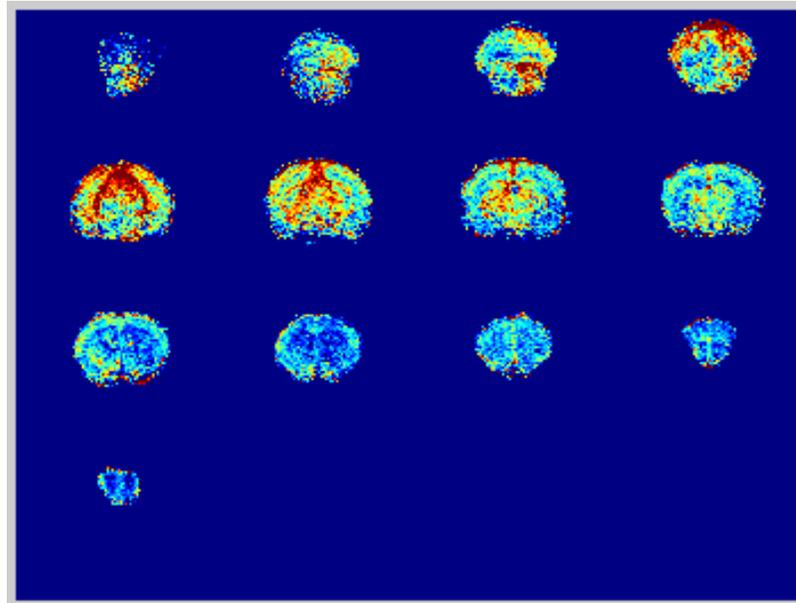# Protocol: Whole Brain Mouse Perfusion, PCASL-EPI

Purpose

- Measurement of whole brain perfusion in a mouse.

| Protocol Directory: "C_ MouseWholeBrainPerfusion"				
Type	**Protocol Name**	**In-plane resolution, slice thickness**	**Slices**	**Scan time**
Localizer	*1_TripilotMouse*			1 min
Angiogram	*2_FlashTofAngiogram*	96µm X 96 µm, 2 mm	10	0.5 min
ASL	*3_PcaslEpi_2shots*	200µm X 200 µm, 1 mm	13	7.5 min
T1T2Map	*4_T1MapEpi*	200µm X 200 µm, 1 mm	15	4.5 min

Instructions

1. Use the mouse brain surface array and a Coil B.
2. Position the mouse so that motion is minimized as motion can cause significant artifacts in this scan.

3. Position the animal cradle so that the mouse neck is at isocenter and verify with localizer.
4. Use the angiogram to verify that mouse carotids are perpendicular to the imaging plane at isocenter, otherwise adjust the mouse bed and redo the angio scan.
5. Acquire the PCASL scan.
6. Adjust the T1 map so that the slice coverage is the same as the PCASL scan. **Do not copy the prescription from the PCASL scan to the T1 m**ap. Just adjust the slice position, offsets and FOV (if necessary).

Tagging Plane Position

Animal positioning with respect to isocenter is important for reproducible and efficient inversion of tagged blood. The tagging plane must always be at iso-center so the mouse position must sometimes be adjusted to accomplish this based on an angiogram. The images below are a sagittal view of a tripilot and an axial view of an angiogram, slicing through isocenter. Both the position of the brain cerebellum and the circularity of the carotids in these images (respectively) are markers of correct animal positioning.
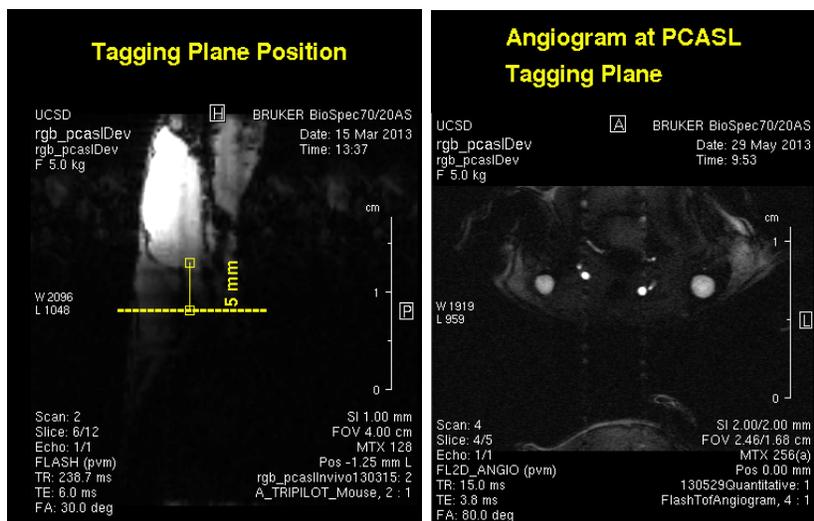
Post-Processing Support

Perfusion maps can be calculated using the local tissue method from the PCASL data and a T1 map. Some scripts are available for post-processing. See Bob Bussell (rbussell@ucsd.edu) for further instructions.