Detachable Quadrature Surface Coil with Mouse Stereotaxic Cradle for *In Vivo* Imaging at 17.6T

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Introduction

For a 17.6T vertical bore magnet, transmit- receive, modular quadrature surface coil was constructed for in vivo proton imaging. The 18.5 mm ID surface coil (See **Fig.1**) was made to fit inside a 33 mm ID volume birdcage coil of an existing MR probe constructed for rat imaging. The copper coil pattern was printed on a flexible kapton film and bonded to the g-10 former using Stycast 1266 industrial adhesive. The 0 channel and 90 channel of the quadrature coil was tuned to resonant frequency (750 MHz) using ATC 100A chip capacitors. The coil was then mounted on to the stereotaxic frame using screws to hold them in position. A detachable mouse stereotaxic frame was designed to fit inside the rat cradle so that we can change cradles depending on the animal being imaged.

Results

The coil performance was evaluated on the bench using Agilent N5230A network analyzer. The 0 channel of the coil was tuned to 750 MHz, S11 at -35 dB and 90 channel of the coil was tuned to 750 MHz, S22 at-35 dB. The isolation between the channels at 750 MHz, S21 was -18dB.The unloaded Q of the coil was 66 and loaded Q with 1% agarose (W/V), 0.2% Magnivist (W/V) lego phantom was 52.The results of ex vivo imaging done with exercised male head of a mouse(C57BLKS, 28g) is shown in **Fig.2**.

Acknowledgements

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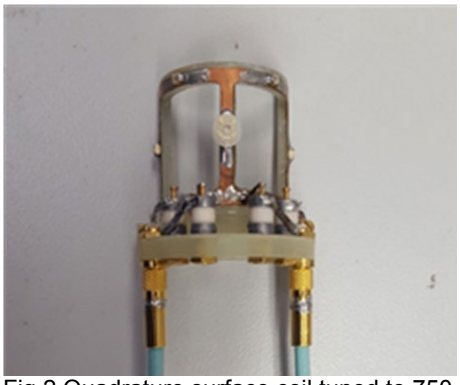

Fig.2 Quadrature surface coil tuned to 750 MHz

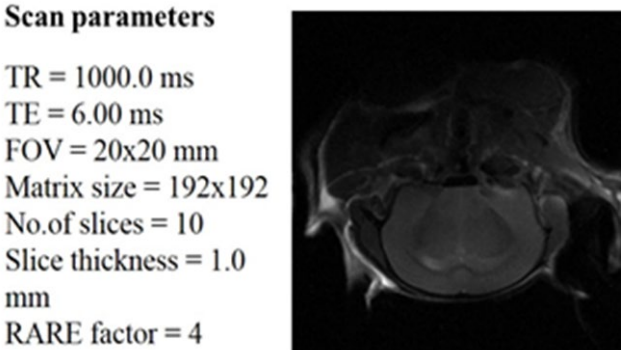

Fig.1 *Ex vivo* imaging of exercise mouse brain using RARE sequence