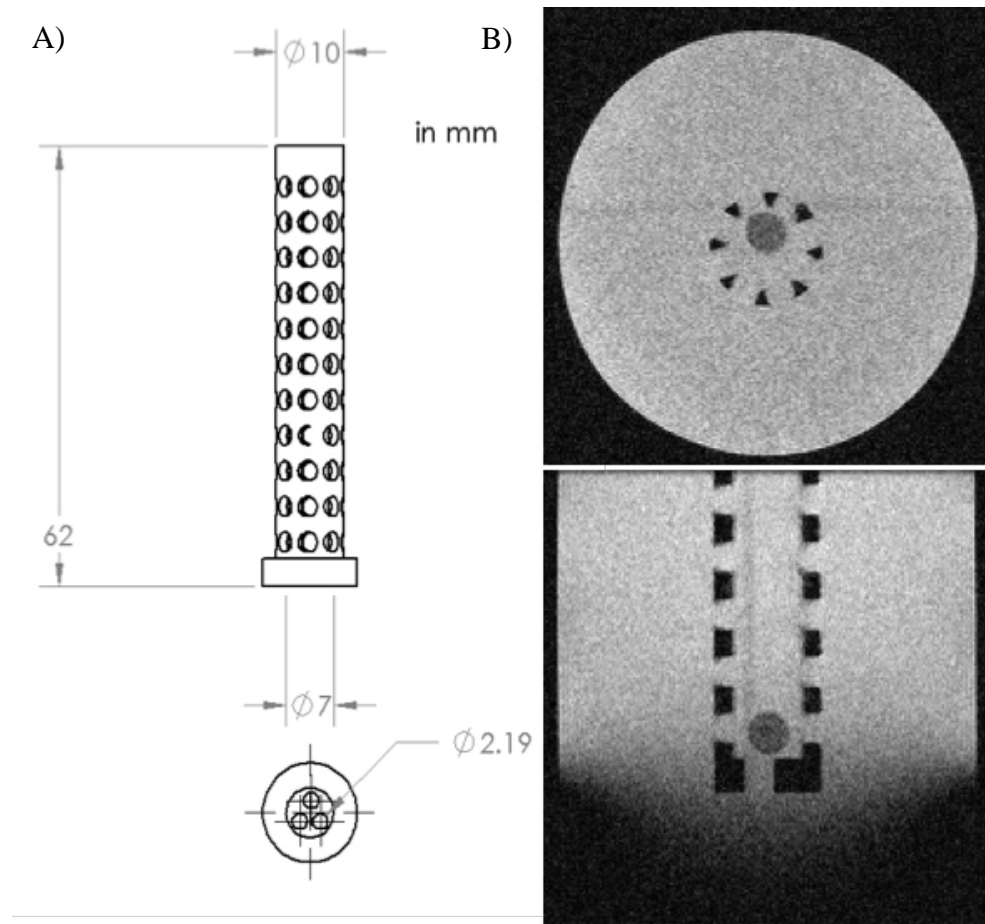
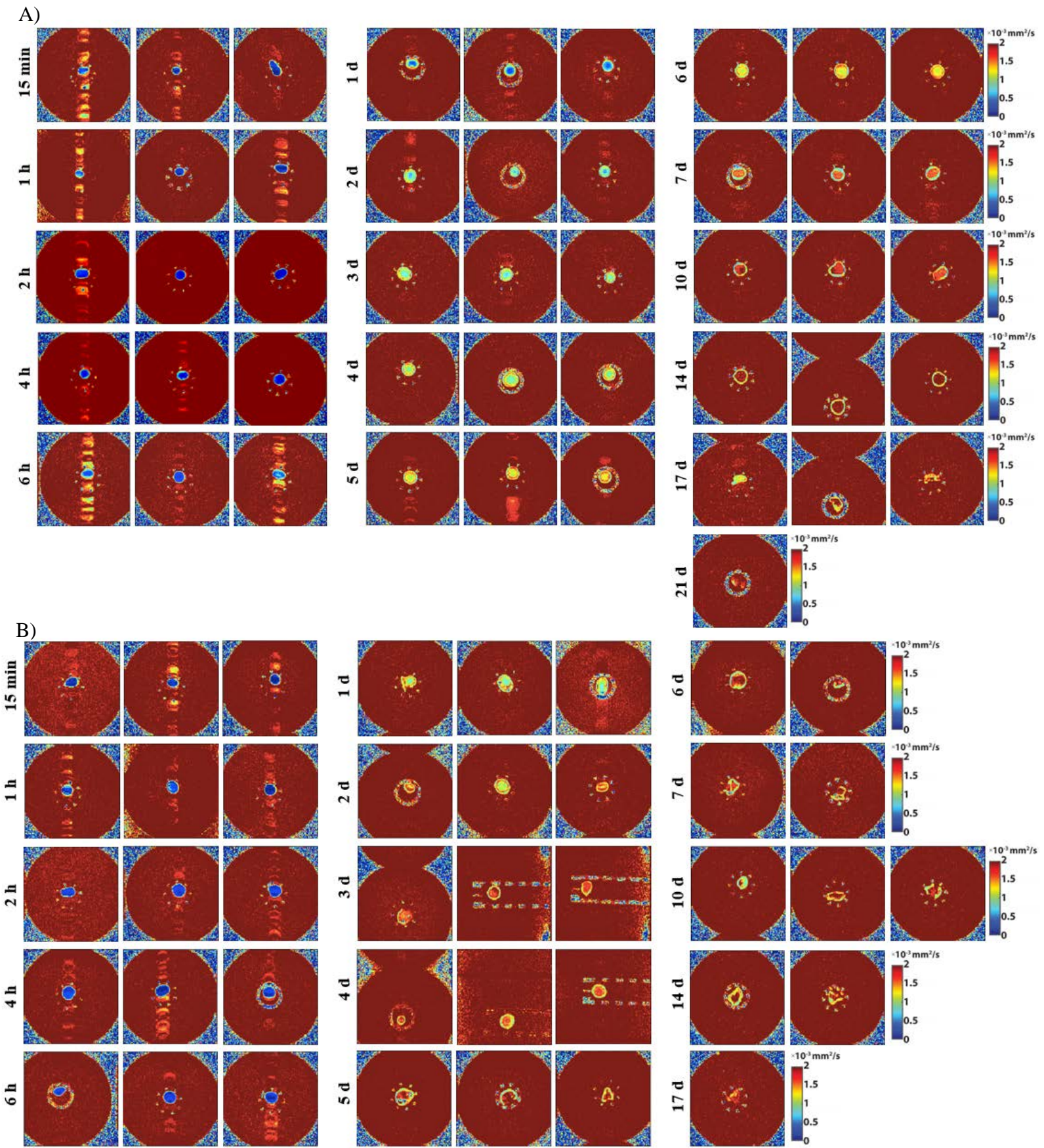


Supplementary Material

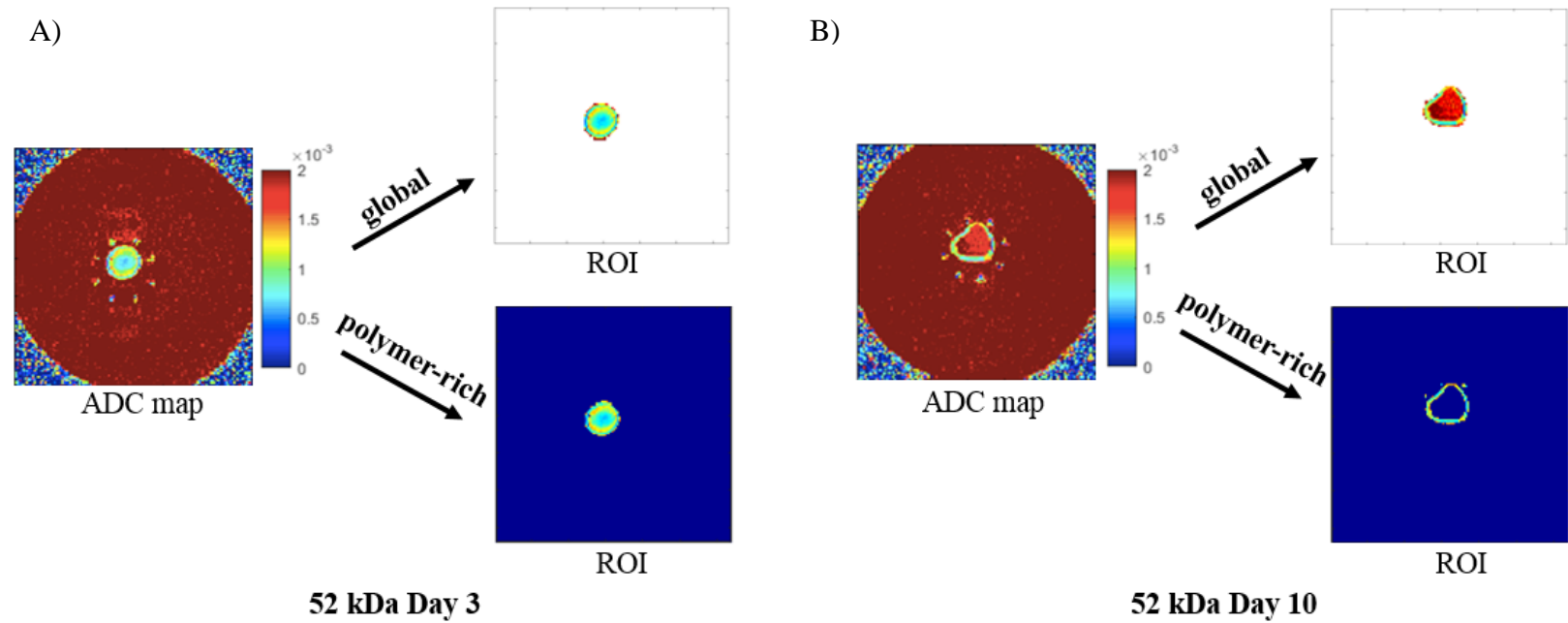
“Noninvasive Characterization of *In Situ* Forming Implant Diffusivity Using Diffusion-weighted MRI”



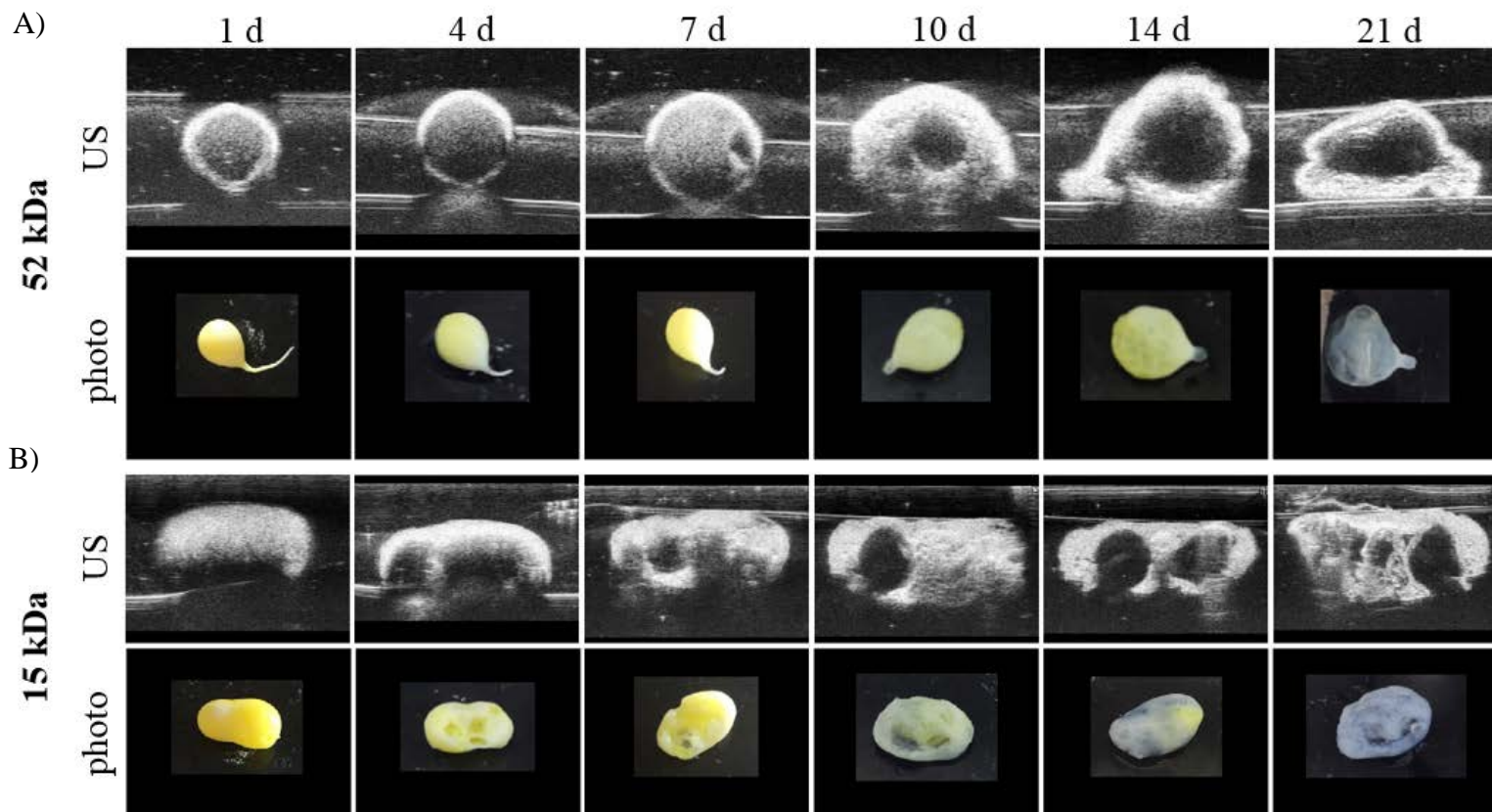
Supplemental Figure 1: A) CAD drawing of the 3D-printed custom insert used to center the implant in a phantom bottle during the MRI scans. B) Axial and sagittal MRI localizer images showing an implant placed in the phantom holder.



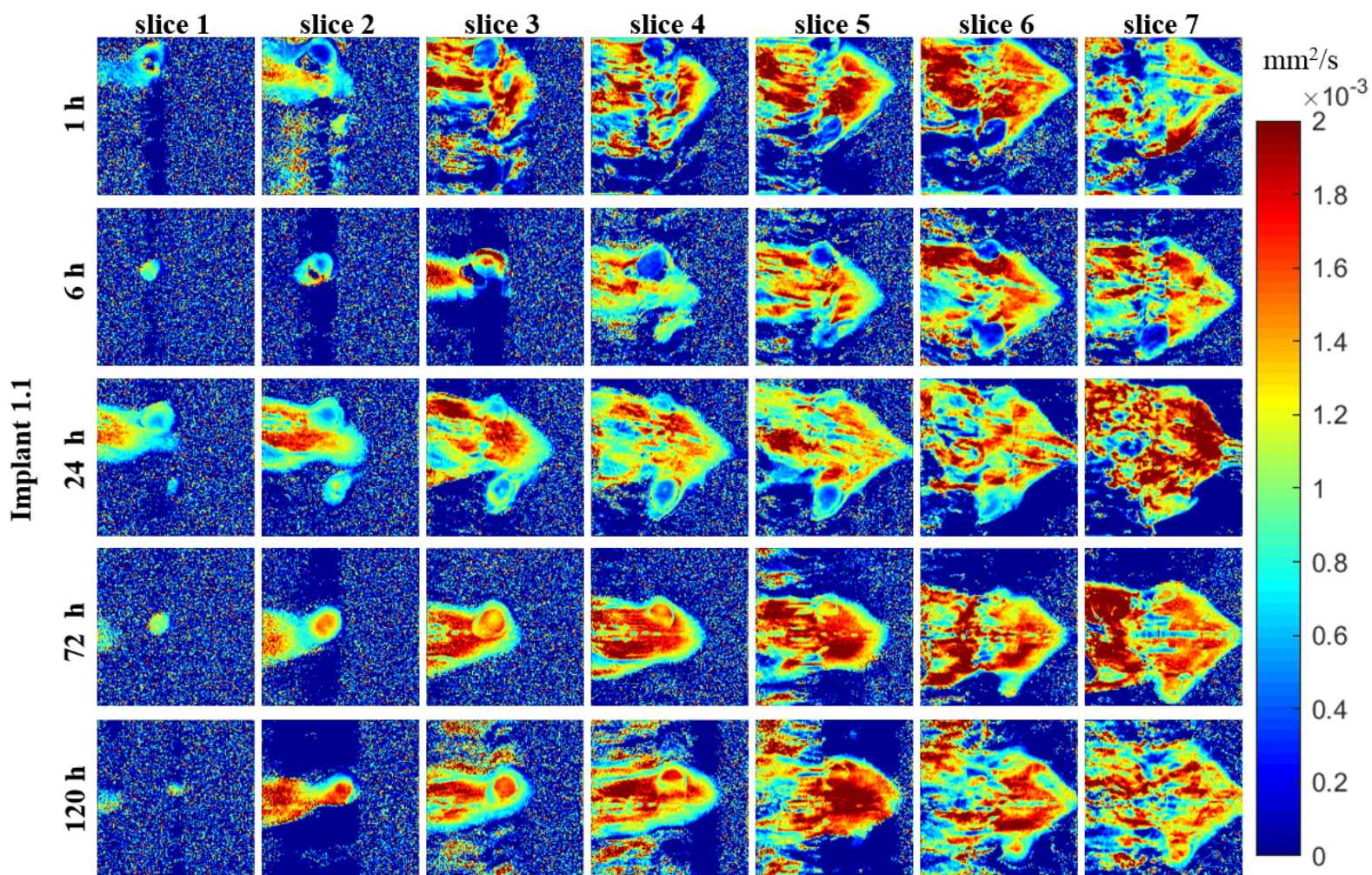
Supplemental Figure 2: Full set of apparent diffusion coefficient (ADC) maps for A) every 52 kDa implant imaged and B) every 15 kDa implant imaged. Timepoints without an $n=3$ were due to implant fragility because of erosion/degradation



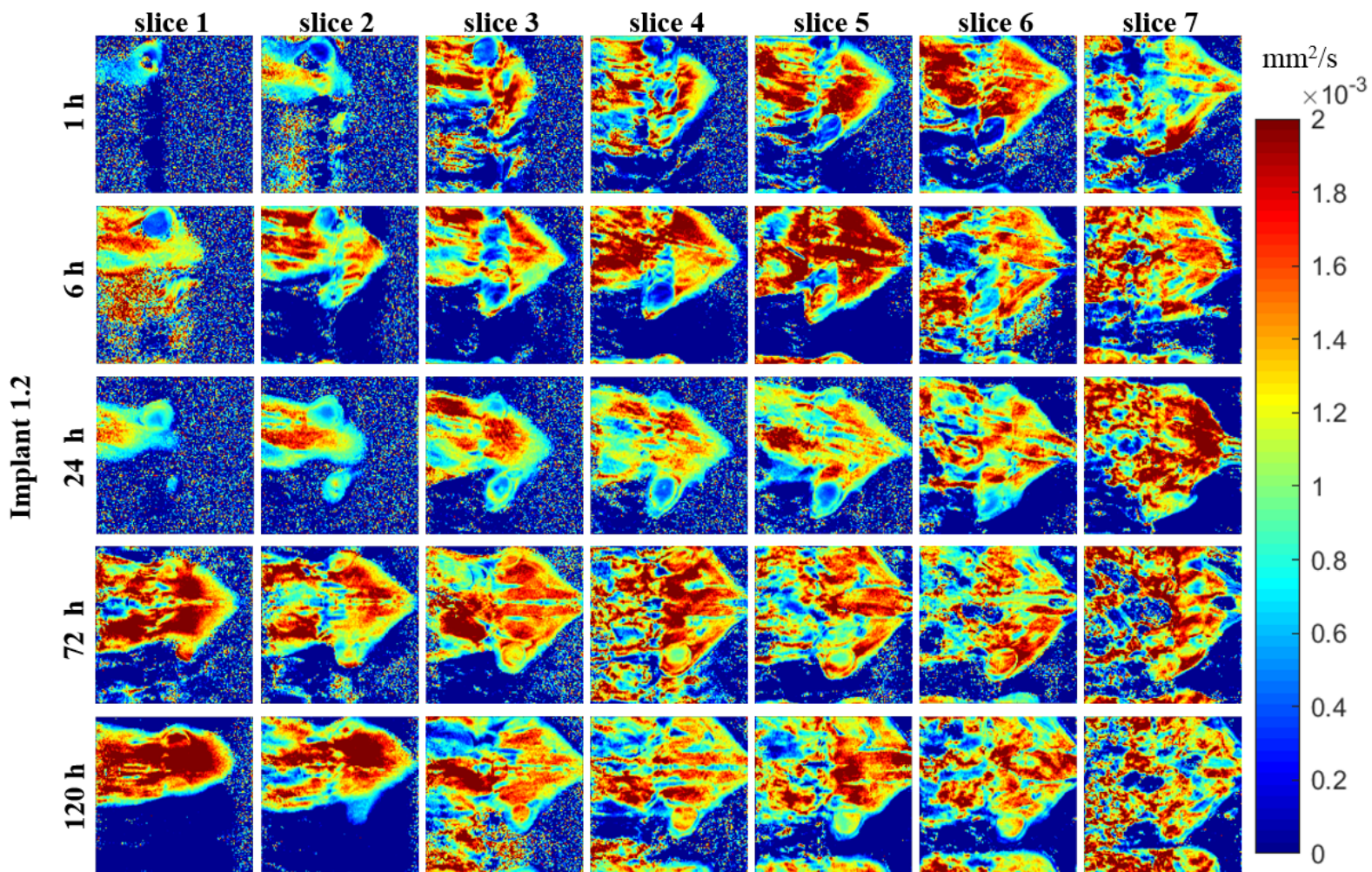
Supplemental Figure 3: ROI selection of the implant from ADC maps for MD calculations. Manual selection of pixels gives a global picture of the entire implant (global), while automatic thresholding of pixels can isolate the polymer-rich regions alone (polymer-rich). A) Selection for 52 kDa implant at day 3 shows minimal difference between the two methods that existed at early timepoints, while B) selection for 52 kDa implant at day 10 shows the isolation of the polymer-rich regions at later time points.



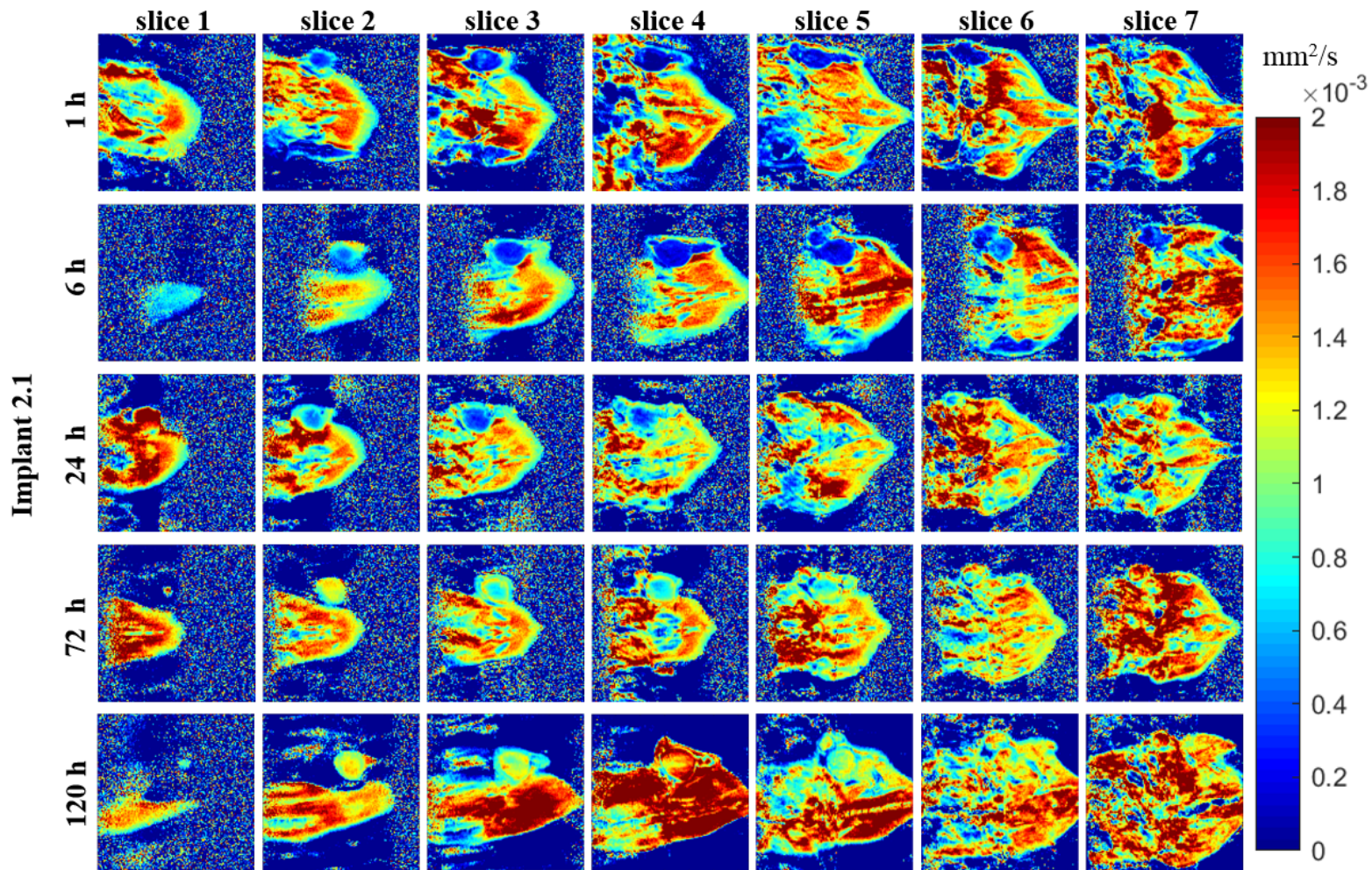
Supplemental Figure 4: Representative ultrasound b-mode images along with a photograph taken of the same implant over 21 days for A) a 52 kDa implant and B) a 15 kDa implant



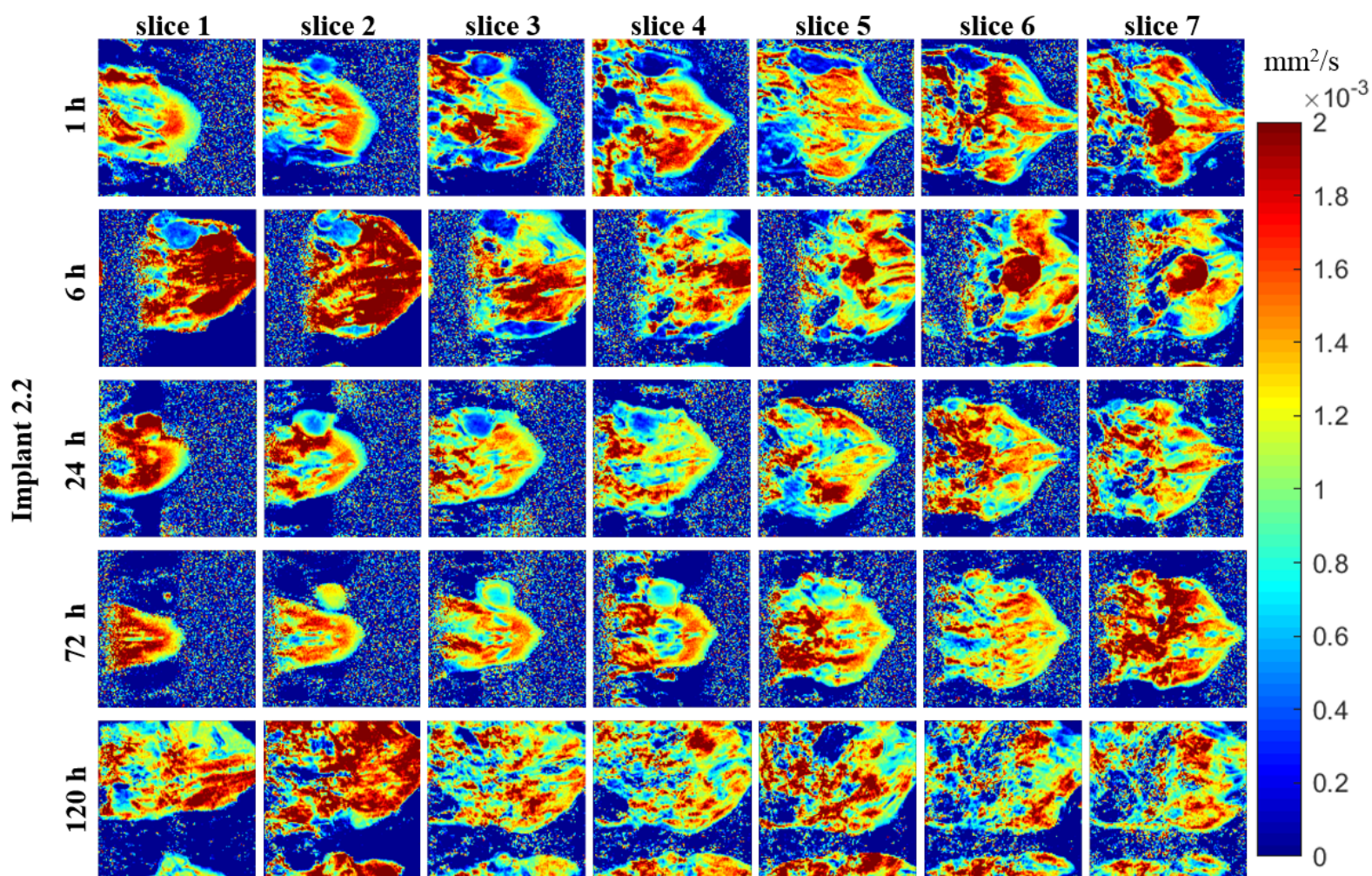
Supplemental Figure 5: Full set of apparent diffusion coefficient (ADC) maps for the *in vivo* implant 1.1 located over the right flank of mouse 1 (top of image). In these images, left is towards the head of the mouse, right is the beginning of the tail, top is the right side of the mouse, and bottom is the left side of the mouse. Red represents high diffusivity, while blue represents low diffusivity.



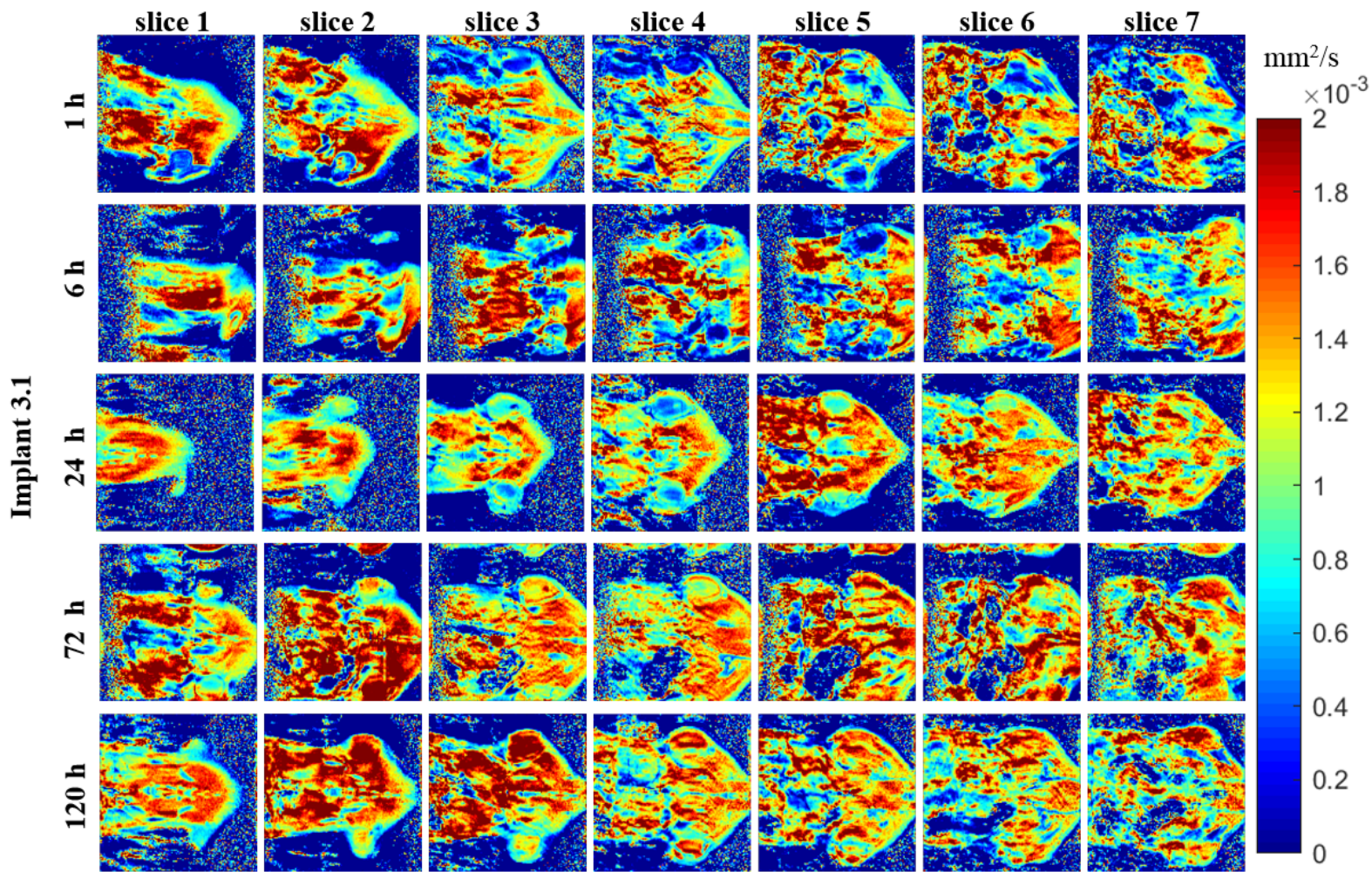
Supplemental Figure 6: Full set of apparent diffusion coefficient (ADC) maps for the *in vivo* implant 1.2 located over the left flank of mouse 1 (bottom of image). In these images, left is towards the head of the mouse, right is the beginning of the tail, top is the right side of the mouse, and bottom is the left side of the mouse. Red represents high diffusivity, while blue represents low diffusivity.



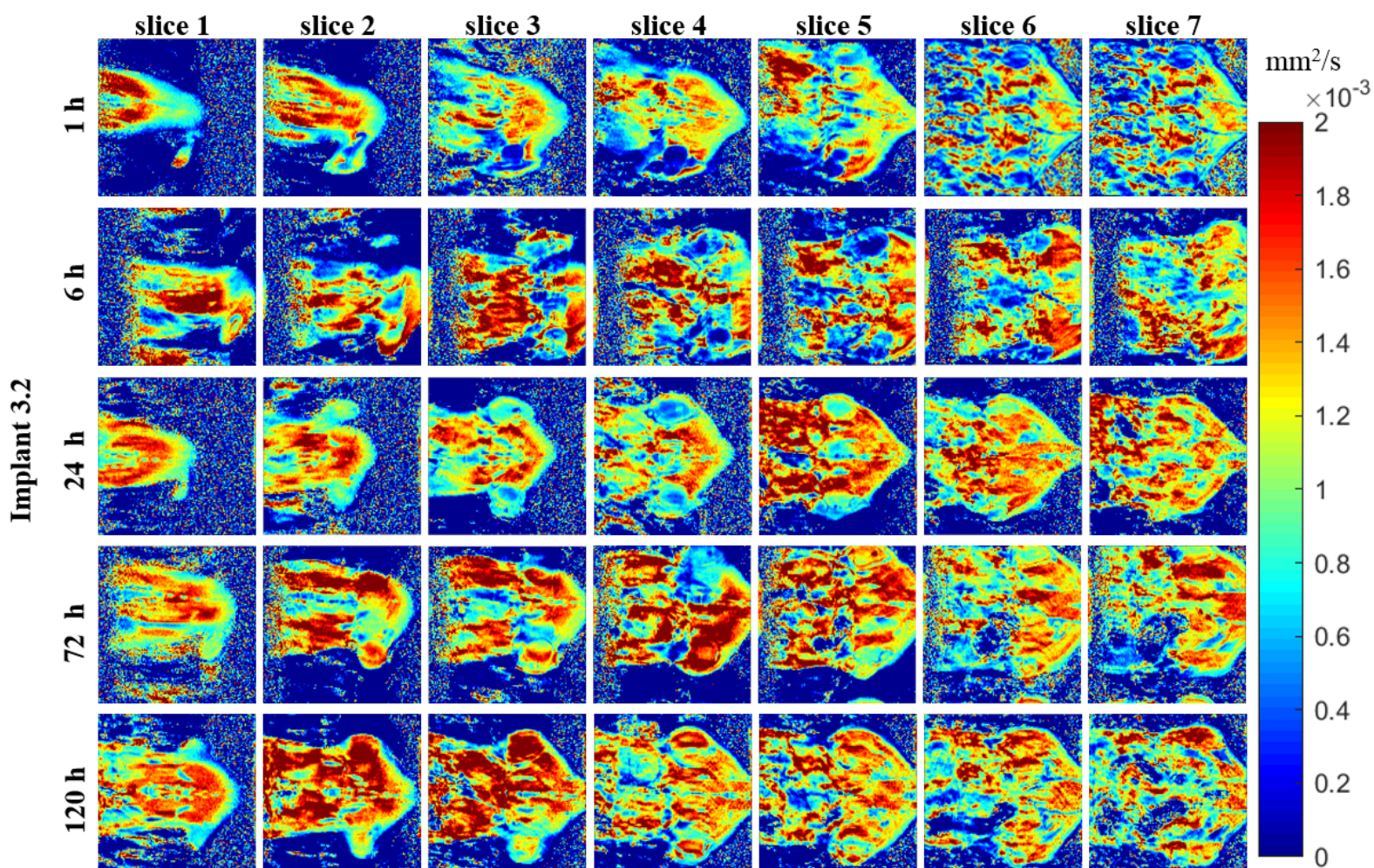
Supplemental Figure 7: Full set of apparent diffusion coefficient (ADC) maps for the *in vivo* implant 2.1 located over the right flank of mouse 2 (top of image). In these images, left is towards the head of the mouse, right is the beginning of the tail, top is the right side of the mouse, and bottom is the left side of the mouse. Red represents high diffusivity, while blue represents low diffusivity.



Supplemental Figure 8: Full set of apparent diffusion coefficient (ADC) maps for the *in vivo* implant 2.2 located over the left flank of mouse 2 (bottom of image). In these images, left is towards the head of the mouse, right is the beginning of the tail, top is the right side of the mouse, and bottom is the left side of the mouse. Red represents high diffusivity, while blue represents low diffusivity.



Supplemental Figure 9: Full set of apparent diffusion coefficient (ADC) maps for the *in vivo* implant 3.1 located over the right flank of mouse 3 (top of image). In these images, left is towards the head of the mouse, right is the beginning of the tail, top is the right side of the mouse, and bottom is the left side of the mouse. Red represents high diffusivity, while blue represents low diffusivity.



Supplemental Figure 10: Full set of apparent diffusion coefficient (ADC) maps for the *in vivo* implant 3.2 located over the left flank of mouse 3 (bottom of image). In these images, left is towards the head of the mouse, right is the beginning of the tail, top is the right side of the mouse, and bottom is the left side of the mouse. Red represents high diffusivity, while blue represents low diffusivity.