

**BIOGRAPHICAL SKETCH**

NAME Arvind P. Pathak		POSITION TITLE Assistant Professor	
EDUCATION/TRAINING			
INSTITUTION AND LOCATION	DEGREE	YEAR(s)	FIELD OF STUDY
University of Poona, Pune, India	B.E.	1993	Industrial Electronics
Medical College of Wisconsin and Marquette University, Milwaukee, WI	Ph.D.	2001	Biophysics and Biomedical Engineering
Johns Hopkins University School of Medicine, Baltimore, MD	Postdoctoral Fellowship	2001-2003	Russell H. Morgan Department of Radiology and Radiological Science

**A. Positions and Honors.****Positions and Employment**

- 2005- Assistant Professor, Departments of Radiology and Oncology, The Johns Hopkins University School of Medicine.
- 2003-2005 Instructor, Russell H. Morgan Department of Radiology and Radiological Science, The Johns Hopkins University School of Medicine.
- 2001-2003 Postdoctoral Fellow, Russell H. Morgan Department of Radiology and Radiological Science, Johns Hopkins University School of Medicine.
- 1996-2001 Functional Imaging Fellow, Dept. of Biomedical Engineering, Marquette University and Biophysics Research Institute, Medical College of Wisconsin, Milwaukee, WI.
- 1994-1996 Research Assistant, Dept. of Biomedical Engineering, Marquette University, Milwaukee, WI.
- 1992-1993 Engineering Intern, Microprocessor-based Design Team, Alfa-Laval India Ltd., Poona, India.

**Other Experience and Professional Memberships**

- 1996- International Society for Magnetic Resonance in Medicine (ISMRM).
- 2004- Society for Molecular Imaging (SMI)
- 2004- American Association of Cancer Research (AACR)

**Honors and Awards**

- 2005 *Elmer L. Lindseth Lectureship*, Dept. of Biomedical Engineering, Case Western Reserve University.
- 2004 *The Andrew Moissoff Young Investigator Award*  
Awarded by the Lymphatic Research Foundation.
- 2004 *The Susan G. Komen Breast Cancer Foundation Young Investigator Scholarship*  
Awarded by the Lymphatic Research Foundation.
- 2002 *The Bill Negendank Young Investigator Award*  
*First Place* for "Outstanding young investigators in the field of cancer MR", Awarded by ISMRM
- 2001 *Journal Publication Award*, Medical College of Wisconsin Cancer Center Trainee Research Paper Competition
- 2000, 2003, 1999, 1998 *Student Stipend Awards* - International Society for Magnetic Resonance in Medicine (ISMRM)
- 1997-2000 *Whitaker Foundation Functional Imaging Fellowship*, Dept. of Biomedical Engineering, Marquette University and Biophysics Research Institute, Medical College of Wisconsin
- 1996 *Student Travel Award* – Bioengineering Section of the American Society of Mechanical Engineering (ASME).
- 1994-96 *Research Assistantship*, National Science Foundation, Dept. of Biomedical Engineering, Marquette University.

**B. Peer-reviewed publications (in chronological order)**

1. **Pathak AP**, Goodman SL and Pepper MS, "Circulating and Imaging Markers for Angiogenesis", *Clinical Cancer Research*, (in revision), 2007.
2. Raman V, **Pathak AP**, Glunde K, Artemov D and Bhujwala ZM, "Magnetic Resonance Imaging of Transgenic Mouse Models of Cancer", *NMR in Biomed*, (in press), 2007.
3. Glunde K, **Pathak AP**, and Bhujwala ZM, "Molecular-Functional Imaging of Cancer: To Image and Imagine", *Trends in Molecular Medicine*, (in press), 2007
4. Raman V, Artemov D, **Pathak AP**, Winnard PT, Yudina A, Bogdanov A, and Bhujwala ZM, "Hypoxic regions are characterized by low vascular volume and high permeability: A combined MR and optical imaging study of a human prostate cancer model", *Cancer Research*, 66(20):1-8, 2006.
5. **Pathak AP**, Artemov D, Neeman M, and Bhujwala ZM. "Lymph node metastasis in breast cancer xenografts is associated with increased regions of extravascular drain, lymphatic vessel area and invasive phenotype", *Cancer Research*, 66(10):5151-58, 2006.
6. Mironchik Y, Winnard P, Vesuna F, Kato Y, Wildes F, **Pathak AP**, Kominsky S, Artemov D, Bhujwala ZM, vanDiest P, Burger H, Glackin C and Raman V. "Twist overexpression induces in vivo angiogenesis and correlates with chromosomal instability in breast cancer", *Cancer Research*, 65(23):10801-9, 2005.
7. **Pathak AP**, Artemov D, Ward DB, Jackson DG, Neeman M, and Bhujwala ZM. "Characterizing extravascular fluid transport of macromolecules in the tumor interstitium by MRI", *Cancer Research*, 65(4):1425-32, 2005.
8. Gimi B, **Pathak AP**, Ackerstaff E, Glunde K, Artemov D and Bhujwala ZM. "Molecular Imaging Of Cancer: Applications of MR Methods", *Proceedings of the IEEE*, v93:784-799, 2005.
9. **Pathak AP**, Dmitri A, and Bhujwala ZM. "A Novel System for Continuous In Vivo Monitoring of Contrast Dynamics in a Mouse Tumor Model", *Magnetic Resonance in Medicine*, 51(3):612-615, 2004.
10. **Pathak AP**, Bhujwala ZM and Pepper MS. "Visualizing Function in the Tumor-Associated Lymphatic System", *Lymphatic Research in Biology*, 2(4):165-72, 2004.
11. Schmainda KM, Rand SD, Joseph AM, Lund R, Ward BD, **Pathak AP**, Ulmer JL, Baddrudjoja MA, Krouwer HG. "Characterization of a first-pass gradient-echo spin-echo method to predict brain tumor grade and angiogenesis", *Am J Neuroradiol*. Oct; 25(9):1524-32. 2004
12. **Pathak AP**, Gimi B, Glunde K, Ackerstaff E, Artemov D and Bhujwala ZM. "Molecular And Functional Imaging Of Cancer: Advances in MRI and MRS", *Methods in Enzymology: Imaging in Biological Research, Part B*, v386:1-58, 2004.
13. Glunde K, Guggino, SE, Solaiyappan M, **Pathak AP**, Ichikawa Y and Bhujwala ZM. "Extracellular Acidification Alters Lysosomal Trafficking In Human Breast Cancer Cells", *Neoplasia*, 5(6): 533-545, 2003.
14. **Pathak AP**, Rand SD, and Schmainda KM. "The Effect of Brain Tumor Angiogenesis on the In Vivo Relationship between the Gradient Echo Relaxation Rate Change ( $\Delta R2^*$ ) and Contrast Agent (MION) Dose", *Journal of Magnetic Resonance Imaging*, 18(4): 397-403, 2003.
15. Biswal BB, **Pathak AP**, Ulmer JL, and Hudetz AG. "Decoupling of the Hemodynamic and Activation-Induced Delays in fMRI", *Journal of Computer Assisted Tomography*, 27(2): 219-225, 2003.
16. Badruddoja MA, Krouwer HG, Rand SD, Rebro KJ, **Pathak AP**, and Schmainda KM. "Anti-Angiogenic Effects of Dexamethasone in 9L Gliosarcoma Assessed by MRI Cerebral Blood Volume Maps", *Neuro-oncology*, 5(4): 235-243, 2003 – **Cover Article**.
17. **Pathak AP**, Schmainda KM, Ward BD, Linderman JR, Rebro KJ, and Greene AS. "MR-derived Cerebral Blood Volume Maps: Issues Regarding Histological Validation and Assessment of Tumor Angiogenesis", *Magnetic Resonance in Medicine*, 46(4): 735-747, 2001.

18. Donahue KM, Krouwer HG, Rand SD, **Pathak AP**, Marszalkowski CS, Censky SC, Prost RW. "Utility of simultaneously acquired gradient-echo and spin-echo cerebral blood volume and morphology maps in brain tumor patients", *Magnetic Resonance in Medicine*, 43(6): 845-853, 2000.
19. **Pathak AP**, Silver-Thorn MB. "A Rate Controlled Indentor for *In Vivo* Analysis of Residual Limb Tissues", *IEEE Transactions on Rehabilitation Engineering*, 6(1): 16-30, 1998.

### INVITED PAPERS

1. Gimi B, **Pathak AP**, Ackerstaff E, Glunde K, Artemov D and Bhujwalla ZM. "Molecular Imaging Of Cancer: Applications of MR Methods", *Proceedings of the IEEE*, v93:784-799, 2005.
2. **Pathak AP**, Gimi B, Glunde K, Ackerstaff E, Artemov D and Bhujwalla ZM. "Molecular And Functional Imaging Of Cancer: Advances in MRI and MRS", *Methods in Enzymology: Imaging in Biological Research, Part B*, v386:1-58, 2004.
3. **Pathak AP**, Artemov D, Solaiyappan M, and Bhujwalla ZM. "MRI May Permit Assessment of Tumor Growth Processes", *Diagnostic Imaging*, 25(4): 25-33, 2003.

### BOOK CHAPTERS

1. Jacobs MA, Glunde K, Gimi B, **Pathak AP**, Ackerstaff EA, Artemov D, and Bhujwalla ZM, "Molecular And Functional MR Imaging Of Cancer", in *Molecular Imaging*, CRC Press, 2006 (in press).
2. **Pathak AP**, "Magnetic Resonance Imaging of Tumor Biology", in *Magnetic Resonance Imaging: Methods and Biological Applications*, Humana Press, Prasad P. Ed. 2005.
3. Bhujwalla ZM, Ackerstaff E, Artemov D, Glunde K, **Pathak AP**, Raman V and Solaiyappan M, "In Vivo Cellular and Molecular Imaging of Cancer", in *Biomedical Magnetic Resonance*, Jaypee Press, Jagannathan NR. Ed: 247-256, 2005.
4. Bhujwalla ZM, Glunde K, Ackerstaff E, **Pathak AP**, Gimi B, Mori N, Raman V and Artemov D, "Functional and Molecular MRI of Preclinical Cancer Models in Drug Discovery and Development", in *In Vivo MR Techniques in Drug Discovery and Development*, CRC Press, 2005.

### JOURNAL REVIEWING ACTIVITIES

1. Cancer Research
2. Neoplasia
3. Cancer Epidemiology Biomarkers and Prevention
4. Magnetic Resonance in Medicine
5. Molecular Imaging
6. Contrast Media and Molecular Imaging
7. Journal of Applied Physiology

### GRANT REVIEWING ACTIVITIES

1. Michael Smith Foundation for Health Research, Vancouver, Canada.

### INVITED LECTURES

1. ISMRM Workshop on Frontiers in Metabolic, Molecular and Clinical Imaging, PA, October, 2006.
2. Dept. of Pathology, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, April, 2006.
3. Dept. of Biomedical Engineering, Case Western University, Ohio, Feb 2005.

4. Dept. of Radiology, Johns Hopkins University School of Medicine, MD, April 2004.
5. MRI and Spectroscopy Center, University of Kentucky College of Medicine, Nov 2003.
6. Dept. of Biomedical Engineering, Rutgers University, NJ, Dec 2002.
7. Dept. of Radiology, University of Medicine and Dentistry of New Jersey, NJ, July 2001.
8. Dept. of Radiology and Oncology, Johns Hopkins University School of Medicine, MD, July 2001.

## PRESENTATIONS

1. Workshop on Frontiers in Metabolic, Molecular and Clinical Imaging, PA, October, 2006.
2. 5<sup>th</sup> Annual Meeting of the Society of Molecular Imaging, Big Island, HA, 2006.
3. 14<sup>th</sup> Scientific Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM), Seattle, WA, 2006.
4. 13<sup>th</sup> Scientific Meeting of ISMRM, Miami, FL, 2005.
5. "Frontiers in Biomedical Imaging", Cleveland, OH, 2005.
6. 3<sup>rd</sup> Annual Meeting of the Society of Molecular Imaging, St. Louis, MO, 2004.
7. MR Research Seminar Series, Dept. of Radiology, Baltimore, MD, 2004.
8. 12<sup>th</sup> Scientific Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM), Kyoto, Japan, 2004.
9. 2<sup>nd</sup> Annual Meeting of the Society of Molecular Imaging, San Francisco, CA, 2003.
10. 11<sup>th</sup> Scientific Meeting of the ISMRM, Toronto, Canada, 2003.
11. Workshop on *In Vivo* Functional and Molecular Assessment of Cancer, Santa Cruz, CA, 2002.
12. 10<sup>th</sup> Scientific Meeting of the ISMRM, Oahu, Hawaii, 2002.
13. Biophysics Seminar Series, Medical College of Wisconsin, Milwaukee, WI, 2001.
14. 9<sup>th</sup> Scientific Meeting of the ISMRM, Glasgow, Scotland, 2001.
15. 8<sup>th</sup> Scientific Meeting of the ISMRM, Denver, CO, 2000.
16. 7<sup>th</sup> Scientific Meeting of the ISMRM, Philadelphia, PA, 1999.
17. 6<sup>th</sup> Scientific Meeting of the ISMRM, Sydney, Australia, 1998.
18. Annual Biomedical Engineering Society (BMES) Fall Meeting, State College, PA, 1996.
19. Annual American Society of Mechanical Engineers (ASME) Winter Meeting, Atlanta, GA, 1996.
20. Midwest Biomedical Engineering Graduate Student Conference, Milwaukee, WI, 1995-2001.

## PUBLICATIONS IN REFEREED CONFERENCE PROCEEDINGS

1. **Pathak AP**, "Characterizing "Angiogenic" Contrast And Extracellular Matrix Integrity In Tumors Using MRI", *ISMRM MR of Cancer Study Group Workshop on Frontiers in Metabolic, Molecular and Clinical Imaging*, Poconos, PA, USA, October 13-16, 2006.
2. Penet MF, Pathak AP, Solaiyappan M, Raman V, Ballesteros Garcia P, Artemov D, Bhujwala ZM, "Characterization of Prostate Cancer Xenografts in Orthotopic and Subcutaneous Sites", *ISMRM MR of Cancer Study Group Workshop on Frontiers in Metabolic, Molecular and Clinical Imaging*, Poconos, PA, USA, October 13-16, 2006.
3. **Pathak AP**, Kato Y, Zhang J, Jones M. "A Novel Lectin-targeted Contrast Agent for Molecular MR Imaging of Blood Vessels", *Molecular Imaging* 5(3): 292, Sept 2006.
4. **Pathak AP**, Artemov D, Raman V, Bhujwala ZM. "Combined Magnetic Resonance and Fluorescence Imaging of ECM Remodeling Induced by Hypoxia in Solid Tumors", *Molecular Imaging* 5(3): 230, Sept 2006.

5. **Pathak AP**, Artemov D, Raman V, and Bhujwalla ZM. "Characterizing Hypoxia-induced Alterations in ECM Integrity of Solid Tumors In Vivo Using MRI and Fluorescent Microscopy", *Proc. ISMRM, 14<sup>th</sup> Annual Mtg*, 2006, Seattle, WA.
6. Artemov D, Ballesteros P, Bhujwalla ZM, **Pathak AP**, Raman V and Solaiyappan M, " Characterizing the Physiological Environments of a Prostate Cancer Xenograft in Orthotopic and Subcutaneous Sites", *Proc. ISMRM, 14<sup>th</sup> Annual Mtg*, 2006, Seattle, WA.
7. **Pathak AP**, Artemov D, Neeman M, Bhujwalla ZM. "Lymph Node Metastasis in Breast Cancer Xenografts is Associated with Increased Regions of Extravascular Drain, Lymphatic Vessel Area, and Invasive Phenotype". *AACR Special Conference - Antiangiogenesis and Drug Delivery to Tumors: Bench to Bedside and Back*, Waltham, MA, 2005.
8. **Pathak AP**, Artemov D, Neeman M, and Bhujwalla ZM, "Lymph Node Metastasis in Breast Cancer Xenografts is Associated with Increased Regions of Extravascular Drain, Lymphatic Vessel Area and Invasive Phenotype", *Proc. AACR Conference on Anti-angiogenesis and Drug Delivery to Tumors*, 2005, Boston, MA.
9. **Pathak AP**, Artemov D, Ward DB, Jackson DG, Neeman M, and Bhujwalla ZM. "Characterizing extravascular fluid transport of macromolecules in the tumor interstitium by MRI", *Proc. ISMRM, 13<sup>th</sup> Annual Mtg*, 2005, Miami, FL.
10. **Pathak AP**, Artemov D, Neeman M, and Bhujwalla ZM. "Lymph node metastasis depends upon lymphatic-convective transport, lymphatic vessel density and invasive phenotype", *Proc. ISMRM, 13<sup>th</sup> Annual Mtg*, 2005, Miami, FL.
11. Kim YR, Rebro K, **Pathak AP** and Schmainda KM. "Multi-parameter characterization of a rat cerebral tumor model using 2D GRE: Measurements of blood volume, water exchange, and inflow velocity", *Proc. ISMRM, 13<sup>th</sup> Annual Mtg*, 2005, Miami, FL.
12. Glunde K, Raman V, Solaiyappan M, **Pathak AP** and Bhujwalla ZM. "Hypoxia increases cellular phosphocholine and total choline levels in human prostate cancer cells", *Proc. ISMRM, 13<sup>th</sup> Annual Mtg*, 2005, Miami, FL.
13. **Pathak AP**, Artemov D, Jackson DG, Raman V, Neeman M, and Bhujwalla ZM. "Imaging Alterations in the Angiogenic and Lymphangiogenic Phenotype Following VEGF-A Overexpression in a Human Breast Cancer Model", *ISMRM MR of Cancer Study Group Workshop on Advances In Experimental and Clinical MR in Cancer Research*, Manchester, UK, October 16-18, 2004.
14. **Pathak AP**, Artemov D, Jackson DG, Neeman M, and Bhujwalla ZM. "Mapping Intratumoral Lymphatic-Convective Drain in Vivo using MRI", *ISMRM MR of Cancer Study Group Workshop on Advances In Experimental and Clinical MR in Cancer Research*, Manchester, UK, October 16-18, 2004.
15. **Pathak AP**, Artemov D, Jackson DG, Raman V, Neeman M, and Bhujwalla ZM. "Imaging Alterations in the Angiogenic and Lymphangiogenic Phenotype Following VEGF-A Overexpression in a Human Breast Cancer Model", *Proc. Socy for Molec Imag, 3<sup>rd</sup> Annual Mtg*, 2004, St. Louis, MO.
16. **Pathak AP**, Artemov D, Jackson DG, Neeman M, and Bhujwalla ZM. "Mapping Intratumoral Lymphatic-Convective Drain in Vivo Using MRI", *Proc. Socy for Molec Imag, 3<sup>rd</sup> Annual Mtg*, 2004, St. Louis, MO.
17. **Pathak AP**, Artemov D, and Bhujwalla ZM. "A Multi-Resolution Adaptive Filtering for Preserving Information in Dynamic Functional Imaging", *Proc. ISMRM, 12<sup>th</sup> Annual Mtg*, 2004, Kyoto, Japan.
18. **Pathak AP**, Artemov D, Jackson DG, Neeman M, and Bhujwalla ZM. "Differences in Lymphatic Drain Following VEGF Overexpression in a Human Breast Cancer Model ", *Proc. ISMRM, 12<sup>th</sup> Annual Mtg*, 2004, Kyoto, Japan.

19. Solaiyappan M, **Pathak AP**, Artemov D, Raman V and Bhujwalla ZM. "VEGF Overexpression Alters Co-Localization Patterns Of Vascular And Metabolic Parameters", *Proc. ISMRM, 12<sup>th</sup> Annual Mtg*, 2004, Kyoto, Japan.
20. **Pathak AP**, Artemov D, Jackson DG, Dafni H, Neeman M, and Bhujwalla ZM. "Probing Intratumoral Lymphangiogenesis and Lymphatic Function Using Optical Imaging", *Proc. Socy for Molec Imag, 2<sup>nd</sup> Annual Mtg*, 2003, San Francisco, CA.
21. **Pathak AP**, Artemov D, Jackson DG, Neeman M, and Bhujwalla ZM. "Intratumor and Intertumor Heterogeneity in Contrast Agent Kinetics as Assessed by Functional MRI - Initial Results with Implications for Metastasis", *Proc. ISMRM, 11<sup>th</sup> Annual Mtg*, 2003, Toronto, Canada.
22. Bhujwalla ZM, Raman V, Atretov D, Mironchik Y, Collars P, **Pathak AP** and Solaiyappan M. "MRI of Prostate Tumors Overexpressing VEGF Exhibit Distinct Alterations Of Vascular Permeability", *Proc. ISMRM, 11<sup>th</sup> Annual Mtg*, 2003, Toronto, Canada.
23. Schmainda KM, Rand SD, Joseph A, Hanson R, Ward BD, **Pathak AP**, Baddrudoja M, and Krouwer HG. "A Combined Gradient-Echo/Spin-echo DSC Method: A Surrogate Marker for Brain Tumor Histologic Grade and Angiogenesis in Patients", *Proc. ISMRM, 11<sup>th</sup> Annual Mtg*, 2003, Toronto, Canada.
24. **Pathak AP**, Artemov D, Jackson DG, Neeman M, and Bhujwalla ZM. "Intratumor and Intertumor Heterogeneity in Contrast Agent Kinetics as Assessed by Functional MRI - Initial Results with Implications for Metastasis", *ISMRM Workshop on In Vivo Functional and Molecular Assessment of Cancer*, Santa Cruz, CA, USA, October 19-21, 2002.
25. Raman V, Artemov A, Mironchik Y, **Pathak AP** and Bhujwalla ZM. "Combined Molecular and Functional Imaging Characterization of Tumor Hypoxia, Vascularization and Metabolism", *ISMRM Workshop on In Vivo Functional and Molecular Assessment of Cancer*, Santa Cruz, CA, USA, October 19-21, 2002.
26. Raman V, Artemov A, Mironchik Y, **Pathak AP** and Bhujwalla ZM. "Combined Molecular and Functional Imaging Characterization of the Tumor Microenvironment", *Molecular Imaging* 1(3): 186, July 2002.
27. Schmainda KM, Rand SD, Joseph A, Ward BD, Hanson R, **Pathak AP**, Baddrudoja M, and Krouwer HG. "Dynamic Gradient-Echo and Spin-Echo Measurements of Tumor Blood Volume and Vascular Morphology Predict Tumor Grade in Patient's with Brain Tumors", *ISMRM Workshop on In Vivo Functional and Molecular Assessment of Cancer*, Santa Cruz, CA, USA, October 19-21, 2002.
28. Rand SD, Schmainda KM, **Pathak AP**, Badruddoja MA, Rebro, KJ, Krouwer HG. "Effects of Dexamethasone on Rat 9L Gliosarcoma Model Vasculature Measured with MR Derived Relative Cerebral Blood Volume Maps and Validated with Histologic Analysis", *Proc. of 40<sup>th</sup> Annual Meeting American Society of Neuroradiology*, Vancouver, Canada, May 13-17, 2002.
29. **Pathak AP**, Ward BD, Hudetz AG, Schmainda KM. "A Novel Technique for Estimating the Susceptibility-Induced MR Signal For *Arbitrary* Microvascular Geometries: The Finite Perturber Method", *Proc. ISMRM, 10<sup>th</sup> Annual Mtg*, 2002.
30. **Pathak AP**, Ward BD, Rebro KJ, Schmainda KM. "The Effect of Brain Tumor Angiogenesis on the *In Vivo* Relationship Between Contrast Agent (MION) Dose and the Gradient Echo Relaxation Rate Change ( $\Delta R2^*$ )", *Proc. ISMRM, 10<sup>th</sup> Annual Mtg*, 2002.
31. Biswal BB, **Pathak AP**. "A Novel MR Brain Segmentation Technique Using Dynamic Susceptibility Contrast", *Proc. ISMRM, 10<sup>th</sup> Annual Mtg*, 2002.
32. Quarles CC, **Pathak AP**, Ward BD, Rebro KJ, Schmainda KM. "Reliability of Measuring Tumor Perfusion using Dynamic Susceptibility Contrast MRI: The Influence of Vascular Structure and Imaging Technique", *Proc. ISMRM, 10<sup>th</sup> Annual Mtg*, 2002.

33. Schmainda KM, Rand SD, Badruddoja M, **Pathak AP**, Rebro KJ, Krouwer HG. "Dexamethasone Selectively Treats Tumor Vasculature as Demonstrated By Simultaneous GE and SE rCBV Measurements", *Proc. ISMRM, 10<sup>th</sup> Annual Mtg*, 2002.
34. **Pathak AP**, Schmainda KM, Ward BD, Linderman JR, Rebro KJ, and Greene AS. "MR-Derived Cerebral Blood Volume Maps: Issues Regarding Histological Validation and Assessment of Tumor Angiogenesis", *Proc. ISMRM, 9<sup>th</sup> Annual Mtg*, 2248, 2001.
35. **Pathak AP**, Schmainda KM, Ward BD, Rebro KJ, and Rand SD. "Assessing Tumor Angiogenesis with Dynamic Susceptibility Contrast fMRI: Which Morphologic Correlates Are Relevant?" *Proc. ISMRM, 9<sup>th</sup> Annual Mtg*, 2243, 2001.
36. Schmainda KM, **Pathak AP**, Badruddoja M, Rand SD, Rebro KJ, Krouwer HG. "Effects of Dexamethasone Treatment on Dynamic Susceptibility CBV Measurements in a Rat Brain Tumor Model", *Proc. ISMRM, 9<sup>th</sup> Annual Mtg*, 2257, 2001.
37. Badruddoja MA, Krouwer HG, Schmainda KM, Rand SD, Rebro KJ, **Pathak AP**, Marszalkowski C S. "Dexamethasone Decreases Relative Cerebral Blood Volume (rCBV) and Vessel Diameter in 9L Gliosarcoma", *Neuro-Oncology*, (3): 266, 2001.
38. Rand SD, Donahue KM, Krouwer HG, Badruddoja M, Prost RW, **Pathak AP**, Kim YR, Marszalkowski CS. "Magnetic Resonance Markers of Neoplastic Angiogenesis in the Adult Brain: Works in Progress". *Proc. Angiogenesis and Cancer: From Basic Mechanisms to Therapeutic Applications*, B-22, 2000.
39. **Pathak AP**, Linderman RJ, Xu H, Ward BD, Greene AS and Donahue KM. "Characterization of  $\Delta R2^*/\Delta R2$  for the Evaluation of Angiogenesis Induced Changes in Vascular Morphology", *Proc. ISMRM, 8<sup>th</sup> Annual Mtg*, v1: 617, 2000.
40. Biswal BB, **Pathak AP**, Ward BD, Ulmer JL, Donahue KM, and Hudetz AG, "Decoupling of the Hemodynamic Delay from the Task-Induced Delay in fMRI", *NeuroImage - Human Brain Mapping 2000 Meeting*, 663, 2000.
41. Biswal BB, **Pathak AP**. "A Novel MR Brain Segmentation Technique Using Dynamic Susceptibility Contrast", *Proc. ISMRM, 8<sup>th</sup> Annual Mtg*, v3: 1755, 2000.
42. Biswal BB, **Pathak AP**, Ward BD, Ulmer JL, Donahue KM, and Hudetz AG. "Decoupling of the Hemodynamic Delay from the Task-Induced Delay in fMRI", *Proc. ISMRM, 8<sup>th</sup> Annual Mtg*, v2: 990, 2000.
43. **Pathak AP**, Donahue KM. "The Utility of the Sequential Contrast Agent Protocol in Assessing Changes in Relative Cerebral Blood Volume", *Proc. ISMRM, 7<sup>th</sup> Annual Mtg*, v3: 1873, 1999.
44. Donahue KM, **Pathak AP**. "Utility of Acquiring Vascular Blood Volume, Permeability and Morphology Information from Dynamic Susceptibility Contrast Agent Studies in Patients with Brain Tumors", *Proc. ISMRM, 7<sup>th</sup> Annual Mtg*, v3: 149, 1999.
45. **Pathak AP**, Donahue KM. "The Effect of Sequential Contrast Agent Studies on the Assessment of Relative Cerebral Blood Volume", *Proc. ISMRM, 6<sup>th</sup> Annual Mtg*, v2: 1153, 1998.
46. Donahue KM, Rand S, **Pathak AP**. "Evaluation of Human Brain Tumor Angiogenesis using Simultaneously Acquired Gradient Echo and Spin Echo EPI during Dynamic Susceptibility Contrast", *Proc. ISMRM, 6<sup>th</sup> Annual Mtg*, v2: 1153, 1998.
47. **Pathak AP**, Silver-Thorn MB. "Design of a Rate Controlled Indentor for *In Vivo* Analysis of Residual Limb Tissues", *1996 Advances in Bioengineering*, Proceedings of the ASME Bioengineering Division, Winter Annual Meeting, Atlanta, GA, 1996, vol. 33, pp. 111-113.
48. **Pathak AP**, Silver-Thorn MB. "An Embedded (PC-Based) Tissue Testing System for *In Vivo* Analysis of Residual Limb Tissues", *Annals of Biomedical Engineering*, Proceedings of the Annual BMES Fall Meeting, Penn State University, PA, 1996, vol. 24, pp. S-73.