BIOGRAPHICAL SKETCH

NAME	POSITION TITLE
Zaver Bhujwalla, Ph.D.	Professor

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
University of Bombay, India (St.Xavier's College)	B.Sc.	1980	Physics and Mathematics
University of Bombay, India (Cancer Research Institute)	M.Sc.	1982	Biophysics
University of London, UK (Middlesex Hospital Medical School)	M.Sc.	1985	Radiation Biology
University of London, UK (Royal Postgraduate Medical School)	Ph.D.		Radiation Biology

A. Position and Honors

Professional Experience:

1982 - 83 Bhabha Atomic Research Center, Division of Radiation Protection, Bombay, India

1983 - 84 Hospital Physicist, Dept. of Radiation Oncology, Tata Memorial Center, Bombay, India

1989 - 91 Postdoctoral Research Fellow, NMR Research Division, Dept. of Radiology, The Johns Hopkins University School of Medicine, Baltimore, MD

1991 - 92 Instructor, NMR Research Division, Dept. of Radiology, The Johns Hopkins University School of Medicine, Baltimore, MD

1992 - 98 Assistant Professor, Division of MR Research, Dept. of Radiology, The Johns Hopkins University School of Medicine, Baltimore, MD

1997 - Oncology Section Head, Division of MR Research, Dept. of Radiology, The Johns Hopkins University School of Medicine, Baltimore, MD

1998 - 2002 Associate Professor of Radiology, The Johns Hopkins University School of Medicine, Baltimore, MD

2000 - 2002 Associate Professor of Oncology, The Johns Hopkins University School of Medicine, Baltimore, MD

2002 - Professor of Radiology, The Johns Hopkins University School of Medicine, Baltimore, MD

2002 - Professor of Oncology, The Johns Hopkins University School of Medicine, Baltimore, MD

National Committees:

Sept. 1996 - 98 Reviewer for the Radiological Sciences Study Section of the USAMRMC Breast Cancer Program

April 1998 Reviewer for the California Breast Cancer Research Program

June 1998 - Reviewer for the Susan Komen Breast Cancer Foundation

1998, 1999, 2000 Ad Hoc Reviewer for the NIH Diagnostic Radiology Study Section

2000	Reviewer for the USAMRMC Prostate Cancer Program
July 2001	Reviewer for NCI RFA:01-014 (P50) to establish In Vivo Cellular and Molecular Imaging Cancer Centers
	Reviewer for the NIH Diagnostic Radiology Study Section

Editorial Boards:

Cancer Biology and Therapy, Editor-in-Chief: Wafik S. El-Deiry, MD, PhD, University of Pennsylvania, Philadelphia, PA

Molecular Imaging, Editor-in-Chief: Ronald Blasberg, MD, PhD, Memorial Sloan Kettering Cancer Center, New York, NY.

The Lancet Oncology, Editor: David Collingridge, Ph.D., Oxford, UK.

Cancer Research, Editor-in-Chief: Frank J. Rauscher, III, Philadelphia, PA

Professional Societies:

American Association of Cancer Research

Association of Medical Physicists of India

British Institute of Radiology, UK

International Society of Magnetic Resonance in Medicine, USA. Chair, Cancer MR Study Group

Radiation Research Society, USA

B. Selected Peer-reviewed Publications (from 60)

Aboagye, E. and Bhujwalla, Z. M. Malignant Transformation Alters Membrane Phospholipid Metabolism of Human Mammary Epithelial Cells. Cancer Research, 59, 80-84, 1999.

Artemov, D., Revelon, G., Atalar, E., Bluemke, D. A., Bhujwalla, Z. M. and Zerhouni, E. A. Switchable Multicoil Array for MR Microimaging of Breast Lesions. Mag. Res. Med., 41: 569-574, 1999.

van Sluis R, Bhujwalla Z, Raghunand N, Ballesteros P, Alvarez J. Cerdan S Gillies RJ. Imaging of extracellular pH of tumors using 1H MRSI. Mag. Res. Med. 41: 743-750, 1999.

Bhujwalla, Z. M., Aboagye, E. O., Gillies, R. J., Chacko, V. P., Mendola, C. E., Backer, J. M. Nm23-transfected MDA-MB-435 human breast carcinoma cells form tumors with altered phospholipid metabolism and pH. A 31P NMR study In vivo and In vitro. Mag.Res. Med., 41: 897-903, 1999 .

Artemov, D., Pilatus, U., Chou, S., Mori, N., Nelson, J. B., Bhujwalla, Z. M. Dynamics of Prostate Cancer Cell Invasion Studied in vitro by NMR Microscopy. Mag. Res. Med. 42:277-282, 1999.

Raghunand N, Altbach MI, van Sluis R, Baggett B, Taylor CW, Bhujwalla ZM and Gillies RJ. Plasmalemmal pH-gradients in Drug-Sensitive and Drug-Resistant MCF-7 Human Breast Carcinoma Xenografts Measured by 31P MR Spectroscopy. Biochemical Pharmacology 57(3):309-12, 1999.

Ravi, R., Mookerjee, B., Bhujwalla, Z. M., Hayes Sutter, C., Artemov, D., Zeng, Q., Dillehay, L., Madan, A., Semenza, G. and Bedi, A. Regulation of tumor angiogenesis by p53-induced degradation of hypoxia-inducible factor 1alpha. Genes and Development, 14(1): 34-44, 2000.

Natarajan, K., Mori, N., Artemov, D., Aboagye, E. O., Chacko, V. P. and Bhujwalla, Z. M. Phospholipid profiles of invasive human breast cancer cells are altered towards a less invasive phospholipid profile by the anti-inflammatory agent indomethacin. Adv. in Enzyme. Reg., Vol. 40, pp 271-284, 2000.

Pilatus, U., Ackerstaff, E., Artemov, D., Mori, N., Gillies, R. J., and Bhujwalla, Z. M. Imaging prostate cancer invasion with multi-nuclear magnetic resonance methods: The Metabolic Boyden Chamber. Neoplasia, Vol. 2, pp 273-279, 2000.

Bhujwalla, Z. M., Artemov, D., Natarajan, K., Ackerstaff, E., and Solaiyappan, M. Vascular Differences Detected by MRI for Metastatic versus Nonmetastatic Breast and Prostate Cancer Xenografts. Neoplasia, Vol.3, pp 143-153, 2001.

Artemov, D., Solaiyappan, M. and Bhujwalla, Z. M. Noninvasive Pharmacoangiography to Detect and Predict Drug Delivery to Cancers by MR Imaging and Spectroscopy. Cancer Research, Vol 61, pp 3039-3044, 2001.

Ackerstaff, E., Pflug, B. R., Nelson, J. B., and Bhujwalla, Z. M. Detection of Increased Choline Compounds with 1H NMR Spectroscopy following Malignant Transformation of Human Prostatic Epithelial Cells. Cancer Research, Vol. 61, pp 3599-3603, 2001.

Pilatus, U., Aboagye, E., Artemov, D., Mori, N. and Bhujwalla, Z. M. Real-Time measurements of cellular oxygen consumption, pH and energy metabolism using Nuclear Magnetic Resonance Spectroscopy. Magnetic Resonance in Medicine, 45, pp 749-755, 2001.

Aboagye, E., Mori, N., and Bhujwalla, Z. M. Effect of Malignant Transformation on lactate levels of Human Mammary Epithelial Cells. Advances in Enzyme Regulation, Vol.41, pp 251-260, 2001.

Bhujwalla, Z.M., Artemov, D., Aboagye, E., Ackerstaff, E., Gillies, R.J., Natarajan, K. and Solaiyappan, M. The Physiological Environment in Cancer Vascularization, Invasion and Metastasis. Novartis Foundation Symposium 240, pp 23-38, 2001.

Semenza, G.L., Artemov, D., Bedi, A., Bhujwalla, Z., Chiles, K., Feldser D., Laughner, E., Simons, J., Taghavi, P., Zhong, H. 'The metabolism of tumours': 70 years later. Novartis Foundation Symposium 240, pp 251-260, 2001.

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, Vol. 15, pp 114-119, 2002.

Glunde, K., Ackerstaff, E., Natarajan, K., Artemov, D. and Bhujwalla, Z. M. Real-time changes in 1H and 31P NMR spectra of malignant human mammary epithelial cells during treatment with the anti-inflammatory agent indomethacin. Magnetic Resonance in Medicine, Vol. 48, pp 819-825, 2002

Gillies, R.J., Raghunand, R., Karczmar, G. and Bhujwalla, Z. M. MR Imaging of the Tumor Microenvironment. Journal of Magnetic Resonance Imaging, Vol. 16, pp 430-450, 2002.

Natarajan, K.N., Mori, N., Artemov D. and Bhujwalla Z.M. Exposure of human breast cancer cells to the anti-inflammatory agent Indomethacin alters choline phospholipid metabolites and nm23 expression. Neoplasia, pp 409-416, 2002.

Bhujwalla, Z. M., Artemov, D., Natarajan K., Solaiyappan, M., Kollars, P. and Kristjansen, P. E. G. Reduction of vascular and permeable regions in solid tumors detected by macromolecular MRI following treatment with anti-angiogenic agent TNP-470. Clinical Cancer Research, Vol. 9, pp 355-362, 2003.

Book Chapter (selected):

Bhujwalla, Z. M., Shungu, D. C., He, Q., Wehrle, J. P. and Glickson, J. D. "MR studies of tumors: relationship between blood flow, metabolism and physiology" in: NMR in Physiology and Biomedicine, pp 311-328, ed. R. J. Gillies, Academic Press, 1994.

Invited Reviews (selected):

Bhujwalla, Z. M., Artemov, D., Glockner, J. Tumor angiogenesis, vascularization and contrast enhanced MRI. Topics in Magnetic Resonance Imaging, 10(2):92-103, 1999.

Review Article (selected):

Gillies, R. J., Bhujwalla, Z. M., Evelhoch, J., Garwood, M., Neeman, M., Robinson, S. M., Sotak, C. H., van der Sanden, B. Applications of Magnetic Resonance in Model Systems I: Tumor Biology and Physiology. Neoplasia, 2(1):1-14, 2000.

Inventions, Patents:

Non Invasive Imaging of Extracellular pH by Magnetic Resonance Methods using extrinsic 1H and 19F probes (filed jointly with Sebastian Cerdan in Spain and R. J. Gillies at University of Arizona).