Cardiac protocol including ^{1}H 3T MRI and ^{31}P MRSI 7T with a dipole array coil

Jabrane Karkouri[1], Will Watson[2], Jonathan Weir-McCall[3,4],Stephen Hoole[3], Dennis Klomp[5], Christopher Rodgers[1]

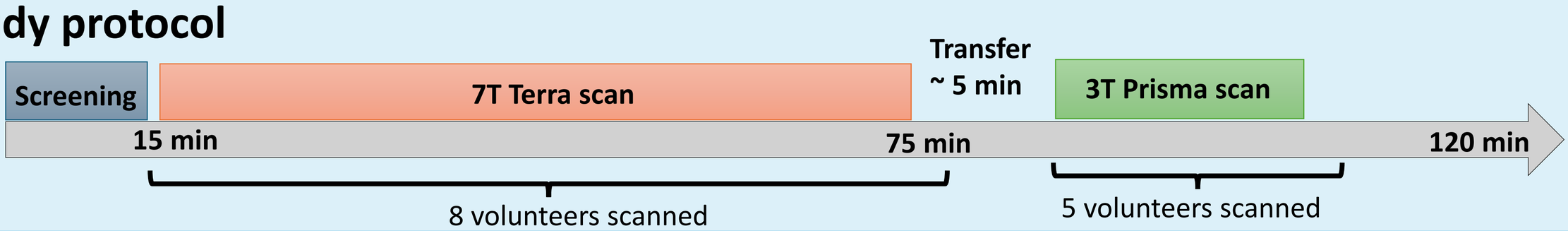
[1]Wolfson Brain Imaging Centre, University of Cambridge, Cambridge, United Kingdom, [2]Department of Cardiovascular Medicine, University of Cambridge, Cambridge, UK, [3]Royal Papworth Hospital, Cambridge, United Kingdom, [4]Department of Radiology, University of Cambridge, Cambridge, United Kingdom, [5]UMC Utrecht, Utrecht, The Netherlands

(E-mail: jk793@cam.ac.uk)

Introduction

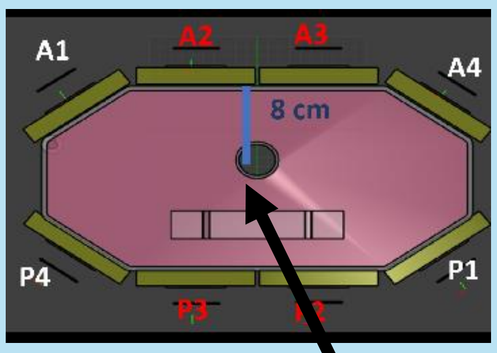
- Phosphorus (^{31}P) MRSI monitors cardiac energetics in vivo
- Validation of a cardiac ^{31}P MRSI protocol with a ^{31}P dipole array coil on phantoms and healthy volunteers

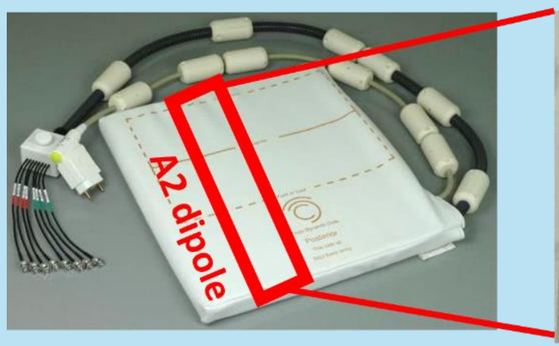
Study protocol

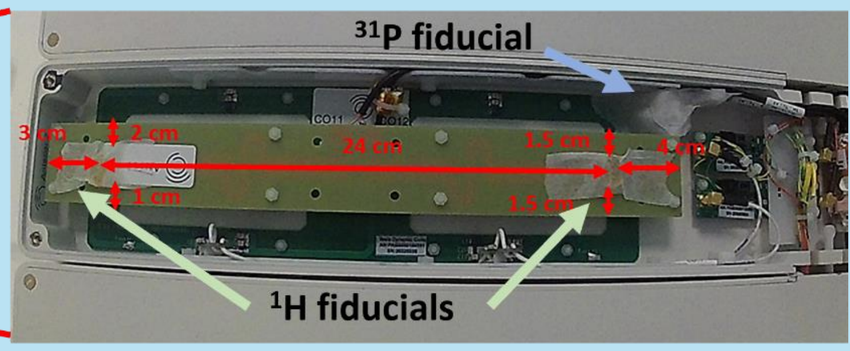


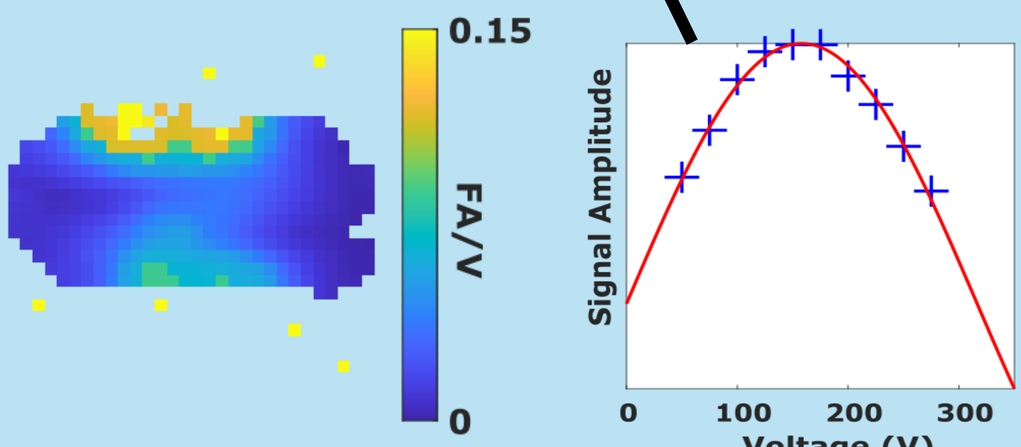
Methods

Hardware





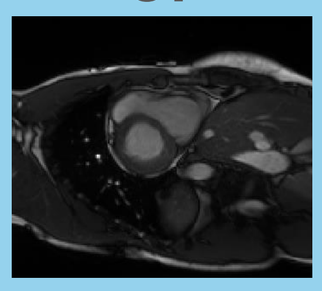


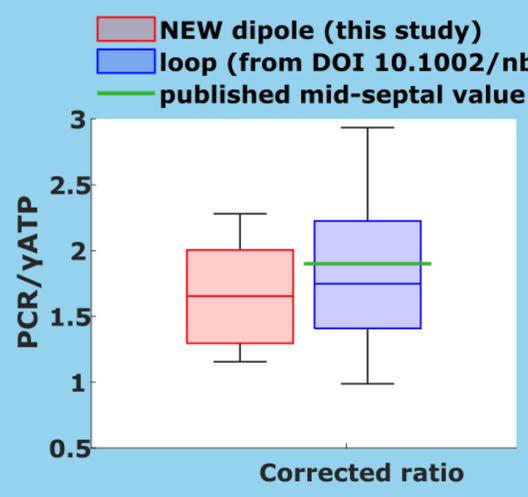


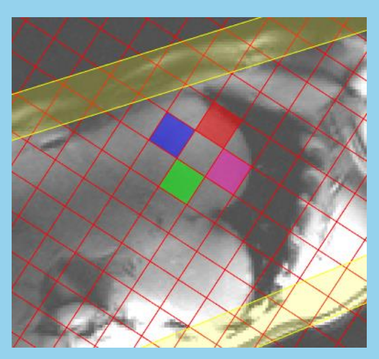
B_1 measurements

Results

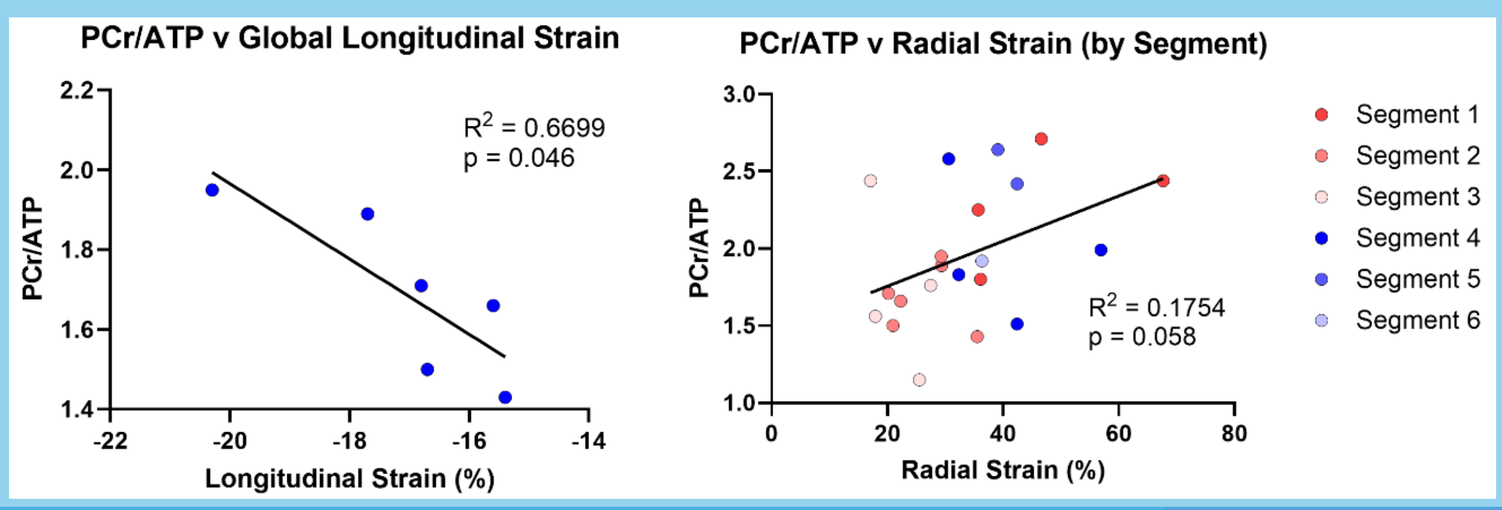
3T



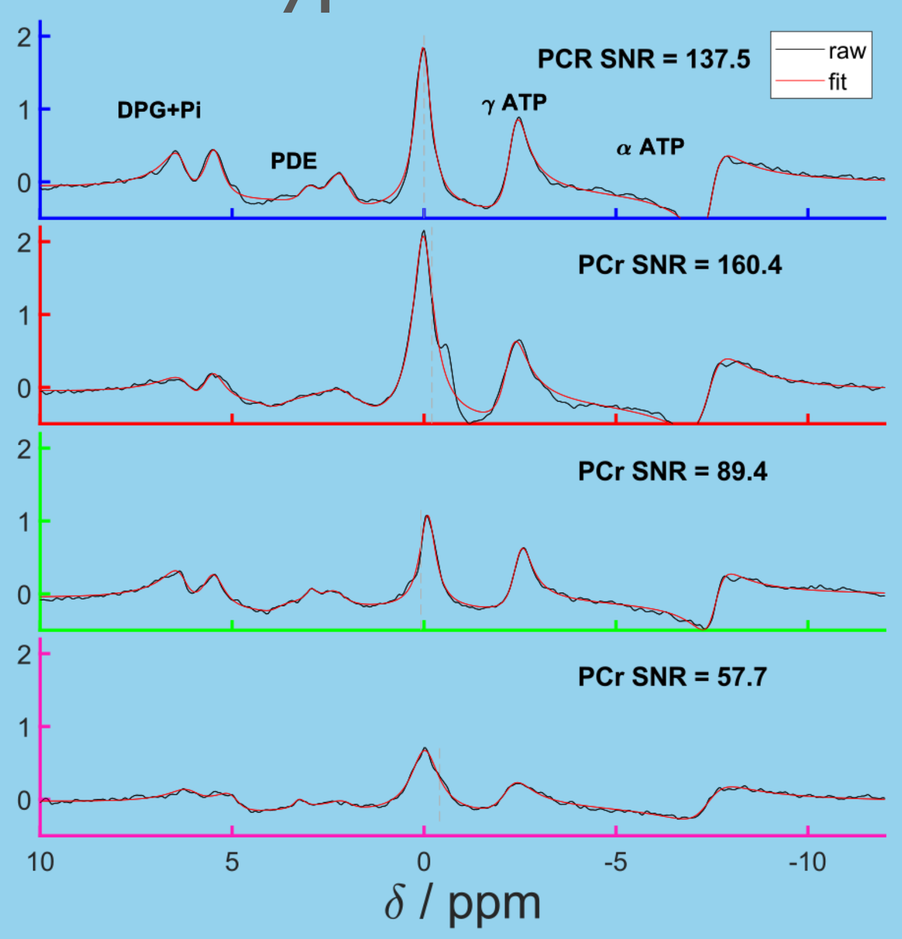




Correlation



7T



Conclusion

- Dipole array coils present a promising new approach for human cardiac ^{31}P-MRSI at 7T
- Improved SNR

References

Neubauer S, et. al. Circulation 1997

Ria Forner, Jabrane Karkouri et. al. ISMRM 2022

Rodgers CT, et. al. MRM 2014

Ellis J,, et. al. NMR Biomed. 2019

Tyler, D.J, et. al. NMR Biomed 2009

Purvis LAB, et. al., Plos One 2017

Acknowledgements

European Union's Horizon 2020 Grant No 801075

Sir Henry Dale Fellowship

MRC medical Research council

NIHR Cambridge Biomedical research centre