

Eric Albert Mellon

Metabolic Magnetic Resonance Research and Computing Center
University of Pennsylvania
B1 Stellar-Chance Labs
422 Curie Blvd
Philadelphia, PA 19104

E-mail: emellon@mail.med.upenn.edu
Phone: (215) 898-9357

EDUCATION

Medical Scientist Training Program (MD/PhD), University of Pennsylvania. 6/2003-Present.
Fourth year graduate student (Combined Year 6), Dept. of Biochemistry and Molecular Biophysics.
Working Thesis Title: Assessment of cerebral metabolism in vivo by 17-Oxygen MRI
Advisor: Ravinder Reddy, PhD

Bachelor of Arts. Biological Sciences and Psychology. University of Delaware. 01/2003.
Overall GPA: 3.901. Magna Cum Laude. Medical College Admissions Test Score: 37 (>97th percentile)

RESEARCH EXPERIENCE

Doctoral Research. University of Pennsylvania 9/2005-Present. I engineer novel pulse sequences and MRI hardware for application to investigations of biological systems *in vivo* and *ex vivo*. My current projects are the use of 17-Oxygen for *in vivo* metabolic imaging, quantification of proteoglycan in *ex vivo* and *in vivo* cartilage by T1Rho and sodium imaging, and quantification of sodium levels in *in vivo* and *ex vivo* brain. Advisor: Dr. Ravinder Reddy, Department of Radiology

Research Assistant. DuPont Hospital for Children, Wilmington DE. 6/2002 – 6/2003 (FT) There I investigated the differentiation and survival pathways of the PNS neuron-like cell line PC12 using molecular biology techniques. Advisor: Dr. Jeffrey Twiss

Research Assistant. University of Delaware, Newark DE. 6/2000 – 6/2002 (FT & PT) I developed interface systems and simulations of cognition and sensory processing for novel electronic neural network models to simulate visual and proprioceptive pathways in primates.
Advisor: Dr. David Northmore & Dr. John Elias

ACADEMIC AND PROFESSIONAL HONORS

Marc Levine Radiology Research Award, University of Pennsylvania Medical School. April 8, 2008.

Britton Chance Young Investigator Award, International Society of Oxygen Transport to Tissue.
Awarded in Uppsala Sweden, August 30, 2007

NRSA Kirchstein Individual MD/PhD Predoctoral Training Grant NINDS 1F30NS059116
"Assessment of cerebral metabolism in vivo by 17-Oxygen magnetic resonance imaging"
Start date: 09/01/07, End date: 08/31/10, Priority Score 133

Medical Scientist Training Program Fellowship, 2003-2010
Starr Study Abroad Scholarship, Grenada, Spain Summer 2002

PUBLICATIONS

Mellon EA, Pilkinton DT, Clark CM, Elliott MA, Witschey WR 2nd, Reddy R, Borthakur A (2008) Sodium MRI detection of mild Alzheimer Disease. *Magnetic Resonance in Medicine*. In Review.

Mellon EA, Beesam RS, Baumgardner JE, Borthakur A, Witschey WR 2nd, Reddy R (2008) Estimation of the cerebral metabolic rate of oxygen consumption with proton detected ¹⁷O MRI during precision ¹⁷O₂ inhalation in swine. *Journal of Magnetic Resonance Imaging*. Submitted.

Mellon EA, Beesam RS, Kasam M, Baumgardner JE, Borthakur A, Witschey WR 2nd, Reddy R (2008) Single shot T_{1ρ} magnetic resonance imaging of metabolically generated water in vivo. *Adv Exp Med Biol*. In press.

Baumgardner JE, **Mellon E**, Tailor DR, Kasam M, Borthakur A, Reddy R (2007) Pulsed inhalation of ¹⁷O₂ for NMR imaging of cerebral metabolism. *IEEE-TBME*. In Review.

Witschey WR 2nd, Borthakur A, Elliott MA, **Mellon E**, Niyogi S, Wang C, Reddy R (2007) Artifacts in T1rho-weighted imaging: Compensation for B(1) and B(0) field imperfections. *J Magn Reson* 186: 75-85.

Witschey WR, Borthakur A, Elliott MA, **Mellon E**, Niyogi S, Wang C, Reddy R (2007) Compensation for spin-lock artifacts using an off-resonance rotary echo in T1rho off-weighted imaging. *Magn Reson Med* 57: 2-7.

Borthakur A, **Mellon E**, Niyogi S, Witschey W, Kneeland JB, Reddy R (2006) Sodium and T_{1ρ} MRI for the molecular and diagnostic imaging of articular cartilage. *NMR in Biomed* 19: 781-821.

Chang JH, **Mellon E**, Schanen NC, Twiss JL (2003) Persistent TrkA activity is necessary to maintain transcription in neuronally differentiated PC12 cells. *J Biol Chem* 278: 42877-42885.

ORAL CONFERENCE PRESENTATIONS

Estimation of the regional cerebral metabolic rate of oxygen consumption with proton detected ¹⁷O MRI during precision ¹⁷O₂ inhalation in swine. May 9, 2008. International Society for Magnetic Resonance in Medicine. Toronto, ON, Canada.

Single shot T_{1ρ} magnetic resonance imaging of metabolically generated water in vivo. August 29, 2007. International Society on Oxygen Transport to Tissue. Uppsala, Sweden.

Detection of metabolically produced H₂¹⁷O in brain by T1rho-weighted MRI. July 24, 2006. Gordon Research Conference on In Vivo Magnetic Resonance. Mount Holyoke College, MA, USA.

Indirect ¹⁷O MRI: measurement of oxygen consumption. May 8, 2006. International Society for Magnetic Resonance in Medicine. Seattle, WA, USA. (Presentation given on behalf of Ravinder Reddy)

OTHER FIRST AUTHOR CONFERENCE PRESENTATIONS

Imaging of physiologic lactate concentrations by SelMQC spectroscopy with Hadamard slice selection on a clinical scanner. May 8, 2008.

International Society for Magnetic Resonance in Medicine. Toronto, ON, Canada. Traditional poster.

Sodium MRI detection of mild Alzheimer's Disease. May 8, 2008.

International Society for Magnetic Resonance in Medicine. Toronto, ON, Canada. Traditional poster.

Fast T1Rho measurements with HASTE and TRUE-FISP readouts for the detection of H₂¹⁷O. May 22, 2007. International Society for Magnetic Resonance in Medicine. Berlin, Germany. Traditional poster.

High temporal resolution measurements of H₂¹⁷O generation from precision-delivered ¹⁷O₂ gas. May 23, 2007. International Society for Magnetic Resonance in Medicine. Berlin, Germany. Traditional poster.

PATENTS

Mellon E, Reddy R, RS Beesam. An electro-mechanical device for simultaneous repeatable registration AND high quality and resolution MRI for cultured tissue samples. In preparation, Penn patent office.

Baumgardner JE, Reddy R, Tailor DR, Borthakur A, **Mellon E**, Kasam M. Magnetic resonance imaging of cerebral oxygen metabolism (CMRO₂) by use of pulsed inhalation of gaseous ¹⁷O₂. Pending.

RELATED EXPERIENCE

Systems Administrator. Access 2000, West Chester, PA. 9/1997-6/2000.

Designed, maintained, and programmed custom servers and clients in *NIX and Windows networks for Internet applications and data management. Programming languages include C/C++, Java, Perl.

Student Fellow. Guatemala Public Health Service, Quetzaltenango Guatemala. 6/2005 – 7/2005.

REFERENCES

Margaret Krall, University of Pennsylvania MSTP Administrator krall@maill.med.upenn.edu
Combined Degree Office, Suite 100 Stemmler Hall, Philadelphia PA 19104 215-898-8025

Ravinder Reddy, Ph.D., Professor of Radiology ravi@mail.mmrrcc.upenn.edu
Department of Radiology, 422 Curie Blvd, Philadelphia PA 19104-6100 215-898-5708