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## BIOGRAPHICAL SKETCH

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NAME Meiyappan Solaiyappan	POSITION TITLE Research Associate		
eRA COMMONS USER NAME (credential, e.g., agency login) msolaiy1			
EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	MM/YY	FIELD OF STUDY
College of Engineering, Chennai, India	B.E.	1979-84	Electronics and Communication

### A. Personal Statement

My research experience is in the field of biomedical visualization with particular focus on multi-modality registration and multi-scale visualization. I collaborate with principal investigators in our institution on several key research projects ranging from head & neck, cardiothoracic imaging, interventional radiology systems and cancer imaging. My relevant experience with respect to current application is my collaboration with the cancer imaging group where I developed visualization software for specific analysis requirements such as quantifying lysosome trafficking and collagen porosity. My experience in visualization over more than fifteen years helps to come up with new approaches to solve complex image analysis problems that take full advantage of the state of the art computing technology. I will apply this expertise to assist users of the PET-MR Scanner and serve on the Oversight Committee.

### B. Positions and Honors

#### Positions and Employment

1984-88	Graphics Engineer ('84), Senior Graphics Engineer ('85), Research & Development Division, Wipro Information Technology Ltd, Bangalore, India
1988-92	Project Leader, Patient Monitoring Workstation, Biomedical Software Research, Thorax Anesthesiology, Thorax Centre, Erasmus University Rotterdam, The Netherlands
1993-98	Sr. Software Engineer ('93), Associate Research Staff ('94), Sr. Research Scientist ('98) Institute of Systems Science ('93-'97), Center for Information Enhanced Medicine ('98), National University of Singapore, Kent Ridge, Singapore.
1998	Faculty Research Associate, Department of Radiology, Johns Hopkins University, School of Medicine, Baltimore, USA

### C. Selected Peer-reviewed Publications

#### Recent publications of importance to the field (in chronological order)

1. Bhujwalla, Z. M., Artemov, D., Solaiyappan, M. Insights into Tumor Vascularization using Magnetic Resonance Imaging and Spectroscopy. *Experimental Oncology*, 2000; Vol. 22, No. 1, 3-7.
2. Bhujwalla ZM, Artemov D, Natarajan K, Ackerstaff E, Solaiyappan M. Vascular differences detected by MRI for metastatic versus nonmetastatic breast and prostate cancer xenografts. *Neoplasia*. 2001 Mar-Apr;3(2):143-53.
3. Artemov D, Solaiyappan M, Bhujwalla ZM. Magnetic resonance pharmacangiography to detect and predict chemotherapy delivery to solid tumors. *Cancer Res*. 2001 Apr 1;61(7):3039-44.
4. Bhujwalla, Z.M., Artemov, D., Ballesteros, P., Cerdan, C., Gillies, R.J. and Solaiyappan, M. Combined vascular and extracellular pH imaging of solid tumors. *NMR in Biomedicine*, 2002 Apr;15(2):114-9.
5. Shahar KH, Solaiyappan M, Bluemke DA, Quantitative differentiation of breast lesions based on three-dimensional morphology from magnetic resonance imaging, *Journal of Computer Assisted Tomography*, 2002; 26 (6): 1047-1053.
6. Zaver M. Bhujwalla, Dmitri Artemov, Kshama Natarajan, Meiyappan Solaiyappan, Peggy Kollars, Paul E.G. Kristjansen, Reduction of Vascular and Permeable Regions in Solid Tumors Detected by Macromolecular Contrast Magnet Resonance Imaging after Treatment With Antiangiogenic Agent TNP-470, *Clinical Cancer Research*, 2003; Vol. 9, 355-362.

7. Kristine Glunde, Sandra E. Guggino, Meiyappan Solaiyappan, Arvind Pathak, Yoshitaka Ichikawa and Zaver M Bhujwalla, Extracellular acidification alters lysosomal trafficking in human breast cancer cells, *Neoplasia*, 2003; 5(6): 533-545.
8. Adrienne M. Williams, Meiyappan Solaiyappan, Harpreet K. Pannu, David Bluemke, Guy Shechter and P. Gearhart, 3-Dimensional magnetic resonance imaging modeling of the pelvic floor musculature in classic bladder exstrophy before pelvic osteotomy, *The Journal of Urology*, 2004; Vol. 172, 1702-1705.
9. Kraitchman DL, Tatsumi M, Gilson WD, Ishimori T, Kedziorek D, Walczak P, Segars WP, Chen HH, Fritzsche D, Izbudak I, Young RG, Marcelino M, Pittenger MF, Solaiyappan M, Boston RC, Tsui BM, Wahl RL, Bulte JW, Dynamic imaging of allogeneic mesenchymal stem cells trafficking to myocardial infarction. *Circulation*. 2005 Sep 6;112(10):1451-61.
10. J. Fritz, M. Solaiyappan, H. Tandri, C. Bomma, A. Genc, C. D. Claussen, J. A.C. Lima, D.A. Bluemke, Right Ventricle Shape and Contraction Patterns and Relationship to MRI findings, *Journal of Computer Assisted Tomography*, 2005; 29(6): 725-733.
11. Sathyanarayana S, Aksit P, Arepally A, Karmarkar PV, Solaiyappan M, Atalar E., Tracking planar orientations of active MRI needles. *J Magn Reson Imaging*. 2007 Aug;26(2):386-91.
12. Ouwkerk R, Bottomley PA, Solaiyappan M, Spooner AE, Tomaselli GF, Wu KC, Weiss RG. Tissue sodium concentration in myocardial infarction in humans: a quantitative <sup>23</sup>Na MR imaging study. *Radiology*. 2008 Jul;248(1):88-96. PMID:PMC2572767.
13. Tang L, Merkle N, Schär M, Korosoglou G, Solaiyappan M, Hombach V, Stuber M. Volume-targeted and whole-heart coronary magnetic resonance angiography using an intravascular contrast agent. *J Magn Reson Imaging*. 2009 Nov;30(5):1191-6. *PMC Journal - in Process*.
14. Kakkad SM, Solaiyappan M, O'Rourke B, Stasinopoulos I, Ackerstaff E, Raman V, Bhujwalla ZM, Glunde K, Hypoxic tumor microenvironments reduce collagen I fiber density, *Neoplasia*. 2010 Aug;12(8):608-17. PMID:PMC2915405.

#### **D. Research Support**

##### **Ongoing Research Support**

2P50CA103175-06A2 (Bhujwalla)

09/22/11 - 07/31/16

NCI JHU ICMIC Program

This center grant funds an *in vivo* Cellular and Molecular Imaging Center at Johns Hopkins. The program consists of four research components, four developmental projects, one career development award and four resources.

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R01 CA134695 (Glunde/Heeren) 07/01/08-06/30/13

NIH/NCI/NIBIB

Imaging hypoxia-driven signaling pathways in the breast tumor microenvironment

The aim of this application is to discover, identify, and validate biomolecules that are differentially expressed under hypoxia in breast tumor models using mass spectrometry imaging.

NIH 1R01CA136756-01A1 (Bhujwalla) 07/01/09-06/30/14

Imaging Hypoxia and Cancer Stem Cells

The goal of this project is to understand the role of the tumor microenvironment and choline metabolism in harboring or creating stem-like cancer cells.

NIH 2R01CA073850 (Bhujwalla) 12/01/09-11/30/14

Functional Imaging of the Metastatic Phenotype

To determine if cancer cell dissemination occurs from hypoxic or normoxic tumor regions in metastasis permissive environments, and investigate the sequence of establishment of hypoxic foci in lymphatic metastatic sites and ascites.

NHLB R01HL944610(Halperin) 07/15/09-05/31/14

Improved targeting and assessment of electrophysiology intervention

Using an electrophysiology (EP) system compatible with real-time magnetic resonance imaging (MRI) to show that the imaging modality can be used to successfully guide catheters to various positions within the heart and record intracardiac electrograms

**Completed Projects Within Last Three Years**

NCI P50CA103175-05S1 (Bhujwalla)

08/01/03-07/31/11 NCE

JHU ICMIC Program

This center grant funds an *in vivo* Cellular and Molecular Imaging Center at Johns Hopkins. The program consists of four research components, developmental projects, career development awards and five resources. The competitive renewal of this application received a priority score of 23, and we are currently completing formalities prior to receiving the notice of grant award.

NIH R21 CA128957 (Bhujwalla)

07/01/07-06/30/10

Image-Guided Pro-Drug/Enzyme Therapy

The aim of this R21 is to design, characterize and test prototype novel agents for MR and optical image-guided prodrug enzyme therapy of the MDA-MB-231 human breast cancer xenograft allowing the visualization of the prodrug enzyme to optimize the timing of the prodrug administration to when the enzyme concentration in tumor relative to normal tissue is the highest.

NIH R01EB003543 (Mori)

09/30/04 - 07/31/09

MR Microimaging of Mouse Brain Development

The goal of this grant is to study mouse brain development using diffusion tensor imaging of postmortem mouse brains samples.