

BIOGRAPHICAL SKETCH

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NAME: Pisani, Laura Jean

eRA COMMONS USER NAME (credential, e.g., agency login): PISANI.LAURA

POSITION TITLE: Director of Pre-Clinical MRI

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Stanford University	Postdoctoral	2002-2007	MRI Physics
Oakland University	Ph.D.	1995-2002	Biomedical Sciences: Medical Physics
McGill University	M.Sc.	1992-1995	Medical Radiation Physics
Wellesley College	B.A.	1988-1992	Physics

NOTE: The Biographical Sketch may not exceed five pages. Follow the formats and instructions below.

A. Personal Statement

My current work focuses on small animal imaging with particular emphasis on MRI. I provide hands-on training for MRI, micro-PET, and fluorescence imaging. My Medical Physics background, and experience in various imaging modalities related to cancer imaging have proven valuable in helping investigators to optimize their experimental design. I establish 7T MRI protocols and train researchers to acquire data from contrast phantoms, excised tissue samples, and *in vivo* specimens.

B. Positions and Honors**Positions and Employment**

1995-2002 Research assistant, Radiotherapy, William Beaumont Hospital, Royal Oak, MI
 2002 Teaching Intern, Oakland Community College, Orchard Ridge, MI
 2002-2004 NCI Postdoctoral Fellow Advanced Techniques for Cancer Imaging, Radiology, Stanford Univ
 2004-2007 Postdoctoral Fellow, Radiology, Stanford University
 2005- Radiology Department Research Committee, Stanford University
 2007- MRI Physicist/Instrumentation Specialist, Radiology, Stanford University

Honors

2006 Ruth L. Kirschstein National Research Service Awards for Individual Postdoctoral Fellows (F32), entitled "Fetal fMRI".
 2005 National Institutes of Health (NIH) Pediatric Loan Repayment Program.
 ISMRM Student Travel Award
 2004 ISMRM Student Travel Award
 2003 ISMRM Student Travel Award
 2002 NCI Postdoctoral Research Fellowship in Advanced Techniques for Cancer Imaging.
 ISMRM Student Travel Award
 1992 Phyllis Flemming Award for Distinction in Physics
 Hughes Fellowship

Current Professional Societies:

C. CONTRIBUTION TO SCIENCE

1. Monitoring Therapy with Imaging

I helped to optimize MR imaging for *in vivo* tracking of tumor enzyme-activatable, therapeutic nanoparticles which cause specific toxicity against glioblastoma tumor cells and glioblastoma-initiating cells. I determined optimal spatial and temporal resolutions for the proton resonance frequency shift method of quantitative magnetic resonance temperature imaging during high intensity ultrasound ablation of canine prostates. Setup error in external beam radiotherapy leads to undertreating therapeutic targets, damaging nearby normal tissue, and limits maximum treatment dose. I determined the improved accuracy of on-line correction of setup errors achievable using kilovoltage- versus megavoltage-localization radiographs.

- Mohanty, S, Chen Z, Li K, Ribeiro GM, Klockow J, Yerneni K, **Pisani L**, Chin FT, Mitra S, Cheshier S, Chang E, Gambhir SS, Rao J, Loadman PM, Falconer RA, Daldrup-Link HE. "A Novel Theranostic Strategy for MMP-14-Expressing Glioblastomas Impacts Survival." *Molecular Cancer Therapeutics* 16, no. 9 (September 2017): 1909–21. PMID 28659432
- Butts-Pauly K, Rieke V, **Pisani L**, Sommer G, Bouley D, Diederich C, Ross A, Nau W, Kinsey A, Dumoulin C, Watkins R, "Assessment of MR Thermometry During High Intensity Ultrasound Ablation of the Canine Prostate", AIP Conference Proceedings, 2006 May;829:76-80.
- Pisani LJ**, Ross AB, Diederich CJ, Nau WH, Sommer FG, Glover GH, Butts K, "Effects of Spatial and Temporal Resolution for MR Image-guided Thermal Ablation of Prostate with Transurethral Ultrasound", submitted to JMRI, 2004. PMID 15971190
- L. Pisani**, D. Lockman, D. Jaffray, D. Yan, A. Martinez, and J. Wong, "Setup Error in Radiotherapy: On-line Correction Using Electronic Kilovoltage and Megavoltage Radiographs", *Int. J. Radiation Oncology Biol. Phys.*, **47**(3), pp. 825-839, 2000. PMID 10837971

2. Multimodality pre-clinical imaging:

MRI is an important modality in pre-clinical research for non-destructive longitudinal measurements, and for development of contrast agents for clinical translation. In longitudinal studies I have helped groups to optimize MRI acquisition to, non-invasively define stroke infarct volume for PET imaging of neuroinflammation in mice, to image fetal morphology in a study demonstrating that infection of pregnant mice with *Listeria monocytogenes* induces fetal bradycardia. I have helped with study design and acquisition optimization for MRI contrast agent development for non-invasive assessment of: elastin deficit in a marfan mouse aneurysm model using an elastin-specific contrast agent, cancer immune responses using a novel USPIO, and innate immune responses to stem cell transplants via endogenous labeling of macrophages with ferumoxytol.

- Daldrup-Link HE, Chan C, Lenkov O, Taghavigarmestani S, Nazekati T, Nejadnik H, Chapelin F, Khurana A, Tong X, Yang F, **Pisani L**, Longaker M, Gambhir SS, "Detection of Stem Cell Transplant Rejection with Ferumoxytol MR Imaging: Correlation of MR Imaging Findings with Those at Intravital Microscopy" *Radiology* 2017: 161139. PMID 28128708
- Okamura H, **Pisani LJ**, Dalal AR, Emrich F, Dake BA, Arakawa M, Onthank DC, Cesati RR, Robinson SP, Milanesi M, Kotek G, Smit H, Connolly AJ, Adachi H, McConnell MV, Fischbein MP "Assessment of elastin deficit in a marfan mouse aneurysm model using an elastin-specific magnetic resonance imaging contrast agent" *Circulation. Cardiovascular imaging*, 2014; 7 (4): 690-696. PMID 24814820
- Lartey FM, Ahn GO, Shen B, Cord KT, Smith T, Chua JY, Rosenblum S, Liu H, James ML, Chernikova S, Lee SW, **Pisani LJ**, Tirouvanziam R, Chen JW, Palmer TD, Chin FT, Guzman R, Graves EE, Loo BW Jr., "PET Imaging of Stroke-Induced Neuroinflammation in Mice Using [18F]PBR06." *Mol Imaging Biol.* 2013 Jul 9. PMID 23836504

Shi Q, **Pisani LJ**, Lee YK, Messing S, Ansari C, Bhaumik S, Lowery L, Lee BD, Meyer DE, Daldrup-Link HE. "Evaluation of the Novel USPIO GEH121333 For MR Imaging of Cancer Immune Responses" Contrast Media Mol Imaging. 2013 May-Jun;8(3):281-8. PMID: PMC3662997

3. Clinical MRI research

Reducing the dose of clinical diagnosis and minimizing invasive biopsies are particularly compelling needs in pediatric medicine. I helped to establish a faster clinical PET/MRI protocol for paediatric cancer staging, and to assess the feasibility of using ferumoxytol to noninvasively detect transplant rejection in kidney allograft recipients.

Aghighi M, Theruvath A, Pareek A, **Pisani L**, Alford R, Muehe A, Sethi T, Holdsworth S, Hazard F, Gratzinger D, Luna-Fineman S, Advani R, Spunt S, Daldrup-Link H. "Magnetic Resonance Imaging of Tumor Associated Macrophages: Clinical Translation." Clin Cancer Res. 2018 May 15. PMID: 29764855

Aghighi M, **Pisani L**, Theruvath AJ, Muehe AM, Donig J, Khan R, Holdsworth SJ, Kambham N, Concepcion W, Grimm PC, Daldrup-Link HE. "Ferumoxytol Is Not Retained in Kidney Allografts in Patients Undergoing Acute Rejection" Mol Imaging Biol. 2017 Apr 14. PMID 26569397

Aghighi M, **Pisani L**, Sun Z, Klenk C, Madnawat H, Fineman S, Advani R, von Eyben R, Owen D, Quon A, Moseley M, Daldrup-Link H. "Speeding up PET/MR for cancer staging of children and young adults" European radiology 2016. PMID 27048532

4. Clinical MRI pulse sequence development

I developed a restricted field of view approach for imaging a dynamic time series of volumes of limited spatial extent within a larger subject. I helped to show multiple advantages of multi-echo echo-planar imaging (EPI) over conventional single-echo EPI for standard blood-oxygenation-level-dependent functional MRI experiments.

Schmiedeskamp H, Newbould RD, **Pisani LJ**, Skare S, Glover GH, Pruessmann KP, Bammer R, "Improvements in parallel imaging accelerated functional MRI using multiecho echo-planar imaging", Magn Reson Med. 2010 Mar;63(4):959-969. PMID: PMC2906757

Pisani LJ, Bammer R, Glover GH, "Restricted Field of View Magnetic Resonance Imaging of a Dynamic Time Series", Magn Reson Med. 2007 Feb;57(2):297-307. PMID 17260360

Complete List of Published Work in MyBibliography:

[http://www.ncbi.nlm.nih.gov/pubmed/?term=\(\(Pisani\)+AND+\(stanford+OR+beaumont\)+OR+Laura+J.+Pisani](http://www.ncbi.nlm.nih.gov/pubmed/?term=((Pisani)+AND+(stanford+OR+beaumont)+OR+Laura+J.+Pisani)

D. Research Support

Ongoing Research Support

2R01AR054458 (Daldrup-Link) 8/01/2011 - 7/31/2017

NIH/NIAMS

Title: Monitoring Stem Cell Engraftment in Arthritic Joints with MR Imaging

Role: Co-investigator

Goal: To develop a clinically applicable MR imaging technique, which provides an early diagnosis of complications of the engraftment process of matrix associated stem cell transplants (MASI).

2P30CA124435-09 (Mitchell) 06/04/07-05/31/21

NCI

Title: Stanford University Cancer Institute

Role: Support personnel

Goal: To build on institutional strengths in both technology development and translational research to foster interdisciplinary collaborations directed at the detection, prevention and treatment of cancer patients.

Completed Research Support

1F32EB005572-01A1 (Laura J. Pisani, Ph.D.) 09/01/06 - 12/31/07
NATIONAL INSTITUTE OF BIOMEDICAL IMAGING AND BIOENGINEERING
Fetal Functional Magnetic Resonance Imaging

In order to develop an f-fMRI technique, the 3 specific aims were: 1) Optimize a restricted-field-of-view f-fMRI sequence ex utero, 2) Implement restricted-field-of-view f-fMRI sequence in utero, and 3) Develop motion correction strategies for f-fMRI.

P41 RR09784 (Gary H. Glover, Ph.D.) 01/01/95 – 5/31/01 100%
NIH/NCRR

Center of Advanced MR Technology at Stanford (P41RR09784)

The goals of this project are to develop innovative MR techniques for fundamental anatomic, physiologic and pathophysiologic studies involving animals and humans and to serve the academic and scientific community through collaborations, education, and access to Center facilities and resources.