

## BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors in the order listed on Form Page 2.  
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NAME <b>Peter B. Barker</b>	POSITION TITLE <b>Professor of Radiology and Oncology</b>		
eRA COMMONS USER NAME (credential, e.g., agency login) <b>pbbark</b>			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	MM/YY	FIELD OF STUDY
Oxford University	B.A.	06/82	Chemistry
Oxford University	D. Phil.	06/86	Physical Chemistry
Huntington Medical Research Institute, California	Post-doc	1989	<i>In vivo</i> MRS and MRI

### A. Personal Statement

I have approximately twenty eight years of experience in performing research, including twenty one years with MRI and MRS in human subjects. I am dedicated to the success of the ICMIC program and in particular will continue to provide leadership in the career development component. In addition, I will work with Drs. van Zijl and Artemov in Research Component 3 on the Development of Novel MRI Contrast Mechanisms in Human Breast Imaging, which I believe has enormous potential for the non-invasive diagnosis and characterization of abnormal breast lesions.

### B. Positions and Honors

#### Positions and Employment

1978	Open Scholarship in Chemistry, Balliol College, Oxford University, U.K.
1982	Greville-Smith Prize in Chemistry, Oxford University, U.K.
1982	Canadian Rhodes Scholars Foundation Scholarship, University of British Columbia, Vancouver, Canada
1983	Research Studentship, UK Science and Engineering Research Council
1986	Boswell Research Fellowship, California Institute of Technology
1988-89	Research Scientist, Huntington Medical Research Institutes, Pasadena, CA Visiting Associate, Division of Chemistry and Chemical Engineering, California Institute of Technology, Pasadena, CA
1989-94	Assistant Professor of Radiology, Division of NMR Research, Johns Hopkins University School of Medicine, Baltimore, MD
1994-97	Senior Bioscientific Staff, Department of Neurology, Henry Ford Hospital, Detroit, MI
1995	Editors Recognition Award for Distinction in Reviewing, Radiology
1996	American Heart Association Established Investigator Award
1995-97	Adjunct Associate Professor of Medical Physics, Oakland University, Rochester, MI
1997-02	Associate Professor of Radiology, Division of Neuroradiology, Johns Hopkins University School of Medicine, Baltimore, MD
1998	Research Scientist, Kennedy Krieger Institute, Baltimore, MD
2002	Professor of Radiology, Johns Hopkins University School of Medicine, Baltimore, MD
2005	Professor of Oncology, Johns Hopkins University School of Medicine, Baltimore, MD
2007	Member, AHA Brain I Peer Review Committee
2007	Outstanding teacher award, weekend educational course, ISMRM/ESMRMB 2007
2008	Charter Member, MEDI Study Section, NIH
2008	Program Advisory Committee, Specialized Neuroscience Research Program, NINDS

## C. Selected Peer-reviewed Publications

### Most relevant to the current application

1. Hourani R, Horska A, Albayram S, Brant LJ, Melhem E, Cohen KJ, Burger PC, Weingart JD, Carson B, Wharam MD, Barker PB. Proton Magnetic Resonance Spectroscopic Imaging to Differentiate Between Nonneoplastic Lesions and Brain Tumors in Children. *J Magn Reson Imaging* 2006 Feb;23(2):99-107.
2. Rao V, Spiro J, Degaonkar M, Horska A, Rosenberg PB, Yousem DM, Barker PB. Lesion Location in Depression Post Traumatic Brain Injury Using Magnetic Resonance Spectroscopy: Preliminary Results from a Pilot Study. *Eur J Psych* 2006; 20(2):65-73.
3. Bonekamp D, Nagae LM, Degaonkar M, Matson M, Abdalla WM, Barker PB, Mori S, Horska A. Diffusion tensor imaging in children and adolescents: Reproducibility, hemispheric, and age-related differences. *Neuroimage* 2007 Jan 15;34(2):733-42.
4. Edden RA, Barker PB. Spatial Effects in the Detection of Gamma-Aminobutyric Acid: Improved Sensitivity at High Fields Using Inner Volume Saturation. *Magn Reson Med* 2007 Dec;58(6):1276-82.
5. Edden RA, Bonekamp D, Smith MA, Dubey P, Barker PB. Proton MR spectroscopic imaging of the medulla and cervical spinal cord. *J Magn Reson Imaging* 2007 Oct;26(4):1101-5.
6. Edden RA, Pomper MG, Barker PB. *In vivo* differentiation of N-acetyl Aspartyl Glutamate from N-acetyl Aspartate at 3 Tesla. *Magn Reson Med* 2007 Jun;57(6):977-82.
7. Baker EH, Basso G, Barker PB, Smith MA, Bonekamp D, Horska A. Regional Apparent Metabolite Concentrations in Young Adult Brain Measured by (1)H MR spectroscopy at 3 Tesla. *J Magn Reson Imaging* 2008 Feb 28;27(3):489-99. PMC Journal - In Process.
8. Bizzi A, Castelli G, Bugiani M, Barker PB, Herskovits EH, Danesi U, Erbetta A, Moroni I, Farina L, Uziel G. Classification of Childhood White Matter Disorders Using Proton MR Spectroscopic Imaging. *AJNR Am J Neuroradiol* 2008 Aug;29(7):1270-5. PMC Journal - In Process.
9. Brenner C, Speck-Martins CE, Farage L, Barker PB. 3T MR with Diffusion Tensor Imaging and Single-Voxel Spectroscopy in Giant Axonal Neuropathy. *J Magn Reson Imaging* 2008 Jul;28(1):236-41.
10. Hourani R, Brant LJ, Rizk T, Weingart JD, Barker PB, Horska A. Can Proton MR Spectroscopic and Perfusion Imaging Differentiate Between Neoplastic and Nonneoplastic Brain Lesions in Adults? *AJNR Am J Neuroradiol* 2008 Feb;29(2):366-72. PMC Journal - In Process.
11. Bonekamp D, Smith MA, Zhu H, Barker PB. Quantitative SENSE-MRSI of the Human Brain. *Magn Reson Imaging* 2009 Dec 31. PMC Journal - In Process.
12. Foerster BR, Conklin LS, Petrou M, Barker PB, Schwarz KB. Minimal Hepatic Encephalopathy in Children: Evaluation with Proton MR Spectroscopy. *AJNR Am J Neuroradiol* 2009 June: 30(8):1610-3. PMID2788940.
13. Horska A, Farage L, Bibat G, Nagae LM, Kaufmann WE, Barker PB, Naidu S. Brain Metabolism in Rett Syndrome: Age, Clinical, and Genotype Correlations. *Ann Neurol* 2009 Jan;65(1):90-7. PMID2676876.
14. Rowland LM, Spieker EA, Francis A, Barker PB, Carpenter WT, Buchanan RW. White Matter Alterations in Deficit Schizophrenia. *Neuropsychopharmacology* 2009 May;34(6):1514-22. PMID2669692..
15. Mohamed MA, Lentz MR, Lee V, Halpern EF, Sacktor N, Selnes O, Barker PB, Pomper MG. Factor Analysis of Proton MR Spectroscopic Imaging Data in HIV Infection: Metabolite-Derived Factors Help Identify Infection and Dementia. *Radiology* 2010 Feb;254(2):577-86. PMID2815344.

## D. Research Support

### Ongoing Research Support

NCI 2P50CA103175 (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.

1R01EB009731 (Zhou)

07/01/09-06/30/14

NIBIB

Amide Proton Transfer (APT) MRI of Brain Tumors at 3T and 7T

The overall goal is to develop the new amide proton transfer (APT)-MRI methodology for more easy use in the clinic and to assess the capability and meaning of APT imaging for diagnosing heterogeneous aspects of gliomas.

5R01NS047691 (Hillis)

07/01/04-06/30/14

NINDS

Neural Basis of Empathy and Prosody

The major goals of this project are to identify the neural substrates of unilateral spatial neglect in hyperacute stroke patients with regions of brain dysfunction and damage identified by diffusion weighted imaging and perfusion weighted imaging.

2R01EB000822 (Maudsley)

07/01/08-06/30/13

NIBIB

Partnership for MR Spectroscopic Imaging Data Processing

The major goal of this project is to establish a standardized, cross-vendor data acquisition and analysis protocol for MR spectroscopic imaging of the brain.

1R01CA125258 (Barker)

08/08/07-07/31/12

NCI

Proton MRSI of Human Breast Cancer at 3 and 7 Tesla

The major goal of this project is to develop high field *in vivo* MRSI techniques for the diagnosis of breast cancer, and to evaluate their sensitivity and specificity.

5R01EY001849 (Zee)

10/01/07-09/30/12

NEI

Oculomotor Disorders - Clinical and Experimental Study

The goal of this project is to learn about the mechanisms of normal eye movement control and human ocular motor disorders using magnetic resonance imaging.

### **Completed Projects Within Last Three Years**

5R01DC005375 (Hillis)

07/01/07-06/30/12

NIDCD

Neural Bases of Language and Cognitive Deficits in Acute Stroke and Recovery

The major goals of this project are to identify the neural substrates of lexical and semantic representations of nouns and verbs, by correlating specific language impairments in hyperacute stroke patients with regions of brain dysfunction and damage identified by diffusion weighted imaging and perfusion weighted imaging.

5P41RR15241 (van Zijl)

09/24/09-08/31/11

NCRR

Supplement to demonstrate the clinical feasibility of the 7T scanner through the implementation of novel technology and application to two disorders, namely multiple sclerosis and Alzheimer's disease.

1P41RR15241 (van Zijl)

07/01/06-06/30/11

NCRR

Resource for Quantitative Functional MRI

The major goal is to provide state-of-the-art MRI and MRS data acquisition and image processing technology and unique MR expertise to facilitate the biomedical research of NIH-funded neuroscientists at several institutions in Maryland and throughout the USA.

NCI P50CA103175-05S1 (Bhujwala)

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.

1R21MH082322 (Barker) 12/01/08-11/30/10  
NIMH  
*In vivo* Determination of NAAG in Brain  
The major goal of this project is to develop methods for measuring NAAG in the human brain on 3T and 7T MR scanners, and to apply these techniques to a pilot study of schizophrenia.

5R01MH071150 (Sacktor) 04/08/05-03/31/10  
NIMH  
Oxidative Stress Markers and HIV Dementia  
The goal of this project is to study the role of oxidative stress in HIV dementia.

5P01AG021190 (Earley) 06/15/04-05/31/09  
NINDS  
Restless Legs Syndrome- The Iron-Dopamine Connection  
The major goal of this project is to investigate the connection between brain iron and dopamine levels in Restless Leg Syndrome.

5R01CA100184 (Jacobs) 08/26/04-04/30/08  
NCI  
Multiparametric MRI characterization of breast tissue  
The major goal of this project is to investigate multi-parametric MRI for the diagnosis of breast cancer.

2R01HL056882 (Bottomley) 04/01/03-03/31/08  
NHLBI  
MR studies of Myocardial Creatine Kinase Metabolism  
The goal of this project is to develop MR spectroscopy methods for the study of myocardial creatine kinase metabolism.