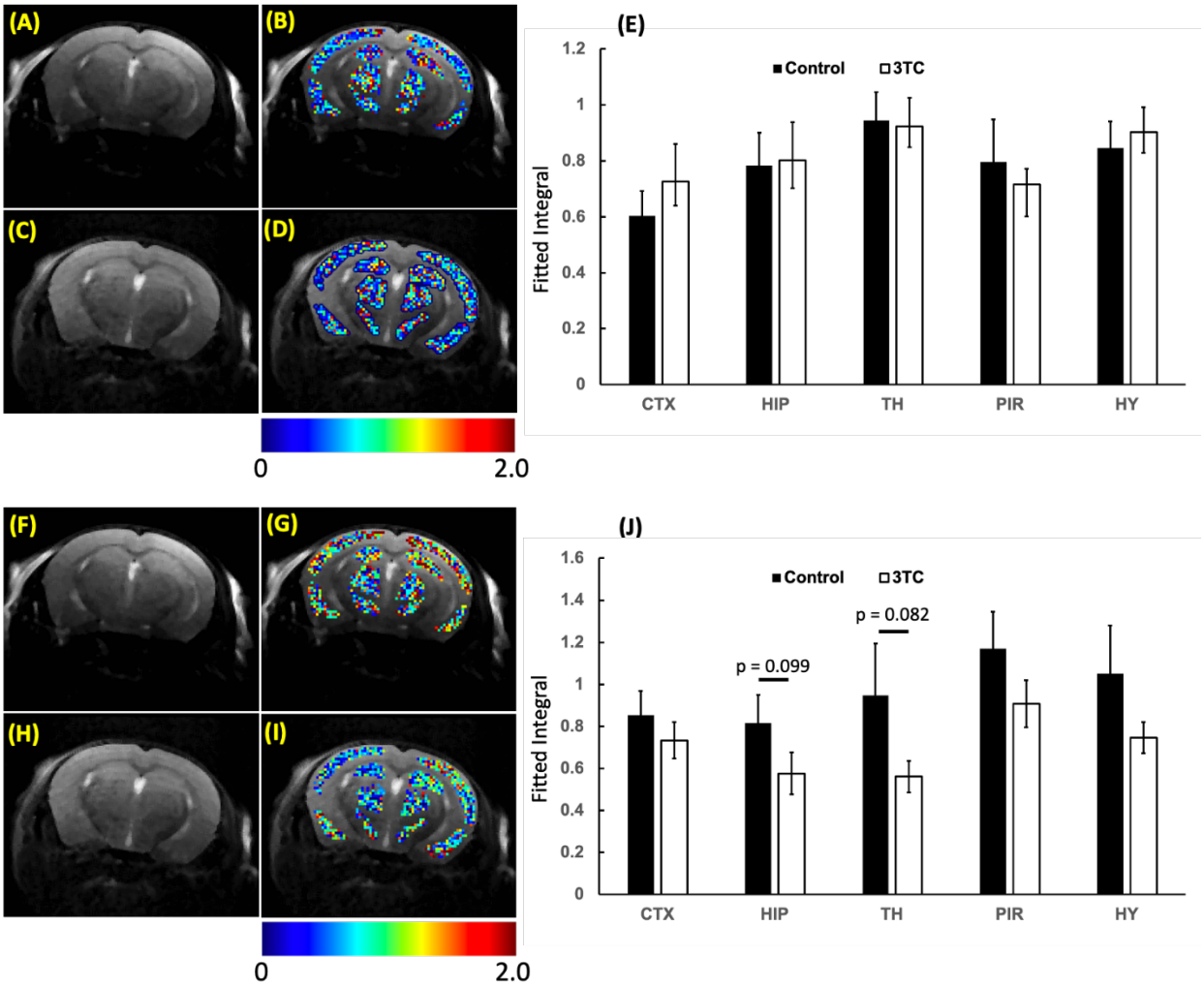
Supplementary Figure 1. Hydroxyl proton CEST effects of 3TC and FTC. (**A**) 3TC hydroxyl proton CEST effect (MTR@1ppm) increases linearly with 3TC concentration (R^2 = 0.95). (**B**) Pixel-by-pixel heatmaps of 3TC samples. Color intensity increases with 3TC concentration. The color bar for the heatmaps is at the side of the figure represents MTR values. (**C**) FTC hydroxyl proton CEST effect (MTR@1ppm) increases linearly with FTC concentration (R^2 = 0.89). (**D**) Pixel-by-pixel heatmaps of FTC samples. Color intensity increases with FTC concentration. The color bar for the heatmaps is at the side of the figure represents MTR values.



Supplementary Figure 2. Representative Z-spectra of a control and a 3TC-treated mouse on (**A**) CTX (cortex), (**B**) TH (thalamus), (**C**) PIR (piriform cortex), and (D) HY (hypothalamus). The effects of NOE, amnio and amide protons are indicated by arrows.



Supplementary Figure 3. Representative fitted five Lorentzian functions of bulk water, aliphatic NOE, MT, amino and amide protons from a control and a 3TC-treated mouse on (**A and B**) CTX (cortex), (**D and E**) TH (thalamus), (**G and H**) PIR (piriform cortex), and (**J and K**) HY (hypothalamus). The sum of the fitted functions is shown as fitted Z-spectrum. The Lorentzian functions are shown upside down. The fitted NOE, amino and amide proton CEST effects on (**C**) CTX, (**F**) TH, (**I**) PIR and (**L**) HY are shown for better visualization.



Supplementary Figure 4. (**A** and **B**) T_2-weighted image of a control mouse, and pixel-by-pixel Lorentzian line integral heatmaps of fitted amide proton effect superimposed on the respective T_2-weighted image. (**C** and **D**) T_2-weighted image of a 3TC-treated mouse, and pixel-by-pixel integral maps of fitted amide effect superimposed on the respective T_2-weighted image. (**E**) Group comparisons of fitted integrals of amide proton CEST effect. (**F** and **G**) T_2-weighted image of a control mouse, and pixel-by-pixel Lorentzian line integral heatmaps of fitted NOE superimposed on the respective T_2-weighted image. (**H** and **I**) T_2-weighted image of a 3TC-treated mouse, and pixel-by-pixel integral maps of NOE superimposed on the respective T_2-weighted image. (**J**) Group comparisons of fitted integrals of NOE. For both amide proton and NOE comparisons, Student's t test (two-tailed) was used to compare *in vivo* CEST imaging results from the control and 3TC groups. Data are expressed as mean ± SEM; N = 8 (Control) and N = 7 (3TC)