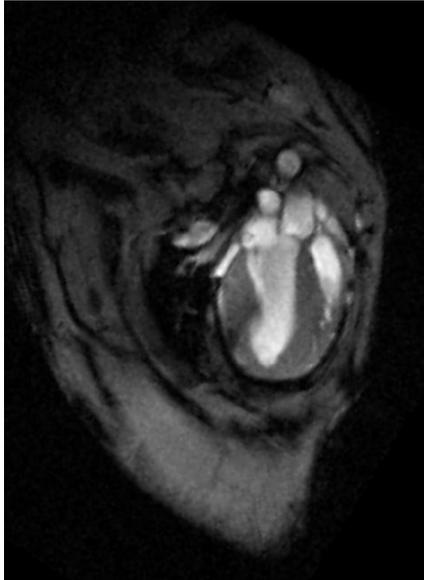


Protocol: Mouse Cardiac CINE Protocol

Purpose

- Basic cardiac movies with 20 frames per cycle.



Type	Scan Name	In-plane res, slice thickness	Scan time
Localizer (for animal positioning)	<i>1_MouseCardiacTripilot</i>	625 μ m x 625 μ m, 2.0 mm	1 min
Localizers (for prescription), 4 slices, 4 frames	<i>2_MouseCardiacCoronal,</i> <i>3_MouseCardiacSagittal,</i> <i>4_MouseCardiacAxial</i>	100-200 μ m, 1.0 mm	~1 min each w/ECG+resp gating
FLASH CINE	<i>5_MouseFLASHCINE</i>	156 μ m x 156 μ m, 1.0 mm	~5 min

Protocol Steps

1. **Set up the physio equipment.** Follow the instructions below and the operator manual. You will need ECG, respiratory and temperature monitoring.
2. **Set up the RF Coil.** Use Coil C, at 35mm inside diameter, 300W Quad Transceiver coil.
3. **Prepare the animal and physio equipment.** See the "Positioning" section below.
4. **Protocol directory.** The protocols can be loaded from the directory named "C_MouseCardiacCine."

Animal Bed

Use the sliding mouse bed. Place the mouse in the prone position and adjust so that the mouse heart is at isocenter.

Physiological Gating

Anesthesia

Anesthesia should be regulated carefully to bring the heart period to about 120 ms. In this case, it is possible to acquire 20 movie frames through the cardiac cycle. If the cardiac cycle is shorter, fewer movie frames can be acquired.

ECG and Respiratory Gating

We have found that setting up ECG and respiratory gating are critical in these scans. Be sure that leads are twisted as much as possible and are passed under the subject to the ECG monitor. The leads should be twisted along their entire length and never form a loop. Tape leads securely at multiple places along the sample bed and check for loops after insertion into the scanner.

A good respiratory signal is equally important for collection of artifact free images. Be sure to position the respiratory bellows between the animal and a hard surface so the respiratory signal is reliable. Set the bladder below the diaphragm. If the bladder is too high you may observe the heart beat in the respiratory signal. In the physio software set respiratory begin delay to 0 and max width to 600 ms to collect data along the plateau of the respiratory signal. The screenshot below shows at typical setup of physio equipment. Keep in mind that the respiratory and ECG signals can take 30 seconds to update after they are disturbed or changed during setup.