BIOGRAPHICAL SKETCH

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NAME	POSITION TITLE
Dmitri Artemov	Associate Professor of Radiology and Oncology
eRA COMMONS USER NAME (credential, e.g., agency login) dmitri	

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
Moscow State University, Moscow, Russia	M. Sc.	1985	Molecular Physics
Institute of Chemical Physics, Russian Academy of Sciences, Moscow, Russia	Ph. D.	1990	Physics and Mathematics
University of Wurzburg, Germany	Post Doc	1992	MR imaging
The Johns Hopkins University, Baltimore, USA	M. Sc.	2002	Biotechnology
The Johns Hopkins University, Baltimore, USA	Post Doc	1997	MR of Cancer

A. Personal Statement

My major scientific interest is developing of novel molecular imaging methods for highly sensitive and specific MR imaging of molecular targets. While MRI is a translatable imaging modality that provides high-resolution 3D information, PET imaging with its extremely high sensitivity and specificity is ideal for imaging of molecular targets. Therefore my research will greatly benefit from availability of a preclinical imaging system that combines MRI and PET capabilities in a single gantry. This instrument will be an ideal test bed for imaging in preclinical models and for translational project. Specifically, unique imaging capabilities of the system can be used for developing of novel targeted theranostic agents and for imaging of infiltrating progenitor cells in the context of tumor microenvironment. I will provide my expertise in MR coil design and pulse sequence development for studies on the scanner and serve on the Oversight Committee.

B. Positions and Honors

Positions and Employment

1986-88	Fellow, Institute of Chemical Physics, Moscow, Russia
1989-91	Scientist, Institute of Chemical Physics and Service Center “Bruker,” Moscow, Russia
1992-93	Fellowship of Alexander von Humboldt-Foundation University of Wuerzburg, Germany
1993-97	Postdoctoral Fellow, Dept. of Radiology, Johns Hopkins University, Baltimore, MD
1997-98	Instructor, Dept. of Radiology, Johns Hopkins University, Baltimore, MD
1998-04	Assistant Professor, Dept. of Radiology, Johns Hopkins University, Baltimore, MD
2004	Associate Professor, Dept. of Radiology and Oncology, Johns Hopkins University, Baltimore MD

Other Experience and Professional Memberships

1999-09	Reviewer for the USAMRMC Breast, Prostate, and Ovarian Cancer Program
2003-09	Reviewer for California Breast Cancer Research Program
1994-present	Member, International Society for Magnetic Resonance in Medicine
2002-present	Member, American Association for Cancer Research
2005-present	Member, Society for Molecular Imaging

Honors

1992-93	Fellowship of Alexander von Humboldt-Foundation, Germany
2009	Fellow of the International Society for Magnetic Resonance in Medicine

C. Selected Peer-reviewed Publications

Most relevant to the current application

1. Mironchik Y, Winnard PT Jr, Vesuna F, Kato Y, Wildes F, Pathak AP, Kominsky S, Artemov D, Bhujwalla Z, Van Diest P, Burger H, Glackin C, Raman V. Twist overexpression induces *in vivo* angiogenesis and correlates with chromosomal instability in breast cancer. Cancer Res. 2005 Dec 1;65(23):10801-9.

2. Raman V, Artemov D, Pathak AP, Winnard PT Jr, McNutt S, Yudina A, Bogdanov A, Bhujwalla ZM, Characterizing vascular parameters in hypoxic regions: a combined magnetic resonance and optical imaging study of a human prostate cancer model, Cancer Res. 2006; 66(20):9929-36.
3. Zhu W, Okollie B, Artemov D. Controlled Internalization of Her-2/neu Receptors by Cross-linking for Targeted Delivery, Cancer Biol Ther. 2007 Dec; 6(12),1960-6.
4. Kato Y, Artemov D. Monitoring of release of cargo from nanocarriers by MRI/MR spectroscopy (MRS): significance of T2/T2* effect of iron particles. Magn Reson Med. 2009 May;61(5):1059-65. PMCID: PMC2718565.
5. Onuki Y, Jacobs I, Artemov D, Kato Y. Noninvasive visualization of *in vivo* release and intratumoral distribution of surrogate MR contrast agent using the dual MR contrast technique. Biomaterials. 2010 Sep;31(27):7132-8. PMCID:PMC2917222.

Additional recent publications of importance to the field (in chronological order)

1. Artemov, D., Mori, N., Okollie, B., Bhujwalla Z.M. MR Molecular Imaging of the HER-2/neu Receptor in Breast Cancer Cells using targeted Iron Oxide Nanoparticles, Magn Reson Med. 2003; 49,403-409.
2. Artemov, D., Mori, N., Ravi, R., Bhujwalla Z.M. MR Molecular Imaging of the HER-2/neu Receptor, Cancer Res, 2003; 63,2723-27.
3. Vogel-Claussen J, Gimi B, Artemov D, Bhujwalla ZM. Diffusion-Weighted and Macromolecular Contrast Enhanced MRI of Tumor Response to Antivascular therapy with ZD6126. Cancer Biol Ther. 2007; Sep;6(9):1469-75. Epub 2007 Jun 27.
4. Kato Y, Okollie B, Artemov D, Non-invasive 1H/13C Magnetic Resonance Spectroscopic Imaging of the Intratumoral Distribution of Temozolomide, Magn Reson Med 2006; 55(4):755-761.
5. Kato Y, Okollie B, Raman V, Vesuna F, Zhao M, Baker SD, Bhujwalla Z, and Artemov D. Contributing Factors of Temozolomide Resistance in MCF-7 Tumor Xenograft Models. Cancer Biology and Therapy, 2007; 6(6):891-7.
6. Li C, Penet MF, Winnard P Jr, Artemov D, and Bhujwalla ZM. Image-guided Enzyme/prodrug Cancer Therapy. Clin Cancer Res, 2008; 14(2), 515-22, (Front Cover). PMC Journal - In Process.
7. Mikhaylova M, Stasinopoulos I, Kato Y, Artemov D, Bhujwalla ZM. Imaging of cationic multifunctional liposome-mediated delivery of COX-2 siRNA. Cancer Gene Ther. 2009 Mar;16(3):217-26. PMCID: PMC3052284
8. Zhu W, Okollie B, Bhujwalla ZM, Artemov D. PAMAM Dendrimer Based Contrast Agents for MR Imaging of Her-2/neu Receptors by a Three-Step Pretargeting Approach. Magn Reson Med. 2008 Apr; 59(4):679-85. PMCID: PMC2947957
9. Zhu W, Artemov D. Biocompatible blood pool MRI contrast agents based on hyaluronan. Contrast Media Mol Imaging. 2010 Oct 28. PMC Journal - In Process.
10. Kato Y, Holm DA, Okollie B, Artemov D. Noninvasive Detection of Temozolomide in Brain Tumor Xenograft by Magnetic Resonance Spectroscopy. J NeuroOncology, 2010; 12(1): 71-79. PMCID:PMC2940553.

D. Research Support

Ongoing Research Support

NCI 2P50CA103175-06A2 (Bhujwalla) 09/22/11-07/31/16
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.

NCI 1 R01 CA154738-01 (Artemov) 12/01/11–11/30/16
Image-guided combination therapy: noninvasive assessment of delivery and response
The objectives of this R01 application are to develop a targeted image-guided drug delivery platform to facilitate antiangiogenic therapy in breast cancer and to understand mechanisms of tumor aggressiveness and resistance to therapy under hypoxia.

NCI 2R01CA82337-11 (Bhujwalla) 04/01/99-03/31/16
Hostile Environments Promote Invasion and Metastasis
COX-2 is a critically important target in cancer that significantly influences a range of characteristics such as angiogenesis, invasion and metastasis. In this application we intend to uncover new targets that interact with

COX-2, and identify the effect of COX-2 expression on extracellular matrix structure and function. We also intend to develop probes to noninvasively image COX-2 expression and activity that will allow us to further understand the role of this enzyme in cancer and allow us to effectively target it.

NCI RO1CA138515 (Bhujwalla) 07/01/09-06/30/14
Image-Guided Prodrug and siRNA Targeting of Cancer
This purpose of this grant is to develop effective treatment strategies utilizing image guided prodrug enzyme-siRNA treatment.

NCI R01CA136756 (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.

NIBI R21 CA133288 (Artemov) 09/01/10-08/31/12
Activated nano-sized MR Contrast Agents for Imaging of Tumor Proteolytic Activity
The main purpose of this project is to develop an activated MRI contrast agent sensitive to activities of proteolytic tumor enzymes that can be important biomarkers of tumor aggressiveness and invasiveness.

KG100594 (Artemov) 04/15/10–04/14/13
SG Komen Breast Cancer Foundation
Novel Two-Component Delivery System Based on Her-2/neu Receptor Internalization Strategy.
The main goal of the proposal is development of a novel image-guided delivery platform for targeted therapy of Her-2 positive breast cancer.

NCI R01CA138264 (Popel) 02/13/09-12/31/13
Predictive Experiment-Based Multiscale Models of Angiogenesis in Breast Cancer
The major goal of this project is to develop predictive multiscale models of breast cancer. Mouse model xenografts of human breast cancer will be used; multiscale imaging studies and molecular studies will provide the foundation for models validation.

NCI R01CA073850 (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.

DOD W81XWH-10-1-0603 (Raman) 08/01/10-08/31/12
A novel RNA Helicase Inhibitor to Treat Breast Cancer
The goals for this project are to study the inhibitor effects of a RNA helicase inhibitor to treat breast cancer.

TEDCO Maryland Stem Cell Foundation 09/01/10-08/31/12
2010-MSCRFE-096-00 (Artemov)
Noninvasive imaging of stem cell homing and viability
Stem cell based therapy is a fascinating and rapidly developing area of stem cell research. The key requirement for high therapeutic efficacy of transplanted stem cells is their rapid migration and homing to the lesion while maintaining viability through the entire treatment duration. In this proposal we will use a novel MR imaging based method that enables noninvasive monitoring of stem cell migration and viability status using established procedures of stem cell labeling with magnetic markers.

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.

NCI R21CA140904 (Bhujwalla) 07/01/09-06/30/11
Molecular Imaging of Cancer Cachexia
In this exploratory application, state of the art imaging techniques will be used in combination with molecular characterization to understand cancer-induced cachexia and the cachexia cascade in preclinical tumor models.

NIH/NCI R21CA128957 (Bhujwalla) 07/01/07-06/30/10
Image-Guided Pro-Drug/Enzyme Therapy
This purpose of this exploratory grant was to develop effective treatment strategies utilizing image guided prodrug enzyme theranostic agents.

NCI R21 CA133600 (Bhujwalla) 01/01/09-12/30/10
Imaging Permissive Microenvironmental Niches for Cancer Stem Cells
The goal of this application is to use molecular and functional imaging to understand the role of hypoxia and physiological and metabolic characteristics in creating or harboring stem-like cancer cells at primary and metastatic sites.

DOD W81XWH-04-1-0595 (Sukumar) 04/01/04-09/29/10
Center for Molecular Targeting of Metastatic Breast Cancer
Development of novel therapeutic strategies for breast cancer.

TEDCO MD Stem Cell Research Grant (Artemov) 07/01/08-06/30/10
Targeting Imaging and Therapy of Breast Cancer Stem-Like Cells
To develop a cell surface receptor targeted polymer platform for specific *in vivo* imaging/therapy of the CD44+CD24-/low BCSLC subpopulation of human breast cancer models.

NIH/NBIB R21 EB008162-01 (Kato) 06/01/08-05/31/10
Noninvasive Monitoring of *in vivo* Drug Release
The goal of this application is to monitor drug release and subsequent intratumoral drug distribution noninvasively, we have focused attention on a unique feature of magnetic resonance imaging (MRI) and spectroscopic imaging (MRSI).

NIH/NCI R56 CA097310 (Artemov) 09/01/07-08/31/09
MR Pharmacoangiography – Vascular Modulation of Delivery
The goal of this application was to use MR spectroscopy to directly detect delivery of therapeutic agents to tumors and correlate delivery with treatment response.

NIH/NCI 2R01 CA73850-05 (Bhujwalla) 04/01/02-03/31/09
Functional Imaging of the Metastatic Phenotype
In vivo and perfused cell studies to determine the role of physiological environment and vascularization in the metastatic spread of prostate cancer.

NIH/NCI R21 5R21CA122515-02 (Artemov) 07/01/06-06/30/09
MR Imaging of Endothelial Progenitor Cells in Prostate Cancer
The major goal was to study the role of endothelial precursor cells in prostate cancer angiogenesis using noninvasive molecular MRI, optical and nuclear imaging of labeled progenitor cells *in vivo.*