

JEFFREY A. RUMBAUGH, M.D., Ph.D.

CURRENT APPOINTMENTS

- 2018-present *Neurologist, Owner, Sole Proprietor*, Remyelix Neurology & Multiple Sclerosis Institute, PLLC DBA Pathway Neurology, Tampa, Florida.
- 2018-present *Teleneurologist*, National Comprehensive Neurology Services, Tampa, Florida

PAST APPOINTMENTS AND PROFESSIONAL EXPERIENCES

- 2017-2018 *Neurohospitalist*, Pioneer Medical Group, Florida Hospital Tampa, Tampa, Florida
- 2017 *Chief of Neurology*, Lakeland Regional Hospital, Lakeland, Florida.
- 2015-2017 *Neurologist*, Watson Clinic, Lakeland, Florida.
Neurohospitalist, Lakeland Regional Hospital, Lakeland, Florida.
- 2013-2015 *Neurohospitalist*, Fairfax Hospital, Inova Health System, Falls Church, Virginia.
- 2009-2013 *Assistant Professor*, Department of Neurology, Division of Neuroimmunology and Neuro-Infectious Diseases, Emory University School of Medicine, Atlanta, Georgia.
Physician, Division of Neurology, Atlanta Veterans Administration Medical Center, Decatur, Georgia.
Physician, Division of Neurology, Grady Memorial Hospital, Atlanta, Georgia.
Director, Inpatient Neuroimmunology and Neuro-Infectious Diseases Consult Service, Emory, Atlanta VAMC, and Grady.
- 2010-2013 *Physician*, Division of Neurology, Childrens Healthcare of Atlanta, Atlanta, Georgia.
- 2011-2013 *Assistant Professor*, Immunology and Molecular Pathogenesis, Emory University, Graduate Division of Biological and Biomedical Sciences, Atlanta, Georgia.
Director, Lumbar Puncture Clinic, Emory University School of Medicine, Atlanta, Georgia.
- 2004-2009 *Assistant Professor*, Department of Neurology, Division of Neuroimmunology and Neuro-Infectious Diseases, Johns Hopkins University School of Medicine, Baltimore, Maryland.
Director, Inpatient Neuroimmunology and Neuro-Infectious Diseases Consult Service, Johns Hopkins Hospital, Baltimore, Maryland.

EDUCATIONAL BACKGROUND

Johns Hopkins Hospital	Chief Resident in Neurology	2004
Johns Hopkins Hospital	Neurology Residency	2003
Johns Hopkins Bayview Medical Center	Medicine Internship	2001
University of Rochester	M.D.	2000
University of Rochester	Ph.D. (Biochemistry)	1998
University of Rochester	M.S. (Biochemistry)	1996
Haverford College	B.S. with Honors in Chemistry, <i>magna cum laude</i>	1993

ACADEMIC HONORS

Multiple Sclerosis Partner in Care, National Multiple Sclerosis Society, 2017
Albert Nelson Marquis Lifetime Achievement Award for unwavering excellence in neurology, 2017
Scientific Program Highlights Plenary Session recognition at AAN annual meeting, 2005-6, 2008-9, 2011
Who's Who in America Selection, 2006-2017
American Society for Clinical Investigation junior investigator Travel Award, 2006
S. Weir Mitchell Award from the American Academy of Neurology for basic neuroscience research, 2005
American Neurological Association's Travel Fellow for top science abstract from junior investigator, 2004
American Academy of Neurology's Travel Award for potential to be a future leader of Neurology, 2004
Society for Neuroimmune Pharmacology's award for best post-doctoral poster presentation, 2004
Society for Neuroimmune Pharmacology's Travel Award for work in HIV related neurotoxicity, 2004
American Neurological Association's Travel Award for outstanding potential in Academic Neurology, 2002
Dean's Award to fourth year medical student for excellent academic and research accomplishment, 2000
E. H. Hooker Fellowship for outstanding work in biological chemistry, 1997
Louis and Molly Wolk Fellowship for outstanding MD-PhD student, 1996
Genetics Training Fellowship from NIH for work in DNA replication and genetics, 1996
Elmer Stotz Fellowship for outstanding potential in biochemical research, 1995
Medical Scientist Training Program at University of Rochester, 1993
American Chemical Society's undergraduate award for analytical chemistry, 1993
Phi Beta Kappa, Junior Year, Haverford College, 1992
Nominated twice by Haverford for Barry Goldwater Scholarship, 1991 and 1992

EXTRACURRICULAR ACTIVITIES

Admissions Volunteer—interview Neurology residency applicants, 2004-2012
Grand Rounds Resident—responsible for scheduling/organizing visits of out-of-town speakers, 2003-2004
Neuroscience Journal Club, 2001-2004
Residency Planning Committee, 2000-2001
Humanism in Medicine Committee, 2000
Students of Rochester Outreach—taught AIDS awareness in high schools, 1993-2000
Admissions Volunteer—led tours, hosted and interviewed medical school candidates, 1993-2000
Student Interest Group in Neurology, 1998-1999
Graduate Education in the Biomedical Sciences, Organizational Committee, 1997-1998
Tutor—Neurology, Biochemistry, Anatomy, Physiology, and Histology, 1994-1997
Teaching Assistant—Medical Biochemistry, 1996

PROFESSIONAL MEMBERSHIPS

American Neurological Association, 2013-present
International Society for Neurovirology, 2007-2013
American Academy of Neurology, 2001-present
Rochester Academy of Medicine, 1998-2000
American Psychiatric Association, 1993-2000
American Association for the Advancement of Science, 1991-1993

PERSONAL

Basic Life Saving, 1998-00, 2009-2011; Advanced Cardiac Life Saving, 1999-04; EMT-D, 1994-97
Running Enthusiast—have now completed 37 marathons and am currently training for thirty-eighth

PUBLICATIONS

D. Cadavid, P. G. Auwaerter, **J. Rumbaugh**, and H. Gelderblom. “*Antibiotics for the Neurological Complications of Lyme Disease (Review)*.” Cochrane Database Syst. Rev. (2016), **12**, CD006978.

J. A. Rumbaugh and W. Tyor. “*Five New Things: HIV-Associated Neurocognitive Disorders*.” Neurol. Clin. Pract. (2015), **5**, 224-31.

A. Pool, L. Lowder, Y. Wu, K. Forrester, and **J. Rumbaugh**. “*Neurovirulence of Cryptococcus neoformans Determined by Timecourse of Capsule Accumulation and Total Volume of Capsule in Brain*.” J. Neurovirol. (2013), **19**, 228-238.

M. Bachani, N. Sacktor, J. McArthur, A. Nath, and **J. Rumbaugh**. “*Detection of Anti-Tat Antibodies in CSF of Individuals with HIV-Associated Neurocognitive Disorders*.” J. Neurovirol. (2013), **19**, 82-8.

J. A. Rumbaugh, M. Bachani, W. Li, T. R. Butler, K. J. Smith, M. Bianchet, T. Wang, M. A. Prendergast, N. Sacktor, and A. Nath. “*HIV Immune Complexes Prevent Excitotoxicity by Interaction with NMDA Receptors*.” Neurobiol. Dis. (2013), **49**, 169-76.

Jeffrey A. Rumbaugh and J. Stephen Dumler. “*Neurological Complications of Rickettsial Infection*.” Lancet Neurol. (2010), submitted.

I. L. Tan, I. J. Koralnik, **J. Rumbaugh**, P. C. Burger, A. K. Rennie, and J. C. McArthur. “*Progressive Multifocal Leukoencephalopathy in a Patient without Immunodeficiency*.” Neurology (2011), **77**, 297-9.

Jeffrey A. Rumbaugh, Joseph Steiner, Ned Sacktor, and Avindra Nath. “*Developing Neuroprotective Strategies for Treatment of HIV-Associated Neurocognitive Dysfunction*.” Future HIV Therapy. (2008), **2**, 271-280.

Kevin Tan, Subhash Patel, Nishiena Gandhi, Felicia Chow, **Jeffrey Rumbaugh**, and Avindra Nath. “*Burden of Neuroinfectious Diseases on the Neurology Service in a Tertiary Care Center*.” Neurology (2008), **71**, 1160-6.

Avindra Nath, Nicoline Schiess, Arun Venkatesan, **Jeffrey Rumbaugh**, Ned Sacktor, and Justin McArthur. “*Evolution of HIV Dementia with HIV Infection*.” Int. Rev. Psychiatry (2008), **20**, 25-31.

Diego Cadavid, Paul Auwaerter, John Aucott, and **Jeffrey Rumbaugh**. “*Treatment for the Neurological Complications of Lyme Disease (Protocol)*.” Cochrane Database Syst. Rev. (2008), **1**, CD006978.

Jeffrey A. Rumbaugh, Guanhan Li, Jeffrey Rothstein, and Avindra Nath. “*Ceftriaxone protects against the neurotoxicity of human immunodeficiency virus proteins*.” J. Neurovirol. (2007), **13**, 168-72.

J. Rumbaugh, J. Turchan-Cholewo, D. Galey, C. St. Hillaire, C. Anderson, K. Conant, and A. Nath. “*Interaction of HIV Tat and Matrix Metalloproteinase in HIV Neuropathogenesis: A New Host Defense Mechanism*.” FASEB J. (2006), **20**, 1736-8.

Tongguang Wang, **Jeffrey A. Rumbaugh**, and Avindra Nath. “*Viruses and the Brain: From Inflammation to Dementia*.” Clin. Sci. (Lond.) (2006), **110**, 393-407.

Jeffrey A. Rumbaugh and Avindra Nath. “*Developments in HIV Neuropathogenesis.*” Curr. Pharm. Des. (2006), **12**, 1023-1044.

Arun Venkatesan, Cassie Spalding, Andrea Speedie, Gita Sinha, and **Jeffrey A. Rumbaugh**. “*Pseudomonas aeruginosa infective endocarditis presenting as bacterial meningitis.*” J. Infect. (2005), **51**, e199-202.

N. S. Hussain, **J. Rumbaugh**, D. Kerr, A. Nath, and A. E. Hillis. “*Effects of Prednisone and Plasma Exchange on Cognitive Impairment in Hashimoto Encephalopathy.*” Neurology (2005), **64**, 165-166.

Jeffrey A. Rumbaugh, Jeffrey R. LaDuca, Yuan Shan, and Catherine A. Miller. “*Cerebral Autosomal Dominant Arteriopathy with Subcortical Infarcts and Leukoencephalopathy (CADASIL): The Dermatologic Diagnosis of a Neurologic Disease.*” J. Am. Acad. Dermatol. (2000), **43**, 1128-1130.

Jeffrey A. Rumbaugh, Leigh A. Henricksen, Michael S. DeMott, and Robert A. Bambara. “*Cleavage of Substrates with Mismatched Nucleotides by Flap Endonuclease (FEN1): Implications for Mammalian Okazaki Fragment Processing.*” J. Biol. Chem. (1999), **274**, 14602-14608.

Jeffrey A. Rumbaugh, Gloria M. Fuentes, and Robert A. Bambara. “*Processing of an HIV Replication Intermediate by the Human DNA Replication Enzyme, FEN1.*” J. Biol. Chem. (1998), **273**, 28740-28745.

Jeffrey A. Rumbaugh, Richard S. Murante, Shuying Shi, and Robert A. Bambara. “*Creation and Removal of Embedded Ribonucleotides in Chromosomal DNA during Mammalian Okazaki Fragment Processing.*” J. Biol. Chem. (1997), **272**, 22591-22599.

Richard S. Murante, **Jeffrey A. Rumbaugh**, Carole J. Barnes, J. Russell Norton, and Robert A. Bambara. “*Calf RTH-1 Nuclease Can Remove the Initiator RNAs of Okazaki Fragments by Endonuclease Activity.*” J. Biol. Chem. (1996), **271**, 25888-25897.

Lin Huang*, **Jeffrey A. Rumbaugh***, Richard S. Murante, Richard J. R. Lin, Lynn Rust, and Robert A. Bambara. “*Role of Calf RTH-1 Nuclease in Removal of 5' Ribonucleotides during Okazaki Fragment Processing.*” Biochemistry (1996), **35**, 9266-9277. (*LH and **JAR** contributed equally to this work.)

B. A. Goff, U. Hermanto, **J. Rumbaugh**, J. Blake, M. Bamberg, and T. Hasan. “*Photoimmunotherapy and Biodistribution with an OC125-Chlorin Immunoconjugate in an *In Vivo* Murine Ovarian Cancer Model.*” Br. J. Cancer (1994), **70**, 474-480.

ONLINE PUBLICATIONS

John N. Ratchford, **Jeffrey Rumbaugh**, and Anita Venkataramana. “*HIV-Associated Dementia.*” In: Gallant, Joel, editor. Johns Hopkins HIV Guide. June 2009. Available at hopkins-hivguide.org.

Scott Newsome, **Jeffrey Rumbaugh**, and Anita Venkataramana. “*Progressive Multifocal Leukoencephalopathy.*” In: Gallant, Joel, editor. Johns Hopkins HIV Guide. June 2009. Available at hopkins-hivguide.org.

Michael Levy, **Jeffrey Rumbaugh**, and Anita Venkataramana. “*Muscle Disorders.*” In: Gallant, Joel, editor. Johns Hopkins HIV Guide. June 2009. Available at hopkins-hivguide.org.

Daniel Harrison, **Jeffrey Rumbaugh**, and Anita Venkataramana. “*Peripheral Neuropathy*.” In: Gallant, Joel, editor. Johns Hopkins HIV Guide. June 2009. Available at hopkins-hivguide.org.

Jeffrey A. Rumbaugh. “*Rocky Mountain Spotted Fever*.” In: Johnson, Richard T., editor. MedLink Neurology. San Diego: MedLink Corporation. January 2009. Available at www.medlink.com.

Jeffrey A. Rumbaugh. “*Neurological Manifestations of Staphylococcal Infections*.” In: Johnson, Richard T., editor. MedLink Neurology. San Diego: MedLink Corporation. October 2008. Available at www.medlink.com.

Jeffrey A. Rumbaugh. “*Neurological Complications of the Hepatitis Viruses*.” In: Johnson, Richard T., editor. MedLink Neurology. San Diego: MedLink Corporation. June 2008. Available at www.medlink.com.

Jeffrey A. Rumbaugh. “*Pneumococcal meningitis*.” In: Johnson, Richard T., editor. MedLink Neurology. San Diego: MedLink Corporation. February 2008. Available at www.medlink.com.

Jeffrey A. Rumbaugh. “*Haemophilus influenzae meningitis*.” In: Johnson, Richard T., editor. MedLink Neurology. San Diego: MedLink Corporation. July 2007. Available at www.medlink.com.

PRESENTATIONS AT INTERNATIONAL MEETINGS (= platform)**

A. Pool, L. Lowder, K. Forrester, Y. Wu, and **J. Rumbaugh**. “*The Role of Cryptococcal Capsule in Pathogenesis of Cryptococcal Meningitis*.” American Neurological Association Annual Meeting, New Orleans, Louisiana, 2013.

L. Lowder, A. Pool, Y. Wu, and **J. Rumbaugh**. “*Mechanisms of Hydrocephalus in the Neuropathogenesis of Cryptococcal Meningitis*.” American Society for Clinical Investigation/American Academy of Physicians Annual Meeting, Chicago, Illinois, 2013.

A. Pool, L. Gainey, K. Forrester, Y. H. Wu, and **J. Rumbaugh**. “*The Role of Cryptococcal Capsule in Pathogenesis of Cryptococcal Meningitis*.” American Academy of Neurology Annual Meeting, San Diego, California, 2013.

A. Pool, L. Gainey, Y. H. Wu, and **J. Rumbaugh**. “*A Mouse Model of Arachnoid Granulation Obstruction by Cryptococcus*.” American Neurological Association Annual Meeting, Boston, Massachusetts, 2012.

A. Pool, Y. H. Wu, and **J. Rumbaugh. “*A Mouse Model of Arachnoid Granulation Obstruction by Cryptococcus*.” American Academy of Neurology Annual Meeting, New Orleans, Louisiana, 2012.

Srikant Rangaraju, Paul Garcia, and **Jeffrey Rumbaugh**. “*Modulation of HIV-Tat Neurotoxicity by Potassium Channel Blockers*.” American Neurological Association Annual Meeting, San Diego, California, 2011.

****J. Rumbaugh**, M. Prendergast, M. Bianchet, and A. Nath. “*HIV-Tat Protein Forms an Immune Complex, Binds the NMDA Receptor, and Prevents Receptor Activation and Excitotoxicity: Implications for HIV Neurocognitive Dysfunction*.” American Academy of Neurology Annual Meeting, Honolulu, Hawaii, 2011.

J. A. Rumbaugh, M. Bachani, and A. Nath. “*Matrix Metalloproteinase-1 Protects against HIV-1 Tat-Induced Neurotoxicity by Cleavage-Dependent and Cleavage-Independent Mechanisms.*” American Neurological Association Annual Meeting, San Francisco, California, 2010.

J. A. Rumbaugh, M. Bachani, and A. Nath. “*Matrix Metalloproteinase-1 Protects against HIV-1 Tat-Induced Neurotoxicity by Cleavage-Dependent and Cleavage-Independent Mechanisms.*” American Academy of Neurology Annual Meeting, Toronto, Ontario, Canada, 2010.

J. A. Rumbaugh, M. Bachani, T. R. Butler, K. J. Smith, M. A. Prendergast, and A. Nath. “*Neutralizing Antibodies against NMDA Excitotoxicity.*” American Neurological Association Annual Meeting, Baltimore, MD, 2009.

J. A. Rumbaugh, M. Bachani, W. Li, T. R. Butler, K. J. Smith, M. Bianchet, M. A. Prendergast, and A. Nath. “*HIV-Tat Protein Forms an Immune Complex, Binds the NMDA Receptor, and Prevents Receptor Activation and Excitotoxicity: Implications for HIV Neurocognitive Dysfunction.*” International Society for Neurovirology Annual Meeting, Miami, Florida, 2009.

****J. A. Rumbaugh**, M. Bachani, W. Li, T. R. Butler, K. J. Smith, M. Bianchet, M. A. Prendergast, and A. Nath. “*A Tat-Immune Complex Binds the NMDA Receptor, Preventing Receptor Activation and Excitotoxicity.*” American Academy of Neurology Annual Meeting, Seattle, Washington, 2009.

A. Nath, S. Newsome, and **J. Rumbaugh**. “*Fulminant Encephalopathy with Basal Ganglia Hyperintensities in HIV-Infected Cocaine Users (FEB-HIC).*” American Academy of Neurology Annual Meeting, Seattle, Washington, 2009.

J. Rumbaugh, M. Bachani, T. Butler, K. Smith, M. Prendergast, and A. Nath. “*HIV Tat Immune Complexes Attenuate Neurotoxicity via NMDA Receptors.*” American Neurological Association Annual Meeting, Salt Lake City, Utah, 2008.

****J. Rumbaugh**, M. Bachani, G. Li, W. Li, and A. Nath. “*Matrix Metalloproteinase Protects against HIV-1 Tat-Induced Neurotoxicity by Decreasing Nitrosative and Oxidative Stress and by Inhibiting HIV Replication.*” American Academy of Neurology Annual Meeting, Chicago, Illinois, 2008.

Kevin Tan, Subhash Patel, Nishiiena Gandhi, **Jeffrey Rumbaugh**, and Avindra Nath. “*The Burden of Neuroinfectious Diseases in a Tertiary Care Hospital.*” American Academy of Neurology Annual Meeting, Chicago, Illinois, 2008.

J. Rumbaugh, M. Bachani, W. Li, G. Li, D. Galey, T. Malpica, and A. Nath. “*Novel Host Defense Mechanisms in the Neuropathogenesis of HIV Infection.*” International Society for Neurovirology Annual Meeting, San Diego, California, 2007.

J. Rumbaugh, M. Bachani, G. Li, W. Li, and A. Nath. “*Matrix Metalloproteinase Protects against HIV-1 Tat-Induced Neurotoxicity by Decreasing Nitrosative and Oxidative Stress and by Inhibiting HIV Replication.*” American Neurological Association Annual Meeting, Washington, DC, 2007.

M. Bachani, A. Nath, and **J. Rumbaugh**. “*Detection of Tat and Anti-Tat Antibodies in Cerebrospinal Fluid of Patients with HIV Infection: Correlation with HIV Dementia, Viral Load, and CD4 Lymphocyte Count.*” American Neurological Association Annual Meeting, Washington, DC, 2007.

****J. Rumbaugh**, M. Bachani, T. Malpica-Llanos, T. Wang, I. Tikhonov, D. Pauza, and A. Nath. “*HIV Tat Immune Complexes Attenuate Neurotoxicity via NMDA Receptors.*” American Academy of Neurology Annual Meeting, Boston, Massachusetts, 2007.

J. Rumbaugh, M. Bachani, T. Malpica, and A. Nath. “*Novel Host Defense Mechanisms in the Neuropathogenesis of HIV Infection.*” Society for Neuroimmune Pharmacology Annual Meeting, Salt Lake City, Utah, 2007.

J. Rumbaugh, M. Bachani, I. Tikhonov, D. Pauza, and A. Nath. “*A Monoclonal Antibody against HIV Tat Attenuates Neurotoxicity via Glutamate Receptors.*” Institute of Human Virology Annual International Meeting on HIV/AIDS, Baltimore, Maryland, 2006.

J. Rumbaugh, M. Bachani, J. Turchan-Cholewo, D. Galey, K. Conant, and A. Nath. “*Interaction of HIV Tat and Matrix Metalloproteinase in HIV Neuropathogenesis: A New Host Defense Mechanism.*” American Neurological Association Annual Meeting, Chicago, Illinois, 2006.

J. Rumbaugh, M. Bachani, I. Tikhonov, D. Pauza, and A. Nath. “*A Monoclonal Antibody against HIV Tat Attenuates Neurotoxicity via Glutamate Receptors.*” International Society for Neurovirology Annual Meeting, Philadelphia, Pennsylvania, 2006.

J. Rumbaugh, J. Turchan-Cholewo, D. Galey, K. Conant, and A. Nath. “*Interaction of HIV Tat and Matrix Metalloproteinase in HIV Neuropathogenesis: A New Host Defense Mechanism.*” American Society for Clinical Investigation/American Academy of Physicians Annual Meeting, Chicago, Illinois, 2006.

J. Rumbaugh, J. Rothstein, and A. Nath. “*Ceftriaxone Protects against the Neurotoxicity of Human Immunodeficiency Virus (HIV) Proteins.*” American Academy of Neurology Annual Meeting, San Diego, California, 2006.

J. Rumbaugh, T. Wang, J. Steiner, J. Rothstein, and A. Nath. “*Ceftriaxone Protects against the Neurotoxicity of Human Immunodeficiency Virus (HIV) Proteins.*” Society for Neuroscience Annual Meeting, Washington, DC, 2005.

J. Rumbaugh, I. Tikhonov, D. Pauza, and A. Nath. “*A Monoclonal Antibody against HIV Tat Attenuates Neurotoxicity via Glutamate Receptors.*” American Neurological Association Annual Meeting, San Diego, California, 2005.

****J. Rumbaugh**, J. Turchan-Cholewo, D. Galey, R. Slevin, K. Conant, and A. Nath. “*Interaction of HIV Tat and Matrix Metalloproteinase in HIV Neuropathogenesis: A New Host Defense Mechanism.*” American Academy of Neurology Annual Meeting, Miami, Florida, 2005.

J. Rumbaugh, J. Turchan-Cholewo, D. Galey, R. Slevin, K. Conant, and A. Nath. “*Interaction of HIV Tat and Matrix Metalloproteinase in HIV Neuropathogenesis: A New Host Defense Mechanism.*” American Neurological Association Annual Meeting, Toronto, Ontario, Canada, 2004.

****J. Rumbaugh**, J. Turchan-Cholewo, K. Conant, C. St. Hillaire, R. Slevin, D. Galey, S. Frederick, C. Anderson, and A. Nath. “*The Role of Matrix Metalloproteinases in Modulation of Neuro-inflammatory and Neuro-Infectious Diseases: A Study in HIV Associated Dementia.*” International Symposium on Rare Neuro-Immunological Diseases, Baltimore, Maryland, 2004.

J. Rumbaugh, J. Turchan-Cholewo, K. Conant, C. St. Hillaire, C. Anderson, R. Slevin, and A. Nath. “*Interaction of HIV Tat and Matrix Metalloproteinase in HIV Neuropathogenesis: A New Host Defense Mechanism.*” Society for Neuroimmune Pharmacology Annual Meeting, Santa Fe, New Mexico, 2004.

Jeffrey A. Rumbaugh, Richard S. Murante, Leigh A. Henricksen, Michael S. DeMott, Carole J. Barnes, and Robert A. Bambara. “*Creation and Removal of Embedded Ribonucleotides in Chromosomal DNA during Mammalian Okazaki Fragment Processing.*” Eukaryotic DNA Replication Meeting, Cold Spring Harbor, New York, 1997.

Robert A. Bambara, Richard S. Murante, **Jeffrey Rumbaugh**, Leigh Ann Hendrickson, and Chockalingam Palaniappan. “*Junction Ribonuclease Activity of Mammalian RNase HI.*” Ribonuclease H Meeting, Ocean City, Maryland, 1996.

Richard S. Murante, Carole J. Barnes, **Jeffrey A. Rumbaugh**, Lin Huang, John Turchi, Lynn Rust, and Robert A. Bambara. “*Reconstituting Mammalian Okazaki Fragment Processing.*” DNA Replication and Repair Meeting, Taos, New Mexico, 1996.

INVITED BOOK CHAPTERS

Jeffrey Rumbaugh, Taylor Harrison, and William Tyor. “*Human Immunodeficiency Virus Infection/AIDS.*” In: Jackson, Alan C., editor. Viral Infections of the Human Nervous System. Basel, Switzerland: Springer-Basel (2012).

Ned Sacktor, **Jeffrey Rumbaugh**, Jeffrey Sevigny, and Lydia B. Estanislao. “*HIV Neurology.*” In: Brust, John C. M., editor. Current Diagnosis and Treatment in Neurology. New York, NY: McGraw-Hill (2012).

Jeffrey A. Rumbaugh. “*Neurological Infections.*” In: Rafii, Michael and Cochrane, Thomas, editors. First Aid for the Neurology Boards. New York, NY: McGraw-Hill (2010).

Jeffrey A. Rumbaugh. “*Neurological Infections.*” In: Azzam, Amin and Yanofski, Jason, editors. First Aid for the Psychiatry Boards. New York, NY: McGraw-Hill (2010).

Jeffrey A. Rumbaugh. “*Tingling and Numbness.*” In: Levy, Michael, editor. Patient Encounters, The Neurology and Psychiatry Work-up. Baltimore, MD: Lippincott Williams and Wilkins (2010).

Jeffrey A. Rumbaugh and Avindra Nath. “*Neuronal Cell Death and Inflammation.*” In: Haddad, John J, Binder MD, Hirokawa N, Windhorst U, and Hirsch MC, editors. Encyclopedic Reference of Neuroscience. Neuroimmunology. Heidelberg, Germany: Springer-Verlag (2008).

Jeffrey A. Rumbaugh and Avindra Nath. “*Approach to the Patient with a CSF Pleocytosis.*” In: Irani, David N., editor. Cerebrospinal Fluid in Clinical Practice. Burlington, MA: Elsevier Inc. (2008).

Jeffrey A. Rumbaugh and Avindra Nath. “*Substance Use Disorders and Neuro-AIDS in the HAART Era.*” In: Goodkin, Karl, editor. The Spectrum of Neuro-AIDS Disorders: Pathophysiology, Diagnosis, and Treatment. ASM Press (2008).

Jeffrey A. Rumbaugh. “*Therapies for the Neurological Complications of HIV Infection.*” In: Johnston, Michael, editor. Principles of Drug Therapy in Neurology. New York, NY: Oxford University Press (2008).

Jeffrey A. Rumbaugh and Justin C. McArthur. “*HIV-Associated Neurocognitive Disorders.*” In: Geldmacher, David, editor. Other Dementias. Delray Beach, FL: Carma Publishing LLC (2007).

PREVIOUS EXTRAMURAL RESEARCH SPONSORSHIP

Title: Imaging Dementia—Evidence for Amyloid Scanning

Study Type: Longitudinal Cohort

Role: Sub-Investigator

Dates: July 2017 to December 2017

Sponsor: American College of Radiology Imaging Network, Alzheimer’s Association

Description: To better understand how amyloid imaging effects treatment of patients with suspected dementia, and whether that treatment leads to better outcomes, compared to patients who do not have amyloid imaging.

Principal Investigator: **Jeffrey A. Rumbaugh**

Title: Neuropathogenesis of Cryptococcal Meningitis

Sponsor: Emory Center for AIDS Research

Dates: February 2012 to January 2013

Amount: \$30,000/year for direct research support

Description: This research proposes to study the pathogenesis of intracranial pressure elevation in cryptococcal meningitis. Using a murine model of cryptococcal infection which we have developed, we will compare the ability of isogenic strains of *Cryptococcus* with differing neurovirulence to obstruct arachnoid granulations. The results of the proposed work will represent the first time this issue has been addressed in an animal model, and will provide unique information about the role of the cryptococcal capsule in elevating ICP.

Principal Investigator: Ned Sacktor

Co-Investigators: **Jeffrey A. Rumbaugh**, Elly Katabira, Noeline Nakasujja

Title: HIV Dementia and Sensory Neuropathy in Uganda

Sponsor: National Institutes of Health, R21

Dates: April 2008 to March 2010

Effort: 5%

Amount: \$100,000/year for direct research support

Description: We propose the first large scale prospective study of HIV-D and HIV-SN in Uganda. The project will assemble a cohort of HIV+ individuals in Uganda: 1) to determine the prevalence of and risk factors associated with HIV-D and HIV-SN among untreated HIV+ individuals with moderate to advanced immunosuppression, 2) to determine whether untreated HIV+ individuals decline from baseline in neuropsychological test performance and peripheral nerve function, and 3) to obtain preliminary data to determine whether HIV subtypes differ with respect to the risk of HIV-D and HIV-SN and progression of HIV-associated cognitive impairment and peripheral nerve function. This proposal will provide the data necessary to characterize the natural history of HIV-D and HIV-SN, which could be used for future R01 applications, and could impact the clinical practice parameters for the initiation of HAART in countries within the Sub-Saharan Africa such as Uganda. Our proposal will provide important preliminary data to examine whether HIV subtypes may differ with respect to their ability to cause HIV-associated CNS and PNS dysfunction. The proposal will also provide training for the HIV clinician-scientists in Kampala, Uganda in the research and management of HIV-associated neurological disease.

Principal Investigator: **Jeffrey A. Rumbaugh**

Mentors: Avindra Nath, Katherine Conant

Grant Number: 1 K08 MH072389-01

Title: Interaction of HIV Tat and MMP in HIV Neuropathogenesis

Sponsor: National Institute of Mental Health

Dates: July 2004 to November 2009

Effort: 90%

Amount: \$50,000/year for direct research support

Description: The aim of this project is to explore the molecular mechanisms and interactions of human and viral factors as they relate to development of neurodegeneration in patients with HIV dementia. In the initial phase of the project, we will utilize a human neuronal cell culture system to investigate the modulation of neuronal toxicity by the interaction of human MMPs with the HIV protein, Tat. We will then use a transgenic murine model system to further explore these interactions *in vivo*. Finally, we will utilize the framework provided by Tat-MMP interactions to identify neuroprotective agents which may be clinically useful for the

treatment of HIV dementia. This basic research will not only advance clinical medicine through its therapeutic implications for many of the neurological complications of HIV disease but may have implications for understanding the pathophysiology of other viral encephalitides and other dementias as well.

Principal Investigator: **Jeffrey A. Rumbaugh**

Title: Characterization of Novel Protective Mechanisms by Host Response to HIV Neuropathogenesis

Sponsor: Johns Hopkins Center for AIDS Research

Dates: July 2007 to June 2008

Amount: \$40,000/year for direct research support

Description: The aim of this project is to characterize the action of two recently recognized host defense mechanisms in preventing HIV associated neurotoxicity. We have previously identified neuroprotective interactions between human MMPs and HIV Tat protein. The first goal of this project is to study the specificity of this interaction, particularly by exploring possible mechanisms of interaction between MMPs and HIV gp120. The second protective process involves the ability of the host antibody response to neutralize neurotoxic functions of viral proteins mediated through glutamate receptors. We will use neurotoxicity assays and immunoprecipitation experiments to study the interactions of these proteins. We will also study the effects such interactions may have on downstream signaling cascades usually triggered by NMDA receptors. The research will provide us with information about the nervous system's repertoire of response to viral infection, and about the role of MMP and antibody responses in central nervous system inflammatory conditions.

Principal Investigator: **Jeffrey A. Rumbaugh**

Title: Plasmacytoid Dendritic Cells and the Innate Immune Inflammatory Response in the Neurodegeneration of Multiple Sclerosis

Sponsor: The Montel Williams MS Foundation

Dates: July 2007 to June 2008

Amount: \$20,000/year for direct research support

Description: The aim of this project is to study the role of plasmacytoid dendritic cells in the neurodegenerative phase of multiple sclerosis. The mechanisms of damage during this phase of disease are not well understood, and the medications used to treat patients with relapsing remitting MS do not work in patients with progressive MS. We hypothesize that neuronal damage is mediated by the innate inflammatory response and PDCs play a critical, but unexplored, role. Using both in vitro and animal model systems, we will study the interaction of PDCs with other innate immune mediators which have been most strongly implicated as potential contributors to MS related neurodegeneration. This work will provide information essential for development of new therapies that might prevent irreversible disability associated with MS.

Grant Number: CARE MS Ext 03409

Title: An Extension Protocol for Multiple Sclerosis Patients who Participated in Genzyme Sponsored Studies of Alemtuzumab

Study Type: Long Term Safety and Effectiveness Study

Role: Sub-Investigator

Sponsor: Genzyme Inc.

Description: To examine the long term safety and effectiveness of alemtuzumab treatment in patients who received alemtuzumab or Rebif in prior studies. To determine if and when further alemtuzumab treatment is needed. To confirm and extend the results of earlier studies that found the number of MS relapses were significantly fewer and the amount of disability was significantly less in RRMS patients who received alemtuzumab compared to patients who received Rebif.

Grant Number: Opera WA21092

Title: A Randomized, Double-blind, Double-dummy, Parallel-group Study to Evaluate the Efficacy and Safety of Ocrelizumab in Comparison to Interferon Beta-1a (Rebif) in Patients with Relapsing Multiple Sclerosis

Study Type: Randomized, Double-blind, Double-dummy, Parallel-group Study

Role: Sub-Investigator

Sponsor: Hoffman-La Roche LTD and Genentech Inc.

Description: To confirm whether patients treated with ocrelizumab may experience even fewer clinical relapses compared with those treated with Rebif.

Grant Number: NCT01457352

Title: Efficacy and Safety of **Baclofen** ER Capsules (GRS) in Subjects With Spasticity Due to Multiple Sclerosis

Study Type: Randomized, Double-blind, Placebo-controlled, Parallel-group Study

Role: Sub-Investigator

Sponsor: Sun Pharma Advanced Research Company Limited

Description: to assess whether baclofen ER capsules demonstrate efficacy and safety in the treatment of spasticity

Title: Characterization of B and T Cell Responses to Starting Interferon in Patients with RRMS

Study Type: Laboratory Evaluation

Performed by: Emory MS Study Group

Role: Co-Investigator

Description: Using advanced immunological techniques, we will the specific B and T cell immune repertoire in patients with newly diagnosed and untreated RRMS, and determine if and how this repertoire changes when the patient starts interferon treatment.

Title: Veterans Administration Longitudinal Study of Multiple Sclerosis

Study Type: Observation

Role: Sub-Investigator

Description: Patients with multiple sclerosis within the VA health system are tracked for a variety of clinical features, including MRI measures, over time.

Grant Number: Decide 205MS301

Title: Multicenter, Double-blind, Randomized, Parallel-group, Monotherapy, Active-control Study to Determine the Efficacy and Safety of Daclizumab High Yield Process (DAC HYP) versus Avonex (Interferon Beta-1a) in Patients with Relapsing-Remitting Multiple Sclerosis

Study Type: Multicenter, Double-blind, Randomized, Parallel-group, Monotherapy, Active-control Study

Role: Sub-Investigator

Dates: July 2012 to June 2013

Sponsor: Biogen Idec

Description: To see if DAC HYP is more effective in the treatment of MS than Avonex. To determine if DAC HYP will affect the MS lesions in the brain by checking whether they change in number and/or size. To learn if receiving DAC HYP for a long time causes the body to develop antibodies against DAC HYP. To measure the levels of DAC HYP in the blood at different times. To test blood for biomarkers which might be used to predict a patient's response to treatment with DAC HYP.

Grant Number: WA25046

Title: A Phase III, Multicenter, Randomized, Parallel-group, Double-blinded, Placebo-controlled Study to Evaluate the Efficacy and Safety of Ocrelizumab in Adults with Primary Progressive Multiple Sclerosis
Study Type: Phase III, Multicenter, Randomized, Parallel-group, Double-blinded, Placebo-controlled Study
Role: Sub-Investigator
Dates: July 2012 to June 2013
Sponsor: Hoffman-La Roche LTD
Description: To confirm whether patients with PPMS treated with ocrelizumab may experience less disability progression compared with those treated with placebo.

Grant Number: Stratify-2 101JC402
Title: JCV Antibody Program in Patients with Relapsing Remitting Multiple Sclerosis Receiving or Considering Treatment with Tysabri: Stratify-2
Study Type: Observational
Role: Sub-Investigator
Dates: January 2012 to December 2012
Sponsor: Biogen Idec
Description: To better understand whether antibodies to JCV may be used to predict whether a patient with multiple sclerosis receiving Tysabri treatment is at higher or lower risk of developing PML.

Grant Number: N01-AI-30025
Title: West Nile Virus Treatment Study and Natural History Study
Study Type: Phase II, Double Blind, Placebo-Controlled Trial
Performed by: Collaborative Antiviral Study Group
Role: Sub-Investigator
Dates: July 2004 to June 2007
Sponsor: National Institute of Allergy and Infectious Disease
Description: The aim of the natural history study is to identify and describe the mortality and morbidity, specifically neurological and functional outcomes, of patients infected with West Nile Virus. We will also characterize the clinical course and diverse manifestations of West Nile Virus infection, assess kinetics of specific anti-West Nile antibodies following infection, and correlate them with outcomes. The aim of the treatment portion of the grant is to assess and characterize the safety and tolerability of Omr-IgG-am™ in a population of hospitalized patients with confirmed or suspected West Nile Virus disease. We will assess pharmacokinetics of specific anti-West Nile antibodies following intravenous administration of Omr-IgG-am™, and estimate efficacy of Omr-IgG-am™ in reducing morbidity and mortality, for patients with known or suspected West Nile Virus infection who receive West Nile Virus specific IV-Omr-IgG-am™ versus similar patients who receive either placebo or non-specific, pooled intravenous immunoglobulin (IVIg).

Grant Number: N01-AI-30025
Title: Long Term Therapy of Herpes Simplex Encephalitis: An Evaluation of Valacyclovir
Study Type: Phase III, Double Blind, Placebo-Controlled Trial
Performed by: Collaborative Antiviral Study Group
Role: Sub-Investigator
Dates: July 2004 to June 2010
Sponsor: National Institute of Allergy and Infectious Disease

Description: The purpose of this study is to test the effect of long-term oral anti-viral therapy (valacyclovir) following the standard intravenous acyclovir therapy on the clinical outcome of patients with herpes simplex encephalitis. A separate substudy will correlate cognitive function with HSV viral load and longitudinal analyses of MRI volumetric measurements, viral load and cognitive test scores as a function of treatment (placebo vs. valacyclovir) and other covariates. Neurological outcome will be assessed for 5 years.

Title: Clinical and Laboratory Characterization of Adult Lyme Disease in Maryland

Study Type: Observational and Laboratory Evaluation

Performed by: Johns Hopkins Lyme Disease Study Group

Role: Co-Investigator

Dates: May 2005 to April 2007

Sponsor: Gene Logic, Inc.

Description: We will evaluate the effectiveness of various diagnostic laboratory tests for patients with systemic and/or CNS Lyme disease, with the aim of developing techniques with significantly improved sensitivity and specificity compared to currently available tests. We will evaluate serum and CNS of patients with Lyme disease for host susceptibility markers indicating a predisposition to developing CNS Lyme complications and/or post-Lyme disease syndrome.

TEACHING RESPONSIBILITIES

2012-2013	Instructor for Outpatient Experience (OPEX) course for first year medical students at Emory
2010-2013	Director of Neuroimmunology/Neuroinfectious Diseases elective rotation for neurology residents.
2000-2013	Supervise medical students, medicine, psychiatry, neurology, and neurosurgery residents at Johns Hopkins University and Emory University Schools of Medicine. Give didactic lectures.
2001-2009	Instructor for Neurology section of Clinical Skills course for second year medical students at Johns Hopkins
2004-2009	Instructor of Neurology Clinical Practicum for undergraduate students at Johns Hopkins
2006-2009	Instructor in Introduction to Clinical Medicine for first year medical students at Johns Hopkins
2008-2009	Preceptor for Neurology Resident's Continuity Clinic at Johns Hopkins

Supervised over 300 undergraduate students, medical students, medicine, psychiatry, neurology, and neurosurgery residents during clinical rotations.

JOURNAL ACTIVITIES

Ad-Hoc Reviewer

Medicine, 2013

Current Medicinal Chemistry, 2012

Journal of Neuroinflammation, 2011

Clinical and Vaccine Immunology, 2007-2009

Canadian Journal of Neurological Sciences, 2004-2009

The American Journal of the Medical Sciences, 2008

AIDS Research and Therapy, 2007

Proceedings of the National Academy of Sciences U.S.A., 2007

Antimicrobial Agents and Chemotherapy, 2007

Journal of Neurovirology, 2007

Journal of Clinical Microbiology, 2006-2007

The AIDS Reader, 2004-2007

Journal of Virology, 2006

Journal of Leukocyte Biology, 2006

Journal of Neurochemistry, 2006

AIDS, 2005

Annals of Neurology, 2004

GRANT REVIEW COMMITTEES AND STUDY SECTIONS

CFAR03 study section for Emory Center for AIDS Research, January 2013

CERTIFICATIONS AND LICENSES

Florida State Medical License, #ME122175, 2014.

Virginia State Medical License, #0101255230, 2013

Georgia State Medical License, #063015, 2009

American Board of Psychiatry and Neurology Certification, #53213, 2005, re-certified 2016

Maryland State Medical License, #D61460, 2004

CLINICAL SERVICE RESPONSIBILITIES

Acute management of inpatients with all forms of neurological disease on a general neurology consult service and in an intensive care unit, including strokes, hemorrhages, seizures, headaches, movement disorders, dementias, peripheral neuropathies, neuro-infectious and neuro-immunological conditions.

ORGANIZATIONAL ACTIVITIES

National Committees

Co-Chair, Panel for Development of Clinical Practice Guideline on Lyme Disease, Infectious Diseases Society of America (IDSA), the American Academy of Neurology Institute (AANI) and the American College of Rheumatology (ACR_h), 2014-present.

Scientific Abstract Reviewer, American Academy of Neurology, 2012

Institutional Administrative Appointments

Quality and Peer Review Committee Member, Lakeland Regional Medical Center, 2017.

Neurology Website Committee, Member, 2011-2013.

Neurology Residency Education Committee, Member, 2010-2013.

Abstract Reviewer, Emory-Egleston Children's Research Center, Seed Grant Program, 2012.

Neuroimmunology/Neuro-Infectious Diseases Fellowship Certification Committee, Member, 2007-2009.

Working to obtain recognition of this subspecialty from the United Council for Neurologic Subspecialties.

INVITED TALKS/PANELS

Multiple Sclerosis Foundation, "Immunology of Multiple Sclerosis for Patients", Tampa, FL, 2015.

Multiple Sclerosis Views & News, Crossfire, "A Multiple Sclerosis Q&A Program", Tampa, FL, 2015.

Howard University, Grand Rounds, "Neurological Complications of HIV Infection", Washington, DC, 2013.

American Academy of Neurology, Moderator, Neuro-Infectious Diseases Section, "The Effects of Aging and HIV on Cognition", San Diego, CA, 2013.

Ponce de Leon Center, Provider's Seminar, "Neurological Complications of HIV Infection", Atlanta, GA, 2013.

- Emory University, Center for AIDS Research Network Seminar, “In or Out: The Role of Cryptococcal Capsule in the Pathogenesis of Cryptococcal Meningitis”, Atlanta, GA, 2012.
- Merck & Co., Inc., Divisions of Clinical Pharmacology and Experimental Medicine Seminar, “Novel Host Defense Mechanisms in the Neuropathogenesis of HIV Infection”, Philadelphia, PA, 2012.
- American Academy of Neurology, Coordinator, Highlights in the Field Session, Neurological Infections Section, New Orleans, Louisiana, 2012.
- Emory University and Atlanta VA Medical Center, Rehabilitation Center of Excellence Seminar, “Novel Host Defense Mechanisms in the Neuropathogenesis of HIV Infection”, Atlanta, GA, 2011.
- University of Virginia, Grand Rounds, “Novel Host Defense Mechanisms in the Neuropathogenesis of HIV Infection”, Charlottesville, VA, 2011.
- Emory University, 4th Annual Advances in Parkinson’s Disease and Multiple Sclerosis Symposium, “Epidemiology and Risk Factors for Multiple Sclerosis”, Charleston, SC, 2011.
- American Academy of Neurology, Coordinator, Highlights in the Field Session, Neurological Infections Section, Honolulu, HI, 2011.
- Emory University, Immunology and Molecular Pathogenesis Seminar, “Novel Host Defense Mechanisms in the Neuropathogenesis of HIV Infection”, Atlanta, GA, 2010.
- Emory University, Grand Rounds, “Novel Host Defense Mechanisms in the Neuropathogenesis of HIV Infection”, Atlanta, GA, 2010.
- Emory University, 3rd Annual Advances in Parkinson’s Disease and Multiple Sclerosis Symposium, “Multiple Sclerosis Differential Diagnosis”, Charleston, SC, 2010.
- National Institute of Aging, Neurodegeneration Seminar, “Novel Host Defense Mechanisms in the Neuropathogenesis of HIV Infection”, Baltimore, MD, 2009.
- National Institute of Neurological Disorders and Stroke, Neurovirology Seminar, “Novel Host Defense Mechanisms in the Neuropathogenesis of HIV Infection”, Bethesda, MD, 2009.
- Johns Hopkins University, Clinical Neuroscience Seminar, “HIV Tat Immune Complexes Attenuate Neurotoxicity via NMDA Receptors”, Baltimore, MD, 2008
- Emory University, Grand Rounds, “Novel Host Defense Mechanisms in the Neuropathogenesis of HIV Infection”, Atlanta, GA, 2008.
- University of Rochester, Special Seminar, “Novel Host Defense Mechanisms in the Neuropathogenesis of HIV Infection”, Rochester, NY, 2007.
- University of North Carolina Medical Center, Grand Rounds, “Novel Host Defense Mechanisms in the Neuropathogenesis of HIV Infection”, Chapel Hill, NC, 2007.

Johns Hopkins University, Clinical Neuroscience Seminar, “Novel Host Defense Mechanisms in the Neuropathogenesis of HIV Infection”, Baltimore, MD, 2007

University of Colorado Health Sciences Center, Grand Rounds, “Novel Host Defense Mechanisms in the Neuropathogenesis of HIV Infection”, Denver, CO, 2007.

Invited “Expert Neurologist”, A Day for Men with Multiple Sclerosis, National Multiple Sclerosis Society, Washington, DC, 2007.