



Oxygen-17 ( $^{17}\text{O}$ ) Bibliography  
May 1, 2010

ISMRM 2010 Presentations

1. *In Vivo*  $^{17}\text{O}$  MRS Imaging for Assessing Myocardial Oxygen Metabolism in Rat Heart at 9.4T  
*Authors: Xiao-Hong Zhu, Yi Zhang, Wei Chen*  
*Session: Peaks of the Heart- ORAL Abstract #172*
2. Estimation of CBF Based on the Metabolic  $\text{H}_2^{17}\text{O}$  Decay Rate in  $\text{CMRO}_2$  Measurement Using *In Vivo*  $^{17}\text{O}$  MR Approach  
*Authors: Xiao-Hong Zhu, Yi Zhang, Hannes Wiesner, Kamil Ugurbil, Wei Chen*  
*Session: Perfusion from Methods to Physiological Responses - ORAL Abstract #716*
3. *In Vivo* Oxygen-17 ( $^{17}\text{O}$ ) MRI at 7 Tesla  
*Authors: Stefan Hoffmann, Paul Begovatz, Armin Nagel, Reiner Umathum, Michael Bock*  
*Session: Non-Proton MRI, Microscopy & ESR - ORAL # 724*
4. Indirect  $^{17}\text{O}$  MRI Using  $T1\rho$  at 11.7 T  
*Authors: Hsiao-Ying Wey, Fang Du, Ai-Ling Lin, Yen-Yu I. Shih, Saoussan Madi, Peter T. Fox, Pradeep M. Gupte, Timothy Q. Duong*  
*Session: : Non-Proton MRI, Microscopy & ESR - ORAL Abstract #726*
5. The  $^{17}\text{O}$  Imaging for Regional Oxygen Consumption Rate in Tumor Bearing Mice at 7T  
*Authors: Michiko Narazaki, Yoko Kanazawa, Hiroo Ikehira, Tetsuya Matsuda*  
*Session: Non-Proton MRI – POSTER # 1004*
6. Exploration of Mitochondrial Respiration in Isolated Hearts: An Observation from Metabolically Produced  $\text{H}_2^{17}\text{O}$  Using  $^{17}\text{O}$  NMR Spectroscopy  
*Authors: Ming Liu, Jessica Spires, Gheorghe D. Mateescu, Chris Flask, Xin Yu*  
*Session: MRS of the Heart - POSTER # 1325*
7. Safety of  $^{17}\text{O}$  and  $^{23}\text{Na}$  MR Imaging of the Human Brain at 9.4 Tesla  
*Authors: Ian C. Atkinson, Rachel Sonstegaard, Lilian Bityou, Neil H. Pliskin, Keith R. Thulborn*  
*Session: SAR & Safety - POSTER # 1442*

ISMRM 2009 Presentations

1.  $^{17}\text{O}$   $T_1/T_2^*$  Tissue-Relaxation Rates with Anatomical Contrast in the Rat Brain at 16.4 T  
*Author: Wiesner, Hannes M.; Balla, David Z.; Pohmann, Rolf; Chen, Wei; Ugurbil, Kamil; Uludag, Kamil*  
*Session: Neurochemical Modeling & Profiling of Brain Metabolism - ORAL Abstract #353*

2. Direct and Noninvasive Measurement of Cerebral Metabolic Rate of ATP in Cat Brain and Its Physiological Implications Author: Zhu, Xiao-Hong; Zhang, Yi; Ugurbil, Kâmil; Chen, Wei  
Session: Advanced High Field MRS Applications in Animal Models - EPOS Abstract #3290
3. New Methods for the Quantification of Myocardial Oxygen Consumption with <sup>17</sup>O MRI  
Author: McCommis, Kyle Stephan; He, Xiang; Abendschein, Dana R.; Gupte, Pradeep M.; Gropler, Robert J.; Zheng, Jie  
Session: Myocardial Perfusion & Spectroscopy - ORAL Abstract #706
4. Non-Invasive, Whole-Brain CMRO<sub>2</sub> Mapping of the Human Brain  
Author: Atkinson, Ian C.; Thulborn, Keith R.  
Session: Non-proton MRI - ORAL Abstract #609

Selected Publications  
(Chronologic order)

**Reviews**

1. Mateescu GD. Functional oxygen-17 magnetic resonance imaging and localized spectroscopy. *Adv Exp Med Biol.* 2003;510:213-8.
2. Zhu XH, Zhang N, Zhang Y, Zhang X, Ugurbil K, Chen W. In vivo <sup>17</sup>O NMR approaches for brain study at high field. *NMR Biomed.* Apr 2005;18(2):83-103.

**Methods**

1. Yeung HN, Lent AH. Proton transverse relaxation rate of <sup>17</sup>O-enriched water. *Magn Reson Med.* 1987 Jul;5(1):87-92.
2. Hopkins AL, Barr RG. Oxygen-17 compounds as potential NMR T2 contrast agents: enrichment effects of H<sub>2</sub>(<sup>17</sup>O) on protein solutions and living tissues. *Magn Reson Med.* Apr 1987;4(4):399-403.
3. Hopkins AL, Haacke EM, Barr RG, Tkach J. Oxygen-17 contrast agents. Fast imaging techniques. *Invest Radiol.* Sep 1988;23 Suppl 1:S240-242.
4. Kwong KK, Xiong J, Kuan WP, Cheng HM. Measurement of water movement in the rabbit eye in vivo using H<sub>2</sub>(<sup>17</sup>O). *Magn Reson Med.* 1991 Dec;22(2):443-50.
5. Ronen I, Navon G. A new method for proton detection of H<sub>2</sub>(<sup>17</sup>O) with potential applications for functional MRI. *Magn Reson Med.* Dec 1994;32(6):789-793.



6. Lasker SE. Functional MR imaging of a metabolite of <sup>17</sup>O<sub>2</sub>. *Artif Cells Blood Substit Immobil Biotechnol*. 1994;22(4):1055-68.
7. Reddy R, Stolpen AH, Leigh JS. Detection of <sup>17</sup>O by proton T1 rho dispersion imaging. *J Magn Reson B*. Sep 1995;108(3):276-279
8. Reddy R, Stolpen AH, Charagundla SR, Insko EK, Leigh JS. <sup>17</sup>O-decoupled <sup>1</sup>H detection using a double-tuned coil. *Magn Reson Imaging*. 1996;14(9):1073-1078.
9. Charagundla SR, Duvvuri U, Noyszewski EA, et al. <sup>17</sup>O-decoupled (<sup>1</sup>H) spectroscopy and imaging with a surface coil: STEAM decoupling. *J Magn Reson*. Mar 2000;143(1):39-44.
10. Zhu XH, Merkle H, Kwag JH, Ugurbil K, Chen W. <sup>17</sup>O relaxation time and NMR sensitivity of cerebral water and their field dependence. *Magn Reson Med*. 2001 Apr;45(4):543-9.
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14. Tailor DR, Baumgardner JE, Regatte RR, Leigh JS, Reddy R. Proton MRI of metabolically produced H<sub>2</sub> <sup>17</sup>O using an efficient <sup>17</sup>O<sub>2</sub> delivery system. *Neuroimage*. Jun 2004;22(2):611-618.
15. Zhu XH, Zhang Y, Zhang N, Ugurbil K, Chen W. Noninvasive and three-dimensional imaging of CMRO<sub>2</sub> in rats at 9.4 T: reproducibility test and normothermia/hypothermia comparison study. *Journal of Cerebral Blood Flow & Metabolism* 2007;27:1225-1234
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### Brain

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