BIOGRAPHICAL SKETCH

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NAME	POSITION TITLE
Peter C.M. van Zijl	Professor of Radiology, Oncology and Biophysics
eRA COMMONS USER NAME (credential, e.g., agency login) pvanzij1	

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
Free University, Amsterdam, The Netherlands	BS	1977	Chemistry
Free University, Amsterdam, The Netherlands	MS	1980	Chemistry
Free University, Amsterdam, The Netherlands	PhD	1985	Mathematics & Physics
Carnegie Mellon University, Pittsburgh, PA	postdoc	1985-87	Chemistry
National Cancer Institute, NIH, Bethesda, MD	postdoc	1987-90	MRI and MRS of cancer

A. Personal Statement

My career has focused on the development of novel MRI and NMR technologies and their application to basic science problems and clinical disease. I am currently the PI of a National Research Resource Center that develops MRI and MR Spectroscopy (MRS) technology and makes this technology available to other Centers and any interested clinician and scientist. Throughout my career I have developed methods for MRS and MRS imaging (MRSI), for diffusion tensor imaging (DTI) and axonal mapping, for physiological imaging (blood flow, blood volume and blood oxygenation), for measuring glucose metabolism and for the study of magnetization transfer processes. In addition I have contributed to the understanding of the BOLD mechanism underlying functional MRI. My current focus is on developing new technologies for high field MRI in humans (7 Tesla) and animals (11.7 T and 17.6 T), including the development of novel biodegradable contrast agents and new molecular image markers. Recently we have developed the capability to image endogenous signals of cellular proteins and peptides. I am also working together with Dr. Martin Pomper to set up a human PET-MRI facility. The PET-MR scanner will be important for performing preliminary experiments before human translation.

B. Positions and Honors

Positions and Employment

1990-92	Research Assistant Professor, Dept. of Pharmacology, Georgetown University Medical School
4/92-8/92	Assistant Professor, Dept. of Radiology, Johns Hopkins University Medical School
9/92-9/97	Associate Professor, Dept. of Radiology, Johns Hopkins University Medical School
10/97	Professor, Dept. of Radiology, Johns Hopkins University Medical School
01/99	Founding Director, F.M. Kirby Research Center for Functional Brain Imaging, Kennedy Krieger Research Institute

Awards, Honors

2007	Gold Medal, International Society of Magnetic Resonance in Medicine
2004	Fellow, International Society of Magnetic Resonance in Medicine
2003	Chair, Experimental NMR conference (ENC)
1995	Established Investigator Award, American Heart Association

Committees, Boards

	Associate Editor *Magnetic Resonance in Medicine*; Editorial Board: *Journal of Cerebral Blood Flow Metabolism*, *Journal of Magnetic Resonance, NMR in Biomedicine*.
2000-04	Board of Trustees (ISMRM)
1997-04	Member Executive Committee for Experimental NMR conference (ENC)
2003	Member, National stroke Council
2001- present	ISMAR council

Member of many scientific advisory boards and NIH review panels.

C. Selected Peer-reviewed Publications (Selected from more than 240 peer-reviewed publications)

Most Relevant to the Current Application

1. Moonen CT, van Zijl PC, Frank JA, Le Bihan D, Becker ED. Functional magnetic resonance imaging in medicine and physiology. Science. 1990 Oct 5;250(4977):53-61.
2. van Zijl PCM, Davis D, Eleff SM, Moonen CTW, Parker RJ, and Strong JM. Determination of Cerebral Glucose Transport and Metabolic Kinetics by Dynamic Magnetic Resonance Spectroscopy, Am. J. Physiol. 1997.273 (Endocrinol. Metab. 36) E1216-E1227.
3. Van Zijl PC, Eleff SM, Ulatowski JA, Oja JM, Ulug AM, Traystman RJ, Kauppinen RA. Quantitative assessment of blood flow, blood volume and blood oxygenation effects in functional magnetic resonance imaging. Nat Med. 1998 Feb;4(2):159-67.
4. Mori S, Crain BJ, Chacko VP, van Zijl PCM, Three-dimensional Tracking of Axonal Projections in the Brain by Magnetic Resonance Imaging, Ann. Neurol., 1999; 45, 265.
5. Lu H, Golay X, Pekar J, van Zijl PCM, Functional Magnetic Resonance Imaging Based on Changes in Vascular Space Occupancy, Magn. Reson. 2003; Med., 50, 263-274.
6. Zhou J, Payen JF, Wilson DA, Traystman RJ, van Zijl PC. Using the amide proton signals of intracellular proteins and peptides to detect pH effects in MRI. Nat Med. 2003 Aug;9(8):1085-1090.
7. Zhou J, Lal B, Wilson DA, Laterra J, van Zijl PC. Amide proton transfer (APT) contrast for imaging of brain tumors. Magn Reson Med. 2003 Dec;50(6):1120-6.
8. Hendrikse J, van der Grond J, Lu H, van Zijl PC, Golay X. Flow territory mapping of the cerebral arteries with regional perfusion MRI. Stroke. 2004; Apr;35(4):882-7.
9. Book: S. Mori, S. Wakana, L.M. Nagae-Poetscher, and P.C.M. van Zijl, "MRI Atlas of Human White Matter", Elsevier, B.V., Amsterdam, 2005; ISBN:0-444-51741-3; 2nd edition: 2010 (K. Oishi, A. Faria, P.C.M. van Zijl), ISBN: 978-0-12-382081-5.
10. Zhou, JY; van Zijl, PCM. Chemical exchange saturation transfer imaging and spectroscopy. Progr. in NMR Spectr. 2006, 48(2-3), 109-136.
11. Donahue MJ, Lu H, Jones CK, Pekar JJ, van Zijl PC. An account of the discrepancy between MRI and PET cerebral blood flow measures. A high-field MRI investigation. NMR Biomed. 2006 Dec;19(8):1043-54.
12. Gilad AA, McMahon MT, Walczak P, Winnard PT Jr, Raman V, van Laarhoven HW, Skoglund CM, Bulte JW, van Zijl PC, Artificial reporter gene providing MRI contrast based on proton exchange. Nat Biotechnol. 2007 25(2):217-9; Epub 2007 Jan 28.
13. van Zijl PC, Jones CK, Ren J, Malloy CR, Sherry AD., MRI detection of glycogen in vivo by using chemical exchange saturation transfer imaging (glycoCEST). Proc Natl Acad Sci U S A. 2007 Mar 13; 104 (11): 4359-64. PMCID:PMC1838607.
14. Landman BA, Huang AJ, Gifford A, Vikram DS, Lim IA, Farrell JA, Bogovic JA, Hua J, Chen M, Jarso S, Smith SA, Joel S, Mori S, Pekar JJ, Barker PB, Prince JL, van Zijl PC. Multi-parametric neuroimaging reproducibility: a 3-T resource study. Neuroimage. 2011 Feb 14;54(4):2854-66. PMCID:PMD3020263.
15. Zhou J, Tryggestad E, Wen Z, Lal B, Zhou T, Grossman R, Wang S, Yan K, Fu D-X, Ford E, Tyler B, Blakeley J, Laterra J, van Zijl PCM Differentiation between glioma and radiation necrosis using molecular magnetic resonance imaging of endogenous proteins and peptides. Nat Med. 2011 Jan;17(1):130-4. Epub 2010 Dec 19. PMCID:PMC3058561.

D. Research Support

Ongoing Research Support

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

NCI 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.

1R01EB015032-01 (van Zijl, KKI) 08/01/11-06/30/15

NIH/NIBIB

Novel Approaches for CEST Labeling, Detection, Quantification and Translation

The overall goal of Project 1 is to develop quantitative MRI approaches for detecting both exogenous and endogenous CEST agents *in situ*.

9U13EB013553-06 (van Zijl) 03/15/06-05/31/16
NIH/NCRR
Annual Meeting of the NCRR/NIBIB Principal Investigators

R01AG020012 (Mori) 06/01/01-06/30/12
NIH/NIA
Human White Matter Tract Mapping by Diffusion MRI
The major goal is to use diffusion tensor imaging to map the brain as a function of age.

1RO1MH084021 (Lu at UTSW to KKI) 09/08/08-06/30/12
NIH/NIMH
Normalized functional MRI in human brain disorders
The goal is focused on the establishment of MRI measures of baseline venous oxygenation as a physiologic normalization factor for fMRI.

1R01EB009731-01 (Zhou) 07/01/09-06/30/13
NIH/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.

EUREKA RO1 DA026299 (Bulte) 07/01/08-05/31/12
NIH/NIDA
Developing MPI for non-invasive and quantitative imaging of stem cells
In collaboration with Philips Research Europe a new imaging technique will be developed based on the non-linear magnetization of superparamagnetic nanoparticles. MPI-magnetic particle imaging-is not related to MRI, and enables “hot spot” tracer imaging without anatomical background information. It will be tested (at high risk through the “EUREKA” grant mechanism) for quantitative non-invasive imaging of neural and mesenchymal stem cells in a rat transient cerebral ischemia model.

1R01 AA018694-01 (Desmond) 07/01/10-06/30/15
NIH/NIAA
fMRI Investigations of Cognition in Alcoholics
The goal of this project is to investigate brain functional differences between alcoholic and non-alcoholic individuals using functional neuroimaging.

1R01EB012590-01 (McMahon) 09/22/10-08/31/14
NIH/NIBIB
DIACEST Islet Cell Capsules for Immunoprotection, MR Detection, and pH Sensing
This proposal is focused on the production of immunoprotective islet cell capsules which are appropriate for treatment and allow MR monitoring of the pH these islets using biodegradable CEST contrast agents.

TEDCO 2011-MSCRFII-0052 (Walczak) 07/01/11-06/30/14
Technology Development Corporation
Intra-arterial targeted Delivery of Stem Cells to Brain Lesions Under MRI Monitoring
The overall aim of this project is to evaluate applicability of intra-arterial cell delivery to stroke and demyelinated brain lesions.

Philips Healthcare (van Zijl) 03/31/10-03/31/14
Multi-modality Brain Tumor imaging
The objective is to develop methods to assess tumor location in brain tumors.

5U13RR021994-04 (van Zijl) 03/15/06-05/31/16
NIH/NCRR

Annual Meeting of the NCRR/NIBIB Principal Investigators

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.

5P41 RR15241-10 (van Zijl) 09/30/01-08/31/11
NIH/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.

5RC2 DA029475-02 (Jernigan) 09/30/09-08/31/11
NIH/NIDA/NICHD
Creating a Pediatric Imaging-Genomics Data Resource
The goal of this project is to learn more about the role of genes in brain structure, chemistry, and function during development in typically developing children, teens, and young adults.