Centre for Advanced Imaging

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

The AMBMC protocol for mouse brain imaging

Specimen Preparation

1. Perfuse mouse using room temperature PBS. Approximately 20-30 mL will be required or until the blood has been washed out. – **Buffer A**

2. Change perfusate to 4% paraformaldehyde and 0.1% Magnevist® (gadopentetate dimeglumine, Bayer HealthCare Pharmaceuticals Inc., Wayne, NJ, USA) in PBS and perfuse 20-30 mL. – **Buffer B**

3. Remove excess skin/muscle from the skull and incubate the skull at 4 ° in Buffer B overnight (~16hr). Use a buffer volume of 30mL and place in a 50 mL falcon tube.

4. Carefully dissect brain so not to damage flocculous and paraflocculous. Damage not visible with the eye will be clearly visible on MRI and make registration more difficult.

5. Incubate brain for 24 hrs in PBS containing 0.1% Magnevist® (30 mL). – **Buffer C**

6. Replace with a new Buffer C (30 mL), and continue incubation for another 3x 24h.*

7. Pat brain dry and place in Fomblin® (Solvay Solexis, Milan, Italy) for imaging.

* The brains should not be sitting inside Buffer C more than 1 week, otherwise it can start appear darker due to the absorption of Magnevist® into the tissue.

Imaging Protocol for 16.4T

- 3D gradient echo
- 15 mm SAW coil (M2M Imaging, USA)
- TR = 50 ms
- TE = 12 ms
- FA = 30°
- Bandwidth = 82 KHz

AUSTRALIAN MOUSE BRAIN MAPPING CONSORTIUM

Please reference:

Ullmann, JFP *et al.* (2012) Segmentation of the C57BL/6J mouse cerebellum in magnetic resonance images. http://dx.doi.org/10.1016/j.neuroimage.2012.05.061