CURRICULUM VITAE

Matthew A. Lewis, Ph.D.

Office: Advanced Radiological Sciences, Department of Radiology
The University of Texas Southwestern Medical Center at Dallas
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Dallas, TX 75390-9058
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EDUCATION

1996-2002	Southwestern Graduate School of Biomedical Sciences, The University of Texas Southwestern Medical Center at Dallas Ph.D. Radiological Sciences dissertation title: "Acoustic Diffraction Tomography of Low Contrast Media with Polyvinylidene Fluoride Polymer Transducer Arrays"
1995	The University of Texas at Dallas
1993-1994	Lancaster University, Lancaster, England, UK junior year abroad
1991-1995	Case Western Reserve University, Cleveland, Ohio, USA B.Sc. Physics with Mathematical Option magna cum laude

RESEARCH AND ACADEMIC APPOINTMENTS

2004-present	Assistant Professor, Department of Radiology, School of Medicine, The University of Texas Southwestern Medical Center at Dallas
2005-present	Associate Member, Harold C. Simmons Comprehensive Cancer Center, UT Southwestern Medical Center at Dallas
2005-present	Faculty, Joint Graduate Program in Biomedical Engineering, Graduate School of Biomedical Sciences, UT Southwestern Medical Center at Dallas
2003-present	Faculty, Radiological Sciences Graduate Program, Graduate School of Biomedical Sciences, UT Southwestern Medical Center at Dallas
2007-present	Adjunct Faculty, Department of Mathematics, The University of Texas at Arlington
2009-present	Instructor, Department of Physics, The University of Texas at Arlington
2002-2004	Instructor, Department of Radiology, School of Medicine, UT Southwestern Medical Center at Dallas
1996-2002	Research Assistant, Advanced Radiological Sciences, Department of Radiology, UT Southwestern Medical Center at Dallas
1995	Teaching Assistant, Department of Physics, UT Dallas
1993	Summer research assistant, Department of Physics, CWRU
1991	Summer intern, Center for Lithospheric Studies, UT Dallas

HONORS AND AWARDS

2003-2004	Charles Pak Fellow of Mineral Metabolism, UT Southwestern Medical Center at Dallas
1999-2000	Texas Space Grant Consortium Graduate Fellow, UT Southwestern Medical Center at Dallas
1996-1997	Texas Space Grant Consortium Graduate Fellow, UT Southwestern Medical Center at Dallas
1995	Phi Beta Kappa, Alpha of Ohio, CWRU
1995	Senior Scholar Award, Physics Department, CWRU
1994	B.S. Chandrasekhar Prize for Physics, CWRU
1992	Freshman Book Prize for outstanding work in French
1991-1995	Presidential, Case Alumni Assoc., and Physics Dept. Scholar, CWRU

EXTRAMURAL APPOINTMENTS

1999-2001	Vice-president, North Texas Orienteering Association

MEMBERSHIP IN SCIENTIFIC AND PROFESSIONAL SOCIETIES

Acoustical Society of America
Society for Industrial and Applied Mathematics
Institute for Electrical and Electronics Engineers (IEEE)

RESEARCH INTERESTS

Task-specific imaging, acoustic inverse scattering of breast microcalcifications, molecular imaging instrumentation including nuclear medicine and optical imaging, linear and non-linear diffraction tomography, tensor tomography of anisotropic materials, acoustic reflectometry of bone, applied inverse problems.

PUBLICATIONS

Geethanath S, Baek HM, Ganji S, Ding Y, Sims RD, Choi C, **Lewis MA**, Kodibagkar VD: Accelerated 1H MR metabolic imaging using compressive sensing. *Radiology*, In Press, November 2011.

Sathe MN, Woo K, Kresge C, Bugde A, Luby-Phelps K, **Lewis MA**, Feranchak AP: Regulation of Purinergic Signaling in Biliary Epithelial Cells by Exocyctosis of SLC17A9-Dependent ATP-Enriched Vesicles. *Journal of Biological Chemistry*, 286(28), 25363-76, 15 July 2011.

Lewis MA, Kodibagkar VD, Oz OK, Mason RP: On the potential for molecular imaging with Cerenkov luminescence. *Optics Letters*, 35(23), 3889-3891, 2010.

Ambartsoumian G, Gouia-Zarrad R, **Lewis MA**: Inversion of the circular Radon transform on an annulus. *Inverse Problems*, 26(10), 105015, 2010.

Soesbe TC, **Lewis MA**, Slavine NV, Richer E, Bonte, FJ, Antich PP: High-Resolution Photon Counting using a Lens-Coupled EMCCD Gamma Camera. *IEEE Trans Nuc Sci*, 57(3), 958-963, 2010.

Feranchak AP, **Lewis MA**, Kresge C, Sathe M, Bugde A, Luby-Phelps K, Antich PP, Fitz JG: Initiation of purinergic signaling by exocytosis of ATP-containing vesicles in liver epithelium. *Journal of Biological Chemistry*, 285(11), 8138-47, 13 January 2010.

Vaidyanathan RS, **Lewis MA**, Ambartsoumian G, Aktosun T: Reconstruction algorithms for interior and exterior spherical radon transform-based ultrasound imaging. *Proceedings of SPIE* 7265, 72641l-1 – 8, 2009.

Jennewein M, **Lewis MA**, Zhao D, Tsyganov E, Slavine N, He J, Watkins L, Kodibagkar VD, O'Kelly S, Kulkarni P, Antich PP, Hermanne A, Rösch F, Mason RP, Thorpe PE: Vascular imaging of solid tumors in rats with a radioactive arsenic-labeled antibody that binds exposed phosphatidylserine. *Clinical Cancer Research* 14(5), 1377-1385, 2008.

Slavine NV, Soesbe TC, Richer E, **Lewis MA**, Antich PP: Construction, calibration and evaluation of a tissue phantom with reproducible optical properties for investigations in light emission tomography. Proceedings of the IEEE Dallas Engineering in Medicine and Biology Workshop, University of Texas at Dallas, 11-12 November 2007, 122-125, 2007.

Soesbe TC, **Lewis MA**, Richer E, Slavine NV, Antich PP: Development and Evaluation of an EMCCD based Gamma Camera for Preclinical SPECT Imaging. *IEEE Transactions on Nuclear Science* 54(5), 1516-1524, 2007.

Slavine NV, **Lewis MA**, Richer E, Antich PP: Iterative reconstruction method for light emitting sources based on the diffusion equation. *Medical Physics* 33(1), 61-68, 2006.

Richer E, **Lewis M**, Odvina CV, Vazquez MA, Smith BJ, Peterson RD, Poindexter JR, Antich PP, Pak CYC: Reduction in Normalized Bone Elasticity Following Long-Term Bisphophonate Treatment as Measured by Ultrasound Critical-Angle Reflectometry. *Osteoporosis International* 16, 1384-1392, 2005.

Tsyganov EN, Zinchenko A, Slavine NV, Antich PP, Seliounine SY, Oz OK, Kulkarni PV, **Lewis MA**, Mason RP, Parkey RW: Reconstruction Algorithm with Resolution Deconvolution for 3-D Image in a Small Animal PET Imager. Small-animal SPECT Imaging, Chapter 8, Springer, 2005.

Lewis MA, Arbique G, Richer E, Slavine N, Jennewein M, Constantinescu A, Brekken R, Guild J, Tsyganov EN, Mason RP, Antich PP: Projection and pinhole based data acquisition for small animal SPECT using storage phosphor technology. Small-Animal SPECT Imaging, Chapter 24, Springer, 2005.

Richer E, **Lewis MA**, Smith B, Li X, Seliounine S, Mason RP, Antich PP: Comparison of CsI(Tl) and Scintillating Plastic in a Multi-Pinhole/CCD-based Gamma Camera for Small Animal Low Energy SPECT. Small-Animal SPECT Imaging, Chapter 11, Springer, 2005.

Durkee JW, Antich PP, **Lewis MA**, Parkey, RW: A Fully Coupled Binary Biochemical Reactive-diffusion Model with Analytic Solution. *J. Theor. Biol.* 221, 163-191, 2003.

Mehta SS, Antich PP, Smith B, **Lewis MA**, and Richer E: Bone elastometric measurements by ultrasound reflectometry: Observations on physiology and functional organization of bone. In Proceedings of the ASME Dynamic Systems and Control Division: Volume 1, 49-54, 2000.

Mehta S, Antich PP, Daphtary M, **Lewis M**, Smith B, and Landis WJ: Studies of bone biophysics using ultrasound velocity. In Acoustical Imaging: Volume 24, H Lee, Ed. Plenum Press, 2000.

Antich PP, Mehta S, Daphtary M, **Lewis M**, Smith B, and Pak CYC: In vivo study of the influence of gravity on cortical and cancellous bone velocity. In Acoustical Imaging: Volume 24, H Lee, Ed. Plenum Press, 2000.

Durkee JW Jr, Antich PP, Tsyganov EN, Constantinescu A, Kulkarni PV, Smith B, Arbique GM, **Lewis MA**, Nguyen T, Raheja A, Thambi G and Parkey RW: Analytic treatment of resolution precision in electronically collimated SPECT imaging involving multiple-interaction gamma rays. *Phys Med Biol* 43, 2975-2990, 1998.

Durkee JW Jr, Antich PP, Tsyganov EN, Constantinescu A, Fernando JL, Kulkarni PV, Smith B, Arbique GM, **Lewis MA**, Nguyen T, Raheja A, Thambi G and Parkey RW: SPECT electronic collimation resolution enhancement using chi-square minimization. *Phys Med Biol* 43, 2949-2974, 1998.

ABSTRACTS, POSTERS, AND PRESENTATIONS

*presenting author

Lewis MA*, Oz OK, Erdman WA: A Dual Nuclear Medicine/Ultrasound Cancer Imaging System. 2nd Annual CPRIT Innovations in Cancer Prevention and Research Conference, 15-17 November 2011, Austin, Texas.

Lewis MA*: Cerenkov Luminescence Imaging. Nuclear Medicine: Physics, Engineering and Practice, 19-21 September 2011, Institute for Scintillation Materials, National Academy of Science of Ukraine, Kharkov, Ukraine.

Alhasan MK, Liu L, **Lewis MA**, Mason RP: A multi-modality imaging approach to assessing vascular disruption. 2011 World Molecular Imaging Congress, 7-10 September 2011, San Diego.

Lewis MA*, Jensen SC, Vaidyanathan RS, Aktosun T, Ambartsoumian G, Gouia R: Novel Imaging Methods for Breast Sonography and Microcalcification Detection/Estimation. 2011 Era of Hope Department of Defense Breast Cancer Research Program Meeting, 3-5 August 2011, Orlando, Florida. P17-28.

Lewis MA*: Binary imaging of the microarchitecture of porous media. 7th International Congress on Industrial and Applied Mathematics – ICIAM 2011, 18-22 July 2011, Vancouver, Canada.

Geethanath S, Moeller S, Corum CA, **Lewis MA**, Kodibagkar VD: A swifter SWIFT using compressive sensing. 19th Annual Meeting & Exhibition of the ISMRM, 7-13 May 2011, Montreal, Canada.

Lewis MA*: Cerenkov-associated fluorescence imaging reconstruction. 27th Southern Biomedical Engineering Conference, 29 April – 1 May 2011, University of Texas at Arlington. In International Journal of Medical Implants and Devices 5:2, pg. 73, 2011.

Geethanath A, Baek H, Gulaka PK, Moeller S, Ganji SK, Ding Y, Corum C, Choi C, Sims RD, **Lewis MA,** Kodibagkar VD: Acceleration of 1H Magnetic Resonance Spectroscopy and Imaging Methods Using Compressed Sensing. 27th Southern Biomedical Engineering Conference, 29 April – 1 May 2011, University of Texas at Arlington. In International Journal of Medical Implants and Devices 5:2, pg. 60, 2011.

Lewis MA*, Kodibagkar VD, Mason RP, Oz OK: The Potential for Clinical Optical Imaging of Radiotracers. UT Metroplex Day, 4 March 2011, UT Southwestern Medical Center at Dallas, Texas.

Geethanath S, Baek HM, Ganji SK, Ding Y, Sims RD, Choi C, **Lewis MA**, Kodibagkar VD: Rapid metabolic imaging of cancer. UT Metroplex Day, 4 March 2011, UT Southwestern Medical Center.

Geethanath S, Moeller S, Corum CA, **Lewis MA**, Kodibagkar VD: A swifter SWIFT using compressed sensing. UT Metroplex Day, 4 March 2011, UT Southwestern Medical Center at Dallas, Texas.

Alhasan MK, Liu L, **Lewis MA**, Mason RP: Tumor EXtirpation using ArSenic (TEXAS) – a fresh look at an ancient chemotherapeutic. UT Metroplex Day, 4 March 2011, UT Southwestern Medical Center.

Lewis MA*: Imaging Assessment of Therapeutic Response in Cancer – New Ideas in Radiology for Personalized Medicine. Carcinogenesis 2011 International Conference, 16-18 February 2011, Dayananda Sagar Institutes, Bangalore, Karnataka, India.

Lewis MA*: Novel Biomedical Imaging Modalities using High-Sensitivity CCD Cameras. Jawaharlal Nehru Centre for Advanced Scientific Research, 15 February 2011, Bangalore, Karnataka, India.

Lewis MA*, Erdman WA: Development of a Dual Gamma-Scintigraphy/Ultrasound System as an Alternative to SPECT/CT for Breast and Head & Neck Cancer Imaging. CPRIT Innovations in Cancer Prevention and Research Conference, 17-19 November 2010, Austin, Texas.

Lewis MA*, Kodibagkar VD, Mason RP, Oz OK: The Potential for Clinical Optical Imaging of Radiotracers. CPRIT Innovations in Cancer Prevention and Research Conference, 17-19 November 2010, Austin, Texas.

Alhasan MK, Liu L, **Lewis MA**, Mason RP: Tumor EXtirpation using ArSenic (TEXAS) – a fresh look at an ancient chemotherapeutic. CPRIT Innovations in Cancer Prevention and Research Conference, 17-19 November 2010, Austin, Texas.

Alhasan MK, Liu L, **Lewis MA**, Reneau J, Magnusson J, Mason RP: Non-Invasive Evaluation of Arsenic Trioxide as a Therapeutic Vascular Disrupting Agent in Solid Tumors using Optical Imaging Correlated with Power Doppler Ultrasound. The Tumor Microenvironment: Hypoxia, Angiogenesis and Vaculature 12th International Workshop, 2-5 May 2010, Toronto, Canada.

Lewis MA*: Development of a CCD-based Gamma Camera. Indian Institute of Science, 28 April 2010; General Electric John F. Welch Technology Centre, 27 April 2010, Bangalore, Karnataka, India.

Lewis MA*: Molecular Imaging – High Tech to Low Tech. New Advanced and Opportunities in Biomedical Imaging and Material Science, 26 April 2010, University of Mysore, India.

Lewis MA*: Molecular Imaging for Nanomedicine. International Conference on Convergence of Science & Engineering in Education and Research: A Global Perspective in the New Millenium, 21-23 April 2010, Dayananda Sagar Institutes, Bangalore, Karnataka, India.

F. David Settles and **Lewis MA**: Data Acquisition Development for a EMCCD-Based Gamma Camera. UT Metroplex Day, 5 March 2010, UT Dallas, Richardson, Texas.

Sathe M, Woo K, **Lewis M**, Feranchak A: ATP release and signaling in cholangiocytes measured by dynamic, multiscale live-cell imaging. 2009 North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition Annual Meeting, 12-14 November 2009, National Harbor, Maryland.

Feranchak AP, **Lewis MA**, Sathe MN, Luby-Phelps K, Fitz JG: Hepatocyte ATP release occurs via exocytosis of ATP-enriched vesicles as determined by multi-scale, dynamic live-cell imaging. 2009 Annual Meeting of the American Association for the Study of Liver Diseases. 30 October – 3 November 2009, Boston, Massachussetts.

Lewis MA*: Clinically Relevant Parameter Estimation: What Parameter(s) Should We Target? 2009 SIAM Annual Meeting and Conference on Control and Its Applications. 6-10 July 2009, Denver, Colorado. MS44, 60.

Vaidyanathan RS, **Lewis MA**, Ambartsoumian G, Aktosun T: Reconstruction algorithms for interior and exterior spherical radon transform-based ultrasound imaging. SPIE Medical Imaging 2009: Ultrasonic Imaging and Signal Processing. 8-12 February 2009, Lake Buena Vista, Florida. 7265-54.

Lewis MA*: Estimating Tumor Bounds in Bioluminescence Tomography. 2008 SIAM Conference on Imaging Science and Annual Meeting. 7-11 July 2008, San Diego, California. PP0, 170.

Lewis MA*, Aktosun T, Ambartsoumian G, Richer E, Antich PP: Acoustic Inverse Scattering for Task-Specific Breast Sonography – Development of Non-Ionizing Methods for Microcalcification Detection in High-Risk Populations. 2008 Era of Hope Department of Defense Breast Cancer Research Program Meeting, 25-28 June 2008, Baltimore, Maryland. P8-26.

Lewis MA*, Constantinescu A, Mason RP, Richer E, Seliounine S, Slavine NV, Soesbe T, Antich PP: Dual Bioluminescance Tomography-Single Photon Emission Computed Tomography for Studies of Metastatic Breast Cancer in Pre-Clinical Models. 2008 Era of Hope Department of Defense Breast Cancer Research Program Meeting, 25-28 June 2008, Baltimore, Maryland. P8-11.

Mason RP, Jennewein M, Sun X, Hao G, Jahn M, **Lewis MA**, Zhao D, Watkins L, O'Kelly S, Kulkarni PV, Hermanne A, Rösch F, Thorpe PE: Breast Tumor Detection and Treatment Using Bavituximab Labeled with Arsenic Radionuclides. 2008 Era of Hope Department of Defense Breast Cancer Research Program Meeting, 25-28 June 2008, Baltimore, Maryland. P8-10.

Lewis MA: Compressive Sensing in Small Animal SPECT: Does it Make Sense? 3rd Biennual Workshop on Small-Animal SPECT Imaging, 16-18 January 2008, Tucson, Arizona.

Slavine N, Soesbe T, Richer E, **Lewis MA**, Antich PP: Construction, calibration and evaluation of a tissue phantom with reproducible optical properties for investigations in light emission tomography. IEEE Engineering in Medicine and Biology Society Dallas Workshop, 11-12 November 2007, Dallas.

Lewis MA*, Berry R, Liu P, Richer E, Antich PP, Johnson SG, Aktosun T, Torlak M: Advanced Acoustic Inverse Scattering and the Development of Breast Microcalcification Screening Methods. UT-DFW Initiative for Biological Sciences & Engineering UT Metroplex Days (www.utmetroplexdays.org), 4 December 2006, UT-Arlington, 11 December 2006, UT-Dallas.

Liu P, **Lewis M**, Antich P: Direct evaluation of cancellous bone porosity using ultrasound. 4th Joint Meeting of the Acoustical Society of America (152nd Meeting) and the Acoustical Society of Japan, 28 November – 2 December 2006, Honolulu, Hawaii. In The Journal of the Acoustical Society of America 120:5 pt 2, pg. 3243-3244, 4aPA13, 2006.

Lewis MA*, Liu P, Richer E, Antich PP, Johnson SG: Linear sampling methods for acoustic inverse scattering in breast microcalcification detection. 4th Joint Meeting of the Acoustical Society of America (152nd Meeting) and the Acoustical Society of Japan, 28 November – 2 December 2006, Honolulu,

Hawaii (oral presentation). In The Journal of the Acoustical Society of America 120:5 pt 2, pg. 3025, 1pBB8, 2006.

Soesbe TC, **Lewis MA**, Richer E, Kulkarni PV, Bonte FJ, Antich PP: High-resolution high-sensitivity small animal SPECT using an electron-multiplying CCD and multiple-pinhole collimation. SNM 53rd Annual Meeting, 3-7 June 2006, San Diego. In Journal of Nuclear Medicine 47:Supplement 1, No. 666, 232P-233P, 2006.

Richer E, Slavine N, Kodibagkar V, **Lewis M**, Zhao D, Mason R, Antich P: In Vivo Comparison of Light Emission Tomography (LET) with MRI in a Lung Metastasis Model. Fifth Annual Meeting of The Society for Molecular Imaging, 30 August – 2 September 2006, Hawaii. In Molecular Imaging 5:3, 2006.

Lewis MA*, Slavine NV, Soesbe T, Richer E, Antich PP: Scatter Correction for Low-Energy Small Animal SPECT using Optical Surface Topography in a Dual Modality Imaging System. 2nd Biannual Workshop on Small-Animal SPECT Imaging, 8-10 March 2006, Tucson, Arizona (oral presentation).

Slavine NV, **Lewis M**, Richer E, Soesbe T, Antich PP: Monte Carlo simulations of the 3D Reconstruction Capabilities of a Multi-Pinhole SPECT System. 2nd Biannual Workshop on Small-Animal SPECT Imaging, 8-10 March 2006, Tucson, Arizona.

Lewis MA*, Richer E, Slavine NV, Soesbe T, Arbique G, Mason RP, Antich PP: Using the Existing Molecular Biology Storage Phosphor Infrastructure for High-Throughput Molecular Imaging. Imaging in 2020: A Conference on Molecular Imaging, 25-29 September 2005, Jackson Hole, Wyoming.

Bhagwandin VJ, Harper A, Beck AW, Mason RP, Richer E, Antich PP, Tsyganov E, **Lewis MA**, Slavine NV, Fleming JB, Wright WE, Brekken RA, Shay JW: Detection of Pancreatic Cancer In Vivo Using Light Emission Tomography (LET). 13th Conference of the International Society of Differentiation, 5-9 September 2005, Honolulu, Hawaii.

Lewis MA*, Richer E, Antich PP: Integrated Motion Control and Data Acquisition for Ultrasound Critical-Angle Reflectometry Using NI LabVIEW State Diagram Toolkit. NIWeek 2005, 16-18 August 2005, Austin, Texas (oral presentation).

Antich PP, **Lewis MA**, Richer E, Slavine N, Zhao D, Soesbe T, Li X, Constantinescu A, Mason RP: A Dual Modality Optical/SPECT Imaging System for Murine Models of Human Breast Cancer. Fourth DoD BCRP Era of Hope Meeting, 8-11 June 2005, Philadelphia, Pennsylvania.

Antich P, **Lewis MA**, Richer E: Bone Mechanical Quality Measured by Ultrasound Critical Angle Reflectometry. NIAMS/ASBMR/INSERM/NIBIB Workshop on Bone Quality: What Is Is and Can We Measure It? 2-3 May 2005, Bethesda, Maryland.

Jennewein M, Slavine N, He J, Kodibagkar V, Kulkarni PV, Seliouline S, **Lewis M**, Zhao Dawen, Tsyganov E, Antich PP, Hermanne A, O'Kelley S, Qaim SM, Roesch F, Mason RP, Thorpe PE: Tumor imaging with the vascular targeting agent Tarvacin labeled with radioactive arsenic isotopes. 96th Annual Meeting of the American Association for Cancer Research, 16-20 April 2005, Anaheim, California.

Soesbe TC, **Lewis MA**, Richer E, Antich PP: Development of a Multi-Pinhole CCD Based SPECT Detector for High-Resolution and High-Sensitivity Imaging in Murine Models of Human Disease. The University of Texas System Molecular Medicine Symposium, 21-22 February 2005, Houston.

Li X, Xia M, Richer E, **Lewis M**, Smith B, Adam A, Mason R, Liu H, Antich PP: Optical Imaging Phantom Study for Quantitative Imaging Correction and Physiological Parameter Detection in vivo. The University of Texas System Molecular Medicine Symposium, 21-22 February 2005, Houston.

Richer E, Slavine N, **Lewis MA**, Tsyganov E, Gellert GC, Dikmen ZG, Bhagwandin V, Shay JW, Mason RP, Antich PP: Three Dimensional Light Emission Tomography using Multiple Rotating CCD Cameras. Third Annual Meeting of The Society for Molecular Imaging, 9-12 September, 2004, St. Louis. In Molecular Imaging 3:3, 2004.

Antich PP, **Lewis MA***, Richer E, Smith B: Ultrasound Critical-Angle Reflectometry: Measureing Velocities in Hard and Soft Anisotropic Tissues. Third International Conference on the Ultrasonic Measurement and Imaging of Tissue Elasticity, 17-20 October, 2004, Lake Windermere, Cumbria, UK (oral presentation).

Jennewein M, Constantinescu A, Bergner O, **Lewis M**, Zhao D, Slavine N, Seliouline S, O'Kelly S, Maus S, Qaim SM, Tsyganov E, Antich PP, Roesch F, Mason RP, Thorpe PE: Molecular Imaging of the Vascular Targeting Antibody Vatuximab® in Rat Prostate Cancer. Annual Congress of the European Association of Nuclear Medicine, 4-8 September 2004, Helsinki, Finland. In European Journal of Nuclear Medicine and Molecular Imaging 31: 2 (Supplement), No. 259, S264, 2004.

Jennewein M, Constantinescu A, Zhao D, **Lewis M**, O'Kelly S, Maus S, Antich PP, Schirrmacher R, Qaim SM, Thorpe PE, Roesch F, Mason RP: A new Labeling Method for Antibodies with Radioactive Arsenic Isotopes. Annual Congress of the European Association of Nuclear Medicine, 4-8 September 2004, Helsinki, Finland. In European Journal of Nuclear Medicine and Molecular Imaging 31: 2 (Supplement), No. P467, S389, 2004.

Jennewein M, Constantinescu A, Bergner O, Slavine N, Seliouline S, **Lewis M**, Zhao D, O'Kelly S, Maus S, Qaim SM, Tsyganov E, Antich PP, Thorpe PE, Schirrmacher R, Roesch F, Mason RP: Radioactive Arsenic Isotopes: New Tools for the Imaging of Tumor Targeting Antibodies. Academy of Molecular Imaging 2004, Orlando. In Molecular Imaging and Biology 16:2, No. 150, 108, 2004.

Zinchenko A, Tsyganov EN, Slavine NV, Kulkarni PV, **Lewis MA**, Mason RP, Oz OK, Parkey RW, Antich PP: Reconstruction Algorithm with Resolution Deconvolution for 3-D Image in a Small Animal PET Imager. The University of Arizona Center for Gamma-Ray Imaging Workshop on Small-Animal SPECT, Tucson, 2004.

Lewis MA*, Arbique G, Jennewein M, Antich PP, Richer E, Constantinescu A, Brekken R, Guild J, Mason RP: Projection and pinhole based data acquisition for small animal SPECT using storage phosphor technology. The University of Arizona Center for Gamma-Ray Imaging Workshop on Small-Animal SPECT, Tucson, 2004 (oral presentation).

Antich PP, **Lewis MA**, Richer E, Smith B, Seliounine S, Li X, Mason RP: Comparison of CsI(Tl) and Scintillating Plastic in a Multi-Pinhole/CCD-based Gamma Camera for Small Animal Low Energy SPECT. The University of Arizona Center for Gamma-Ray Imaging Workshop on Small-Animal SPECT, Tucson, 2004.

Richer E, **Lewis M**, Odvina CV, Vasquez MA, Pak CYC, Antich PP: Impaired Bone Quality in Bisphosphonate (BISPHOS) Treatment and Renal Transplantation by Ultrasound Critical Angle Reflectometry (UCR). ASBMR 2003, Minneapolis. In Journal of Bone and Mineral Research 18:(Supplement 2), No. SU111, S207, 2003.

Zinchenko A, Tsyganov EN, Slavine NV, Kulkarni PV, **Lewis MA***, Mason RP, Oz OK, Parkey RW, Antich PP: Expectation Maximization Algorithm With Resolution Deconvolution For 3-D Image Reconstruction In A Small Animal PET Imager. SNM 2003, New Orleans (oral presentation). In Journal of Nuclear Medicine 44:5 (Supplement), No. 528, 162P, 2003.

Antich PP, **Lewis MA***, Richer E, Kulkarni PV, Smith BJ, Mason RP: A Novel Multi-Pinhole/CCD-Coupled CsI(Tl) Crystal Gamma Camera For Fully 3D μSPECT/μCT Small-Animal Imaging. SNM 2003, New Orleans (oral presentation). In Journal of Nuclear Medicine 44:5 (Supplement), No. 523, 161P, 2003.

Antich PP, **Lewis MA**, Richer E, and Smith B: In Vivo Assessment Of Bone Quality In The Clinic With A Second Generation Ultrasound Critical-Angle Reflectometer. IBMS-JSMBR 2003, Osaka, Japan. In Bone 32:5 (Supplement), S184, 2003.

Antich P, Mehta S, Daphtary M, Smith B, and **Lewis M**: In Vivo Assessment of Bone Material Axes Using UCR. Annals of Biomedical Engineering 26:(Suppl 1), S116.

Lewis MA*, Antich PP, Mehta S, Abbott S, Daphtary M, Smith B, Nguyen T: Biomedical Applications of Ultrasound Critical-Angle Reflectometry - From Spectroscopy to Functional Elastometric Imaging. APS Centennial Meeting, March 1999.

Lewis M*, Mehta S, Smith B, and Antich P: Investigations of Ultrasound Propagation Toward Development of Novel Tissue Characterization Devices. Texas Space Grant Consortium Fall Meeting, November 1998.

Lewis MA* and Wessels M: Zernike Polynomials in *Mathematica*. Worldwide Mathematica Conference, Chicago, June 1998.

Mason RP, Constantinescu A, Durkee JW, **Lewis M**, Arbique G, Kulkarni P, and Antich PP: Functional Imaging – Coregistered SPECT and MRI for Synergistic Diagnosis. NIH Center Proposal Site Review, 1997.

TEACHING EXPERIENCE

Fall 2011
Guest lecturer, UTD EEBM/BMEN 6376.001 Lecture Course in Biomedical Applications of Electrical Engineering – Introduction to Biomedical Imaging Modalities, and Medical Imaging: where algorithms impact lives

Case Study Discussion Leader, Ethics III – Ethics in the broader scientific community, UT Southwestern Graduate School of Biomedical Sciences

Summer 2011
QP-SURF Research Mentor, Scott C. Jensen, Utah State University

Guest lecturer, Governor's Science and Technology Champions Academy, UTA – Medical Imaging

Fall 2010
Instructor, UTA PHYS 1441-001 General College Physics I –
algebra-based introductory mechanics (text: Giancoli 6th edition, volume 1)

Instructor, UTA PHYS 2321-001 Computational Physics -
introduction to numerical methods in physics and simulation
(text: Computational Physics 2nd Edition, Giordano & Nakaniski)

Guest lecturer, UTD EEBM/BMEN 6376.001 Lecture Course in Biomedical Applications of Electrical Engineering – Medical Imaging: where algorithms impact lives

Summer 2010
Research Mentor, F. David Settles, University of Texas at Dallas

Spring 2010
Green Fellow Mentor, F. David Settles, University of Texas at Dallas
Development Toward an EMCCD-Based Gamma Camera with Real Time Scintillation Event Position Estimation

Instructor, UTA PHYS 1441-001 General College Physics I
Instructor, UTA PHYS 1442-001 General College Physics II –
algebra-based electromagnetism and modern physics (text: Giancoli 6th edition, volume 2)

Fall 2009
Co-Instructor, RDS 5389 Medical Imaging
via teleconference with UTA MATH 5392-005 Mathematics of Medical Imaging (text: Kak and Slaney, Principles of Computerized Tomographic Imaging)

Instructor, UTA PHYS 1441-001 General College Physics I
Instructor, UTA PHYS 1442-001 General College Physics II

Summer 2009
Science Teacher Access to Resources at Southwestern (STARS) Mentor
Tracy Wall, Trinity Springs Middle School
Hemoglobin Modulation as a Potential Contrast Agent for Bioluminescence Imaging and Tomography

Spring 2009
Instructor, UTA PHYS 1441-001 General College Physics I

Instructor, RDS 5390-01 Radiological Laboratory - Introduction to Software for Grants, Proposals, Reports, Simulation, Data Acquisition and Analysis, SPECT microimaging, finite element analysis

Guest lecturer, Quantitative Biology Discussion Group -
An Introduction to Compressive Sensing and Other State-of-the-Art Analyses

Fall 2008
Instructor and Course Developer, BME 5363 Digital Processing of Medical Images
image deblurring, restoration, reconstruction, SVD, Tikhonov regularization

Spring 2008
Co-Instructor, RDS 5383 Cross-Sectional Human Radiologic and MRI Anatomy
added lectures on comparative murine anatomy

February 2008
Guest lecturer, Science Teacher Access to Resources at Southwestern (STARS), local high school science classes hosted by UT Southwestern Medical Center at Dallas – Physics in Medical Imaging

Fall 2007
Co-Instructor, RDS 5389 Medical Imaging - Discrete Fourier Transform, Introduction to Maximum Likelihood-Estimation Maximization, Singular Value Decomposition, Compressive Sampling

Spring 2007
Instructor, RDS 5388 Principles of Nuclear Medicine and Emission Computer Tomography - Introduction to SPECT and PET, Statistics for Nuclear Medicine, Maximum Likelihood Expectation Maximization

F*all 2006*
Instructor, RDS 5390-01 Radiological Laboratory - Introduction to Software for Grants, Proposals, Reports, Simulation, Data Acquisition and Analysis

Summer 2006
Guest Instructor, UT Southwestern Allied Health Sciences School, PO 3423 – Applied Prosthetics/Orthotics and Rehabilitation Technology II, Introduction to Finite Element Analysis

Fall 2005
Guest Instructor, RDS 5389 Medical Imaging - Discrete Fourier Transform, Introduction to Maximum Likelihood-Estimation Maximization

March 2005
Guest lecturer, Science Teacher Access to Resources at Southwestern (STARS), local high school science classes hosted by UT Southwestern Medical Center at Dallas

Summer 2004
Organizer and Instructor, RDS 5096-01 Special Topics in Radiological Sciences - Optical and Multi-pinhole Nuclear Imaging, UT Southwestern Graduate School of Biomedical Sciences

May 2004
Guest lecturer, Introduction to SPECT and PET, Medical Imaging Course (Biomedical Engineering), University of Texas at Arlington

Fall 2003-present
Founder and organizer, Imaging Sciences Journal Club, UT Southwestern Medical Center at Dallas

Fall 2003
Co-facilitator, Clinical Ethics in Medicine, UT Southwestern School of Medicine

Summer and Fall 1995
Teaching Assistant, Introductory Physics Laboratories, University of Texas at Dallas

GRADUATE COMMITTEE MEMBERSHIP

Celeste Roney, Ph.D., Qualifying committee (Radiological Sciences Graduate Program)
Todd Soesbe, Ph.D., Qualifying committee (Radiological Sciences)
Peiying Liu, Ph.D., Exam I and Ph.D. committees (Joint Graduate Program in Biomedical Engineering)
Xiufeng Li, Ph.D., Exam I committee (Biomedical Engineering)
Areum Kim, Ph.D., Exam I committee (Biomedical Engineering)
Bokkyu Lee, M.S., Exam I committee (Biomedical Engineering)
Aman Goyal, Exam I committee (Biomedical Engineering)
Ravi Vaidyanathan, M.Sc., Master's committee (Biomedical Engineering)
Keith Hulsey, Qualifying Exam and Ph.D. committee (Radiological Sciences)
Rim Gouia, Master's committee (Mathematics, UTA)
Songling Li, Qualifying Exam committee (Radiological Sciences)
Hongguang Xi, Exam I and research advisory committees (Biomedical Engineering)
Sairam Geethanath, Qualifying Exam and Ph.D. committees (Biomedical Engineering)
Long Huang, Exam II and Ph.D. committees (Radiological Sciences)
Chengxin Zhou, Exam I committee (Biomedical Engineering)
Su-Tong Lo, Qualifying Exam committee (Radiological Sciences)
Robb Berry, Qualifying Exam committee (Radiological Sciences)
Mustafa Alhasan, Qualifying Exam committee (Radiological Sciences)
Rohin Moza, Qualifying Exam II committee (Biomedical Engineering)
David Case, Master's committee (Mechanical Engineering, Southern Methodist University)
Ramraj Velmuragan, Exam I committee (Biomedical Engineering)
Yao Ding, Qualifying Exam and Ph.D. committee (Radiological Sciences)

CURRENT AND PREVIOUS SUPPORT

18 April 2007 – 31 March 2012
NIH/NCI SAIR – RFA CA-07-04
1U24 CA126608-03 (PIs Ralph Mason & Dean Sherry)
"UT Southwestern Small Animal Imaging Resource Program"
Total Costs: $2,355,000
Support and Effort: 10%

17 August 2007 – 16 August 2011
Department of Defense Congressionally Directed Medical Research Program
Breast Cancer Research Program Synergistic Idea Award
BC063989 W81XWH-07-1-0640 (PI Matthew Lewis)
"Acoustic Inverse Scattering for Breast Microcalcification Detection"
Total Costs: $770,818.86 Direct Costs: $490,967.51
Support and Effort: 50%

1 May 2004 – 31 May 2007 (no-cost extension through 31 December 2007)
Department of Defense Congressionally Directed Medical Research Program
Breast Cancer Research Program Idea Award
BC031685 (PI Peter Antich)
"Investigation of Metastatic Breast Tumor Heterogeneity and Progression Using Dual Optical/SPECT Imaging"
Total Costs: $465,858 Direct Costs: $298,626
Support and Effort: 50%

PENDING SUPPORT

Cancer Prevention & Research Institute of Texas Individual Multi-Investigator Research Award
RFA R-12-MIRA-1
RP121053/120720-P2 (PI Lewis)
"The Intersection of Imaging and Mathematical Modeling of ATP Purinergic Signaling"
(Parent application - RP120720, PI Andrew Feranchak,
"Extracellular ATP and Purinergic Signaling in Cancer")
Total Direct Costs: $481,291 Total Costs: $506,620
Support and Effort: 40%
Specific Aim: Development of novel mesoscale imaging and mathematical modeling of extracellular ATP signaling in cancer.

PROFESSIONAL SERVICE

Southwestern Small Animal Imaging Research Program Technical Advisory Committee – Member, 2009 – present

Congressionally Directed Medical Research Program (CDMRP) Department of Defense Breast Cancer Research Program (BCRP) – grant reviewer, May 2009, Training-Physical Imaging/Radiation Oncology; May 2010, Training-Physical Imaging

Congressionally Directed Medical Research Program (CDMRP) Department of Defense Prostate Cancer Research Program (PCRP) – grant reviewer, July 2010, Prostate Cancer Training-1

U.S. Civilian Research & Development Foundation (CRDF) for the Independent States of the Former Soviet Union – grant reviewer, 2006

Susan G. Komen Breast Cancer Foundation – 2006-2007 Research Grant Program reviewer (Detection/Diagnosis/Prognosis), 2007

Medical Physics – Associate Editor, 2007

Journal of Microscopy – Reviewer, 2007

Optics Express – Reviewer, 2007-2010

Biomedical Optics Express – Reviewer, 2010

Optics Letters – Reviewer, 2008-2009

Applied Optics – Reviewer, 2009

Journal of the Optical Society of America A – Reviewer, 2008-2010

International Journal of Biomedical Imaging – Reviewer, 2009

IEEE Transactions on Medical Imaging – Reviewer, 2010

PATENTS

U.S. Patent 7,611,465. Rapid and Accurate Detection of Bone Quality Using Ultrasound Critical Angle Reflectometry.