

## **CURRICULUM VITAE**

January 2, 2009

**Kenneth P. Vives, MD**  
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**New Haven, CT 06520-8082**  
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### **EDUCATION**

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B.S. Biochemical Engineering, Rutgers College of Engineering, May 1990.

*Salutatorian, Summa Cum Laude, Tau Beta Pi.*

M.D. Yale University School of Medicine, 1995. *Summa Cum Laude, Alpha Omega Alpha.*

### **CAREER**

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Internship – Yale New Haven Hospital General Surgery Program 1995-1996.

Residency – Yale New Haven Hospital Neurosurgery Program 1996-2001. Completed Chief Residency June 30, 2001.

*Assistant Professor* Yale University School of Medicine 7/2001 – 7/2007.

*Associate Professor* Yale University School of Medicine 7/2007 – present.

*Associate Residency Director* Department of Neurosurgery 5/2008-present

Combined general neurosurgery practice at Yale-New Haven Hospital, New Haven, CT and William H. Backus Hospital, Norwich, CT, 7/2001-6/2003.

Sections of Epilepsy and Spine, Yale University/Yale-New Haven Hospital 7/2003-present.

*Director*, Section of Stereotactic and Functional Neurosurgery, Yale University/Yale-New Haven Hospital, 7/2006-present.

### **PROFESSIONAL ORGANIZATIONS**

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American Society for Stereotactic and Functional Neurosurgery, American Epilepsy Society, Congress of Neurological Surgeons

### **BOARD CERTIFICATION**

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American Board of Neurological Surgery (ABNS) #28098

### **GRANT HISTORY**

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“GDNF Delivery to MPTP Monkeys by EIAV lentivirus and AAV”

Principal Investigator: Donald Eugene Redmond, MD, Agency: NINDS, NIH

Type: R01 (5U01NS046028); Effort: 30%

Start Date: May 1, 2004. End Date: April 30, 2009.

The aim of this proposal is to study the effectiveness of providing viral vector therapy for the production of glial derived neurotrophic factor to selected sites of the striatum in monkeys treated with MPTP to induce Parkinson Disease-like symptoms. In addition, substantial work is

being done to establish a safe and effective means of viral gene regulation. Ultimately, we hope to transition this to a multi-center clinical trial in humans with refractory Parkinson Disease.

“Origin of Extracellular Glutamate in Human Temporal Lobe Epilepsy”

Principal Investigator: Dennis D. Spencer, MD, Agency: NINDS, NIH

Type: R01 (5R01NS054038); Effort: 2%

Start Date: Sept. 1, 2006. End Date: March 31, 2010.

Extracellular glutamate is known to be excessively elevated both ictally and interictally in the epileptic human hippocampus. However, the source and significance to epileptogenesis of these high levels of glutamate remain a matter of debate. The overall goal of this proposal is to better understand the cellular and metabolic mechanisms that underlie the elevations of glutamate seen in the hippocampus of patients with mesial temporal sclerosis (MTS).

Type: P01 5P01NS041328 (McCarthy)

09/01/06-08/31/07

“Human Functional Brain Anatomy”

Principal Investigator: Gregory McCarthy, PhD; Agency: NINDS, NIH

Type: P01 (5P01NS041328); Effort: 2%

Start Date: September 1, 2006. End Date: August 31, 2011.

The aim of this proposal is to provide detailed correlation between evoked electrophysiologic recordings from the brain surface of patients undergoing invasive epilepsy monitoring and anatomic locations. This work continues to complement work done utilizing fMRI. The ultimate goal is to better understand the contribution of specific anatomic areas to overall brain function.

“Bioimaging and Intervention in Neocortical Epilepsy”

Principal Investigator: James Duncan, PhD, Agency: NIBIB, NIH

Type: R01 (5R01EB000473); Effort: 4%

Start Date: April 1, 2007. End Date: March 31, 2012.

The aim of this proposal is to develop advanced, correlative techniques in neuroimaging to identify brain abnormalities responsible for the generation of seizures in humans. The ultimate goal is to provide a means of limiting or altogether eliminating the need for invasive brain surface recording to identify areas of the brain responsible for seizures and subsequent resection

“Image-Guided Deep Brain Microscopy for Neurosurgical Intervention”

Principal Investigator: Xenophon Papademetris, Agency: NIBIB, NIH

Type: R21 (1R21EB007770); Effort: 1%

Start Date: August 1, 2007. End Date: July 31, 2010.

The goal of this project is to develop a minimally-invasive image-guided microscopy system for neurosurgical interventions such as optical biopsy.

“Anticipating Seizures in Epileptic Networks”

Principal Investigator: Susan S. Spencer, MD, Agency: NINDS, NIH

Type: R01 (5R01NS044102); Effort: Consultant

The aim of this proposal is to better understand the role of the integrated brain network in the context of epilepsy in order to predict the likelihood of seizures occurring as well as

understanding the dynamics of the network. My role, specifically, is to investigate thalamic-cortical relations through the use of stereotactic depth electrode recordings from patients undergoing invasive electrode recordings for epilepsy. Ultimately, the goal is to understand the role of the thalamus in allowing seizure generation and possibly eliminate the seizures through either lesioning or neurostimulation.

## **PAST RESEARCH**

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“Bioimaging and Intervention in Neocortical Epilepsy”

Principal Investigator: James Duncan, PhD, Agency: NIBIB, NIH

Type: R01 (5R01EB000473); Effort: Consultant

Start Date: April 1, 2002. End Date: March 31, 2007.

The aim of this proposal is to develop advanced, correlative techniques in neuroimaging to identify brain abnormalities responsible for the generation of seizures in humans. The ultimate goal is to provide a means of limiting or altogether eliminating the need for invasive brain surface recording to identify areas of the brain responsible for seizures and subsequent resection

“Localization of Function in the Brain”

Principal Investigator: Gregory McCarthy, PhD, Agency: NINDS, NIH

Type: R01 (2R01MH005286); Effort: 8%

Start Date: Dec. 1, 1977. End Date: Nov. 30, 2006.

The aim of this proposal is to provide detailed correlation between evoked electrophysiologic recordings from the brain surface of patients undergoing invasive epilepsy monitoring and anatomic locations. This work continues to complement work done utilizing fMRI. The ultimate goal is to better understand the contribution of specific anatomic areas to overall brain function.

“The Role of Notch Receptors in Human Central Nervous System Neoplasms.” 12/98-6/2000. In Collaboration with Murat Gunel, MD and Spyros Artavanis-Tsakanovis, PhD.

“Electrophysiology and Immunochemical Profile of Subcortical White Matter Neurons.” 11/97-6/2000. In Collaboration with Charles Greer, PhD., Anne Williamson, PhD., and Dennis D. Spencer, MD.

“In-Vivo Paired Pulse Study of Inhibition in the Human Hippocampus.” Supported by an American Heart Association Medical Student Research Fellowship, 7/93 - 6/94 at Yale University School of Medicine. Under the Guidance of Dennis D. Spencer, M.D. and Gregory McCarthy, Ph.D.

“Establishment of a Clinical Database for the Lesional Epilepsy Patients 1986 - Present.” 10/93 - 4/94 at Yale University School of Medicine. Under the Guidance of Dennis D. Spencer, M.D.

“Subcellular Localization and Characterization of FK-506 Binding Proteins in Various Tissues.” Medical Student Summer Research Fellowship, 5/91-8/91 at Yale University School of Medicine. Under the Guidance of Mark I. Lorber, M.D.

“Equilibrium Binding of Linear Immune Complexes to P388D1 Macrophages.” Supported by Center for Advanced Biotechnology and Medicine (CABM) Fellowships, 9/89 - 12/89 and 5/90 - 9/90 at UMDNJ - Rutgers College of Engineering, Piscataway, NJ. Under the Guidance of Martin L. Yarmush, M.D., Ph.D.

“Bioavailability of Heavy Metal Toxins from Incinerator Flyash.” 9/88 - 5/89 at Rutgers College of Engineering. Under the Guidance of David D. Kosson, Ph.D.

#### INVITED LECTURES

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- “Surgical Treatment for Trigeminal Neuralgia” at Yale-New Haven Shoreline Medical Center, March 2007.
- “Surgical Treatment of Neoplastic Spine Disease” at the First Annual Neuro-Oncology Update, Yale School of Medicine, September, 2006.
- “Surgery for Movement Disorders” at Advances in the Treatment of Parkinson’s Disease Symposium, Yale University School of Medicine, September, 2005.
- “Sports-Related Traumatic Brain Injury” at *Sports Related Injuries* sponsored by the Backus Foundation, April 2004.
- “Epilepsy Surgery at Yale-New Haven Hospital” by request to the Yale New-Haven Board of Trustees, Yale New Haven Hospital, March 2004.
- “Intracranial Pressure Management” at Backus Hospital Grand Rounds, Norwich, CT, March 2003.
- “Management of Spinal Cord Injury” at Backus Hospital Grand Rounds, Norwich, CT, March 2002.
- “Surgical Management of Trigeminal Neuralgia” at Shoreline Clinic, Norwich, CT, June 2007.
- “Surgical Management of Trigeminal Neuralgia” at Waterbury Hospital, Norwich, CT, June 2007.

#### PEER-REVIEWED PUBLICATIONS

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- Vives, KP, “The Equilibrium Binding of Immune Complexes to P388D1 Macrophages.” Published as undergraduate thesis, Rutgers University Press, May 1990.
- Azhderian EM, Kolipaka J, Vives K, Lorber MI. “Nucleus associated FK 506 binding proteins with potential relevance to FK506 immunosuppression.” *Transplantation Proceedings*, February 1993 25(1 Pt 1):662-4,.
- Bronen RA, Vives KP, Kim JH, Fulbright RK, Spencer SS, Spencer DD. “Focal cortical dysplasia of Taylor, balloon cell subtype: MR differentiation from low-grade tumors.” *AJNR Am J Neuroradiol*. 1997 Jun-Jul;18(6):1141-51.
- Bartolomei JC, Christopher S, Vives K, Spencer DD, Piepmeier JM. “Low-grade gliomas of chronic epilepsy: a distinct clinical and pathological entity.” *J Neurooncol*. August 1997;34(1):79-84.
- Vives KP, Spencer DD, Al-Rohdan N, McCarthy G. “The Use of MRI in Surgical Planning.” *MRI and Epilepsy*, Cascino G. ed.
- Vives KP, Maiaire JN, Awad IA. “Quality of Life Issues in Vascular Malformations of the CNS.” Chapter in *Vascular Malformations of the Central Nervous System*, Jafar JJ and Awad IA, Rosenwasser, R eds. Lippincott-Raven Publ. 1998.
- Vives KP, Awad IA. “Vascular Malformations and Epilepsy.” Chapter In *Epilepsy: Etiologies and Treatment*, Kotargal P and Luders H, eds Raven Press Publ. 1998.
- Vives KP, Piepmeier JM. “Complications and expected outcome of glioma surgery.” *J Neurooncol*. 1999 May;

42(3):289-302.

Lee S, Vives K, Westerveld M, Spencer D. "Quantitative temporal lobe volumetrics in the surgical management of nonlesional frontal and temporal neocortical epilepsies." *Adv Neurol*. 2000;84:577-93.

Baehring J, Vives K, Duncan C, Piepmeier J, Bannykyh S. Tumors of the posterior third ventricle and pineal region: ependymoma and germinoma. *J Neurooncol*. 2004 Nov;70(2):273-4.

Pan JW, Venkatraman T, Vives K, Spencer DD. Quantitative glutamate spectroscopic imaging of the human hippocampus. *NMR Biomed*. 2006 Apr;19(2):209-16.

Baehring JM, Vives KP, Bannykh S. Images in neuro-oncology: anaplastic pleomorphic xanthoastrocytoma. *J Neurooncol*. 2006 Sep;79(2):151-2.

DeLorenzo C, Papademetris X, Wu K, Vives KP, Spencer D, Duncan JS. Nonrigid 3D brain registration using intensity/feature information. *Med Image Comput Comput Assist Interv Int Conf Med Image Comput Comput Assist Interv*. 2006;9(Pt 1):932-9.

Baehring JM, Vives K, Bannykh S. Progressive multifocal leukoencephalopathy in a patient with marginal zone B-cell lymphoma. *J Neurooncol*. 2007 Dec;85(3):289-90.

Baehring JM, Vives K, Ogle E, Bannykh S. A cerebral teratoma in an unusual location. *J Neurooncol*. 2007 Nov;85(2):203-5.

DeLorenzo C, Papademetris X, Vives KP, Spencer DD, Duncan JS. A comprehensive system for intraoperative 3D brain deformation recovery. *Med Image Comput Comput Assist Interv Int Conf Med Image Comput Comput Assist Interv*. 2007;10(Pt 2):553-61.

Hetherington HP, Kuzniecky RI, Vives K, Devinsky O, Pacia S, Luciano D, Vasquez B, Haut S, Spencer DD, Pan JW. A subcortical network of dysfunction in TLE measured by magnetic resonance spectroscopy. *Neurology*. 2007 Dec 11;69(24):2256-65.

Elsworth JD, Redmond DE Jr, Leranath C, Bjugstad KB, Sladek JR Jr, Collier TJ, Foti SB, Samulski RJ, Vives KP, Roth RH. AAV2-mediated gene transfer of GDNF to the striatum of MPTP monkeys enhances the survival and outgrowth of co-implanted fetal dopamine neurons. *Exp Neurol*. 2008 May;211(1):252-8

Cavus I, Pan JW, Hetherington HP, Abi-Saab W, Zaveri HP, Vives KP, Krystal JH, Spencer SS, Spencer DD. Decreased hippocampal volume on MRI is associated with increased extracellular glutamate in epilepsy patients. *Epilepsia*. 2008 Aug;49(8):1358-66.

Gwinn RP, Spencer DD, Spencer SS, Duckrow RB, Vives K, Wu K, Tkeshelashvili D, Zaveri HP. Local spatial effect of 50 Hz cortical stimulation in humans. *Epilepsia*. 2008 Sep;49(9):1602-10.

D. Eugene Redmond, Jr., Kimberly B. Bjugstad, Yang D. Teng, Vaclav Ourednik, Jitka Ourednik, Dustin R. Wakeman, Xuejun H. Parsons, Rodolfo Gonzalez, Barbara C. Blanchard, Seung U. Kim, Zezong Gu, Stuart A. Lipton, Eleni Markakis, Robert H. Roth, John D. Elsworth, John R. Sladek, Jr., Richard L. Sidman, and Evan Y. Snyder. Behavioral improvement in a primate Parkinson's model is associated with multiple homeostatic effects of human neural stem cells. *PNAS* (in press).

## BOOK CHAPTERS

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Vives K, Lee G, Spencer D. "Anterior Temporal Resection." **Epilepsy: A Comprehensive Textbook**, Engel J and Pedley T, eds., *in press*.

- Mulligan L, Vives K, Spencer D. "Placement of Depth Electrodes." **Textbook of Epilepsy**, Luders HO, ed., *in press*.
- Vives KP, McCarthy K, Spencer DD. "Surgical planning for epilepsy monitoring." Chapter in **Youmans Neurological Surgery Fifth Edition**, Winn R, ed. Elsevier, 2003.
- Vives KP, Gunel M, Awad IA. "Surgical Treatment of Supratentorial Cavernous Malformations." Chapter in **Youmans Neurological Surgery Fifth Edition**, Winn R, ed. Elsevier, 2003.
- Lee S, Vives KP, Kim J, Piepmeier JM. "Surgical Treatment of Unusual Gliomas." Chapter in **Youmans Neurological Surgery Fifth Edition**, Winn R, ed. Elsevier. 2003.
- Vives KP, Awad IA. "Vascular Malformations and Epilepsy." Chapter in **Epilepsy: Etiologies and Treatment**, Kotagal P and Luders H, eds. Raven Press Publ. 1998.
- Vives KP, Maiaire JN, Awad IA. "Quality of Life Issues in Vascular Malformations of the CNS." Chapter in **Vascular Malformations of the Central Nervous System**, Jafar JJ and Awad IA, Rosenwasser, R eds. Lippincott-Raven Publ. 1998.
- Vives KP, Al-Rohdan N and Spencer DD. "The Use of MRI in Surgical Planning." **Neuroimaging in Epilepsy**, Cascino G and Jack C eds. Butterworth-Heinemann. 1996.

## ABSTRACTS

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- Teisseyre TZ, Papademetris X, DeLorenzo C, Spencer D, Duncan JS, Vives KP. Accuracy Assessment of Electrode Location During Image-Guided Neurosurgery, Annual Meeting of the American Epilepsy Society, 2007.
- DeLorenzo C, Papademetris X, Duncan J, Vives KP. The Use of Stereoscopic Brain Surface Tracking to Compensate for Brain Shift during the Use of Intraoperative Imaging Guidance Systems Based on Preoperative Multimodal Imaging, Annual Meeting of the Congress of Neurological Surgeons, 2007.
- Leichtle S, Bober J, Markakis E, Leranath C, Samulski R, Zhou X, Zufferey R, Aebischer P, Vives K, Redmond D, AAV2 is superior to EIAV vector for expressing GDNF in the primate nigrostriatal system, Annual Meeting of the American Society for Neural Therapy and Repair, 2007.
- DeLorenzo C, Papademetris X, Vives K, Spencer D, Duncan J, A Realistic Brain Phantom for 3D Deformation Recovery, IEEE International Symposium on Biomedical Imaging, 2007.
- Markakis EA, Leranath C, Bober J, Samulski RJ, Rabinowitz J, Zhou X, Vives K, and Redmond, Jr DE. Transduction of Neural Cells in Primate Brain using Adeno-Associated Virus (AAV) Serotypes 2 and 5. Annual Meeting of the American Society for Gene Therapy, Molecular Therapy 2006.
- Markakis EA, Leranath C, Bober J, Samulski RJ, Rabinowitz J, Zhou X, Vives K, and Redmond, Jr DE. Efficiency of Gene Delivery among AAV Serotypes in Primate Brain. Annual Meeting of the American Society for Neural Therapy and Repair, 2006.
- Papademetris X, Vives K, DiStasio M, Staib L, Neff, M, Flossman S, Frielinghaus N, Zaveri H, Spencer D, Duncan J, Development of a research interface for image guided intervention: initial application to epilepsy neurosurgery. IEEE International Symposium on Biomedical Imaging, 2006.
- DeLorenzo C, Papademetris X, Vives K, Spencer D, Duncan D. Combined feature/intensity-based brain shift compensation using stereo guidance. IEEE International Symposium on Biomedical Imaging 2006.

- DeLorenzo C, Papademetris X, Wu K, Vives K, Spencer D, Duncan J, Nonrigid 3D Brain Registration Using Intensity/Feature Information, International Conference on Medical Image Computing and Computer Assisted Intervention 2006.
- DiStasio M, Vives K, Papademetris X. The BioImage Suite Datatree Tool: Enabling Flexible Realtime Surgical Visualizations. ISC/NA-MIC Workshop on Open Science, International Conference on Medical Image Computing and Computer Assisted Intervention 2006.
- Golomb J, Shamy M, Levin A, Davis K, McNally K, Vives K, Spencer D, Spencer S, Zaveri H and Blumenfeld H. Neocortical Slowing During Temporal Lobe Seizures Demonstrated by Quantitative Analysis of Intracranial EEG. Annual Meeting of the American Epilepsy Society, 2005.
- Diaz M, Morris J, Vives K, Spencer D, McCarthy G. Face and Object Processing in the Fusiform Gyrus: A Comparison of Intracranial ERP Recordings and Functional MRI. Annual Meeting of the Society for Neuroscience 2005.
- Vives KP, McCarthy G, Luby ML, Spencer DD. In-Vivo Paired Pulse Study of Inhibition in the Human Hippocampus: Comparison Among Groups Based Upon Hippocampal Volumes. American Association of Neurological Surgeons Annual Meeting, April, 1995.
- Vives KP, McCarthy G and Spencer DD. In-Vivo Paired Pulse Study of the Human Hippocampus. Annual Meeting of the Society for Neuroscience, November 1994.
- Vives KP and Spencer DD. Epilepsy Surgery for Neuronal Migration Disorders. Annual Meeting of the American Epilepsy Society, December 1994.
- Lorber MI, Vives K and Azhderian E. Nuclear Associated FK-506 Binding Proteins with Potential Relevance to FK-506 Immunosuppression. Annual Meeting of the 14th International Congress of the Transplant Society, 1992.
- Azhderian E, Lentz S, Vives K and Lorber MI. Identification of Nuclear Membrane Associated Immunophilins of Potential Importance in Cyclosporin and FK-506 Immunosuppression. Annual Meeting of American Society of Transplant Surgeons, 1992.