

# Northumbria Research Link

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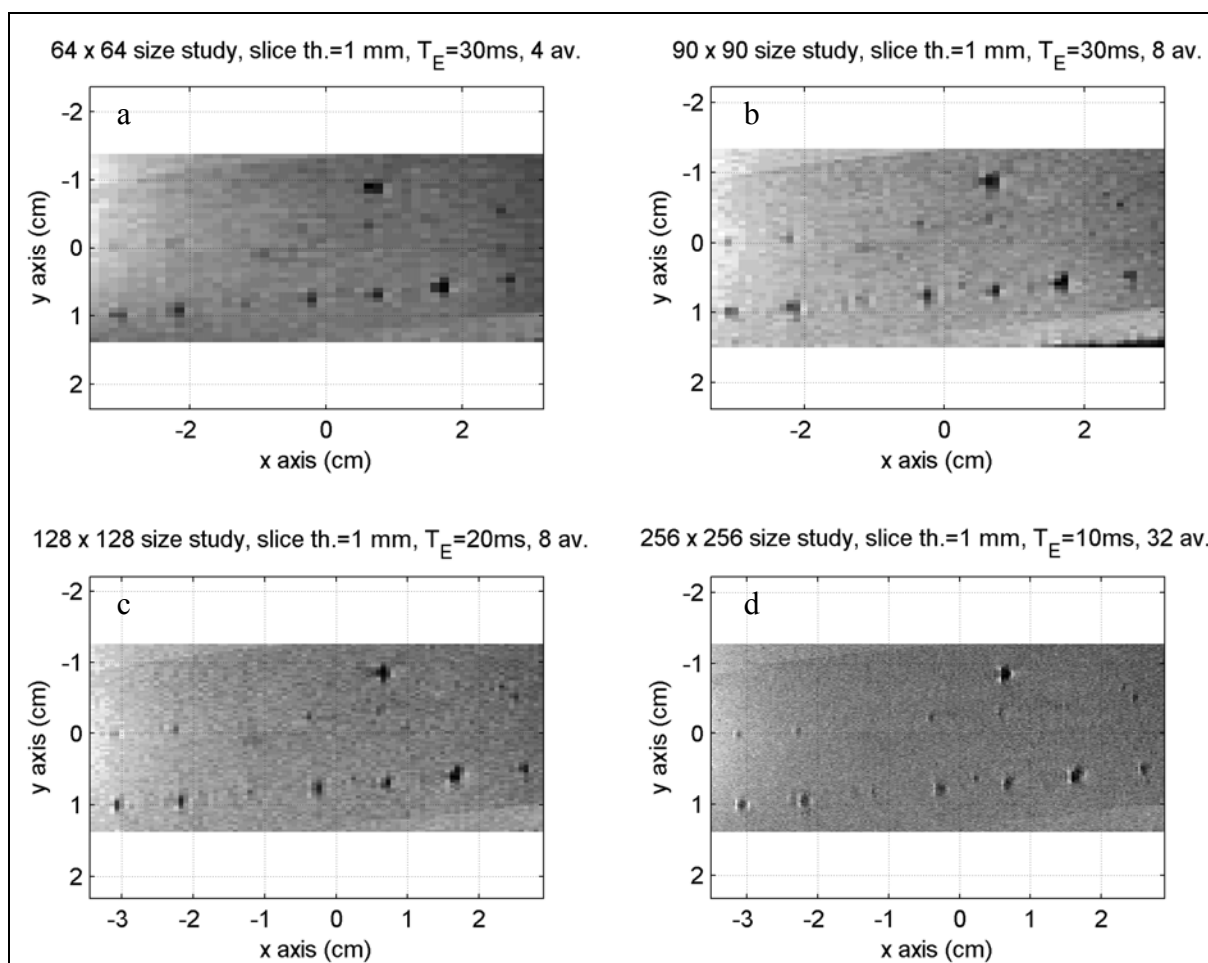
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Electronic Supporting Information

## Towards MRI microarrays

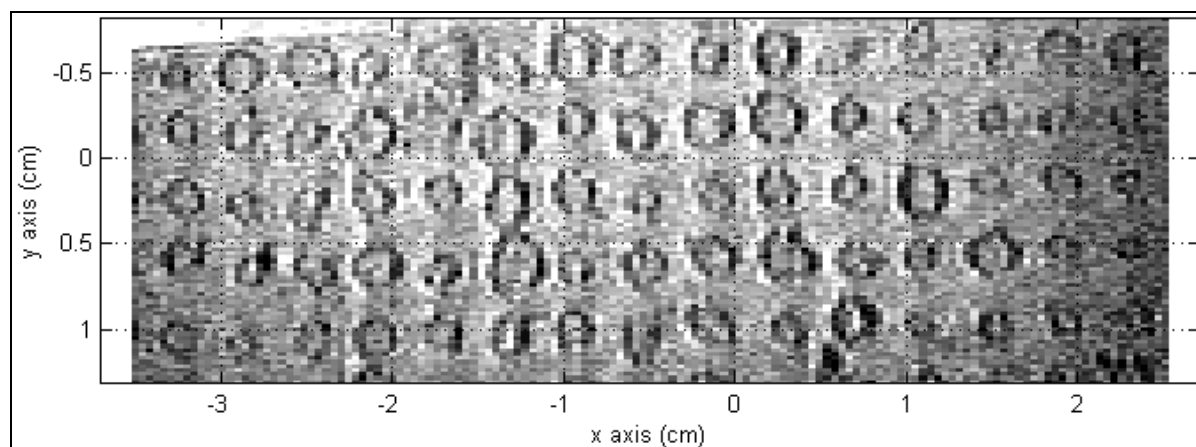
Andrew Hall, Victoria J. Mundell, Cristina Blanco-Andujar, Martin Bencsik, Glen McHale,  
Michael I. Newton and Gareth W. V. Cave<sup>a</sup>

Slide 1.



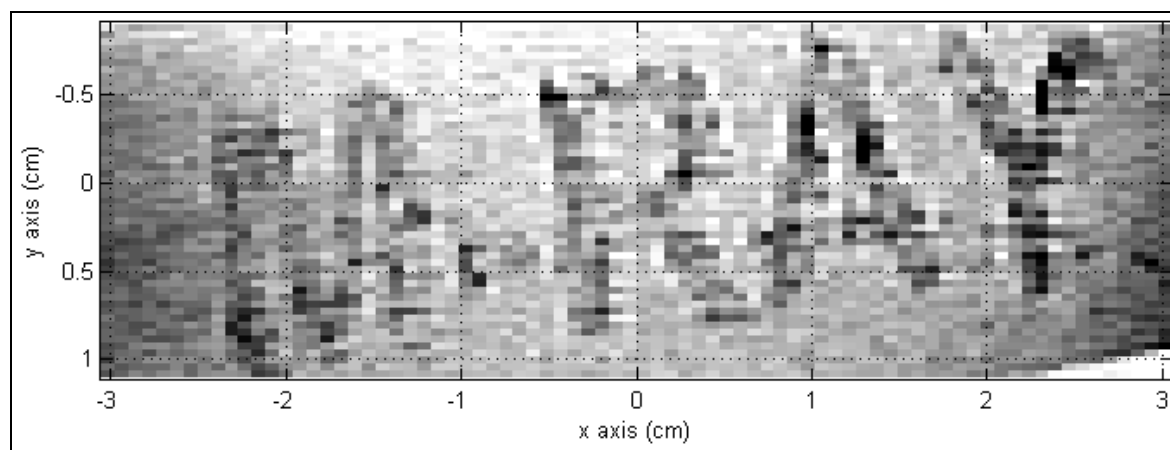
The array was made as described in the communication; however, the two separate lines of SPIO spots, the bottom line with spot size  $\sim 2$  mm and the top line with spot size  $\sim 1$  mm are all positive and imaged in water. It was imaged with increasing spatial resolution of (a)  $1370 \times 719 \mu\text{m}^2$ , (b)  $978 \times 511 \mu\text{m}^2$ , (c)  $688 \times 359 \mu\text{m}^2$  and (d)  $344 \times 180 \mu\text{m}^2$ . Bright pixels in close proximity to dark pixels are seen at the spots, which is the signature of MRI 'susceptibility effect' artefact. Increasing spatial resolution requires longer imaging time (= 28 s for (a), 56 s for (b) and (c), 224 s for (d)), but allows enhanced identification of the smallest spots. The slice thickness is 1 mm for all images and the echo time value was individually tailored to reach a good compromise of SNR to contrast.

Slide 2.



The slide was made by laser etching a 5 x 15 array and spotting with cDNA (all the same). cDNA was then spotted onto the spots directly and allowed to dry. This was subsequently washed before imaging in water. MRI details: RARE sequence, RARE factor = number of lines = 64,  $T_E = 30$  ms,  $T_E^{\text{eff}} = 975$  ms, 8 averages, spatial resolution =  $1172 \times 547 \mu\text{m}^2$ , slice thickness = 0.5 mm, imaging time = 15.5 s.

Slide 3.



The slide was made by laser etching “M-RAY” the glass slide, and then immobilising cDNA into the etch surface before hybridising with cDNA (as described in the communication) and imaging in water. MRI details: RARE sequence, RARE factor = number of lines = 128,  $T_E = 30$  ms,  $T_E^{\text{eff}} = 1726$  ms, 16 averages, spatial resolution =  $781 \times 391 \mu\text{m}^2$ , slice thickness = 1 mm, imaging time = 62 s.