Supporting Figures
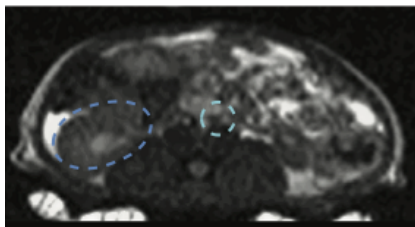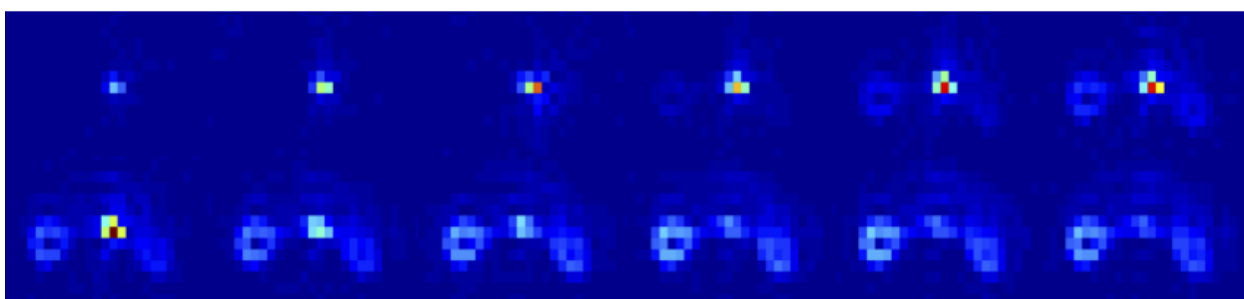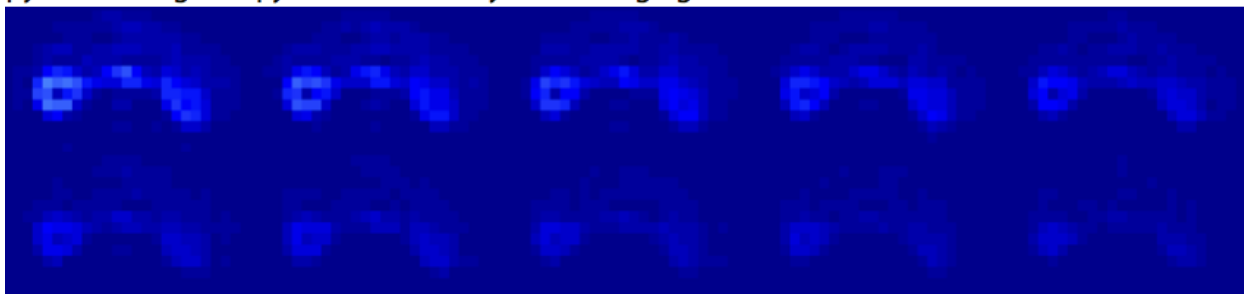
anatomical

vessel
left kidney
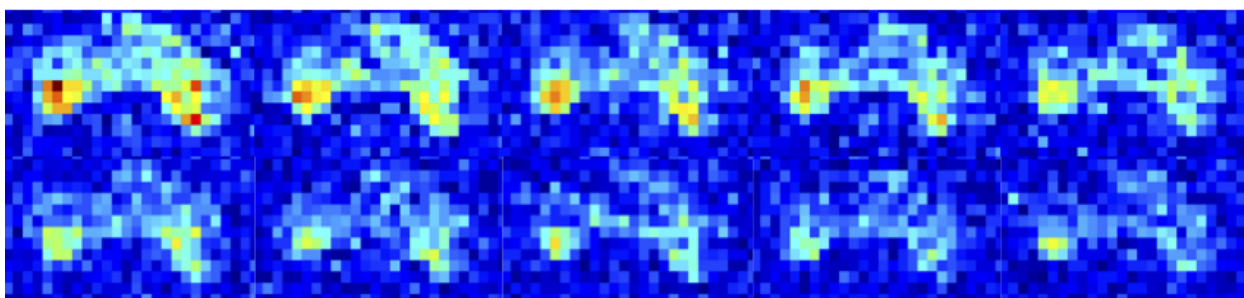(ROI for tracking and B_1 calibration)
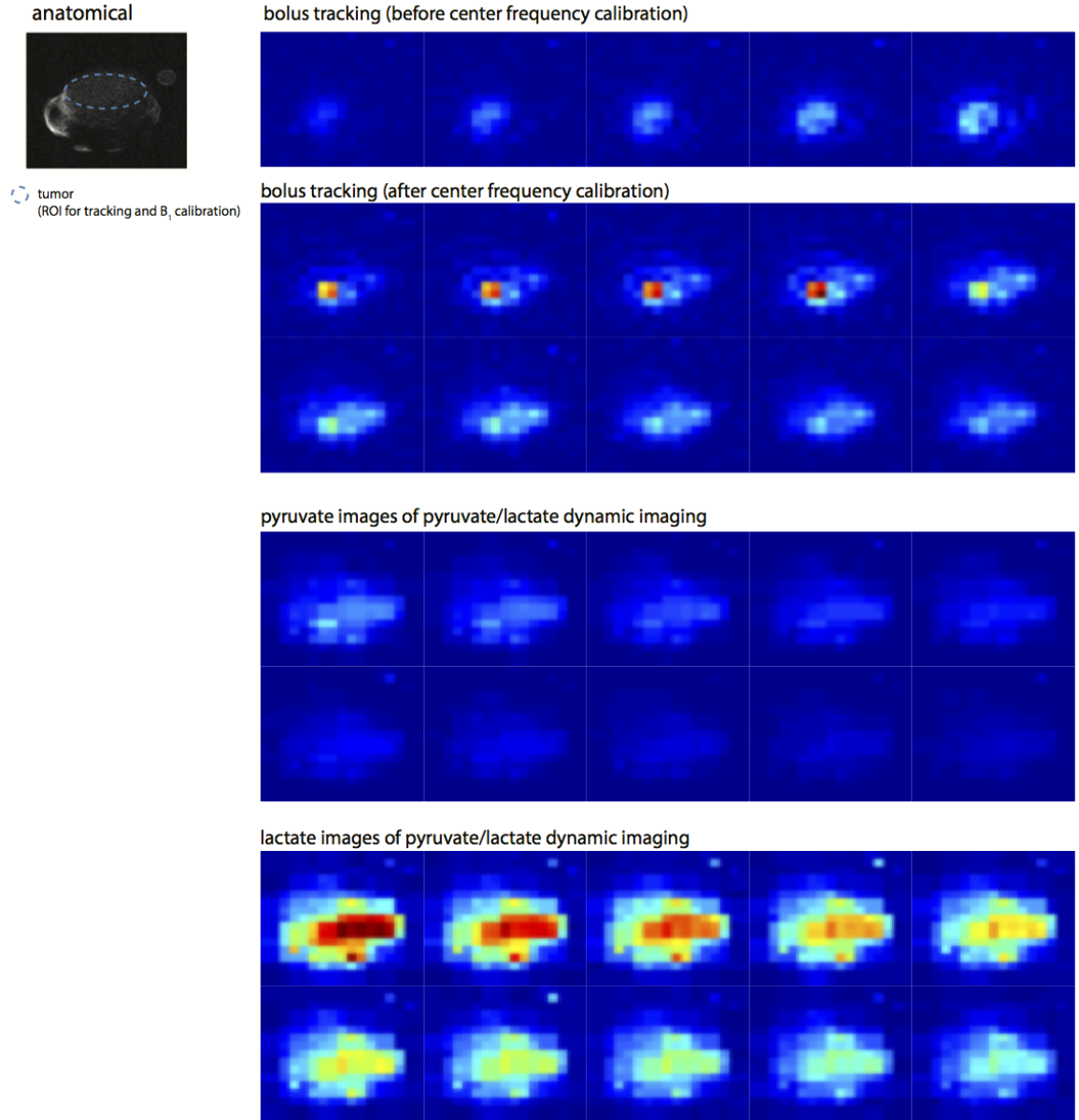
bolus tracking

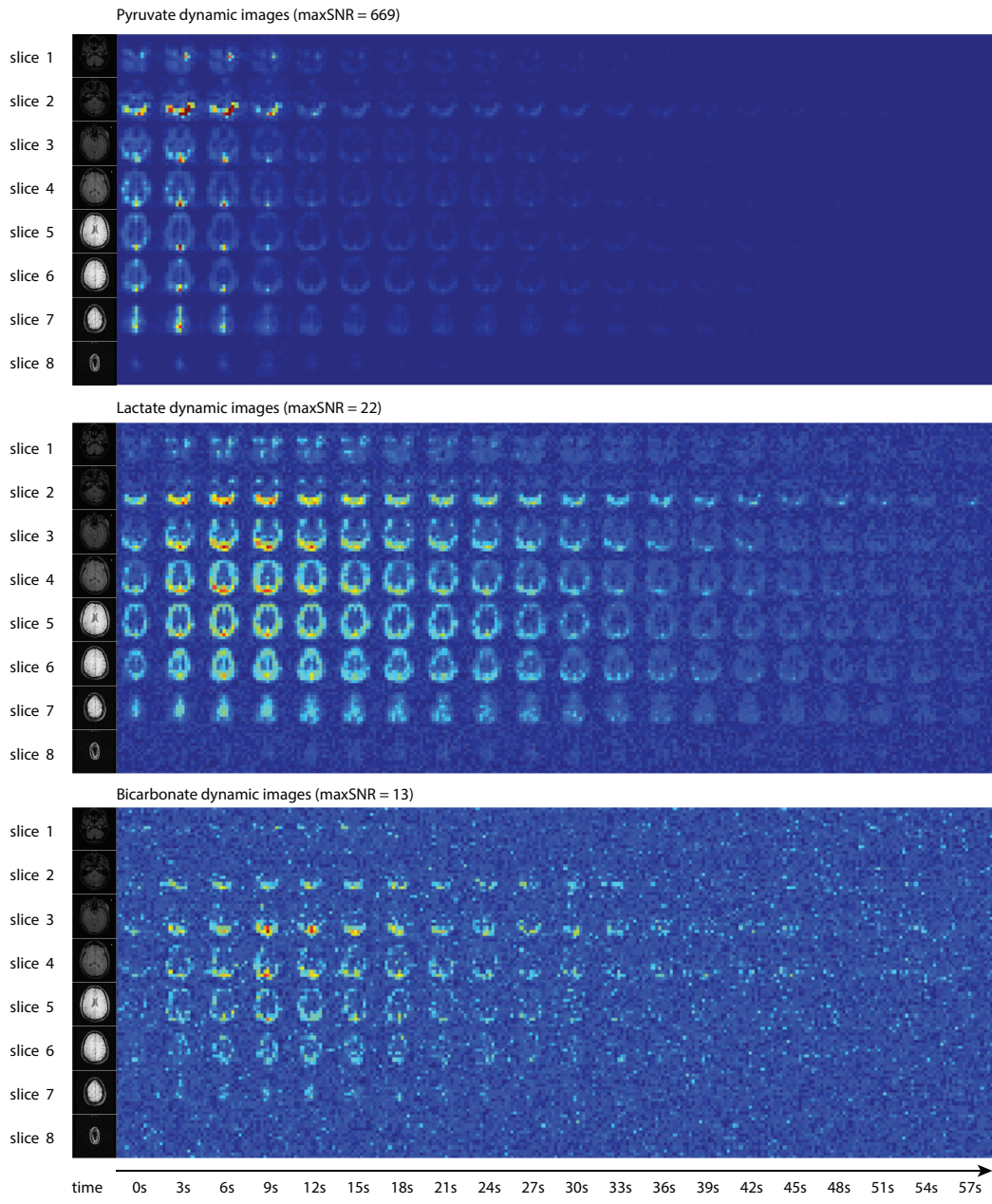**pyruvate images of pyruvate/lactate dynamic imaging**

lactate images of pyruvate/lactate dynamic imaging

Supporting Figure S1: Results of bolus tracking and pyruvate/lactate dynamic imaging of the experiment described in Fig. 4. Fig. 4 shows every other ^{13}C image in this figure.

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Supporting Figure S2: Results of bolus tracking and pyruvate/lactate dynamic imaging of the experiment described in Fig. 5. Fig. 5 shows every other ^{13}C image in this figure.

Supporting Figure S3: The first twenty time points of multi-slice dynamic images for the hyperpolarized [1-^{13}C]pyruvate human study as described in Fig. 7.