

BIOGRAPHICAL SKETCH

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NAME William M. Brooks, Ph.D.		POSITION TITLE Director, Hoglund Brain Imaging Center	
eRA COMMONS USER NAME WBROOKS		Professor, Neurology	
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
Griffith University, Australia	B.Sc.(Hons)	1979	Chemistry
Griffith University, Australia	Ph.D.	1984	Chemistry
Griffith University, Australia	Post Doc	1984-85	Chemistry
Dept. Radiology, Univ. of Queensland, Australia	Post Doc	1985-88	Chemistry

A. Positions and Honors

Professional Experience

1988-1989: Research Officer, Australian Commercial Research & Development Limited, Australia
1990-1991: Consultant Manager, Brisbane NMR Centre, Griffith University, Australia
1994-1997: Research Associate Professor, Dept. Cell Biology, University of New Mexico, Albuquerque, NM
1991-2002: Scientific Director, Clinical & Magnetic Resonance Research Center, Univ of NM, Albuquerque
1997-2002: Research Associate Professor, Dept. Neurosciences, University of New Mexico, Albuquerque
2002-present: Director, Hoglund Brain Imaging Center, University of Kansas Medical Center, Kansas City KS.
2002-present: Professor, Department of Neurology, University of Kansas Medical Center, Kansas City KS.

NIH Study Sections/VA Review Panels

Reviewer, NICHD Program/Project Grant Site Visit, June 1995, Seattle, Washington.
Reviewer, Review Panel for Special Initiative on PTSD and other stress-related disorders. Department of Veteran's Affairs Medical Research Service/Department of Defense, June 1998, Washington DC.
Reviewer, Functional MRI and Intervention for Cognitive Deficits After TBI. SEP, June 2001, Washington DC.
ad hoc Reviewer, NSD-A, 2001 – present; BDCNL-90S (now BINP – see below), 2005; CNNT, 2006
Reviewer, NIA Program/Project Grant Site Visits: April & July 2003, March 2004
Reviewer, Alzheimer's Disease Research Centers SEP, Sept & Oct 2003, and Oct 2004
Reviewer, Member Conflict Special Emphasis Panel ZRG1 BDCN-F (03) (M), November 2004, Rockville, MD.
Reviewer, ZRG1 BDCN-L-90s, Mar 2005, Bethesda, MD.
Reviewer, Trauma Research Centers SEP NIGMS ZGM1 PPBC-5 (TB), 2005
Reviewer, Alzheimer's Disease Cooperative Study SEP, 2006
Permanent Member, Brain Injury and Neurovascular Pathologies (BINP) Study Section, 2006 - present.
ad hoc Reviewer, CND 2007 - present

B. Selected peer-reviewed publications (from > 100)

Brooks WM, Sabet A, Sibbitt WL Jr, Barker PB, van Zijl P, Moonen C, Duyn J: Neurochemical quantification in systemic lupus erythematosus. J Rheumatol, 24:2323-2329, 1997.
Brooks WM, Wesley MH, Koditwakku P, Garry P, Rosenberg GA: 1H-MRS differentiates white matter hyperintensities in Subcortical Arteriosclerotic Encephalopathy from those in normal elderly. Stroke, 28: 1940-1943, 1997.
Brooks WM, Hodde-Vargas J, Vargas LA, Yeo RA, Ford CC, Hendren RL: The frontal lobe of children with schizophrenia spectrum disorders: A 1H-MRS study. Biol Psychiatry, 43:263-269, 1998.
Friedman SD, **Brooks WM**, Jung R, Hart BL, Yeo RA: Proton MR Spectroscopic findings correspond to diffuse neuropsychological function in traumatic brain injury. AJNR: Am J Neuroradiol, 19:1879-1885, 1998.
Sabet A, Sibbitt WL Jr, **Brooks WM**, Danska J: Neurometabolite markers of cerebral injury in the antiphospholipid antibody syndrome of Systemic Lupus Erythematosus. Stroke, 29: 2254-2260, 1998.
Brooks WM, Friedman SD, Stidley CA: Reproducibility of 1H-MRS in vivo: Magn Reson Med, 41:193-7, 1999.
Brooks WM, Jung RE, Ford CC, Greinel EJ, Sibbitt Jr., WL: Relationship Between neurometabolite derangement and neurocognitive dysfunction in Systemic Lupus Erythematosus J Rheum, 26:81-85, 1999.
Friedman SD, **Brooks WM**, Jung RE, Chiulli SJ, Sloan JH, Montoya BT, Hart BL, Yeo RA, Quantitative 1H-MRS predicts outcome following Traumatic Brain Injury. Neurology 52: 1384-1391, 1999.

- Jung RE, **Brooks WM**, Chiulli SJ, Weers DC, Yeo RA: The biochemical markers of intelligence: A proton MR spectroscopy study of normal human brain. *Proc R Soc Lond B* 1426:1375-1379, 1999.
- Jung RE, Yeo RA, Chiulli SJ, Sibbitt WL Jr, Weers DC, Hart BL, **Brooks WM**: Biochemical markers of cognition: A proton MR spectroscopy study of normal human brain. *Neuroreport*, 10: 3327-3331, 1999.
- Brooks WM**, Stidley CA., Petropoulos H, Jung RE, Weers DC, Friedman SD, Barlow MA, Sibbitt WL Jr, Yeo RA: Metabolic and cognitive response to human Traumatic Brain Injury: A quantitative proton magnetic resonance study. *J Neurotrauma*. 17, 629-640, 2000.
- Brooks WM**, Friedman SD, Gasparovic C: Magnetic Resonance Spectroscopy in Traumatic Brain Injury. *J Head Trauma Rehab*, 16, 149-164, 2001.
- Jung RE, Yeo RA, Love TM, Petropoulos H, Sibbitt WL Jr, **Brooks WM**: Biochemical Markers of Mood: A Proton MR Spectroscopy Study of Choline in Normal Brain. *Biological Psychiatry*, 51, 224-9, 2002
- Bustillo J, Rowland L, Lauriello J, Petropoulos H, Hammond R, Hart B, **Brooks WM**: Elevated choline concentrations in the caudate nucleus in antipsychotic-naive schizophrenia, *Am J Psychiatry*. 159, 130-133, 2002
- Yeo RA, Hill DE, Campbell RA, Vigil J, Petropoulos H, Hart BL, Zamora LL, **Brooks WM**: A proton magnetic resonance spectroscopy investigation of the right frontal lobe in children with Attention Deficit Hyperactivity Disorder. *J Am Acad Child Adolesc Psychiatry*, 42:303-310, 2003.
- Sibbitt WL, Schmidt PJ, Hart BL, **Brooks WM**: Fluid attenuated inversion recovery imaging in Neuropsychiatric Systemic Lupus Erythematosus. *J Rheumatol* 2003 30:1983-9, 2003.
- Mullins PG, Rowland L, Bustillo J, Bedrick EJ, Lauriello J, **Brooks WM**: Reproducibility of 1H-MRS measurements in schizophrenic patients. *Magn Reson Med* 2003 50:704-7, 2003.
- Driscoll I, Hamilton DA, Petropoulos H, Yeo RA, **Brooks WM**, Baumgartner RN, Sutherland RJ: The Aging Hippocampus: Cognitive, Biochemical and Structural Findings, *Cerebral Cortex* 2003 13:1344-51, 2003.
- Bosma GPTH., Steens SCA, Petropoulos H, van den Haak A, Doornbos J, Huizinga TWJ., **Brooks WM**, Harville, A, Sibbitt WL. Jr., van Buchem MA: Neuropsychiatric systemic lupus erythematosus (NPSLE): a multisequence MRI study. *Arthritis Rheum* 50:3195-202, 2004.
- Heddings A, Bilgen M, Nudo R, Toby B, McIlff T, **Brooks WM**: High-Resolution MRI of the Human Median Nerve. *Neurorehabilitation and Neural Repair* 18:80-87, 2004.
- Villarreal G, Hamilton DA, Graham DP, Driscoll I, Qualls C, Petropoulos H, **Brooks WM**: Reduced area of the corpus callosum in posttraumatic stress disorder. *Psychiatry Research: Neuroimaging* 131:227-235, 2004.
- Rowland LM, Bustillo JR, Mullins PG, Jung RE, Lenroot R, Landgraf E, Barrow R, Yeo R, Lauriello J, **Brooks WM**: The effects of ketamine on anterior cingulate glutamatergic activity in healthy humans: A 4.0T proton MRS study. *Am J Psychiatry* 162: 394-6, 2005.
- Driscoll I, Hamilton DA, Yeo RA, **Brooks WM**, Sutherland RJ: Virtual Navigation in Humans: The Impact of Age, Sex, and Hormones on Place Learning. *Hormones and Behavior*, 47: 326-33, 2005.
- Hunter JV, Thornton RJ, Wang ZJ, Levin HS, Roberson G, **Brooks WM**, Swank PR: Late Proton MR Spectroscopy in Children Following Traumatic Brain Injury: Correlation with Cognitive Outcomes. *AJNR: Am J Neuroradiol* 26: 482-8, 2005.
- Bilgen M, Al-Hafez B, He Y-Y, **Brooks WM**: Magnetic resonance angiography of rat spinal cord at 9.4 T: a feasibility study *Magn Reson Med*, 53: 1459-61, 2005.
- Bilgen M, Heddings A, Al-Hafez B, Hasan W, McIlff T, Toby B, **Brooks WM**: Microneurography of The Human Median Nerve *J Magn Reson Imag* 21: 826-30, 2005.
- Jung RE, Haier RJ, Yeo RA, Rowland LM, Petropoulos H, Levine AS, Sibbitt WL Jr., **Brooks WM**: Sex Differences in N-acetylaspartate Correlates of General Intelligence: A ¹H-MRS Study of Normal Human Brain, *Neuroimage*, 26:965-72, 2005
- White LJ, Robergs RA, Sibbitt WL Jr., Gasparovic C, Petropoulos H, **Brooks WM**: Accumulation of acetyl groups following cycling: a ¹H-MR spectroscopy study. *Int J Sports Med* 26: 1-5, 2005.
- Holsen LM, Zarcone JR, Thompson TI, **Brooks WM**, Anderson MF, Ahluwalia JS, Nollen NL, Savage CR: Neural Mechanisms Underlying Food Motivation in Children and Adolescents, *Neuroimage*, 27: 669-76, 2005.
- Holsen LM, Zarcone JR, **Brooks WM**, Butler MG, Thompson TI, Ahluwalia JS, Nollen NL, Savage CR: Neural Mechanisms Underlying Hyperphagia in Prader-Willi Syndrome. *Obesity* 14: 1028-37, 2006.
- Driscoll I, Howard SR, Stone JC, Monfils MH, Tomanek B, **Brooks WM**, RJ Sutherland: The aging

hippocampus: A multi-level analysis in the rat. *Neuroscience*, 138: 1173-85 2006.

Yeo RA, **Brooks WM**, Jung RE; NAA and Higher Cognitive Function in Humans *Adv Exp Med Biol* 576: 215-26, 2006.

Yeo RA, Phillips JP, Jung RE, Brown AJ, Campbell RC, Brooks WM: Magnetic resonance spectroscopy detects brain injury and predicts cognitive functioning in children with brain injuries. *J Neurotrauma* 23:1427-35, 2006.

Onyszchuk G, Al-Hafez B, He Y-Y, Bilgen M, Berman NEJ, **Brooks WM**: A Mouse Model of Sensorimotor Controlled Cortical Impact: Characterization Using Longitudinal Magnetic Resonance Imaging, Behavioral Assessments and Histology. *J Neurosci Meth* 160:187-96, 2007.

Poole JL, Atanasoff G, Pelsor JC, Sibbitt WL Jr, **Brooks WM**. Relationships between person and health factors and job characteristics in women with systematic lupus erythematosus. *Work* 28:95-100, 2007.

Sajja BR, Narayana PA, Wolinsky JS, Ahn CW, and the PROMiSe Trial MRSI Group: Longitudinal Magnetic Resonance Spectroscopic Imaging of Primary Progressive Multiple Sclerosis Patients Treated with Glatiramer Acetate: Multi-Center Study. *Multiple Sclerosis* 14: 73-80, 2008

Burns JM, Donnelly JE, Anderson HS, Mayo MS, Spencer-Gardner L, Thomas GP, Cronk BB, Haddad Z, Klima D, Hansen D, **Brooks WM**: Peripheral Insulin and Brain Structure in Early Alzheimer's Disease, *Neurology*, 69;1094-1104, 2007.

Bustillo JR, Rowland LM, Jung R, **Brooks WM**, Qualls C, Hammond R, Hart B, Lauriello J: Proton magnetic resonance spectroscopy during initial treatment with antipsychotic medication in schizophrenia. *Neuropsychopharmacology* in press 2007.

Onyszchuk, G, He, Y-Y, Berman, NEJ, **Brooks, WM**: Detrimental Effects of Aging on Outcome from Traumatic Brain Injury – A Behavioral, Magnetic Resonance Imaging, and Histological Study in Mice. *J Neurotrauma* 25:153–171 2008.

C. Research Support

Ongoing Research Support

No number	Brooks, W (PI)	01/01/08 – 12/31/08
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Traumatic Brain Injury Glutamate Study

The main goal is to use non-invasive magnetic resonance spectroscopy to monitor glutamate and glutamine concentrations following administration of medication designed to reduce glutamate release in an animal model of traumatic brain injury

Role: PI

R01 DK080090	Savage, Cary (PI)	07/01/08 – 06/30/11
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NIH
Brain function predictors and outcome of weight loss and weight loss maintenance
We will use functional magnetic resonance imaging (fMRI) to characterize brain systems underlying food motivation in obese and healthy weight individuals and to identify predictors of weight loss and maintenance in obese individuals participating in a diet-based behavioral weight loss intervention.

Role: PI

R21 HD050534	Savage, Cary (PI)	05/15/07 – 4/30/09
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NIH/NICHD
Predicting Response to Memory Training in TBI with fMRI
The goals of this project are to use fMRI and a verbal memory paradigm to examine predictors of cognitive and daily functioning in individuals with traumatic brain injury.

Role: Co-Investigator

R21 AG029615	Burns, J (PI)	7/1/07 – 6/30/09
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NIH/NIA
Longitudinal Study of Cardiorespiratory Fitness in Alzheimer's Disease
The goals of the project are to assess the relation of cardiorespiratory fitness in AD and its relation to surrogate markers of brain aging and disease.

Role: Co-Investigator

0860041Z	Cirstea, MC (PI)	7/1/2007-6/30/2009
AHA-Heartland Multimodal Neuroimaging in Stroke Motor Rehabilitation The major goal is to predict recovery from motor deficits in chronic stroke using neuroimaging (fMRI and magnetic resonance spectroscopy). Role: Co-Investigator		
<u>Completed Research Support</u>		
P20 RR15636	Brooks, W (PI), Okada, Y (Program PI)	03/01/01 – 02/28/06
NIH/NCRR Physiological basis of MRS signals after traumatic brain injury (TBI) This Institutional Development Award to form a Center of Biomedical Research Excellence is to develop an integrated neuroimaging research center by funding promising researchers in specific projects and improving infrastructure. Dr Brooks' component is to determine the electrophysiological and histological underpinnings of MR spectroscopic changes (NAA and Cho) seen after TBI in a rat model. It will provide important understanding of the spectroscopic changes seen in the current proposal by linking basic and clinical science. Dr Brooks received no support from this grant award since moving to University of Kansas Medical Center in 2002. Role: PI on project.		
R01 NS039123	Brooks, W (PI)	08/01/03 – 07/31/07
NIH/NINDS Neurometabolism and Outcome in Traumatic Brain Injury. Aim: to determine the usefulness of neurochemical markers of brain injury determined by non-invasive magnetic resonance spectroscopy to predict cognitive outcome and monitor recovery following traumatic brain injury. Further aims are to understand the biochemistry and physiology of TBI. Role: PI		
R21 AG026482-01	Berman, N. (PI)	04/01/06 – 03/31/08
NIH/NIA Experimental Approaches to Traumatic Brain Injury in Aging The major goals of this project are to determine the effects of age on cognitive, molecular and cellular outcome following traumatic brain injury. Role: Co-Investigator		
No Number	Brooks, W (PI)	02/02/04 – 06/30/08
Siemens Medical Solutions Imaging Studies at 3 Tesla (Reproducibility of Spectroscopic Imaging) The major goals of this project are to evaluate and develop magnetic resonance spectroscopic imaging acquisition software for use in specific patient groups. Role: PI		
Varian, Inc.	Brooks, W. (PI)	07/01/05 – 06/30/08
Development of Spectroscopic Imaging in Animal Models at High Field The major goals of this project are to test the reliability of spectroscopic imaging under normal conditions as well as in selected injury models. Role: Principal Investigator		
0655759Z	Brooks, W (PI)	07/01/06 – 6/30/08
AHA-Heartland Arm Movement Patterns in Stroke: Neural Substrates The major goals of this project are characterize brain plasticity in a motor task in stroke patients using magnetic resonance spectroscopy and functional magnetic resonance imaging. Role: PI		