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Curriculum Vitae
JEFFREY ROBERT KIRSCH

PERSONAL

Office address: 3181 S.W. Sam Jackson Park Road, KPV5A
Portland, Oregon 97239-3098

Website: <http://www.ohsu.edu/anesth/>

EDUCATION

1975 - 1978 Undergraduate: The University of Michigan,
Ann Arbor, Michigan

1979 - 1983 Medical School: The University of Michigan
Medical School, Ann Arbor, Michigan

2004 Certificate in Business Administration, American Society of
Anesthesiologists

PROFESSIONAL APPOINTMENTS

2002 - Present Professor and Chair, Department of Anesthesiology and
Perioperative Medicine, Oregon Health and Science University
(start date 12/1/02)

2009 – 2018 Associate Dean for Clinical and Veteran’s Affairs. Oregon
Health and Science University, Portland OR (Effective
November 1, 2009)

2009 OHSU Professional Board Disciplinary Hearing Officer

2006 – 2008 President, Salmon Creek Anesthesia Providers, LLC owned
by OHSU Medical Group, Incorporated in Washington

2000-2002 Johns Hopkins University ACGME Anesthesiology
Resident Training Program Director

2000-2002 Director of Medical Student Education, The
Johns Hopkins University, Department of Anesthesiology and
Critical Care Medicine, Baltimore, Maryland

1999-2002 Professor: The Johns Hopkins University

Department of Anesthesiology and Critical Care Medicine,
Baltimore, Maryland

1998 - 2002 Director: Johns Hopkins Office-Based Anesthesia Services.

1997 - 2002 Vice Chairman, Training and Education, The Johns Hopkins University Department of Anesthesiology and Critical Care Medicine.

1992 - 1998 Associate Professor, The Johns Hopkins University Department of Anesthesiology and Critical Care Medicine Baltimore, Maryland

Director of Residency Education, The Department of Anesthesiology and Critical Care Medicine, The Johns Hopkins University, Baltimore, Maryland

1992 - 2002 Associate Professor, The Johns Hopkins University Department of Neurology, Baltimore, Maryland

1991 - 2000 Associate Director of Medical Student Education, The Johns Hopkins University, Department of Anesthesiology and Critical Care Medicine, Baltimore, Maryland

1988 - 1992 Assistant Professor, The Johns Hopkins Hospital, Department of Anesthesiology and Critical Care Medicine, Baltimore, Maryland

1988 - 1992 Assistant Professor, The Johns Hopkins Hospital, Department of Neurology, Baltimore, Maryland

1988 - 1992 Associate Director of Residency Education, The Johns Hopkins Hospital, Department of Anesthesiology and Critical Care Medicine, Baltimore, Maryland

1987 - 1988 Instructor, The Johns Hopkins Hospital, Department of Anesthesiology and Critical Care Medicine, Baltimore, Maryland

1986 - 1988 Fellow, Divisions of Neurosurgical Anesthesia and Neuroscience Critical Care, The Johns Hopkins Hospital, Department of Anesthesiology and Critical Care Medicine, Baltimore, Maryland

1986 - 1987 Chief Resident, The Johns Hopkins Hospital, Department of Anesthesiology and Critical Care Medicine, Baltimore, Maryland

1984 - 1986 Resident, The Johns Hopkins Hospital, Department of Anesthesiology and Critical Care Medicine, Baltimore, Maryland

1983 - 1984 Intern, The Johns Hopkins Hospital, Department of Anesthesiology and Critical Care Medicine, Baltimore, Maryland

BOARD CERTIFICATION

1987 Diplomate of the American Board of Anesthesiology, October 30, 1987 (time unlimited)
Certificate number 14602

MEDICAL LICENSE

Oregon
October 21, 2002
Certificate number: MD24155

Maryland
March 23, 1987
Certificate number D34901 (allowed to lapse)

Washington
August 19, 2005
Certificate number MD0004554 (allowed to lapse)

DEGREES

1978 Bachelor of Science in Physiology,
The University of Michigan

1978 Bachelor of Science in Zoology,
The University of Michigan

1983 Doctor of Medicine (with Distinction),
The University of Michigan

HONORS AND AWARDS

1976 William J. Bronstrom Freshman Prize, The University of Michigan

1978 James B. Angell Scholar, The University of Michigan

1978 Highest Honors in Physiology, The University of Michigan

1978 High Distinction in Zoology, The University of Michigan

1983 Special Dean's Award for Excellence in Biomedical Research,
The University of Michigan

1983 Alpha Omega Alpha

1986 Merel Harmel, M.D. Outstanding Resident Award

1994 - 2000 Associate Examiner, American Board of Anesthesiology

1997 - 2000 Alternate Delegate, American Society of Anesthesiology

2000 - 2004 Delegate, American Society of Anesthesiology House of
Delegates (Society of Neurosurgical Anesthesia and Critical
Care)

2004 – 2007 Alternate Delegate, American Society of Anesthesiology
(Society of Neurosurgical Anesthesia and Critical Care)

2000 - 2002 Alternate Delegate, American Society of Anesthesiology
(Maryland Society of Anesthesiology)

2001 - 2002 Specialist Reviewer, Maryland Board of Physician Quality
Assurance

2000-2004 Site visitor: ACGME, Anesthesiology RRC

2002 Endowment established: Jeffrey R. Kirsch, M.D. Leadership
Endowment in Residency Education, Johns Hopkins School of
Medicine

2002 Johns Hopkins Department of Anesthesiology Outstanding
Achievement Award (June 8, 2002)

2003 Baltimore Magazine: Top Doctors in Anesthesiology
http://www.baltimoremagazine.net/annuals/top_docs_2003/listings.asp

2004 OHSU Medical Staff Chairman's Award for Outstanding
Contributions in Clinical Care Quality

2004 Portland Monthly Magazine: Top Doctors in Anesthesiology
<http://www.ohsu.edu/news/2004/020604best.html>

2005 (October-November 2004) Portland Monthly Magazine: Top Doctors in Anesthesiology

2006 Portland Monthly Magazine: January 2006: One of Five Portland Physicians of the Year

2006 OHSU Medical Staff Chairman's Award for Outstanding Contributions in Clinical Care Quality for Operationalizing the OHSU Quality Executive Committee

2007 Portland Monthly Magazine, January 2007: Top Doctors in Anesthesiology
<http://www.ohsu.edu/ohsuedu/academic/som/dean/upload/Top%20Docs7.pdf>

2007 - 2008 Temporary Member: FDA Anesthetic & Life Support Drugs Advisory Committee (ALSDAC)

2008 Portland Monthly Magazine, January 2008: Top Doctors in Anesthesiology <http://www.portlandmonthlymag.com/health-and-fitness/articles/0108-features-top-docs/>

2008 OHSU Faculty Senate Award Nominee (1 of 4 from the School of Medicine) in Outstanding Leadership

2008 - 2011 Member: FDA Anesthetic & Life Support Drugs Advisory Committee (ALSDAC)

2008 (November 13, 14) Acting Chair FDA Anesthetic & Life Support Drugs Advisory Committee

2009 Portland Monthly Magazine, January 2009: Top Doctors in Anesthesiology
<http://www.portlandmonthlymag.com/issues/archives/articles/top-docs-2009/2/>

2009 Visiting member: FDA Medical Devices Advisory Committee; Anesthesiology and Respiratory Therapy Consultant

2009 Chair FDA Anesthetic & Life Support Drugs Advisory Committee

2010 OHSU Golden Rose for Service Excellence. Recognized excellence in patient interactions on labor and delivery unit

2010 Portland Monthly Magazine, January 2010: Top Doctors in

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| | Anesthesiology http://www.portlandmonthlymag.com/issues/current-issue/articles/health-top-docs-0110/2/ |
| 2011 | Foundation for Anesthesia Education and Research (FAER) Academy of Research Mentors in Anesthesiology |
| 2013 | Portland Magazine 2013 Top Docs & Nurses (one of 19 chosen for the Portland metropolitan area for anesthesiology http://portlandmonthlymag.com/health-and-fitness/articles/top-doctors-and-nurses-2013-january-2013 |
| 2013 | Cofounder (with Dr. Zeev Kain) of American Society of Anesthesiology Academic Caucus |
| 2013 | Design and development of Associate Member status for Association of University Anesthesiologists |
| 2014 | American Society of Anesthesiology, Board of Directors, Alternate Director for Academic Anesthesiology |
| 2015 | Portland Magazine 2015 Top Docs & Nurses |
| 2015 | American Society of Anesthesiology, Board of Directors, Director for Academic Anesthesiology |
| 2016 | Accreditation Council for Graduate Medical Education, Board of Directors |
| 2016 | Portland Magazine 2016 Top Docs & Nurses |
| 2017 | Calvin & Mayho Tanabe Endowed Professor of Anesthesiology and Perioperative Medicine, OHSU. |

MEMBERSHIPS and Position with Society

Date of First Affiliation:

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| 1979 | Phi Beta Kappa, Alpha Chapter |
| 1980 | Galens Medical Society |
| 1983 | Alpha Omega Alpha Honorary Medical Society |
| 1983 | American Medical Association |
| 1983 | International Anesthesia Research Society |

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| 1983 | American Society of Anesthesiology |
| 1986 | Society of Neurosurgical Anesthesia and Critical Care |
| 1987 | The American Physiological Society, Regular Member |
| 1988 | International Society of Cerebral Blood Flow and Metabolism |
| 1989 | American Heart Association Council on Circulation |
| 1989 | Section on Critical Care and Emergency Neurology of the American Academy of Neurology |
| 1990 | American Academy of Neurology |
| 1991 | Society of Critical Care Medicine |
| 1991 | Association of University Anesthesiologists; active member (elected) |
| 1996 | Society of Neurosurgical Anesthesia and Critical Care <u>Secretary-Treasurer</u> |
| 1997 | Society of Neurosurgical Anesthesia and Critical Care <u>Vice President</u> |
| 1998 | Society of Neurosurgical Anesthesia and Critical Care <u>President-Elect</u> |
| 1998 | Society of Neurosurgical Anesthesia and Critical Care Chairman, Nominating Committee |
| 1999 | Society of Neurosurgical Anesthesia and Critical Care <u>President</u> |
| 1999 | Society for Neuroscience |
| 2000-2002 | Maryland Society of Anesthesiology: <u>Secretary-Treasurer</u> |
| 2001-2002 | Society of Neurosurgical Anesthesia and Critical Care, Chairman Committee Distinguished Service Award |
| 2002 | Society of Neurosurgical Anesthesia and Critical Care, Chairman Committee Teacher of the Year |
| 2002 | Oregon Medical Association |

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| 2002 | Oregon Society of Anesthesiologists (member of executive committee) |
| 2002 | Neurocritical Care Society, Board of Directors |
| 2002 | Society of Academic Anesthesiology Chairs |
| 2003 | American Association of Neurological Surgeons, Associate Member |
| 2003 | Medical Society of Metropolitan Portland |
| 2003 | Neurocritical Care Society, Director and Founding Member |
| 2005 | Society of Academic Anesthesia Chairs, Council |
| 2006 | Council of Academic Societies of the Association of American Medical Colleges. (Elected: Society of Academic Anesthesia Chairs Representative 2006-2008) |
| 2005 | Foundation for Anesthesia Education and Research (FAER) Board Member (2010 FAER Resident Scholars Committee) |
| 2010 | FAER Executive Committee; ASA Resident Scholar Committee; Grant Policy Committee |
| 2010 | Association of Academic Anesthesiology Chairs/Society of Academic Anesthesiology Associations: Elected Secretary/Treasurer |
| 2011 | Association of University Anesthesiologists; Elected Leadership Council |
| 2012 | Society of Academic Anesthesiology Associations: Elected President Elect |
| 2013 | Association of University Anesthesiologists, Elected Treasurer |
| 2014 | Society of Academic Anesthesiology Associations: Elected President |
| 2014 | American Society of Anesthesiologists: Board of Directors |
| 2017 | Association of University Anesthesiologists: Elected Secretary |

COMMITTEES

1992-2002 Joint Committee on House Staff and Postdoctoral Programs, Johns Hopkins University

1992-1994 Subcommittee on House Staff and Postdoctoral Finances, Joint Committee on House Staff and Postdoctoral Programs, Johns Hopkins University

1992-1993 Dean's Committee on Moonlighting, Johns Hopkins University

1992-2002 Fellowship Committee, Department of Anesthesiology/CCM, Johns Hopkins University

1992-2002 Chairman, Clinical Competence Committee, Anesthesiology/CCM, Johns Hopkins University

1992-2002 Supply and Equipment Committee, Anesthesiology/CCM, Johns Hopkins University

1992-2002 Support Staff Committee, Anesthesiology/CCM, Johns Hopkins University

1987-2002 Clinical Competence Committee, Anesthesiology/CCM, Johns Hopkins University

1987-2002 Education Committee, Anesthesiology/CCM, Johns Hopkins University

1993-1996 Co-chairman subcommittee on University Fellowships, Joint Committee on House Staff and Postdoctoral Programs, Johns Hopkins University

1993-2002 Chairman, Education Committee, Department of Anesthesiology/CCM, Johns Hopkins University

1993-2002 Executive Advisory Committee, Department of Anesthesiology/CCM, Johns Hopkins University

1995-1997 American Society of Anesthesiologists Subcommittee on Experimental Neurosciences and Biochemistry

1996-1997 XVIII International Symposium on Cerebral Blood Flow and Metabolism, Local Scientific Advisory Board

1997-1999 American Society of Anesthesiologists, Subcommittee on Critical Care

1997 Faculty Advisor, Johns Hopkins Medical School Postdoctoral Association

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| 1998 | Program Chair: Society of Neurosurgical Anesthesia Annual Meeting, October 16, 1998, Orlando Florida |
| 1999 | Physician Advisor: Subcommittee on Anesthesia Rules; Maryland Dental Board |
| 2000 - 2002 | Committee on Appointment and Promotions, Johns Hopkins School of Medicine |
| 2000 - 2002 | Adjunct member of the 2001 Committee on Anesthesia Subspecialties: American Society of Anesthesiologists |
| 2000 - 2002 | Maryland Society of Anesthesiology Legislative Committee |
| 2001 - 2002 | Johns Hopkins School of Medicine Department of Anesthesiology Professorial Promotions Committee |
| 2002 | Johns Hopkins School of Medicine, Postdoctoral Fellowship Subcommittee Postgraduate Medical Education Retreat |
| 2002 - 2005 | American Society of Anesthesiologists: Adjunct member of the 2003 Committee on Residents and Medical Students |
| 2002 - 2008 | American Society of Anesthesiologists: Adjunct member of the Committee on Research |
| 2002-2004 | American Society of Anesthesiologists: Member of the Subcommittee on Experimental Neurosciences |
| 2002-2004 | American Society of Anesthesiologists: Member of the Committee on Clinical Forum |
| 2002 | Johns Hopkins University Search Committee for the William Holland Wilmer Professor of Ophthalmology and Director of the Wilmer Institute |
| 2002 - Present | Oregon Health and Science University Medical Board |
| 2002 - Present | Oregon Health and Science University Operating Room Executive Management Group |
| 2002 - Present | Oregon Health and Science University ICU steering Committee |
| 2002 - 2008 | Oregon Health and Science University Medical Group Medical Board Executive Committee |

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| 2003 – 2007 | Oregon Health and Science University Performance Improvement Initiative Steering Committee |
| 2004-2005 | Oregon Health and Science University, Chair Medical Group Revenue Cycle Task Force |
| 2004 | Oregon Health and Science University, search committee for chair of Orthopedics |
| 2005 – 2011 | AMA representative on the ACGME Residency Review Committee for Anesthesiology |
| 2005 – 2008 | OHSU-Medical Group Executive Leadership Compensation Committee |
| 2005 – 2007 | Chair Elect, Oregon Health and Science University, Medical (Professional) Board |
| 2006 - 2007 | Chair: Oregon Health and Science University, Quality Executive Committee |
| 2005 - 2006 | OHSU Dean's committee to review Department of Medical Informatics & Clinical Epidemiology |
| 2006 – 2007 | Oregon Health and Science University, Chair Quality Executive Committee |
| 2006 – Present | Oregon Society of Anesthesiologists, Ex-officio member executive committee |
| 2007 – 2009 | Oregon Health and Science University, Chair Professional (Medical) Board |
| 2007 – 2009 | Oregon Health and Science University, Health System Board Member |
| 2009 – Present | Oregon Health and Science University, Health Care Reform Advisory Group |
| 2009 – Present | Oregon Health and Science University, Latino Medical Student and Student National Medical Association Advisory Council; Elected by Student Officers of organization |
| 2009 – 2011 | Physician's Committee; In 2011 renamed as Professional Staff Assistance Committee |
| 2009 – 2018 | OHSU School of Medicine – Portland VA Medical Center |

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| | Oversight Group Co-Chair (with PVAMC Chief of Staff) |
| 2010 – 2018 | VISN 20 VA Academic Advisory Research (and Education) Group |
| 2010 – 2018 | OHSU/PVAMC Operational Task Force |
| 2011 – 2012 | Search Committee Chair: Senior Associate Dean for Education, OHSU School of Medicine |
| 2012 | Search Committee: Chair Department of Radiology Portland VA Hospital |
| 2011 – Present | OHSU Off Campus Authorization Committee |
| 2012 – 2013 | Department of Internal Medicine review committee |
| 2012 – 2017 | OPEX (Lean) Guiding Coalition Committee |
| 2013 | Search Committee: Chief of Staff Portland VA Hospital |
| 2013 | Chair, OHSU Internal Review of Radiation Medicine |
| 2014 | OHSU Credentials Committee |
| 2014 | Chair, OHSU Internal Review of Orthopedics |
| 2014 | OHSU Professionalism Committee |
| 2015 | Chair, OHSU Internal Review of Neurosurgery |
| 2015 | American Society of Anesthesiologists Educational Track Subcommittee on Neuro Anesthesia |
| 2016 | Chair, OHSU Internal Review of Otolaryngology |
| 2017 | Chair, OHSU Internal Review of Pathology |

Community Service

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| 2004 – 2007 | Portland Junior Hawks Girls' Ice Hockey Program, steering committee member |
| 2005 – 2008 | Northwest Selects Girls' Ice Hockey Program, steering committee member |

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| 2005 – 2007 | Northwest Selects Girls' Ice Hockey Program, Chair, Board of Directors and team manager |
| 2006 – Present | Alta Mira Home Owners Association Board of Directors |
| 2008 – Present | Robison Jewish Home (Cedar Sinai Park); 6125 SW Boundry Street, Portland, OR 97221; Volunteer Services |
| 2012 – Present | Oregon Food Bank Volunteer |
| 2015 – Present | Alta Mira Home Owners Association Board of Directors Chair |
| 2015 – Present | Jewish Federation of Portland, Chair Free Loan Committee |

Completed NIH Grants:

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| Award: | T32 PI |
| Source of Support: | National Institutes of Health |
| Title: | Integrated and Translational Training in Anesthesiology Research |
| Support Dates: | 7/01/2008 – 6/30/2013 |
| Award Amount: | Direct Costs: \$608,307 |

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| Award: | Clinician-Scientist Development Award |
| Source of Support: | Johns Hopkins University |
| Title: | Cerebral Ischemia and Free Oxygen Radicals |
| Support Dates: | 07/01/87 - 06/30/89 |

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| Award: | Clinical Investigator Development Award |
| Source of Support: | National Institutes of Health |
| Title: | Cerebral Ischemia and Free Oxygen Radicals |
| Support Dates: | 08/01/87 - 07/31/92 |

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| Award: | Program Project Grant |
| Source of Support: | National Institutes of Neurological and Communicative Disorders and Stroke |
| Title: | Mechanisms of Regulation of Cerebral Blood Flow |
| Program Director: | Richard J. Traystman, Ph.D. |

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| <u>Project 1:</u> | Focal Cerebral Ischemia and Oxygen Free Radicals |
| P.I.: | Richard J. Traystman, Ph.D. |
| Effort: | 20% |

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| <u>Project 2:</u> | Complete and Incomplete Global Cerebral Ischemia |
| P.I.: | Raymond C. Koehler, Ph.D. |
| Effort: | 15% |

Project 3: Cerebral Blood Flow and Metabolism During
Cardiopulmonary Resuscitation
P.I.: Richard J. Traystman & Raymond C. Koehler (Co-PIs)
Effort: 10%

Award: Program Project Grant
Source of Support: National Institutes of Neurological and Communicative
Disorders and Stroke
Title: Mechanisms of Regulation of Cerebral Blood Flow
Program Director: Richard J. Traystman, Ph.D.

Project 1: The Role of Nitric Oxide in the Control of Cerebral Blood
Flow in Global and Focal Cerebral Ischemia

P.I.: Jeffrey R. Kirsch, M.D. and Richard J. Traystman, Ph.D.
Effort: 25%
Award Amount: \$559,138 Total Direct Costs

Award: RO1
Source of Support: National Institutes of Neurological and Communicative
Disorders and Stroke
Title: Cerebral Ischemia in the Female
P.I.: Patricia D. Hurn, R.N. Ph.D. & Jeffrey R. Kirsch, M.D.
Effort: 10%
Award Amount: \$668,662 Total Direct Costs

Source of Support: National Institutes of Neurological and Communicative
Disorders and Stroke

Title: Mechanisms of Regulation of Cerebral Blood Flow
Program Director: Richard J. Traystman, Ph.D.

Project 1: Sigma Receptor Signaling in Focal Cerebral Ischemia
P.I.: Jeffrey R. Kirsch, M.D.
Effort: 20%
Award Amount Requested: \$684,216 Total Direct Costs

Current Gifts/Grants from Industry

None

STUDY SECTIONS:

1999 - 2002

Adhoc Member The Wellcome Trust, London NW1

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| 1999 - 2002 | American Heart Association: Affiliate Study Section |
| 1998 | American Heart Association: Consortia Study Group |
| 1998 | Adhoc Member NIH Neurology B-1 Study Section |
| 1994 - 1997; 1998-2002 | American Heart Association (Brain) |
| 1995 | Department of Veterans Affairs, Merit Review Committee for Alcoholism and Drug Dependence, Ad-hoc reviewer |
| 2007 – 2012 | International Anesthesia Research Society Frontiers Award |
| 2010 – 2012 | NIH T32 Grants |

PUBLICATIONS

1. **Kirsch JR**, LG D'Alecy: Effect of altered availability of energy-yielding substrates upon survival from hypoxia in mice. *Stroke* 10:288-291, 1979.
2. **Kirsch JR**, LG D'Alecy, PB Mongroo: Butanediol induced ketosis increased tolerance to hypoxia in the mouse. *Stroke* 11:506-512, 1980.
3. Eiger SM, **JR Kirsch**, LG D'Alecy: Hypoxic tolerance enhanced by B-hydroxybutyrate-glucagon in the mouse. *Stroke* 11:513-517, 1980.
4. **Kirsch JR**, LG D'Alecy: Brain ketone hypothesis of 1,3-butanediol enhanced hypoxic survival. *J Cerebral Blood Flow Metab* (Suppl 1):S186-S187, 1981.
5. **Kirsch JR**, LG D'Alecy: Role of tissue lactate and substrate availability in 1,3-butanediol-enhanced hypoxic survival in the mouse. *Stroke* 14:971-976, 1983.
6. **Kirsch JR**, LG D'Alecy: Hypoxic induced preferential ketone utilization by rat brain slices. *Stroke* 15:319-323, 1984.
7. **Kirsch JR**, LG D'Alecy: Glucagon stimulates ketone utilization by rat brain slices. *Stroke* 15:324-328, 1984.
8. Hanley DF, R Struble, C Wilson, **JR Kirsch**, D Wilson, RJ Traystman: Differential distribution of neurovascular contact for VIP, substance P, leucine enkephalin and pituitary releasing factors in the canine pituitary. *J Cerebral Blood Flow Metab* 7:S318, 1987.
9. **Kirsch JR**, DF Hanley, DA Wilson, RJ Traystman: Effect of centrally administered enkephalinamides on regional cerebral blood flow in the dog. *J Cerebral Blood Flow Metab*, 8:385-394, 1988.

10. Diring M, PW Ladenson, C Borel, GK Hart, **JR Kirsch**, DF Hanley: Sodium and water regulation in a patient with cerebral salt wasting. *Arch Neurol*, 46:928-930, 1989.
11. Helfaer M, **JR Kirsch**, RJ Traystman: Anesthetic modulation of cerebral hemodynamic and evoked responses to transient middle cerebral artery occlusion in cats. *Stroke*, 21:795-800, 1990.
12. Deutschman CS, **JR Kirsch**, MJ Breslow, CF Miller, RJ Traystman: Failure of endotoxic shock to elicit superoxide radical anion production in pig brain. *Circulatory Shock*, 31:149-158, 1990.
13. **Kirsch JR**, MA Helfaer, K Blizzard, TJK Toung, RJ Traystman: Age related cerebrovascular response to global ischemia in pigs. *Am J Physiol*, 259:H1551-H1558, 1990.
14. Diring MN, **JR Kirsch**, PW Ladenson, C Borel, DF Hanley: Cerebrospinal fluid atrial natriuretic factor in intracranial disease. *Stroke*, 21:1550-1554, 1990.
15. Ichord RN, **JR Kirsch**, MA Helfaer, S Haun, RJ Traystman: Age-related differences in recovery of blood flow and metabolism after cerebral ischemia in swine. *Stroke*, 22:626-634, 1991.
16. Diring MN, DS Heffez, L Monsein, **JR Kirsch**, DF Hanley, RJ Traystman: Cerebrovascular CO₂ reactivity during delayed vasospasm in a canine model of subarachnoid hemorrhage. *Stroke*, 22:367-372, 1991.
17. Helfaer MA, **JR Kirsch**, SE Haun, RC Koehler, RJ Traystman: Age-related cerebrovascular reactivity to CO₂ after cerebral ischemia in swine. *Am J Physiol* 260:H1482-H1488, 1991.
18. Baldwin WA, **JR Kirsch**, PD Hurn, WSP Toung, RJ Traystman: Hypothermic reperfusion after global cerebral ischemia reduces intracranial pressure and improves recovery of somatosensory evoked potentials in dogs. *Am J Physiol*, 261:H774-H781, 1991.
19. Haun SE, **JR Kirsch**, MA Helfaer, KL Kubos, RJ Traystman: Polyethylene glycol-conjugated superoxide dismutase fails to augment brain superoxide dismutase activity in piglets. *Stroke*, 22:655-659, 1991.
20. Matsumiya N, RC Koehler, **JR Kirsch**, RJ Traystman: Conjugated superoxide dismutase reduces caudate infarction volume after transient focal ischemia in cats. *Stroke*, 22:1193-1200, 1991.
21. **Kirsch JR**, MN Diring, CO Borel, DF Hanley, WT Merritt, G Bulkley: Pre-operative lumbar epidural morphine improves post-operative analgesia and ventilatory function following trans-sternal thymectomy in patients with myasthenia gravis. *Critical Care Medicine*, 19:1474-1479, 1991.
22. Helfaer MA, **JR Kirsch**, SE Haun, LE Moore, RJ Traystman: Polyethylene glycol conjugated superoxide dismutase fails to blunt post-ischemic reactive hyperemia in young swine. *Am J Physiol*, 261:H548-H553, 1991.

23. Diringer MN, JS Lim, **JR Kirsch**, DF Hanley: Suprasellar and intraventricular blood predict elevated plasma atrial natriuretic factor in subarachnoid hemorrhage. *Stroke*, 22:577-581, 1991.
24. Moore LE, **JR Kirsch**, MA Helfaer, R Greenberg, RJ Traystman: Hypercapnic blood flow reactivity not increased by α -blockade or cordotomy in piglets. *Am J Physiol*, 262:H1884-H1890, 1992.
25. Takeshima R, **JR Kirsch**, RC Koehler, AW Gomoll, RJ Traystman: Monoclonal leukocyte antibody does not decrease the injury of transient focal ischemia in cats. *Stroke* 23: 247-252, 1992.
26. Sipos E, **JR Kirsch**, H Nauta, G Debrun, J Ulatowski, W Bell: Retrograde thrombosis following resection of arterial venous malformation treated with intra-arterial urokinase. *J Neurosurg*, 76:1004-1007, 1992.
27. Helfaer MA, **JR Kirsch**, PD Hurn, KK Blizzard, RC Koehler, RJ Traystman: Tirilazad mesylate does not improve early cerebral metabolic recovery following complete ischemia in dogs. *Stroke*, 23:1479-1486, 1992.
28. Hoehner PJ, JT Whitson, **JR Kirsch**, RJ Traystman: Effect of intracarotid and intraventricular morphine on regional cerebral blood flow and metabolism in pentobarbital anesthetized dogs. *Anesth Analg*, 76:266-273, 1993.
29. Tung WA, MA Helfaer, **JR Kirsch**, LE Moore, RJ Traystman: Histamine-2 receptor blockade does not affect hyperemia following cerebral ischemia in young swine. *Critical Care Medicine*, 21:260-266, 1993.
30. Diringer MN, **JR Kirsch**, DF Hanley, RJ Traystman: Cerebrovascular CO₂ reactivity following subarachnoid hemorrhage in cats. *J Neurosurgery*, 78:915-921, 1993.
31. St.Jacques PJ, **JR Kirsch**, MN Diringer, RJ Traystman: MK-801 does not prevent impaired cerebrovascular reactivity to CO₂ during hypoglycemia in piglets. *Am J Physiol* 264:H2124-H2130, 1993.
32. Maruki Y, RC Koehler, **JR Kirsch**, RJ Traystman: Efficacy of the 21-aminosteroid tirilazad during normoglycemic and hyperglycemic ischemia on early metabolic and evoked potential recovery. *Pharmacology of Cerebral Ischemia*, 1992. Edited by J Krieglstein, H Oberpichler-Schwenk, Wissenschaftliche Verlagsgesellschaft mbH Stuttgart, pp 333-337.
33. Toung TJ, **JR Kirsch**, RJ Traystman: Effects of pentoxifylline on cerebral blood flow, metabolism and evoked response following total cerebral ischemia in dogs. *Crit Care Med*, 22:273-281, 1994.
34. Maruki Y, RC Koehler, **JR Kirsch**, KK Blizzard, RJ Traystman: Effect of the 21-aminosteroid tirilazad on cerebral pH and somatosensory evoked potential after incomplete ischemia. *Stroke*. 24:724-730, 1993.

35. McPherson RW, **JR Kirsch**, RJ Traystman: Inhibition of nitric oxide synthase does not affect α_2 -adrenergic mediated cerebral vasoconstriction. *Anesth Analg*, 78:67-72, 1994.
36. Greenberg RS, MA Helfaer, **JR Kirsch**, LE Moore, RJ Traystman: Nitric oxide synthase inhibition with intravenous N^G-mono-methyl-L-arginine reversibly decreases cerebral blood flow in piglets. *Crit Care Med*, 22:384-392, 1994.
37. Cheng W, JF Hartmann, DE Cameron, EM Griffiths, **JR Kirsch**, RJ Traystman: Cerebral blood flow during cardiopulmonary bypass: The influence of temperature and pH management strategy in immature pigs. *Annals of Thoracic Surgery*, 59:880-886, 1995.
38. Dinger MN, **JR Kirsch**, RJ Traystman: Reduced cerebral blood flow but intact reactivity to hypercapnia and hypoxia following subarachnoid hemorrhage in rabbits. *J Cere Blood Flow Metab*. 14:59-63, 1994.
39. Ichord RN, MA Helfaer, **JR Kirsch**, D Wilson, RJ Traystman: Nitric oxide synthase inhibition attenuates hypoglycemic cerebral hyperemia in piglets. *Am J Physiol*. 266: H1062-H1068, 1994.
40. Nishikawa T, **JR Kirsch**, RC Koehler, DS Bredt, SH Snyder, RJ Traystman: Effect of nitric oxide synthase inhibition on cerebral blood flow and injury volume during focal ischemia in cats. *Stroke*. 24:1717-1724, 1993.
41. McPherson RW, **JR Kirsch**, RJ Traystman: N^o-nitro-L-arginine methyl ester prevents cerebral hyperemia by inhaled anesthetics in dogs. *Anesth & Analg*. 77:891-897, 1993.
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43. Traystman RJ, H Kim, RC Koehler, **JR Kirsch**: Improvement in metabolic recovery from hyperglycemic ischemia with 21-aminosteroid tirilizad mesylate. In: *Microcirculatory stasis in the brain*, Edited by M Tomita. Elsevier Science Publishers B.V. pp 337-342, 1993.
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