

## Curriculum Vitae

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**Name:** Emilio Rafael Garrido Sanabria, MD, Ph.D.

**Position:** Associate Professor, Department of Biomedicine  
Principal Investigator and Director, Epilepsy Research Laboratory  
College of Biomedical Sciences and Health Professions

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**Citizenship:** U.S. and Brazilian **Birth place:** Havana, Cuba

**Languages:** English, Spanish and Portuguese

### ACADEMIC DEGREES and EDUCATION

**M.D.** 1994 *Summa Cum Laude*, Inst. Superior de Ciencias Médicas de Ciudad Habana, Cuba.  
1995 Universidade de São Paulo, Medical License: CRM-SP 98190, São Paulo, Brazil.

**Ph.D.** 1995-1999. Neurology/Neuroscience Graduate Program at the Department of Neurology and Neurosurgery, Universidade Federal de São Paulo, Brazil. **Thesis Dissertation:** “*Electrophysiological study of chronic epileptogenesis in a model of temporal lobe epilepsy induced by pilocarpine*”. **Advisors:** Esper A. Cavalheiro, MD, Ph.D., Supported by the National Council of Research (CNPq) and Yoel Yaari, Ph.D., Department of Physiology, Hebrew University-Hadassah School of Medicine.

**Graduate Program PhD Internship.** 1997-1998 at the Department of Physiology, Hebrew University-Hadassah Medical School. Jerusalem, Israel. “*In vitro electrophysiology for the study of temporal lobe epilepsy*”. **Advisor:** Yoel Yaari, Ph.D. Supported by Israeli Science Foundation.

**Post-doctoral training,** 1999-2001, “*Electrophysiology of Human Tissue from Epileptic Patients*”, at the Department of Neurology and Neurosurgery, Universidade Federal de São Paulo, Brazil. **Advisor:** Dr. Esper A. Cavalheiro. Short-term post-doctoral training at the Institute of Physiology, Charité-Humboldt University, Berlin. **Advisor:** Prof. Uwe Heinemann.

**Post-doctoral training,** 2001-2003, Department of Anatomy and Neurobiology, University of Maryland School of Medicine, Baltimore, **Activities:** “*Thalamo-cortical physiology*” and “*Synaptic neurotransmission in hippocampal networks*”. **Mentor:** Asaf Keller, Ph.D.

## ACADEMIC EMPLOYMENT

2010 – Present **Associate Professor**, (Tenured) at the Department of Biomedicine, College of Biomedical Sciences and Health Professions, The University of Texas at Brownsville, TX.

2009 – 2010 **Associate Professor**, (Tenure-Track) at the Department of Biological Sciences, The University of Texas at Brownsville, TX.

2004 – 2009 **Assistant Professor**, (Tenure-Track) at the Department of Biological Sciences, The University of Texas at Brownsville, TX.

2003 – 2004 **Research Assistant Professor**, (non-tenure track) at the Department of Biological Sciences, The University of Texas at Brownsville, TX.

2002 – 2003 **Research Assistant Professor**, (non-tenure track) Department of Anatomy and Neurobiology, University of Maryland School of Medicine, Baltimore, MD.

2002 – 2002 **Visiting Assistant Professor**, Department of Anatomy and Neurobiology, University of Maryland School of Medicine, Baltimore, MD.

2001 – 2002 **Post-doctoral Associate**, Department of Anatomy and Neurobiology, Univ. of Maryland School of Medicine, Baltimore, MD. Mentor: Prof. Asaf Keller.

2001 – 2001 **Affiliated Professor**, Laboratory of Experimental Neurology, Department of Neurology and Neurosurgery, Universidade Federal de São Paulo, Brazil.

1999 – 2001 **Post-doctoral Associate**, Department of Neurology and Neurosurgery, Universidade Federal de São Paulo-Escola Paulista de Medicina, Brazil. *FAPESP 99/-2669-6*.

## FELLOWSHIPS/SCHOLARSHIPS/TRAINING:

- Fellowship from CNPq for PhD Graduate School. 1994-1999, Process N° 141952, UNIFESP-EPM. Topic: “*Electrophysiological study of chronic epileptogenesis in a model of temporal lobe epilepsy induced by pilocarpine*”. Laboratory of Experimental Neurology, Department of Neurology and Neurosurgery, Uni. Federal of São Paulo. Advisor: Prof. Dr. Esper A. Cavalheiro.

- Fellowship from the Israeli Science Foundation to develop PhD training (1997-1998) at the Department of Physiology, Hebrew University-Hadassah Medical School. Jerusalem, Israel. Topic: “*In vitro electrophysiology for the study of temporal lobe epilepsy*”. Mentor: Dr. Yoel Yaari.

- Visiting Scientist. “*Training in electrophysiological approaches to study human epileptic tissue. In vitro electrophysiology including intracellular, extracellular and patch clamp methods. Use of neuroanatomical tracers to reveal network reorganization of human tissue*”. Charite Institute for Physiology, Humboldt University, Berlin, 09/19/1999 - 10/08/1999. Mentor: Uwe Heinemann.

- Training in “*Neuropathology and molecular neurobiology of dysplastic tissue taken from drug-resistant epileptic patients*”. Advisor: Prof. Dr. Roberto Spreafico. “C. Besta” National Institute of Neurology, Milan, Italy during visit to the Laboratory of Experimental Neurology, Universidade Federal of Sao Paulo, April to June, 2000.

- Neurology Training Program. “*Electroencephalography and Neurophysiological Basis of Epilepsies*”. Clinical Neurophysiology Program at Department of Neurology and Neurosurgery, Universidade Federal de São Paulo, São Paulo, Brazil, 1998-2001.

## SCIENTIFIC MEMBERSHIP

- American Physiological Society since 2008.
- Society for Neuroscience since 2004.
- American Society for Nanomedicine, 2011.
- New York Academic of Sciences, 2007.

## RESEARCH PERFORMANCE

### Research Interests

- Epilepsy, Alzheimer's Disease, Traumatic Brain Injury and other neurological disorders.
- Molecular mechanisms regulating presynaptic release of neurotransmitter.
- Neuropharmacology of CNS disorders with emphasis in epilepsy and Alzheimer's Disease.
- Synaptic plasticity and synaptopathies in epilepsy and Alzheimer's disease.
- Mechanisms of action and development of antiepileptic/antiepileptogenic drugs.
- Analysis of Gene expression during the course of neurological disorders.
- Nanomedicines: Gene and drug nanodelivery systems for CNS disorders.

### Research training and experience:

- Electrophysiological "in vitro" recordings from brain slices (human and rodents), heterologous expression systems (e.g. HEK293, PC12) and primary neuronal cultures.
- Whole-cell patch-clamp recording from neurons in acute brain slices and cell culture.
- Sharp-microelectrode intracellular recordings in hippocampal and cortical brain slices.
- Extracellular recording to study epileptogenesis and synaptic plasticity in brain slices.
- Multiphoton Confocal Microscopy for analysis of exocytosis/endocytosis.
- Genetically-encoded fluorescent sensors including pH-sensitive Synapto-pHluorins (VAMP-GFP) to image synaptic vesicle exocytosis and recycling in presynaptic terminals.
- Video-rate fluorescence imaging of Ca<sup>2+</sup> transients in cultured cells and primary neurons.
- Laser Scanning Confocal Microscopy and Wide Field Fluorescence Microscopy.
- Animal models of epilepsy. Expertise in the pilocarpine model of temporal lobe epilepsy.
- Animal surgery, electrode implantation and EEG recordings from small animals.
- Electrical stimulation, superfusion and microinjection of pharmacological agents and drugs.
- Histology, standard and fluorescence immunohistochemistry and Western blotting.
- Video-monitoring and classification of seizures using SeizureScan detection suite.
- Electron Microscopy. Sample preparation and analysis of presynaptic ultrastructural data.

### Collaborative Institutional Training Initiative (CITI) training and certifications

*Reducing Pain and Distress in Laboratory Mice and Rats, Basic Course, - Working with Mice in Research, Working with Rats in Research Settings, Surgery and euthanasia, Systematically Monitoring for Pain and Distress, Fluid and Electrolyte Balance, Documentation of Post-Procedure Care, Alleviation of Pain, Occupational Health and Safety, Antibody Production.*

### Experience mentoring and supervising Post-Docs, Research Assistant Professors and Visiting Scientists.

Luis F. Pacheco, PhD (2005-present), Research Assistant Professor (Non-Tenure Track).

Boris S. Ermolinsky, PhD (2006-2011), Assistant Professor (Tenure-track) of Biomedicine.

### Visiting Scientist for PhD rotation (Collaborations with Brazilian Institutions)

Sofia Jürgensen, PhD (3 months in 2010), Training in electrophysiology.

Leandro L. Antonio, PhD (1 month, 2009), Training in electrophysiology.

Mauro S. Oliveira, PhD (6 months in 2008), Training in electrophysiology.

**AWARD:** 1995 “GLAXO Travelling Junior Fellowship” from the World Federation of Neurology (W.F.N). Magnetic field stimulation for the treatment of experimental epilepsy.

**SELECTED PEER-REVIEWED PUBLICATIONS:**

- 1) Upreti C, Skinner F, Pacheco LF, Partida C, Otero R, Thakker R, Zhou Z, Maglakesidze G, Velíšková J, Velíšek L, Romanovicz D, Jones T, Stanton PK, **Garrido-Sanabria ER**. Long-term increase in presynaptic transmitter release, vesicle recycling and altered presynaptic structure in limbic epilepsy. *Brain, Journal of Neurology*, (BRAIN-2011-01301), *in print*, 2011.
- 2) Ruiz N, Pacheco LF, Farrell B, Ermolinsky BS, **Garrido-Sanabria ER**, Nair S. Metabolic gene expression changes in the hippocampus of obese epileptic male rats in the pilocarpine model of temporal lobe epilepsy. *Brain Research*, 1426: 86-95, 2011.
- 3) **Garrido-Sanabria ER**, Perez-Cordova MG, Colom LV. Differential expression of voltage-gated K<sup>+</sup> currents in medial septum/diagonal band complex neurons exhibiting distinct firing phenotypes. *Neuroscience Research*, 70(4): 361-9, 2011.
- 4) Jürgensen S, Antonio LL, Mussi GE, Brito-Moreira J, Bomfim TR, De Felice FG, **Garrido-Sanabria ER**, Cavalheiro EA, Ferreira ST. Activation of D1/D5 dopamine receptors protects neurons from synapse dysfunction induced by amyloid-beta oligomers. *J Biol Chem.*, 286(5): 3270-6, 2011.
- 5) Scorza CA, Araujo BH, Leite LA, Torres LB, Otalora LF, Oliveira MS, **Garrido-Sanabria ER**, Cavalheiro EA. Morphological and electrophysiological properties of pyramidal-like neurons in the *stratum oriens* of Cornu ammonis 1 and *Cornu ammonis* 2 area of *Proechimys*. *Neuroscience*, 177: 252-68, 2011.
- 6) Oliveira MS, Pacheco LF, Mello CF, Cavalheiro EA, **Garrido-Sanabria ER**. Epileptiform activity in the limbic system. *Frontiers in Biosciences, Review*. 3: 565-93. 2011.
- 7) Ermolinsky BS, Skinner F, Garcia I, Arshadmansab MF, Otalora LF, Zarei MM, **Garrido-Sanabria ER**. Upregulation of STREX variant of Ca<sup>2+</sup>-activated potassium (BK) channel in epileptic rats: a comparative real time PCR study. *Neuroscience Research*, 69(1): 73-80, 2011.
- 8) Pacheco Otalora LF, Skinner F, Oliveira MS, Farrell B, Arshadmansab MF, Pandari T, Garcia I, Robles L, Rosas G, Mello CF, Ermolinsky BS, **Garrido-Sanabria ER**. Chronic deficit in the expression of voltage-gated potassium channel Kv3.4 subunit in the hippocampus of pilocarpine-treated epileptic rats. *Brain Research*, 1368: 308-16, 2011.
- 9) Oliveira MS, Skinner F, Arshadmansab M, Garcia I, Pacheco LF, Ermolinsky BS, Knaus H-G, Mello CF, **Garrido Sanabria ER**, Altered expression and function of small-conductance (SK) Ca<sup>2+</sup>-activated K<sup>+</sup> channels in pilocarpine-treated epileptic rats, *Brain Research*. 12; 1348:187-99, 2010.
- 10) Oliveira MS, Furian AF, Rambo LM, Ribeiro LR, Royes LF, Ferreira J, Calixto JB, Otalora LF, **Garrido-Sanabria ER**, Mello CF. Prostaglandin E2 modulates Na<sup>+</sup>,K<sup>+</sup>-ATPase activity in rat hippocampus: implications for neurological diseases. *Journal of Neurochemistry*, 109(2): 416-26, 2009.

- 11) **Garrido-Sanabria ER**, Pacheco LF, Arshadmansab MF, Francisco S, Ermolinsky B. Impaired expression and function of group II metabotropic receptors in pilocarpine-treated epileptic rats. *Brain Research*, 1240: 165-76, 2008.
- 12) Pacheco Otalora LF, Hernandez EF, Arshadmansab MF, Francisco S, Willis M, Ermolinsky B, Zarei M, Knaus HG, **Garrido-Sanabria ER**. Downregulation of BK channel expression in the pilocarpine model of temporal lobe epilepsy, *Brain Research*, 1200C: 116-31, 2008.
- 13) Ermolinsky B, Pacheco LF, Arshadmansab MF, **Garrido-Sanabria ER**. Differential changes in mGluR2 and mGluR3 gene expression following pilocarpine-induced *status epilepticus*: A comparative real-time PCR analysis, *Brain Research*, 1226: 173-80, 2008.
- 14) Ermolinsky B, Arshadmansab MF, Pacheco Otalora LF, Zarei MM, **Garrido-Sanabria ER**. Deficit of Kcnma1 mRNA expression in the dentate gyrus of epileptic rats. *Neuroreport*, 19(13): 1291-4, 2008.
- 15) Pacheco Otalora LF, Moffett JR, **Garrido-Sanabria ER**. Selective vulnerability of hippocampal NAAGergic neurons in experimental temporal lobe epilepsy. *Brain Research*, 1144: 219-230, 2007.
- 16) Colom LV, **Garrido-Sanabria E**. Modulation of normal and altered hippocampal excitability status by septal networks. *J Neurosci Res*. 85(13): Review, 2839-43, 2007.
- 17) **Garrido-Sanabria ER**, Perez MG, Banuelos C, Reyna T, Hernandez S, Castaneda MT, Colom LV. Electrophysiological and morphological heterogeneity of slow firing neurons in medial septal/diagonal band complex as revealed by cluster analysis. *Neuroscience*, 146(3): 931-45, 2007.
- 18) Malfatti CR, Perry ML, Scheigert I, Muller A, Pasquetti L, Rigo FK, Figuera MR, **Garrido-Sanabria ER**, Mello CF. Convulsions Induced by Methylmalonic Acid are Associated with Glutamic Acid Decarboxylase Inhibition in Rats: A Role for GABA in the Seizures Presented by Methylmalonic Acidemic Patients. *Neuroscience*, 146 (4): 1879-87, 2007.
- 19) **Sanabria ER**, D'Andrea Vieira I, da Silveira Pereira MF, Faria LC, da Silva AC, Cavaleiro EA, da Silva Fernandes MJ. Pro-epileptic effect of alfentanil in rats subjected to pilocarpine-induced chronic epilepsy, *Brain Research Bulletin*, 69 (5): 535-45, 2006.
- 20) Colom LV, Garcia-Hernandez A, Castaneda MT, Perez-Cordova MG, **Garrido-Sanabria ER**. Septo-hippocampal networks in chronically epileptic rats: potential antiepileptic effects of theta rhythm generation. *Journal of Neurophysiology*, 95(6): 3645-53, 2006.
- 21) Otalora LFP, Couch J, Shigamoto R, Zarei MM, **Garrido-Sanabria ER**. Abnormal mGluR2/3 expression in the perforant path termination zones and mossy fibers of chronically epileptic rats. *Brain Research*, 1098:170-185, 2006.
- 22) **Garrido-Sanabria ER**, Castaneda MT, Banuelos C, Perez-Cordova M, Hernandez S, Colom LV. Septal GABAergic neurons are selectively vulnerable to pilocarpine-induced hippocampal seizures. *Neuroscience*, 142 (3): 871-83, 2006.
- 23) Toro B, Cox N, Wilson RJ, Toro L, Stefani E, **Garrido-Sanabria E**, Zarei M. M. KCNMB1 Regulates Surface Expression of a Voltage and Ca<sup>2+</sup>-activated K<sup>+</sup> Channel via Endocytic Trafficking Signals. *Neuroscience*, 142: 661-669, 2006.

- 24) Castaneda MT, **Sanabria ER**, Hernandez S, Ayala A, Reyna TA, Wu JY, Colom LV. Glutamic acid decarboxylase isoforms are differentially distributed in the septal region of the rat. *Neuroscience Research*; 52(1): 107-19, 2005.
- 25) Colom LV, Castaneda MT, Reyna T, Hernandez S, **Garrido-Sanabria E**. Characterization of medial septal glutamatergic neurons and their projection to the hippocampus. *Synapse*, 58(3):151-64, 2005.
- 26) **Garrido-Sanabria ER**, Wozniak KM, Slusher BS, Keller A. GCP II (NAALADase) inhibition suppresses mossy fiber-CA3 synaptic transmission by a presynaptic mechanism. *Journal of Neurophysiology*, 91 (1): 182-193, 2004.
- 27) Roehrs, C, **Sanabria, ERG**, Da Silva, A.C, Faria, LC, Sinhoin, VDG, Marques, RH, Priel, MR, Rubin, MA, Cavalheiro, EA, Mello CF. Succinate increases neuronal post-synaptic excitatory potentials *in vitro* and induces convulsive behavior through N-methyl-D-aspartate-mediated mechanisms. *Neuroscience*, 125 (4): 965-971, 2004.
- 28) Gabriel S, Njunting M, Pomper J, Merschhemke M, **Sanabria ER**, Eilers A, Kivi1 M, Zeller M, Meencke HJ, Cavalheiro EA, Heinemann U, Lehmann, TN. (2004). Stimulus and potassium-induced epileptiform activity in the human dentate gyrus from patients with and without hippocampal sclerosis. *Journal of Neuroscience*, 17 (24):10416-30, 2004.
- 29) Malfatti CR, Royes LF, Francescato L, **Sanabria ER**, Rubin MA, Cavalheiro EA, Mello CF. Intrastratial methylmalonic acid administration induces convulsions and TBARS production, and alters Na<sup>+</sup>,K<sup>+</sup>-ATPase activity in the rat striatum and cerebral cortex. *Epilepsia*. 44(6): 761-767, 2003.
- 30) **Sanabria ER**, Pereira MFS, Dolnikoff MS, Andrade IS, Ferreira AT, Cavalheiro EA, Fernandes MJ. Deficit in hippocampal long-term potentiation in monosodium glutamate-treated rats, *Brain Research Bulletin*, 15, 59(1): 47-51, 2002.
- 31) Silva AV, **Sanabria ERG**, Cavalheiro EA, Spreafico R. Alterations of the neocortical GABAergic system in the pilocarpine model of temporal lobe epilepsy: Neuronal damage and immunocytochemical changes in chronic epileptic rats. *Brain Research Bulletin*, 15, 58(4): 417-21. 2002.
- 32) Lurton D, Yacubian EM, **Sanabria ER**, Da Silva, A.V, Vianna R, Garzon E, Sakamoto A, Spreafico R, Cavalheiro EA. Immunohistochemical study of six cases of Taylors's type focal cortical dysplasia: correlation with electroclinical data. *Epilepsia*, 43 (5): 217-219, 2002.
- 33) Longo BM, **Sanabria, ER**, Gabriel S, Cavalheiro E, Mello LE. Hippocampal electrophysiological abnormalities in pilocarpine-induced chronic epileptic rats treated with cycloheximide. *Epilepsia*, 43 (5): 203-208, 2002.
- 34) Vianna E, Ferreira AT, Naffah-Mazzacoratti MG, **Sanabria ER**, Funke M, Cavalheiro E.A, Fernandes MJ. Evidence that ATP participates in the pathophysiology of pilocarpine-induced temporal lobe epilepsy:a fluorimetric, immunohistochemical and western blot studies. *Epilepsia*, 43 (5): 227-229, 2002.
- 35) **Sanabria ER**, Silva AV, Spreafico R, Cavalheiro EA. Neocortical Damage, reorganization and abnormal hyperexcitability in the pilocarpine model of temporal lobe epilepsy. *Epilepsia*, 43 (5): 96-106, 2002.

- 36) **Sanabria ER**, Su H, Yaari Y. Initiation of network burst by Ca<sup>2+</sup>-dependent intrinsic bursting in the rat pilocarpine model of temporal lobe epilepsy. *Journal of Physiology* (London), 532: 205-216, 2001.
- 37) Santos NF, Marques RH, Correia L, Sinigaglia-Coimbra R, Calderazzo L, **Sanabria ER**, Cavalheiro EA. Multiple pilocarpine-induced status epilepticus in developing rats. A long-term behavioral and electrophysiological study. *Epilepsia*, 41 (suppl 60): s57-s63, 2000.
- 38) Naffah-Mazzacoratti MG, Funke MG, **Sanabria ERG**, Cavalheiro EA. Growth-associated phosphoprotein (GAP-43) expression is increased in the supragranular regions of the dentate gyrus following pilocarpine-induced seizures in rats. *Neuroscience*, 91(2):485-492, 1999.
- 39) Garrido YCS, **Sanabria ER**, Funke MG, Cavalheiro EA, Naffah-Mazzacoratti MG. Mitogen-activated protein kinase is increased in the limbic structures of the rat brain during the early stages of status epilepticus. *Brain Res. Bulletin*, 47 (23): 223-229, 1998.
- 40) Scorza F, **Sanabria ER**, Calderazzo LS, Cavalheiro EA. Glucose utilization during interictal intervals in a epilepsy model induced by pilocarpine: A qualitative study. *Epilepsia*, 39 (10): 1041-1045, 1998.
- 41) **Sanabria ERG**, Scorza FA, Calderazzo LS, Cavalheiro EA. Disruption of the c-Fos protein expression in the suprachiasmatic nucleus of chronic epileptic rats, *Neuroscience Letters*, 216 (2): 105-108, 1996.
- 42) Cantera B, Mendoza C, Hernandez I, Loynaz C, Alvarez O, **Garrido E**, Rodriguez V. EEG study on acupuncture treatment preceding induced epileptic seizures. *Am J Acupunct*, 20(1): 43-6, 1992.

## GRANTS and AWARDS

### ACTIVE GRANTS:

1) DoD - PR100534 04/01/11 - 04/01/14

**Grant title:** "New Treatments for Drug-Resistant Epilepsy that Target Presynaptic Transmitter Release".

**Funding Agency:** Department of Defense (DoD), Peer Reviewed Medical Research Program (PRMRP), Congressionally-directed Medical Research Program (CDMRP).  
FY10 Investigator-Initiated Research Award: Partnering PI Option

2.25 Academic and 1.00 Summer Total Funding: **\$826,432**

**Role:** Principal Investigator

**Collaborator and Partnering PI:** Professor Patric Stanton, PhD, New York Medical College.

**Synopsis:** This collaborative project proposes to investigate whether down-regulation of SV2a is responsible for reducing the anticonvulsant efficacy of levetiracetam (Keppra®, LEV), a phenomenon known as tolerance that has limited the use of LEV in the treatment of epilepsy. The long-term goals of this collaborative proposal are to (1) identify the most effective antiepileptic drugs, which modulate presynaptic glutamate release, and (2) determine the presynaptic mechanism of action of the new antiepileptic drug LEV.

2) 2 P20 MD001091-06

10/01/10 - 10/31/13

**Grant title:** *“Developing Biomedical Research Infrastructure at UTB/TSC”.*

**Funding Agency:** National Institute of Health (NIH)

2.25 Academic and 1.00 Summer

**Role:** Co-principal Investigator

Total Funding: **\$3,539,652**

**Program Director:** NIH/NCMHD(Luis V. Colom)

**Principal Investigator.** Lehker, M.

**Additional roles:** Director of Faculty Development and Instrumentation (Imaging) Cores  
Development of course for the Instrumentation Core: “Advanced Microscopy and Bioimaging”.

**Synopsis:** The continuation of the RIMI program will provide the mechanism for UTB to accelerate the implementation of the university's research plans through enhancing research facilities and the research environment for students and faculty.

### 3) Support of Competitive Research (SCORE) Research Advancement Award (SC1)

1 SC1 GM081109-01 (Garrido-Sanabria, PI)

**Grant Title:** *“Molecular determinants of mossy fiber presynaptic channelopathies in epilepsy”*

**Funding Agency:** NIH/NIGMS/MBRS

08/01/07 - 07/31/12

**Role:** Principal Investigator

Total Funding: **\$1,100 000**

**Synopsis:** The main goal of this project is to determine the molecular mechanisms that contribute to presynaptic receptor dysfunction in the pathogenesis of mesial temporal lobe epilepsy.

#### **PENDING GRANT APPLICATION:**

R01 Multiple Principal Investigator

**Grant title:** *“Molecular mechanisms of dysfunctional presynaptic transmitter release in epilepsy”.*

**Role:** Principal Investigator

**Collaborator:** Prof. Patric Stanton at New York Medical College, NY.

To be resubmitted in November 5, 2011.

**Synopsis:** A collaborative study to investigate the mechanisms of presynaptic synaptopathies in experimental epilepsy.

DoD- Department of Defense

10/01/12 - 10/01/15

**Grant title:** *“Molecular and cellular basis of neuroinflammation in the pilocarpine model of temporal lobe epilepsy in rodents”.*

**Funding Agency:** Department of Defense (DoD), Peer Reviewed Medical Research Program (PRMRP), Congressionally-directed Medical Research Program (CDMRP).

FY10 Investigator-Initiated Research Award

**Role:** Co-Principal Investigator

**Collaborator and PI:** Dr. Saras Nair, Dept. Biomedicine, UTB, Submitted in August 5, 2010.

**Synopsis:** The goal of this collaborative project is to determine the role of neuroinflammation in the pathogenesis of brain injury and cell death in epilepsy.

**COMPLETED GRANTS:**

**1) AMERICAN RECOVERY AND REINVESTMENT ACT (ARRA COMPETITIVE SUPPLEMENT) OF 2009** Grant #3SC1NS063950-03S1.

**Grant title:** *“Molecular Determinants of Mossy Fiber Presynaptic Channelopathies in Epilepsy”.*

**Funding Agency:** NIH 08/20/09 - 07/31/11

**Role:** Principal Investigator Total Funding: **\$222,076**

**Synopsis:** This supplement grant will allow collaboration with Patric Stanton at New York Medical College to develop supporting experiments with Multiphoton Laser Scanning Confocal Microscopy and Transmission Electron Microscopy for parent SC1 grant.

**2) 1R21NS056160-01A2 (Garrido-Sanabria, PI)** 12/01/07 - 11/30/09

**Grant Title:** *“Targeted immunoliposomes for cell-type specific gene therapy of epilepsy”*

**Funding Agency:** NIH/NINDS 2.25 Academic

**Role:** Principal Investigator Total funding: **\$307,681**

**Consultant:** Esther H. Chang **Subcontractor:** Synergene Therapeutics, Inc

**Synopsis:** The specific aim is to develop immunoliposomes as gene delivery vehicles that can selectively target glutamatergic neurons and deliver cDNA for expression of large conductance calcium-activated potassium (BK) channel (alfa-pore forming subunit). Long-term goal: Develop novel nonviral strategy for cell-type specific CNS gene therapy.

**3) 1P20MD001091-01 (Research Infrastructure - RIMI)** 11/08/04-10/31/09

**Grant Title:** *“Developing Biomedical Research Infrastructure at UTB/TSC”*

**Funding agency:** NIH/NCMHD(Martin) 2.25 Academic and 1.00 Summer

**Role:** Co-Principal Investigator Funding: **\$608,999/year**

**Synopsis:** Enhance existing infrastructures to support growing biomedical research initiatives.

**4) R25GM083755 (Mitchell, PI)** 02/01/08 - 01/31/13

**Grant Title:** *“Utah-Texas Bridge to the Biomedical Informatics Doctorate”*

**Funding Agency:** NIH/NIGMS 0.45 Academic Year

**Role:** Course development Funding: **\$150,000/year**

**direct costs**

**Synopsis:** The main goal of this partnership grant is to establish a pathway for UTB students to move toward a doctoral degree in biomedical informatics at the University of Utah.

**5) 421400-4300. Sparc POC Grant Program.** 01/01/09 - 07/01/09

**Grant title:** *“Neurotargeting via cell-type specific neurotropic ligands”*

**Role:** Principal Investigator Funding: **\$25,000 (Total)**

**Funding agency:** South Texas Management office of the University of Texas System.

**Synopsis:** Develop novel ligands for neurons. *“Proof of Concept” Short Proposal to Accelerate Research Commercialization grant.*

6) S06GM068855 (Colom, PD/Garrido-Sanabria, PI) 04/01/05 - 7/31/07

**Grant title:** "Presynaptic modulation via NAAG in hippocampus: Implication for chronic epilepsy"

**Funding Agency:** NIH/NIGMS/MBRS 4.50 academic and 2.00 Summer

**Role:** Principal investigator Funding: **\$159,510/year**

**Parent grant title:** "MBRS SCORE Supplement at The University of Texas at Brownsville".

**Synopsis:** The main goal of this project is to contribute to a better understanding of basic mechanisms underlying chronic epilepsy by characterizing the role of NAAGergic circuits in controlling glutamatergic neurotransmission and abnormal hyperexcitability in a chronic model of epilepsy. Determining how NAAG modulates hyperexcitability is an important foundation for development of novel therapeutic alternatives in the treatment of epilepsy.

7) 5P20MD000161-02 (PI. Colom LV) 02/17/03-01/31/08

**Grant Title:** "Creation of a Hispanic Health Research Center in the Lower Rio Grande Valley".

**Funding agency:** NIH/NCMHD 2.25 academic

**Role:** Faculty and project investigator Funding: **\$188,000/year**

**Synopsis:** The major goal of this project is to develop research capacity in a nucleus of individuals and partner minority serving academic institutions in LRGV starting with specific interrelated projects in diabetes, cardiovascular disease, and cancer.

## COLLABORATIONS

### Collaborations with the Pharmacological and Biotechnology industry:

**TRANSPOSAGEN** for Development and Characterization of mGluR2 knockout (GRM2) rat.

**GUILFORD PHARMACEUTICALS** to develop novel antiepileptic compounds in 2005-2007.

**SYNERGENE THERAPEUTICS, INC** as Subcontractor for R21 grant, 2005-2007.

### Collaborations with scientists at US institutions:

*Dr. Patric Stanton*, Dept. of Cell Biology and Anatomy, New York Medical College, NY.

*Dr. Manuel Miranda-Araujo*, Dept of Biological Sciences, University of Texas El Paso, TX.

*Dr. Dwight Romanovicz*, Electron Microscopy, University of Texas Austin, TX.

*Dr. Theresa Jones*, University of Texas Austin, Department of Psychology, TX.

*Dr. Esther H. Chang*, Georgetown University Medical Center, Lombardi Comprehensive Cancer Center, Washington, DC.

### Collaborations with scientists at foreign institutions:

*Dr. Hans G. Knaus*, Department of Physiology, University of Innsbruck, Innsbruck, Austria.

*Dr. Esper A. Cavalheiro*, Experimental Neurology, Univ. Federal de São Paulo, Brazil.

*Dr. Carlos Mello*, Department of Biochemistry, Universidade de Santa Cruz do Sul, Brazil.

## BOOK CHAPTERS

- **EPILEPSIA**, Eds Carlos A. Guerreiro & Marilisa M. Guerreiro. Chapter: “*Epileptogenesis: Contribution of experimental models*”, E. R. **Garrido-Sanabria** & Esper A. Cavalheiro, 2000.
- **La Epilepsia em Latinoamérica. Epilepsia 2000 –Primer Congreso Latinoamericano de Epilepsia**. Eds: Marcelo Devilt. Chapter: “*Long-term consequences of multiple pilocarpine-induced status epilepticus during early life*”. 200-206, 2000.

## PARTICIPATION IN NATIONAL AND INTERNATIONAL MEETINGS

- 1) Upreti C, **Garrido-Sanabria ER**, Stanton PK. Abnormal functional and ultrastructural changes of synaptic vesicle pools at active zones in mossy fiber boutons in mesial temporal lobe epilepsy, (ID: 1.009), Investigator Workshop, the *65<sup>th</sup> America Epilepsy Society Annual Meeting*, Baltimore, December 3 and 4, 2011.
- 2) **Garrido-Sanabria ER**, Otero R, Thakker R, Partida C, Skinner F, Jones T, Romanovicz D, Upreti C, Stanton PK. Abnormal Ultrastructure of Large Mossy Fiber Boutons-CA3 pyramidal Cell Synapses in Mesial Temporal Lobe Epilepsy. (ID: 1150094), *65<sup>th</sup> America Epilepsy Society Annual Meeting*, Baltimore, December 3, 2011.
- 3) **Garrido-Sanabria ER**, Pacheco L, Antonina Rait, Kim SS, Pirollo K, Chang EH. Neurotropic Nanoparticles for CNS delivery of Antiepileptic Drugs. *3<sup>rd</sup> Meeting of the American Society for Nanomedicine, Section: Nanotechnology-based Targeted Delivery of Therapeutics*, Rockville, MD, Nov 9-11, 2011.
- 4) Upreti PK, Stanton E, **Garrido-Sanabria ER**. Abnormalities in presynaptic vesicle pools of mossy fiber boutons in the pilocarpine model of mesial temporal lobe epilepsy. Poster. 779.10/Z13, *Society for Neuroscience Meeting*, Washington, Nov 16, 2011.
- 5) **Pacheco Lf**, Velasquez M, J. Rodriguez J, Ermolinsky B, **Garrido-Sanabria Er**. Septal neuroblastoma (SN56) cell line expresses a hybrid cholinergic and glutamatergic phenotype. Poster 446.17/D70. *Society for Neuroscience Meeting*, Washington, Nov 16, 2011.
- 6) Pacheco L, Oliveira M, **Garrido-Sanabria ER**. Deficit of small-conductance calcium-activated SK potassium channels in pilocarpine-treated epileptic rats. *64<sup>th</sup> American Epilepsy Society Meeting*, San Antonio, December 2010.
- 7) Upreti C, Stanton PK, **Garrido-Sanabria ER**. *Status epilepticus* produces long-term enhancement of vesicular release and functional abnormal presynaptic mossy fiber terminals in hippocampus. 2010-S-4741-SfN. *Society for Neuroscience Meeting*, San Diego, 2010.
- 8) Jurgensen S, Antonio LL, Mussi G, **Garrido-Sanabria ER**, Cavalheiro E, Ferreira ST. D1/D5 receptor activation protects neurons from synaptic dysfunction induced by Alzheimer's A $\beta$  oligomers. *Society for Neuroscience Meeting*, San Diego, 2010.
- 9) Partida C, Pacheco L, **Garrido-Sanabria ER**. Aberrant structural plasticity of mossy fiber pathway in chronic epileptic rats: a preliminary study, *12th UTB/TSC Research Symposium*, TX, March, 2010.
- 10) Garcia I, Castillo R, Pacheco L, **Garrido ER**. Expression of sodium channel subunit Nava1.2 in temporal lobe epilepsy. *12th UTB/TSC Research Symposium*, TX, March, 2010.
- 11) Dobtson B, Guajardo K, Nair S, **Garrido-Sanabria ER**. Pilocarpine-treated chronic epileptic rats exhibit signs of morbid obesity. *12<sup>th</sup> UTB Research Symposium*, TX, 2010.

- 12) Pacheco LF, Arshadmansab MF, Hernandez EF, Francisco S, Willis M, Knaus H-G, Zarei M, **Garrido E**. Abnormal gene expression of presynaptic modulators of synaptic transmission in temporal lobe epilepsy: a quantitative real-time PCR study. *5<sup>o</sup> Congreso Latinoamericano de Epilepsia*, Montevideo, Uruguay. Nov 5-8, 2008.
- 13) Pacheco LF, Arshadmansab MF, Hernandez EF, Francisco S, Willis M, Knaus H-G, Zarei MM, **Sanabria E**. Seizure-induced down-regulation of BK channel {alpha} pore-forming and {beta4} accessory subunits in the brain of chronically epileptic rats. *Neuroscience Meeting*, San Diego, 2007.
- 14) Hernandez EF, **Garrido E**. Seizure-induced large conductance Ca<sup>2+</sup> activated K<sup>+</sup> channelopathy in a rat model of temporal lobe epilepsy: an Immunohistochemical and RT-PCR investigation. *UTB/TSC Research Symposium, Texas*, March 2007.
- 15) Arshadmansab M and **Garrido E**. Reduction in calcium-activated potassium (BK) channels and accessory subunit beta 4 in the cortex and hippocampus of chronically epileptic rats, *UTB/TSC Research Symposium, TX*, March 2007.
- 16) Hernandez EF, Pacheco LF, Zarei MM, **Garrido-Sanabria ER**. Down-regulation of Maxi-K channel expression in hippocampus of chronically epileptic rats: implication for mossy fiber excitability and epileptogenesis, (Poster 176.10/II6), *Society for Neuroscience Meeting*, Atlanta, 2006.
- 17) Pacheco LF, Moffett JR, **Garrido-Sanabria ER**. Abnormal NAAGergic circuits in a model of temporal lobe epilepsy, (Poster 278.9/MM15), *Society for Neuroscience Meeting*, Atlanta, 2006.
- 18) Mejia J, Garcia I, Urbani F, **Garrido-Sanabria ER**, Beale JM. Design and Implementation of a Double Chamber Cage for Mobile Phone Radiation Exposure, *Environmental and Health World Congress*, Santos, Brazil, July 2006.
- 19) Castaneda MT, **Garrido-Sanabria ER**, Reyna T, Hernandez S, Colom LV. Electrophysiological variability of septum/diagonal band neurons. *Society for Neuroscience Meeting, San Diego, CA. 2004*.
- 20) Castaneda MT, **Garrido-Sanabria ER**, Reyna T, Hernandez S, Colom LV. Morphological variability of electrophysiologically-identified medial septum/diagonal band neurons. *Society for Neuroscience Meeting, San Diego, CA. 2004*.
- 21) Perez MG, **Garrido-Sanabria ER**, Reyna T, Castaneda T, Hernandez S, Colom LV. Distinct voltage-gated K<sup>+</sup> channels underlie physiologically diverse firing patterns in medial septum and diagonal band neurons. *Neuroscience Meeting, San Diego, CA. 2004*.
- 22) **Sanabria ERG**, Krystyna M, Wozniak KM, Slusher BS, Keller A. GCP II inhibition suppresses mossy fiber-ca3 excitatory synaptic transmission via a presynaptic mechanism. *Society for Neuroscience Meeting, Orlando, Florida, 2003*.
- 23) Cavalheiro EA, Silva A, **Sanabria ERG**. and Spreafico, R. Structural and functional alterations in neocortex of pilocarpine-treated chronic epileptic rat. *American Epilepsy Society/American Clinical Neurophysiology Society Annual Meeting*, Los Angeles, 2001.
- 24) Lurton D, Yacubian EM, **Sanabria ERG**, Da Silva AV, Vianna R, Garzon E, Sakamoto A, Spreafico R, Cavalheiro EA. Taylor's cortical dysplasia: histopathological findings and correlations with electroclinical data. *VI Workshop on the Neurobiology of Epilepsias*, Foz de Iguaçu, Brazil, 2001.

- 25) Silva AV, **Sanabria ERG**, Cavalheiro EA. and Spreafico, R. Neocortical damage, reorganization and abnormal hyperexcitability in the pilocarpine model of temporal lobe epilepsy. *VI Workshop on the Neurobiology of Epilepsias*, Foz de Iguacu, Brazil, 2001.
- 26) Longo BM, **Sanabria ERG**, Gabriel S, Cavalheiro EA, Mello LEAM. Hippocampal electrophysiological abnormalities in pilocarpine-induced chronic epileptic rats treated with cycloheximide. *VI Workshop on the Neurobiology of Epilepsias*. Foz de Iguacu, Brazil, 2001.
- 27) Yaari Y, H, Su H, **Sanabria ERG**, Wellmer J. and Beck H. Plasticity in the temporal lobe epilepsy: I. Changes in intrinsic neuronal activity. *VI Workshop on the Neurobiology of Epilepsias*, Krumlov, Czech Republic, 2001.
- 28) Gabriel S, **Sanabria ERG**, Cavalheiro EA, Heinemann U. Lehmann TN, Epileptiform activity in the dentate gyrus of human hippocampus after chronic pharmacoresistant temporal lobe epilepsy". *VI Workshop on the Neurobiology of Epilepsias*, Krumlov, Czech Republic, 2001.
- 29) Vianna E, Ferreira AT, Naffah-Mazzacoratti M.G., **Sanabria ERG**, Funke M, Cavalheiro EA, Fernandes MJS. Evidence that ATP participates in the pathophysiology of pilocarpine-induced temporal lobe epilepsy: a fluorimetric, immunohistochemical and western blot studies. *VI Workshop on the Neurobiology of Epilepsias*, Krumlov, Czech Republic, 2001.
- 30) Lurton D, **Sanabria ERG**, Yacubian EM, Vianna R, Sakamoto A, Spreafico R, Cavalheiro, EA. Cortical dysplasias: an immunocytochemical study of 11 cases. *24<sup>th</sup> International Epilepsy Congress, Buenos Aires, Argentina*. 2001.
- 31) **Sanabria ERG**, Silva AV, Spreafico R, Cavalheiro EA. Neocortical hyperexcitability in pilocarpine-treated chronic epileptic rats. *24<sup>th</sup> International Epilepsy Congress, Buenos Aires, Argentina, 2001*.
- 32) Yacubian EM, **Sanabria ERG**, Lurton D, Da Silva, AV, Vianna R, Garzon E, Sakamoto A, Pahl F, Vellutini E, Gabriel S, Cavalheiro EA. Local heterogeneity of field potentials recorded from dentate gyrus of human hippocampus in surgically-treated temporal lobe epileptic patients. *24<sup>th</sup> Intern. Epilepsy Congress, Buenos Aires, Argentina, 2001*.
- 33) **Sanabria ERG**, Yacubian EM, Lurton D, Da Silva AV, Vianna R, Garzon E, Sakamoto A, Pahl F, Vellutini, E, Gabriel S, Cavalheiro EA. Electrophysiological properties of human hippocampal slices from pharmacoresistant temporal lobe epilepsy. *XXV Congress of Brazilian League against Epilepsy, São Paulo, Brazil, 2000*.
- 34) Lurton D, **Sanabria ERG**, Yacubian EM, Da Silva AV, Vianna R, Garzon E, Sakamoto A, Pahl F, Vellutini E, Gabriel S, Cavalheiro EA. Quantitative study of hippocampal neuronal loss in 22 cases of temporal lobe epilepsy. correlations with morphological and clinical data. *XXV Congress of Brazilian League against Epilepsy, Brazil, 2000*.
- 35) Scattolini, M, Fiorini, VCC, Marques R, Segredo HR, Fernandes, MJ, Cavalheiro, EA, **Sanabria, ERG**. Neuronal populations in a model of cortical dysgenesis induced by prenatal irradiation. *XXV Congress of Brazilian League against Epilepsy, Brazil, 2000*.
- 36) **Sanabria ERG**, Fiorini VC, Scattolini M, Marques R, Segredo HR, Fernandes MJ, Cavalheiro E.A. Chronic epileptogenesis after prenatal treatment with a apoptosis inhibitor. *XXV Congress of Brazilian League Against Epilepsy, São Paulo, Brazil, 2000*.
- 37) Vianna EP, Ferreira AT, **Sanabria ERG**, Cavalheiro EA, Fernandes MJS. Alteration in basal calcium concentration in the hippocampus of epileptic rats. *XXV Congress of Brazilian League against Epilepsy, São Paulo, Brazil, 2000*.

- 38) Marques RH, Santos NF, **Sanabria ERG**, Cavalheiro EA. Chronic hippocampal hyperexcitability in rats submitted to multiple status epilepticus during development. *XXV Congress of Brazilian League against Epilepsy, São Paulo, Brazil, 2000.*
- 39) Garrido Y, **Sanabria ERG**, Mazzacoratti, MG, Cavalheiro EA. Hippocampal neurogenesis during development: study in a model of epilepsy induced by pilocarpine during development. *XIX Brazilian Congress of Neurology. Salvador. Brazil, 2000.*
- 40) **Sanabria ERG**, Su H, Cavalheiro EA, Yaari Y. Abnormal intrinsic properties of hippocampal neurons in a model of temporal lobe epilepsy. Satellite symposium at the 23<sup>st</sup> International Epilepsy Congress, *V Workshop on the Neurobiology of Epilepsy (WONOEP)*. Prague, 1999.
- 41) **Sanabria ERG**, Su H, Yaari Y. Neuronal plasticity and epilepsy. Persistent up-regulation of intrinsic bursting in a model of temporal lobe epilepsy. *23<sup>st</sup> International Epilepsy Congress, V Workshop on the Neurobiology of Epilepsy (WONOEP)*. Prague, 1999.
- 42) **Sanabria ERG**, Su H, Cavalheiro EA, Yaari Y. AMPA-dependent polysynaptic responses and spontaneous interictal-like discharges in Ca1 region of hippocampus in temporal lobe epilepsy. *International meeting about excitatory amino-acids, "Ten years later"*, Manaus, 1998.
- 43) Su H, **Sanabria ERG**, Yaari Y. Neuronal synchronization by novel Ca<sup>2+</sup> dependent intrinsic bursting in a model of temporal lobe epilepsy. *Israeli Neurosciences Meeting, Eilat, Israel, 1998.*
- 44) **Sanabria ERG**, Naffah-Mazzacoratti M, Garrido Y, Funke M, Cavalheiro EA. Mitogen-activated protein kinase during pilocarpine-induced *status epilepticus*. *22<sup>nd</sup> International Epilepsy Congress*, Dublin, Ireland, 1997.
- 45) **Sanabria ERG**, Scorza FA, Bortolotto ZA, Calderazzo L, Cavalheiro EA. Photic induction of fos immunoreactivity in chronic epileptic rats. *21<sup>nd</sup> International Epilepsy Congress. 1995, Australia, 1995.*
- 46) **Sanabria ERG**, Scorza FA, Bortolotto ZA, Calderazzo L, Cavalheiro EA. Photic induction of fos immunoreactivity in chronic epileptic rats. *European congress of epilepsy*, Netherlands, 1996.
- 47) Scorza FA, **Sanabria ERG**, Bortolotto ZA, Calderazzo L, Cavalheiro EA. Circadian periodicity of spontaneous recurrent seizures in the pilocarpine model. *European congress of epilepsy. European Congress of Epilepsy*, Netherlands, 1996.
- 48) **Sanabria ERG**, Martinez A, Fernandes JL, Cantera B. Magnetic fields in experimental model of epilepsy. *21<sup>st</sup> International Epilepsy Congress*. Sydney, 1995.
- 49) **Sanabria ERG**, Martinez A, Fernandes JL, Cantera B. Study in epileptic models on the application on magnetic fields and their relation with acupuncture and the central nervous system. *World Congress on Medical Physics and Biomedical Engineering*, Rio de Janeiro, Brazil, 1994.
- 50) **Sanabria ERG**, Martinez A, Fernandes JL, Cantera B. Study in epileptic model on the application of magnetic fields and their relation with acupuncture and CNS. *VII Pan-american Congress of Epilepsy. 2<sup>nd</sup> Meeting of the Latinamerican Chapters of International League Against Epilepsy*, Havana, Cuba, 1994.

## INVITED LECTURES

1. "Nanotechnologies for the Treatment of Neurological Disorders", *South Texas Technology Management (STTM)* meeting at UTB/TSC, May 2010.
2. "Molecular determinants of mossy fiber excitability in temporal lobe epilepsy". *International Symposium Hippocampal function and Dysfunction*, Conference Center: Schloss Cecilienhof Neuer Garten, 14469 Potsdam, Germany, December 10th-13th, 2009.
3. "Electrophysiological studies of recurrent circuits in the human epileptic tissue and correlation with animal models" in Plenary session "Basic Investigation in Human Tissue" at the *5<sup>o</sup> Congreso Latinoamericano de Epilepsia*, Montevideo, Uruguay. Nov 5-8, 2008.
4. "The Use of Human Tissue to Understand the Physiopatogenic Mechanisms of Epilepsy". *III Congreso Internacional de Medicina General "Dr. Carlos E. Aguirre Hernandez"*, Tamaulipas, Mexico, Nov 13, 2007.
5. "NAAGergic systems in epilepsy" at the XX Annual Meeting of the Brazilian Federation of the Societies for Experimental Biology at Águas de Lindóia, São Paulo, Brazil, 2005.
6. "Abnormal intrinsic properties of hippocampal neurons in a model of temporal lobe epilepsy", *WONOE, Satellite symposium at the 23<sup>st</sup> International Epilepsy Congress*. Prague, 1999.
7. "Experimental models of cortical dysplasias", Lecture at the *VI Jornada Paulista de Neurofisiologia Clínica*. São Paulo. Nov 24, 2000, Brazil.
8. "Electrophysiological mechanisms of epileptogenesis in temporal lobe epilepsy". Lecture at the *University of São Paulo (USP) Ribeirão Preto, Department of Physiology*, Brazil, Sept. 2000.
9. "Epileptogenesis and functional neuroplasticity in temporal lobe epilepsy". *Symposia about Neuroplasticity at the Meeting of International Epilepsy League*, São Paulo, Brazil, 2000.
10. "Physiopathogenesis of temporal lobe epilepsy: epileptic neuronal networks versus epileptic neuron". *Lecture at special session of the Federação de Sociedades de Biologia Experimental - FESBE-2000, Caxambu*. Minas Gerais, Brazil, 2000.
11. "Neuropharmacological basis of temporal lobe epilepsies" electrophysiological approaches in vitro". *Invited lecturer at Seminar session of Pharmacology Department at the Institute of Pharmacology (INFAR), Universidade Federal de Sao Paulo (UNIFESP)*, São Paulo, 2000.
12. *WONOE, Satellite Symposium at the 24<sup>st</sup> International Epilepsy Congress*. "Neocortical damage, reorganization and abnormal hyperexcitability in the pilocarpine model of temporal lobe epilepsy". Foz de Iguaçu, Brazil, 1999.
13. "Basic mechanisms of temporal lobe epilepsy". *Invited lecture at the meeting of the Electrodiagnostic Session of Neurology Service at the "Hospital Servidor Público Estadual de São Paulo"*. São Paulo, Brazil, Nov 12, 1998.

**TEACHING RESPONSIBILITIES (2004-2011)****Courses taught at the Departments of Biological Sciences and Biomedicine (UTB)**

<b><u>Semester</u></b>	<b><u>Courses</u></b>
<b>Fall 2011</b>	<ul style="list-style-type: none"> <li>- <i>Advanced Microscopy and Bioimaging (2011/FA)</i></li> <li>- <i>Biology Seminar (2011/FA/ BIOL-4100-01)</i></li> <li>- <i>Thesis II (2010/FA/BIOL-7301)</i></li> </ul>
<b>Spring 2011</b>	<ul style="list-style-type: none"> <li>- <i>Graduate Seminar (2011/SP/BIOL 6101.01)</i></li> <li>- <i>Thesis (2010/FA/BIOL-7300)</i></li> <li>- <i>Graduate Research (2011/SP/BIOL 6385.01)</i></li> </ul>
<b>Spring 2010</b>	<ul style="list-style-type: none"> <li>- <i>Advanced Physiology (2009/FA/ BIOL-3301.02)</i></li> <li>- <i>Thesis (2009/FA/ BIOL-7300-03)</i></li> </ul>
<b>Summer 2010</b>	<ul style="list-style-type: none"> <li>- <i>Advanced Microscopy and Bioimaging (2010/FA/ BIOL-4370.01)</i></li> </ul>
<b>Fall 2010</b>	<ul style="list-style-type: none"> <li>- <i>Advanced Microscopy and Bioimaging (2010/FA/ BIOL-4370.02)</i></li> <li>- <i>Research Project in Biology (2009/FA/ BIOL-4393-01)</i></li> <li>- <i>Thesis (2010/FA/BIOL-7300)</i></li> <li>- <i>Research Problems in Biology (BIOL-4309)</i></li> </ul>
<b>Spring 2009</b>	<ul style="list-style-type: none"> <li>- <i>Advanced Physiology (BIOL-3301.02)</i></li> <li>- <i>Research Problems in Biology (2009/SP) (BIOL-4199-01)</i></li> </ul>
<b>Fall 2009</b>	<ul style="list-style-type: none"> <li>- <i>Advanced Physiology (2009/FA/ BIOL-3301.02)</i></li> <li>- <i>Research Project in Biology (2009/FA/ BIOL-4393-01)</i></li> <li>- <i>Biology Seminar (2009/FA/ BIOL-4100-02)</i></li> <li>- <i>Graduate Research (2009/FA/ BIOL- 6685-01)</i></li> <li>- <i>Thesis (2009/FA/ BIOL-7300-03)</i></li> </ul>
<b>Spring 2008</b>	<ul style="list-style-type: none"> <li>- <i>Release time for Research activities</i></li> </ul>
<b>Fall 2008</b>	<ul style="list-style-type: none"> <li>- <i>Advanced Physiology (BIOL-3301.02)</i></li> <li>- <i>Graduate Biological Research Problems (BIOL 6365)</i></li> <li>- <i>Graduate Thesis, BIOL 7300 – 7301</i></li> </ul>
<b>Spring 2007</b>	<ul style="list-style-type: none"> <li>- <i>Advanced Physiology (BIOL-3301-02, 3 credits)</i></li> <li>- <i>Research Problems in Biology (BIOL-4309-05, 3 credits)</i></li> </ul>
<b>Fall 2007</b>	<ul style="list-style-type: none"> <li>- <i>Advanced Physiology (BIOL-3301-02, 3 credits)</i></li> <li>- <i>Research Problems in Biology (BIOL-4309-05, 3 credits)</i></li> </ul>
<b>Spring 2006</b>	<ul style="list-style-type: none"> <li>- <i>Biomedical Research II – Research Methodology BIOL-4370</i></li> <li>- <i>Anatomy and Physiology I (BIOL-2301.03) (3 credit)</i></li> </ul>
<b>Summer I 2006</b>	<ul style="list-style-type: none"> <li>- <i>Neuroscience. Graduate (BIOL-6400)</i></li> <li>- <i>Neuroscience Undergraduate (BIOL-4370, 4 credit)</i></li> <li>- <i>Research Problem in Biology (BIOL 4299, 3 credits)</i></li> </ul>
<b>Summer II 2006</b>	<ul style="list-style-type: none"> <li>- <i>Research Problem in Biology (BIOL 4299, 3 credits)</i></li> </ul>
<b>Fall 2006</b>	<ul style="list-style-type: none"> <li>- <i>Advanced Physiology (BIOL-3301-02, 3 credits)</i></li> <li>- <i>Research Problems in Biology (BIOL-4309-05, 3 credits)</i></li> </ul>

- Spring 2005:** - Anatomy and Physiology I BIOL 2301.03 (3 Credits)  
- Biomedical Sciences Research II:  
- Research Methodology I (BIOL 4370-Course director)
- Summer 2005** - Neurosciences (Undergraduate and graduate course) BIOL 6400
- Fall 2005** - Anatomy and Physiology I BIOL-2301.03 (3 credit)
- Summer I 2004:** - Topics in Biology, BIOL 4370
- Summer II 2004:** - General Biology II BIOL 1307
- Fall 2004:** - Anatomy and Physiology I BIOL 2301.03

### Course Development

- 1- **“Advanced Microscopy and Imaging for Biological and Biomedical Sciences”**. This advanced course was developed as part of the Teaching Core of the Research Infrastructure for Minority Institution Grant (NIH/NIGMS). Course description: Undergraduate and graduate students will gain knowledge and practical training in *state of the art* microscopes and imaging techniques including laser scanning confocal microscopy, atomic force microscopy, etc.
- 2- **“Research Methodology”**, Topics in Biology 4370 in 2005-2006 for MBRS-RISE program. This course presents the foundations for scientific research and research methods via an introductory assessment of scientific approaches within the context of the biological and biomedical sciences. The course is designed to introduce students to basic concepts and offer a broad systematic survey of scientific inquiry and research design via the themed areas including Foundations of Empirical Research, Design and Structure of Research, Data Collection, and Data Processing and Analysis (including statistical analysis).
- 3- Course development for the grant application of the **“Utah-Texas Bridge to the Biomedical Informatics Doctorate”**, Co-Principal Investigator in a Graduate Education Grant, R25GM083755 (Mitchell, PI), 02/01/08-01/31/13, NIH/NIGMS.

### Graduate Thesis Committee and Mentorship of Graduate Students

- Cristina Banualos (2006), Thesis Committee and Co-Advisor. Advisor: Luis V. Colom
- Teresa Castaneda (2009), Thesis Committee and Co-Advisor. Thesis dissertation: *“The cholinergic, GABAergic and glutamatergic septal neurons and their projections to hippocampus”*. Advisor: Luis V. Colom.
- Maria T. Aguirre (2009). Thesis Committee and Co-Advisor. Thesis Dissertation: *“The role of the body mass index in determining obesity”*, Advisor: Dr. Gerson Peltz.
- Mauro Oliveira (PhD student co-advisor, 2009), collaboration with University of Santa Maria, Rio Grande do Sul, Brazil. Advisor: Dr. Carlos Mello.
- Thesis Committee of Master Program Graduate Student Jose Antonio Garcia, Department of Biological Sciences. August 2009. Mentor: Luis V. Colom.
- Tarun Tandari. Thesis Advisor. Thesis Dissertation: *“Development of Antibodies against internal epitope of vesicular glutamate transporter type 1”*, March, 2011.
- Carlos Partida, Thesis Advisor, Thesis Dissertation: *“Ultrastructural alterations of synapses in experimental epilepsy”*, due Fall Semester, 2011.

## **Institutional service responsibilities and professionally-related services to the profession**

1. Invited Panelist (Engagement Models and Scalability), VISTASUMMIT, Oct 6, 2011.
2. Member of the Data Team for Student Success (2011-Current).
3. Nominated for the Presidential Awards for Excellence in Science, Mathematics and Engineering Mentoring (PAESMEM) in Oct 5, 2011.
4. Full member of The Center for Biomedical Studies (2004-Current).
5. Associate Member of the Graduate Faculty (2005-Current).
6. Member of the Search Committee for Dean of the new College of Biomedical Sciences and Health Professions (2011-current).
7. Chair of the Personal committee Department of Biomedicine (2011- Current)
8. Member of the Curriculum Committee Department of Biomedicine. Fall 2011
9. Member of the College Curriculum Committee (College of Biomedical Sciences and Health Professions), Fall 2011.
10. Member of the Center for Biomedical Studies (CBS) Advisory Committee (2008-Current).
11. Member of the Transition Committee for the New College of Biomedical Sciences and Health Professions. Fall 2011.
12. Mentor of high-school students in research activities in the Summer Science Scholarship Program in collaboration with the School of Public Health at Houston and Pan-American University, (2006-Current).
13. Academic Advisor for the Chess Team at UTB/TSC (2006-Current).
14. Member of the Valley Nanotech Institute Center for Excellence at UTB (2008-Current).
15. Mentor of the University of Texas System Louis Stokes Association for Minority Participation at UTB. Mentoring more than 12 students (2007-Current)
16. Course Coordinator for the Bridge for Graduate Program in Bioinformatics with University of Utah funded by NIH in 2008.
17. Member of the Advisory board for the Minority Biomedical Research Support-Research Initiative for Scientific Enhancement (MBRS-RISE) Program at UTB. (2004-Current).
18. Elected Member of the Academic Senate for the College of Science Mathematics and Technology (2007-2009).
19. Member of the Graduate Committee of the Dept. of Biological Sciences, (2006-2008).
20. Reviewer and consultant for the UCRA Health Science Panel of the CUNY Research Foundation (PSC-CUNY Awards Program), 2006.
21. Member of the Undergraduate Committee for Biological Sciences since 2006.
22. Member of the UTB *Campus Advisory Committee* for the Science and Technology Learning Center, 2006 and 2007.
23. Member of the Committee for the College of Mathematics, Science and Technology (CMST) Student Scholarship (2006-2007).
24. Coordinator for the MBRS-RISE scholar training center. Actively participate in writing a "UTB MBRS RISE Equipment Supplement for Student Research Enhancement" (Administrative Supplement) that was funded by NIGMS/NIH, in 2008.

## LIST OF REFERENCES

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