

CURRICULUM VITAE - **Marcus E. Raichle, Sr.**

Date: January 15, 2015

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Present Position:

Professor of Radiology, Neurology, Neurobiology, Biomedical Engineering and Psychology

Education:

Undergraduate:

1952 - 1955 Weatherwax High School
Aberdeen, Washington

1955 - 1960 University of Washington B.S.
Seattle, Washington

Graduate:

1960 - 1964 University of Washington M.D.
Seattle, Washington

Honorary Degrees

2006 University of Chicago, Doctor of Science

Academic Positions and Clinical Appointments:

1964 - 1965 Internship, Straight Medicine
Baltimore City Hospitals
Baltimore, Maryland

1965-1966 Resident in Medicine
Baltimore City Hospitals
Baltimore, Maryland

1964-1966 Fellow
Department of Medicine
Johns Hopkins University

1966-1968 Assistant Neurologist
New York Hospital
Cornell Medical Center
New York, New York

1968-1969 Neurologist (Chief Resident)
New York Hospital
Cornell Medical Center
New York, New York

1968-1969 Instructor
Department of Neurology
Cornell University Medical College
New York, New York

1969-1971 Major, United States Air Force
Neurologist and Flight Surgeon
USAF School of Aerospace Medicine
Brooks AFB
San Antonio, Texas

1969-1970 Clinical Instructor
Department of Medicine
Division of Neuroscience
University of Texas Medical School
San Antonio, Texas

1971-1972 Research Instructor in Neurology
Research Fellow in Radiation Physics
Mallinckrodt Institute of Radiology
Washington University School of Medicine
St. Louis, Missouri

1971-1975 Assistant Neurologist
Barnes Hospital
St. Louis, Missouri

1972-1975 Assistant Professor of Neurology
Washington University School of Medicine
St. Louis, Missouri

1972-1975 Assistant Professor of Radiology (Radiation Sciences)
The Edward Mallinckrodt Institute of Radiology
Washington University School of Medicine
St. Louis, Missouri

1974-1975 Assistant Professor of Biomedical Engineering
Washington University
St. Louis, Missouri

1975-1978 Associate Neurologist
Barnes Hospital
St. Louis, Missouri

1975-1978	Associate Professor of Neurology Washington University School of Medicine St. Louis, Missouri
1975-1979	Associate Professor of Radiology (Radiation Sciences) The Edward Mallinckrodt Institute of Radiology Washington University School of Medicine St. Louis, Missouri
1975 - 2007	Consulting Neurologist St. Louis Children's Hospital St. Louis, Missouri
1975 -1979	Associate Professor of Biomedical Engineering Washington University St. Louis, Missouri
1978 - present	Professor of Neurology Washington University School of Medicine St. Louis, Missouri
1978 - 2007	Neurologist Barnes-Jewish Hospital St. Louis, Missouri
2007 – present	Neurologist, emeritus Barnes-Jewish Hospital St. Louis, Missouri
1979 - present	Professor of Radiology The Edward Mallinckrodt Institute of Radiology Washington University School of Medicine St. Louis, Missouri
1979 - present	Professor of Biomedical Engineering Washington University St. Louis, Missouri
1982 - 1995	Senior McDonnell Fellow McDonnell Center for Studies of Higher Brain Function Washington University St. Louis, Missouri
1985 - 1997	Neurologist St. Louis Regional Hospital St. Louis, Missouri
1993	Professor of Neurobiology Washington University St. Louis, Missouri

- 1995 - 2007 Co-Director (with Michael Welch), Division of Radiological Sciences
Mallinckrodt Institute of Radiology
Washington University School of Medicine
St. Louis, Missouri

- 1999 Adjunct Professor of Psychology
University of Missouri-Columbia
Columbia, Missouri

- 2000 Professor of Psychology
Washington University
St. Louis, Missouri

- 2014 The Alan A. and Edith L. Wolff Distinguished Professorship in Medicine

Non-University Activities:

- 1974 - 1990 Stroke Council
American Heart Association

- 1975 - 1979 Neurology Study Section A
National Institutes of Health

- 1975 - 1978 Cardiovascular D Research Study Committee
American Heart Association

- 1976 – present Oboe and Solo English Horn, St Louis Civic Orchestra, St Louis, Missouri

- 1978 Committee on Cerebrovascular Diseases
NINCDS Long Range Planning Effort

- 1978 Basic Science Task Force, NINCDS Long Range
Planning Effort

- 1983 NINCDS Ad Hoc Advisory Panel

- 1983 Chairman, NINCDS PET Grants Special Review Committee

- 1983 NIMH Program Evaluation Panel, Neurosciences
Research Branch

- 1985 Chairman, NINCDS Brain Imaging Centers Special
Review Committee

- 1987 - 1988 National Academy of Sciences (CBASSE) Panel on
New Technologies in Cognitive Psychophysiology

- 1989 - 2000 Advisory Board, McDonnell-Pew Program in Cognitive
Neuroscience

- 1990 Institute of Medicine Committee: National Neural
Circuitry Database

1990	Institute of Medicine Committee: Symposium on Neuroscience and Brain Research ("Decade of the Brain Symposium")
1993-1995	Congress Committee, IBRO
1994-2001	Scientific Advisory Board, National Alliance for Autism Research
1994-1998	Dana Awards Committee, Charles A. Dana Foundation
1998-1999	Lounsbery Award Committee, National Academy of Sciences
2000-2008	Chairman, Advisory Board, National fMRI Data Center, Dartmouth College
2000 - 2001	Chairman, Presidential Commission of "Perspectives in neurobiological research in the Max Planck Society with special emphasis on imaging procedures"
2001 - 2002	National Academy of Sciences Panel to Review the Scientific Evidence on the Polygraph
2002 – 2004	Scientific Advisory Board, Santa Fe Institute Consortium on Enhancing Human Development
2002	Medical Director, First Solo Balloon Flight Around the World (Steve Fossett, Pilot)
2002 – 2010	Scientific Advisory Board, Keck Center for Neuroimaging, University of California at San Diego
2002 – 2005	External Advisory Board, F.C. Donders Center for Cognitive Neuroimaging, Nijmegen, The Netherlands
2002 – 2005	External Advisory Board, Department of Psychology, University of California, Santa Barbara
2006 - 2007	National Research Council panel to review the State of the Science in Nuclear Medicine
2007 – 2010	Governing Board, John D. and Katherine T. MacArthur Foundation Neurolaw Initiative
2007 – 2008	Blue Ribbon Panel to evaluate NIMH Intramural Research Program
2008 – 2009	International Science Advisory Council, Ontario (Canada) Brain Initiative
2002 – 2014	External Advisory Board, Center for the Neural Basis of Cognition (CNBC), University of Pittsburgh and Carnegie-Mellon University

- 2009 – present Advisory Board, Center for Neuroimaging (CNI), Stanford University
- 2005 – present Board of Scientific Advisors, Center for Neural Science, New York University
- 2007 – 2013 Scientific Advisory Board (Fachbeirat), Max Planck Institute for Biological Cybernetics, Teubingen, Germany
- 2008 - 2016 MacArthur Foundation Network on Law and Neuroscience
- 2009 – 2014 Scientific Advisory Board, West Virginia University (Neuroscience)
- 2011 – 2015 Chair, Scientific Advisory Committee, Ontario (Canada) Brain Institute
- 2011 – 2015 Member, Board of Directors, Ontario (Canada) Brain Institute and Foundation
- 2012 – 2014 Board on Behavioral, Cognitive and Sensory Sciences (BBCSS), National Research Council, National Academy of Sciences
- 2012 – present Ralph Gerard Prize Committee, Society for Neuroscience
- 2013 – 2014 Troland Award Committee, NAS, USA
- 2015 Troland Award Committee Chairman, NAS, USA

University Activities:

- Chairman, Residency Selection Committee, Department of Neurology, 1975-1987
- Vice Chairman, Radioactive Drug Research Committee, 1980 – 2005
- Radioactive Drug Research Committee, Ex Officio Member, 2005 - present
- Advisory Committee, Laboratory of Neuroimaging, Department of Neurology, 1989 -1993
- Chairman, Search Committee, Psychology Department Chair, 1990 - 1995
- Advisory Committee, General Clinical Research Center, 1985 - 1995
- Advisory Committee, Pediatric Clinical Research Center, 1990 - 1994
- Search Committee, Director of Neuroradiology, 1990
- Search Committee, Director of Pediatric Neurology, 1990
- Committee on Indirect Costs and Perdeim, 1992
- Steering Committee, McDonnell Center for Studies of Higher Brain Function, 1992 - 2000
- Research Advisory Committee, Mallinckrodt Institute of Radiology, 1992 - 1995
- Clinical Research Committee, Mallinckrodt Institute of Radiology, 1992 - 2000

Executive Committee, Mallinckrodt Institute of Radiology, 1995 – 2007

Co-Director (with Michael J. Welch), Division of Radiological Sciences, Mallinckrodt Institute of Radiology, 1995 - 2007

Search Committee, Luce Professorship in Individual and Collective Memory, 1998-2000

Internal Review Committee, Division of Biology and Biomedical Sciences, 2001-2002

Member, Twenty-first Century Awards Committee, Washington University, 2003 – 2011

Member, Task Force On Undergraduate Education Across The University, 2009 – 2011

Member, Committee on the History of Medicine Program, 2008 – present

Member, Department of Radiology Head Search Committee 2012 - 2014

Hospital Appointments:

1975 - 2008	Barnes-Jewish Hospital of St. Louis (Neurologist)
2008 – present	Barnes-Jewish Hospital of St. Louis (Emeritus Staff)
1975 – 2008	St. Louis Childrens Hospital

Medical License: Missouri, R4521, 8 January 1972

Specialty Board:

American Board of Psychiatry and Neurology (Neurology),
April 1973

Honors and Awards:

1964	E.O. Jones Scholarship Prize University of Washington School of Medicine
1972 - 1977	NINCDS Teacher-Investigator Award
1978	K.A.C. Elliott Lecture, Montreal Neurological Institute
1984	The Sarah L. Poiley Memorial Award, New York Academy of Sciences (with Michael Phelps)
1987	The George William Church Lecture, University Texas, San Antonio
1988	The H.J.M. Barnett Lecture, University of Western Ontario

- 1989 Carmichael Lecture, National Hospital, London
- 1990 Paul C. Aebersold Award, Society of Nuclear Medicine
Rita B. Rudel/Lucy Moses Lecture, Columbia University
- 1991 Willis Lecture, American Heart Association
John Dorsey Memorial Lecture, Wayne State University
Moruzzi Lecture, European Neuroscience Association
Sachs Lecture, Child Neurology Society
Flexner Lecture, University of Pennsylvania
- 1992 Elected, National Academy of Medicine (formerly the Institute of Medicine/IOM)
Decade of the Brain Medal, American Association of
Neurological Surgeons (Harvey Cushing Society)
Sylvio O. Conti Decade of the Brain Award
Annual Science in Medicine Lecture, University of Washington
Decade of the Brain Lecture, Society for Neuroscience
Elizabeth Crosby Memorial Lecture and Medal,
University of Michigan
Wendell Scott Memorial Lecture, Mallinckrodt Institute of
Radiology, Washington University School of Medicine
- 1993 Baule Lecture, Syracuse University
Glaxo Lecture, Association of British Neurologists
Geschwind Lecture, Dyslexia Society
- 1994 Fogan Lecture, State University of New York, Buffalo
Elected, Honorary Foreign Member Association of British Neurologists
Betty Banker and Maurice Victor Visiting Professor, Case-Western Reserve
University
- 1996 Elected, National Academy of Sciences
Elected, Fellow of the American Association for the Advancement of Science
Charles A. Dana Award for Pioneering Achievement in Health
*with Michael Posner
William James Book Award, American Psychological Association
*with Michael Posner
Theobald Smith Award, Albany Medical College
Safar Lecture, University of Pittsburgh
- Stephen Lecture, Washington University
- 1997 Salmon Lecture and Medal, New York Academy of Medicine
Kuhl-Lassen Lecture, Society of Nuclear Medicine
- 1998 Elected, Fellow of the American Academy of Arts and Sciences
Karl Spencer Lashley Award, American Philosophical Society
*with Michael Posner
Stafford Little Lecture, Princeton University
- 1999 Carl and Gerty Cori Award for Faculty Achievement
Washington University (inaugural recipient)
Bristol-Myers Squibb Award for Distinguished Achievement in Neuroscience Research

- William Fields Lecture, University of Texas, Houston
- 2000 Robert J. and Claire Pasarow Foundation Medical Research Award
Elected Honorary Member, American Neurological Association
- 2001 Grawemeyer Award for Psychology (inaugural recipient), University of Louisville
(shared with Steve Petersen and Michael Posner)
Geshwind Lecture, Harvard University
- 2002 Goldberg Family Lecture, University of Rochester
Soriano Lectureship, American Neurological Association
- 2004 Patricia Goldman-Rakic Award in Cognitive Neuroscience (shared with Michael Posner)
from the National Association for Research in Schizophrenia and Depression (NARSAD)
- 2005 Herbert G. Cohen Memorial Lecture in Neuroethics, Columbia University
- 2006 University of Washington School of Medicine, Distinguished Alumni Award
Honorary Doctor of Science, University of Chicago
M.R. Bauer Distinguished Guest Lecturer, Brandeis University
Kavli Distinguished Scholar, University of California, San Diego
Cotzius Lecturer, American Academy of Neurology
Lauterbur Lecturer, International Society of Magnetic Resonance in Medicine
- 2008 Hunt-Wilson Lecture, American Association of Neurological Surgeons
Allen Edwards Endowed Lectureship, University of Washington
Klaus Hoffmann Lecture, University of Pittsburgh
Eli Robbins Lecture, Washington University
Abass Alavi Lecture, University of Pennsylvania
Ralph W. Gerard Prize in Neuroscience, Society for Neuroscience
- 2009 George A. Miller Prize, Cognitive Neuroscience Society
- 2010 C. U. Ariens Kappers Medal, Royal Netherlands (Netherlands) Academy of Sciences
- 2011 MetLife Foundation Award for Medical Research
Peter Raven Lifetime Achievement Award, St Louis Academy of Sciences
International Society Cerebral Blood Flow & Metabolism Lifetime Achievement Award
- 2012 Second Century Award, Washington University
Washington University Founders Day Awards: Distinguished Faculty Award
- 2013 Talairach Lecturer, Organization for Human Brain Mapping
- 2014 Perl Prize in Neuroscience, University of North Carolina
Kavli Prize in Neuroscience, Norwegian Academy of Science and Letters
Elected: Norwegian Academy of Science and Letters
- 2015 Dr. Charles L. Branch BrainHealth Award
Lifetime Achievement ('Glass Brain') Award, Organization for Human Brain Mapping
American Society of Neuroradiology, Honorary Member
Fellow, American Physiological Society (Inaugural group)

2016 IPSEN Foundation Neuronal Plasticity Prize

Editorial Responsibilities:

1974 - 1982	Editorial Board, STROKE, A Journal of Cerebral Circulation
1976 - 1982	Editorial Board, NEUROLOGY
1979 - 1986	Editorial Board, ANNALS OF NEUROLOGY
1981 - 1983	Deputy Chief Editor, JOURNAL OF CEREBRAL BLOOD FLOW AND METABOLISM
1983 - 1986	Editorial Board, JOURNAL OF CEREBRAL BLOOD FLOW AND METABOLISM
1985 - 1990	Editorial Board, BRAIN (first non-British member)
1985 - 1987	Editorial Board, HUMAN NEUROBIOLOGY
1985 - 1990	Editorial Board, BRAIN RESEARCH
1987 - 1990	Editorial Board, SYNAPSE
1989 - 1995	Editorial Board, JOURNAL OF NEUROSCIENCE
1989 - 2004	Editorial Board, JOURNAL OF COGNITIVE NEUROSCIENCE
1990 - 2002	Editorial Board, CEREBRAL CORTEX
1990 - 1996	Editorial Board, JOURNAL OF NUCLEAR MEDICINE
1993 - 1998	Editorial Board, BIOLOGICAL PSYCHIATRY
1993 - 2004	Editorial Board, LEARNING AND MEMORY
1993 - 2004	Editorial Board, HUMAN BRAIN MAPPING
1995 - 2004	Editorial Board, NEUROIMAGE
2001 - present	Editorial Board, PNAS
2011 - present	Editorial Board, TRENDS IN COGNITIVE SCIENCE
2014 – present	Editorial Board, PSYCHOLOGICAL SCIENCE IN THE PUBLIC INTEREST

Professional Societies and Organizations:

American Academy of Neurology
American Academy of Arts and Sciences
American Association for Advancement of Science
 Fellow, 1996
 Chair-elect, Section on Neuroscience (V), 2002
 Chair, Section on Neuroscience (V), 2003
American Neurological Association
American Physiological Society, Fellow
American Society of Neuroradiology, Honorary Member
Association of British Neurologists, Honorary Foreign Member
Association for Research in Nervous and Mental Disease
Birmingham Medical Research Expeditionary Society
Explorers Club (New York)
International Society of Cerebral Blood Flow and Metabolism
 Secretary, 1985-1989
 President-Elect, 1989-1991
 President, 1991-1993
International Double Reed Society
National Academy of Medicine (formerly Institute of Medicine)
National Academy of Sciences
 Member, Editorial Board, PNAS, 1998 – present
 Troland Award Committee 2013 – present
 Chair 2015
Norwegian Academy of Science and Letters
Organization for Human Brain Mapping
 Interin Council, 1996-1997
 Council, 1997 - 1999
 Secretary, 1997-1998
 Chair-elect, 2002 - 2003
 Chair, 2003 - 2004
 Past Chair, 2004 - 2005
Society for Neuroscience
 Public Relations Committee 1988-1991
 Program Committee 1993-1996
 Nominating Committee 1996
 Grass Lecture Selection Committee 1996-1997
 Nominating Committee 2000

Published Papers:

Times cited (excluding self-citation): 62,865; Papers cited > 1000 times: 12; H-index: 125

1. Raichle ME, Posner JB, Plum F: Cerebral blood flow during and after hyperventilation. *Arch Neurol* 23:394-403, 1970.
2. Raichle ME, Kutt H, Louis S, McDowell F: Neurotoxicity of intravenously administered penicillin G. *Arch Neurol* 25:232-239, 1971.
3. Harik SI, Raichle ME, Reis DJ: Spontaneously remitting spinal epidural hematoma in a patient on anticoagulation. *NEJM* 284:1355-1357, 1971.
4. Raichle ME, King WH: Functional hypoglycemia: a potential cause of unconsciousness in flight. *Aerospace Med.* 43:76-78, 1972.
5. Richter PL, Zimmerman EA, Raichle ME, Liske E: The electroencephalograms of 2947 United States Air Force Academy Cadets. *Aerospace Med* 42:1011-1014, 1971.
6. Phelps ME, Grubb RL, Raichle ME, Ter-Pogossian MM: The effects of arterial blood pressure on the regional cerebral blood volume by x-ray fluorescence. *Stroke* 4:390-399, 1973.
7. Grubb RL, Jr, Hernandez M, Raichle ME, Phelps ME: The effect of iodinated contrast agents on the autoregulation of cerebral blood flow. *Stroke* 5:155-160, 1974.
8. Stone HL, Raichle ME, Hernandez MJ: The effect of sympathetic denervation on cerebral CO₂ sensitivity. *Stroke* 5:13-18, 1974.
9. Raichle ME, Grubb RL, Jr, Eichling JO: Brain permeability of water. *Arch of Neurol* 30:319-321, 1974.
10. Eichling JO, Raichle ME, Grubb RL, Jr, Ter-Pogossian MM: Evidence of the limitations of water as a freely diffusible tracer in brain of the Rhesus monkey. *Circ Res* 35:358-364, 1974.
11. Raichle ME, Larson KB, Phelps ME, Grubb RL, Jr, Welch MJ, Ter-Pogossian MM: In vivo measurement of brain glucose transport and metabolism employing ¹¹C-glucose. *Amer J Physiol* 228:1936-1948, 1975.
12. Grubb RL, Jr, Raichle ME, Eichling JO, Ter-Pogossian MM: The effects of changes in PaCO₂ on cerebral blood volume, blood flow, and vascular mean transit time. *Stroke* 5:630-639, 1974.

13. Gado M, Eichling JO, Grubb RL, Jr, Phelps ME, Raichle ME, Ter-Pogossian MM: Appraisal of the angiographic circulation time as an index of cerebral blood flow. *Radiology* 115:107-112, 1975.
14. Eichling JO, Raichle ME, Grubb RL, Jr, Larson KB: In vivo determination of cerebral blood volume with radioactive oxygen-15 in the monkey. *Circ Res* 27:707-714, 1975.
15. Grubb RL, Jr, Raichle ME, Phelps ME, Ratcheson RA: Effects of increased intracranial pressure upon cerebral blood volume, blood flow, and oxygen utilization in monkeys. *J Neurosurg* 43:385-398, 1975.
16. Raichle ME, Grubb RL, Jr, Gado MH, Eichling JO, Ter-Pogossian MM: In vivo correlation between regional cerebral blood flow and oxidative metabolism in man. *Arch Neurol* 33:523-356, 1976.
17. Hernandez-Perez MJ, Raichle ME, Stone HL: The role of the peripheral sympathetic nervous system in cerebral blood flow autoregulation. *Stroke* 6:284-292, 1975.
18. Raichle ME, Eichling JO, Straatmann MG, Welch MJ, Larson KB, Ter-Pogossian, MM: Blood brain barrier permeability of ¹¹C-labeled alcohols and ¹⁵O-labeled water. *Am J Physiol* 230:543-552, 1976.
19. Raichle ME, Hartman BK, Eichling JO, Sharpe LG: Central noradrenergic regulation of cerebral blood flow and vascular permeability. *Proc Nat Acad Sci* 72:3726-3730, 1975.
20. Raichle ME, Grubb RL, Jr, Eichling JO, Ter-Pogossian MM: Measurement of brain oxygen utilization with radioactive oxygen-15, experimental verification. *J Appl Physiol* 40:638-640, 1976.
21. Phelps ME, Hoffman EJ, Coleman RE, Welch MJ, Raichle ME, Weiss ES, Sobel BE, Ter-Pogossian MM: Tomographic images of blood pool and perfusion in brain and heart. *J Nucl Med* 17:603-612, 1976.
22. Fletcher AP, Alkjaersig N, Davies A, Lewis M, Brooks J, Hardin W, Landau W, Raichle ME: Blood coagulation and plasma fibrinolytic enzyme system pathophysiology in stroke. *Stroke* 7:337-348, 1976.
23. Fletcher AP, Alkjaersig N, Tulevski V, Davies A, Brooks J, Hardin W, Eliasson S, Landau W, Raichle ME: A pilot study of urokinase therapy in cerebral infarction. *Stroke* 7:135-142, 1976.
24. Gado MH, Phelps ME, Hoffman EJ, Raichle ME: Changes in cerebral blood volume and vascular mean transit time during induced cerebral seizures. *Radiology* 121(1):105-109, 1976.

25. Grubb RL, Jr, Raichle ME, Eichling JO, Gado MH: The effects of subarachnoid hemorrhage upon cerebral blood volume, blood flow, and oxygen utilization in humans. *J Neurosurg* 46:446-453, 1977.
26. Phelps ME, Hoffman EJ, Coleman RE, Welch MJ, Raichle ME, Weiss ES, Sobel BE, Ter-Pogossian MM: Tomographic images of blood pool and perfusion in brain and heart. *J Nucl Med* 17:603-612, 1976.
27. Grubb RL, Jr, Raichle ME, Gado MH, Eichling JO, Hughes CP: Cerebral blood flow, oxygen utilization and blood volume in dementia. *Neurology* 27:905-910, 1977.
28. Grubb RL, Jr, Raichle ME, Eichling JO: Peripheral sympathetic regulation of brain water permeability. *Brain Res* 144:204-207, 1978.
29. Raichle ME, Welch MJ, Grubb RL, Jr, Higgins CS, Ter-Pogossian MM, Larson KB: Measurement of regional substrate utilization rates in vivo using emission tomography. *Science* 199:986-987, 1978.
30. Raichle ME, Grubb RL, Jr: Regulation of brain water permeability by centrally released vasopressin. *Brain Res* 143:191-194, 1978.
31. Raichle ME, Grubb RL, Jr, Phelps ME, Gado MH, Caronna JJ: Cerebral hemodynamics and metabolism in pseudotumor cerebri. *Ann Neurol* 4(2):104-111, 1978.
32. Grubb RL, Jr, Raichle ME, Higgins CS, Eichling JO: Measurement of regional cerebral blood volume by emission tomography. *Ann Neurol* 4:322-328, 1978.
33. Laux BE, Raichle ME: The effect of acetazolamide on cerebral blood flow and oxygen utilization in the rhesus monkey. *J Clin Invest* 62:585-592, 1978.
34. Tewson TJ, Welch MJ, Raichle ME: ¹⁸F-labeled 3-deoxy-3-fluoro-D-glucose: Synthesis and preliminary bio-distribution data. *J Nucl Med* 19(12):1339-1345, 1978.
35. Kliefoth AB, Grubb RL, Jr, Raichle ME: Depression of cerebral oxygen utilization by hypercapnia in the Rhesus monkey. *J Neurochem* 32:661-663, 1979.
36. Herbst TJ, Raichle ME, Ferrendelli JA: α -adrenergic regulation of cyclic AMP levels in brain microvessels. *Science* 204:330-332, 1979.
37. Raichle ME, Grubb RL, Jr, Higgins CS: Measurement of brain tissue carbon dioxide content in vivo by emission tomography. *Brain Res* 166:413-417, 1979.

38. Grubb RL, Jr, Ratcheson RH, Raichle ME, Kliefoth AB, Gado MH: Regional cerebral blood flow and oxygen utilization in superficial temporal-middle cerebral artery anastomosis patients. An exploratory definition of clinical problems. *J Neurosurg* 50:733-741, 1979.
39. Tewson TJ, Raichle ME, Welch MJ: Preliminary studies with ¹⁸F-haloperidol: A radioligand for in vivo studies of the dopamine receptors. *Brain Res* 192:291-295, 1980.
40. Preskorn S, Hartman B, Raichle ME, Clark H: The effect of dibenzazepines (tricyclic antidepressants) on cerebral capillary permeability in the rat in vivo. *J Pharm Exp Therapeutics* 213:313-320, 1980.
41. Raichle ME, Larson KB: The significance of the NH₃-NH₄⁺ equilibrium on the passage of ¹³N-ammonia from blood to brain. A new regional residue detection model. *Circ Res* 48:913-937, 1981.
42. Clark HB, Hartman BK, Raichle ME, Preskorn SH, Larson KB: Measurement of cerebral vascular extraction fractions in the rat using intracarotid injection techniques. *Brain Res* 208:311-323, 1981.
43. Grubb RL, Jr, Raichle ME: Intraventricular angiotensin II increases brain vascular permeability. *Brain Res* 210:426-430, 1981.
44. Montgomery EB, Grubb RL, Jr, Raichle ME: Cerebral hemodynamics and metabolism in postoperative cerebral vasospasm and treatment with hypertensive therapy: A case report. *Ann Neurol* 9:502-506, 1981.
45. Grubb RL, Jr, Raichle ME: Effects of hemorrhagic and pharmacologic hypotension on cerebral oxygen utilization and blood flow. *Anesthesiology* 56:3-8, 1982.
46. Clark HB, Hartman BK, Raichle ME, Preskorn SH, Larson KB: An intravenous technique for the measurement of cerebral vascular extraction fraction in the rat. *J Cerebral Blood Flow & Metab* 2:187-196, 1982.
47. Preskorn SH, Raichle ME, Hartman BK: Antidepressants alter cerebrovascular permeability and metabolic rate in primates. *Science* 217:250-252, 1982.
48. Martin WRW, Raichle ME: Cerebellar blood flow and metabolism in cerebral hemisphere infarction. *Ann. Neuro* 14:168-176, 1983.
49. Herscovitch P, Markham J, Raichle ME: Brain blood flow measured with intravenous H²¹⁵O. I. Theory and error analysis. *J Nucl Med* 24:782-789, 1983.
50. Raichle ME, Martin WRW, Herscovitch P, Mintun M, Markham J: Brain blood flow measured with H²¹⁵O. II. Implementation and validation. *J Nucl Med* 24:790-798, 1983.

51. Volpe JJ, Herscovitch P, Perlman JM, Raichle ME: Positron emission tomography in the newborn: Extensive impairment of regional cerebral blood flow with intraventricular hemorrhage and hemorrhagic intracerebral involvement. *J Pediatrics* 72:589-601, 1983.
52. Dischino DD, Welch MJ, Kilbourn MR, Raichle ME: The relationship between lipophilicity and the brain extraction of C-11-labeled radiopharmaceuticals. *J Nucl Med* 24:1030-1038, 1983.
53. Herscovitch P, Raichle ME: Effect of tissue heterogeneity on the measurement of cerebral blood flow with equilibrium C15O2 inhalation technique. *J Cereb Blood Flow & Metab* 4:407-415, 1983.
54. Mintun MA, Raichle ME, Kilbourn MR, Wooten FG, Welch MJ: A quantitative model for the in vivo assessment of drug binding sites with positron emission tomography. *Ann Neurol* 15:217-227, 1984.
55. Perlmutter JS, Raichle ME: Pure hemisdystonia with basal ganglion abnormalities on PET. *Ann Neurol* 15:228-233, 1984.
56. Welch MJ, Kilbourn MR, Mathias CJ, Mintun MA, Raichle ME: Comparison in animal models of 18F-spiroperidol and 18F-haloperidol: potential agents for imaging the dopamine receptor. *Life Sciences* 33:1687-1693, 1983.
57. Mintun MA, Raichle ME, Martin WRW, Herscovitch P: Brain oxygen utilization measured with O-15 radiotracers and positron emission tomography. *J Nucl Med* 25:177-187, 1984.
58. Fox PT, Raichle ME: Stimulus rate dependence of regional cerebral blood flow in human striate cortex demonstrated by positron emission tomography. *J Neurophysiology* 51: 1109-1120, 1984.
59. Powers WJ, Martin WRW, Herscovitch P, Raichle ME, Grubb RL, Jr: Extracranial-intracranial bypass surgery: Hemodynamic and metabolic effects. *Neurology* 34:1168-1174, 1984.
60. Powers WJ, Grubb RL, Jr, Raichle ME: Physiological responses to focal cerebral ischemia in humans. *Ann Neurol* 16:546-552, 1984.
61. Fox PT, Mintun MA, Raichle ME, Herscovitch P: A noninvasive approach to quantitative functional brain mapping with H215O and positron emission tomography. *J Cereb Blood Flow & Metab* 4:329-333, 1984.
62. Reiman EM, Raichle ME, Butler FK, Herscovitch P, Robins E: A focal brain abnormality in panic disorder, a severe form of anxiety. *Nature* 310:683-685, 1984.

63. Perlman JM, Herscovitch P, Kreusser KL, Raichle ME, Volpe JJ: Positron emission tomography in the newborn: effect of seizure on regional cerebral blood flow in an asphyxiated infant. *Neurology* 35:244-247, 1985.
64. Fox PT, Perlmutter JS, Raichle ME: A stereotactic method of anatomical localization for positron emission tomography. *J Computer Assist Tomog* 9:141-153, 1985.
65. Fox PT, Raichle ME: Stimulus rate determines regional brain blood flow in striate cortex. *Ann Neurol* 17:303-305, 1985.
66. Volpe JJ, Herscovitch P, Perlman JM, Kreusser KL, Raichle ME: Positron emission tomography in the asphyxiated term newborn: parasagittal impairment of cerebral blood flow. *Ann Neurol* 17:287-296, 1985.
67. Herscovitch P, Raichle ME: What is the correct value for the brain:blood partition coefficient for water? *J Cerebral Blood Flow & Metabol* 5:65-69, 1985.
68. Herscovitch P, Mintun MA, Raichle ME: Brain oxygen utilization measured with O-15 radiotracers and positron emission tomography: generation of metabolic images. *J Nucl Med* 26:416-417, 1985.
69. Powers WJ, Grubb RL, Jr, Baker RP, Mintun MA, Raichle ME: Regional cerebral blood flow and metabolism in reversible ischemia due to vasospasm. Determination by positron emission tomography. *J Neurosurg* 62:539-546, 1985.
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