Curriculum Vitae

Sandra Peña de Ortiz, Ph.D.
(787) 764-0000; ext. 5875
sandra@hpcf.upr.edu

Education

University of Puerto Rico	BS Pharmacy 1989
University of Cincinnati, OH	Ph.D. Toxicology 1994

Postdoctoral Training

University of California at Berkeley – Joe L. Martínez, Ph.D.	NSF Postdoctoral Fellowship, Jan - Aug, 1995
University of Texas at San Antonio – Joe L. Martínez Ph.D.	NSF Postdoctoral Fellowship, 1995 - 1996

Additional Training

Long-Term Potentiation in the Hippocampus	Woods Hole Summer Course, 1991
Short Course: Advanced Molecular Biology	1995 Meeting of the Society for Neuroscience
Short Course: What's wrong with my mouse? Trangenic and Knockout Models for Behavior	1996 Meeting of the Society for Neuroscience
Short Course: DNA Microarrays	1999 Meeting of the Society for Neuroscience
Workshop on Survival Skills and Ethics	2000 University of Pittsburg/ NIMH
Short Course on Bioinformatics and Genomics	2001 Meeting of the International Society for Neurochemistry

Body Work Training And Experience

Craniosacral Therapy I Certification from Upledger Institute, March, 2010
Craneosacral Therapy in Pregnancy, Birth, and Postpartum: Certification by Carol Gray, Portland, OR

Employment

Professor Department of Biology	University of Puerto Rico at Río Piedras	Since July 2005
Associate Professor Department of Biology	University of Puerto Rico at Río Piedras	July 2000 -2005
Assistant Professor Department of Biology	University of Puerto Rico at Río Piedras	January 1997-2000

Fellowships:

NIH Minority Biomedical Research Support Program Trainee, 1986-1989
UCSF Minority Summer Research Trainee, 1987
Glaxo First Year Graduate Scholarship, 1989
NSF Honorary Mention and Grant Award, 1989-1990
American Psychological Association-NIMH Minority Neuroscience Fellowship, 1990-1991, 1993
Ford Foundation Dissertation Fellowship, 1992
NSF Minority Postdoctoral Fellowship, 1995-1996

Honors

1989	Glaxo First Year Graduate Scholarship,
1989-1990	NSF Honorary Mention and Grant Award,
1999	Glaxo Wellcome Young Investigator Award in Puerto Rico,
2000	University of Puerto Rico Distinguished Professor Award
2002	APA-NIH, Minority Fellow Achievement Award
2009	Minority Traveling Scientist from SFN
2012	Highlighted by Neuroscience Fellows Program in NIH Publication

Professional Memberships

1991 – Present	Society for Neuroscience (SFN)
2002 -- Present	Molecular and Cellular Cognition Society

Other Experience and National Service

2001 -- 2002	Puerto Rico SFN Chapter President
2000 -- 2001	Puerto Rico SFN Chapter Secretary/Vicepresident
2001	Organizer of a Young Investigators Colloquium on Recombination/Repair Mechanisms in the Brain, International Meeting of the Society for Neurochemistry-Buenos Aires, Argentina
2000 – Present	Founder and Director: Designed and established the Microarray Facility at the Department of Biology, which I transitioned into the Functional Genomics Reseach center (FGRc).
2004 – 2008	Training Advisory Committee, Diversity Program, American Physiology
2005 – 2009	Member of SFN Membership & Chapters Committee (Renewed Appointment for 3 additional years).
2008 – 2009	Graduate Program Coordinator, University of Puerto Rico, Río Piedras Campus
2008 - Present	President & Founder of the First Local Chapter of the Molecular and Cellular Cognition Society.
2008 – Present	Organizer of the Annual Meetings of the PR Chapter of the Molecular and Cellular Cognition Society.
2012	NIH-Neurobiology of Learning & Memory (LAM) *Ad Hoc* Panel Reviewer

Invited Seminars

1. 08/2000 GENE EXPRESSION MONITORING IN LEARNING AND MEMORY (8/2000), *UCLA, Dept. of Neurobiology*
2. 08/2001 EVIDENCE FOR A RECOMBINATION SYSTEM IN THE BRAIN AND ITS RELATION TO LEARNING *International Meeting of the Society for Neurochemistry-Buenos Aires, Argentina.*

3. 02/2003 GENE EXPRESSION PROFILING IN HIPPOCAMPAL AND AMYGDALA-DEPENDENT LEARNING . *Winter Conference on Neural Plasticity, Guadalupe.*
4. 05/2006 GENOMIC MECHANISMS IN MEMORY, *Mount Sinai Medical Hospital*
5. 06/2006 ANIMAL MODELS IN SCHIZOPHRENIA. *Specialized Neuroscience Research Program Annual Conference, Alaska*
6. 07/2006 GENOMIC MECHANISMS IN MEMORY, *Marine Biological Laboratory (MBL), Woods Hole*
7. 07/2006 ACHIEVING BALANCE BETWEEN A SCIENTIFIC CAREER AND PERSONAL LIFE, *MBL*
8. 11/2006 GENE RECOMBINATION MECHANISMS AND MEMORY CONSOLIDATION, *Annual Meeting of the Molecular & Cellular Cognition Society*
9. 12/2006 GENOMIC REARRANGEMENT MECHANISMS AND MEMORY CONSOLIDATION, *Universitat de Girona, Spain*
*10.*12/2006 GENOMIC REARRANGEMENT MECHANISMS AND MEMORY CONSOLIDATION , *Universitat Autonoma de Barcelona, Spain*
11. 12/2006 NURR1 & 14-3-3ETA, CREB REGULATED GENES IN MEMORY: IMPLICATIONS TO SCHIZOPHRENIA, *EMBL Rome, Itlay,*
12. 09/2008 THE FLAP STRUCTURE-SPECIFIC ENDONUCLEASE-1 IN MEMORY: IMPLICATIONS TO THE ROLE OF GENE RECOMBINATION IN COGNITION, University of Wisconsin at Madison
13. 06/2009 DNA Recombination and Memory , Universidad del Valle, Cali Colombia
14. 10/2010 Identification and Characterization of DNA Recombination Factors Relevant to Learning and Memory. , UCLA
15. 02/2011 Neurolipidomics in Learning and Memory: Identification of Fatty Acid Synthase as a Factor required for exercise-induced cognitive benefits

Journal Reviewer (Selected)

Journal of Neurochemistry, 1999, 2005
Neuroscience, 2000, 2002, 2005 (2x), 2009
Neurobiology of Learning and Memory, 2002,
Genes, Brain & Behavior, 2004 (2x)
Neuroscience Letters, 2004
Cellular & Molecular Biology Letters, 2005
Behavioral Neuroscience, 2005
Learning and Memory, 2006, 2011, 2012
Journal of Gerontology: Biological Sciences, 2008
Environmental Toxicology, 2009
Hippocampus, 2009
Behavioral Research Bulletin, 2010
PLOS ONE, 2012

Funding

A. Active

"DNA Recombination/Repair Mechanisms in Memory"

Principal Investigator: Sandra Peña de Ortiz, Ph.D.

Consultant: J. David Sweatt, Ph.D. - Evelyn F. McKnight Chair, Dept of Neurobiology, Director, McKnight Brain Institute,University of Alabama, Birmingham

Agency: NIMH

Type: SC1MH086072-01 (Period: 8/01/2008-7/31/2012)

To study the role of DNA recombination processes in memory of conditioned taste aversion using by 1) characterizing the role of flap structure-specific DNA endonuclease-1 and DNA ligase IV in memory using antisense targeting and 2) by studying the learning-realated genomic rearrangement of specific candidate genes.

"Advancing Biomedical Research in Puerto Rico"

Principal Investigator: Sandra Peña de Ortiz, Ph.D.

Agency: NCRR

Type: 5P20RRQ16470-09 (Period: 8/01/2009-7/31/2014)

The Puerto Rico Alliance for the Advancement of Biomedical Research Excellence (PRAABRE) will strengthen Puerto Rico's biomedical research capacity, productivity and competitiveness. It will build on its established biomedical research network of 16 institutions with a scientific focus on Neuroscience, Molecular Medicine and Drug Design, and it will be a pipeline for students throughout their scientific careers thereby contributing to the development of a knowledge-based economy in Puerto Rico. This progress will be achieved through a strong, cohesive structure that integrates common scientific and educational interests, collaborations and a new mentoring initiative.

Completed Research Support

"DNA Recombination and Learning"

Principal Investigator (Proyect 4): Sandra Peña de Ortiz, Ph.D.

Consultant: Alcino J. Silva, Ph.D. - UCLA.

Overall PI: Rafael Arce, Ph.D.

Agency: NIH-NIGMS

Type: SCORE: NIH-NIGMS SCORE-S06GM08102 (Period: 7/04-6/08)

To study the role of DNA recombination processes in memory of conditioned taste aversion using inhibitors of DNA ligase and DNA microarrays.

"Genomics of Emotional Memory"

Principal Investigator (Project 5): Sandra Peña de Ortiz, Ph.D.

Collaborator: Gregory J. Quirk, Ph.D.; Ponce School of Medicine, Ponce Puerto Rico

Overall P.D.I.: Conchita Zuazaga, Ph.D.

Agency: National Center for Research Resources

Type: IDEA-COBRE, 5P20 RR15565-02 (Period: November, 2001 – October, 2005); extension until June 30, 2007

The goal of this project is to define amygdalar gene expression profiles in conditioned taste aversion and in extinsion of tone fear conditioning (medial prefrontal cortex).

"Molecular Characterization of CREB in Learning and Memory"

Principal Investigator (Project 3): Sandra Peña de Ortiz, Ph.D.; Collaborator: Alcino J. Silva, UCLA

Overall P.I., José E . García Arrarás

Agency: National Institute of Neurological Disease and Stroke
Type: SNRP, 1 U54 NS39405-01 (Period: September 1999 - August - 2004); extension until November, 2006

The goal of this project is to define CREB dependent gene expression profiles in spatial and emotional memory using genetically modified mice and cDNA microarrays. Thus, there is no direct overlap between this research and the current proposal.

Teaching

Department of Biology, UPR-Rio Piedras

1996-1997 - 2nd Semester:	BIOL 4032: Molecular and Cellular Biology: 3 credits
1997-1998 - 1rst Semester:	BIOL 5548: Neurobiology: 3 credits BIOL 5546: Biochemistry of Nucleic Acids: 2 credits BIOL : Genetics Laboratory: 1 credit
1997-1998 - 2nd Semester:	BIOL 4032: Molecular and Cellular Biology: 4 credits (Coordinator and Professor) BIOL : Genetics Laboratory: 2 credits
1998-1999 - 1rst Semester	BIOL 6996: Seminar in Gene Regulation: 3 credits BIOL : Genetics Laboratory: 3 credits BIOL 5548: Neurobiology: *ad honorem* Three lectures on Synaptic Plasticity and Learning and Memory
1998-1999 - 2nd Semester	BIOL 6999: Modern Topics in Biology: 4 credits (Coordinator and Professor) BIOL 4032: Molecular and Cellular Biology: 2 credits
Summer 1999	UNESCO Course, *ad honorem*
1999-2000 - 1rst Semester	BIOL 5548: Neurobiology: 3 credits
2000-2001 - 1rst Semester	BIOL 5546: Biochemistry of Nucleic Acids: Invited Lecture - a*d honorem*
2000-2001- 2nd Semester	BIOL 6996: Seminar in Functional Genomics: 3 credits *ad honorem*
2001-2002-1rst Semester	BIOL 6996: Seminar in Cellular, Molecular, and Behavioral Neuroscience: 2 credits *ad honorem*; Co-Taught with Dr. Maldonado-Vlaar
2003-2004-1rst Semester	BIOL 6515: Cellular Psysiology: 1 credit *ad honorem* Co-Taught with Dr. Pablo E. Vivas-Mejía
2003-2004-2nd Semester	MATE 6685: Introduction to the use of Computers in Biology: Bioinformatics: 3 credits *ad honorem*
2004-2005-2nd Semester	BIOL 6996: Seminar on Disruption of Gene Function: 3 credits *ad honorem*
2005-2006-First Semester	BIOL 5548: Neurobiology: 3 credits, *ad honorem*
2005-2006-2nd Semester	BIOL 6996: Seminar on Molecular and Cellular Cognition: 3 credits *ad honorem*
2006-2007- 2nd Semester	BIOL 3010: Introduction to Molecular and Cellular Biology
2008-2009-First Semester	BIOL 5548: Neurobiology: 3 credits, *ad honorem*

Book Chapters

1. Josselyn, S., Kida S., **Peña de Ortiz, S.** Silva, AJ. (2002) CREB, plasticity, and memory. In: HANDBOOK OF CHEMICAL NEUROANATOMY: Immediate early genes and inducible transcription factors in mapping of the central nervous system function and dysfunction. Leszek Kaczmarek, Harold A. Robertson – Editors, p. 329-361

2. Silva AJ & **Peña de Ortiz S**. CREB and memory. ***Encyclopedia of Neuroscience***. Elsevier 3rd Edition, George Adelman and Barry Smith, Eds. (2003)

3. **Peña de Ortiz S,** Colón M, & Arshavsky Y. GENOMIC THEORY OF DECLARATIVE MEMORY. In Dynamical Genetics, Ed. Valerio Parisi. Kerala (India): Research Signpost; 2004. p. 345-64.

Primary Publications

1. Cashman, J.R. and **Peña, S.** S-oxygenation of 7%-thiomethylspironolactone by the flavin containing monooxygenase. ***Drug Metab. Drug Interact.*** 1988, 6(3/4):337-348.

2. Cashman, J.R. and **Peña, S.** Canrenone formation via general base-catalyzed elimination of 7(methylthio)spironolactone S-oxide. ***Chem. Res. Toxicol.*** 1989, 2(2):109-113.

3. Peña de Ortiz, S., Cannon, M.M. and Jamieson Jr., G.A. Expression of nuclear hormone receptors within the rat hippocampus. ***Mol. Brain Res.*** 1994, 23:278-283.

4. Peña de Ortiz, S. and Jamieson Jr., G.A. HZF-3, an immediate-early orphan receptor homologous to NURR1/NOT: Induction upon membrane depolarization and seizures. ***Mol. Brain. Res.*** 1996, 38:1-13.

5. Peña de Ortiz, S. and Jamieson Jr., G.A. Molecular cloning and brain localization of HZF-2, a new member of the Rev-Erb family of orphan nuclear receptors. ***J. Neurobiol.*** 1997, 32:341-357.

6.Peña de Ortiz S, Maldonado-Vlaar CS, Carrasquillo Y. Hippocampal Expression of the Orphan Nuclear Receptor Gene *hzf-3/nurr1* During Spatial Discrimination Learning. ***Neurob. Learn. Mem.*** 2000, **74**:161-171. *Cover Picture.*

7. Vázquez SI, Vázquez A, and **Peña de Ortiz, S**. Different Hippocampal Activity Profiles for PKA and PKC in Spatial Discrimination Learning. ***Behavioral Neuroscience,*** 2000; 114(6): 1109B1118.

8. Ortiz-Zuazaga HG, Robles Y, Chiesa, R, and **Peña de Ortiz S.** Analysis of learning-related changes in gene expression using nylon-membrane cDNA arrays. ***Currents in Computational Molecular Biology*** *2001, 159-160.*

11. Peña de Ortiz, S and Arshavsky YI. DNA Recombination is a Possible Mechanism in Declarative Memory. ***Journal of Neuroscience Research,*** 2001; **63**:72-81 .

12. Ren K and **Peña de Ortiz S**. Non-homologous DNA end joining in the mature rat brain. ***Journal of Neurochemistry***, 2002, **80**: 949-959.

13. Kida S, Josselyn SA, **Peña de Ortiz S.**, Kogan JH, Chévere I., Masushige S, and Silva AJ. CREB required for the stability of new and reactivated fear memories. ***Nature Neuroscience,*** 2002; 5(4):348-55

14. Ge H, Chiesa R, **Peña de Ortiz, S**. HZF-3 Expression in the Amygdala after Establishment of Conditioned Taste Aversion. ***Neuroscience***, 2003, 120:1-4.

15. Robles Y, Pablo E. Vivas, Ortiz-Zuazaga HG, Yahaira Felix, **Peña de Ortiz, S**. Hippocampal gene expression profiling in spatial learning. ***Neurobiology of Learning & Memory,*** 2003, 80:80-95.

16. Peña de Ortiz S, Colón M, Carrasquillo Y, Padilla B, and Arshavski YI. Experience-dependent expression of the gene encoding terminal deoxynucleotidyl transferase in the mouse brain. ***Neuroreport,*** 2003, 14(8):1141-4.

17. Wang J, Ren K, Perez J, Silva AJ, Pena de Ortiz S. The antimetabolite ara-CTP blocks long-term memory of conditioned taste aversion. ***Learn Mem***. 2003 10:503-9.

18. Alvarez-Jaimes L, Betancourt B, Rodríguez D, **Peña de Ortíz S,** and Carmen S. Maldonado-Vlaar. Spatial learning in rats is impaired by microinfusions of Protein Kinase C-gamma antisense oligodeoxynucleotide within the nucleus accumbens. ***Neurobiology of Learning and Memory***, 2004; 81:120-136.

19. Vázquez A & **Peña de Ortiz S**. Intrahippocampal Lead Blocks Long-term Memory and Learning-Induced Protein Kinase C activation in adult rats. ***Toxicology and Applied Pharmacology****, 2004,* 200:27-39

20. Santini E, Ge H, Ren K, **Peña de Ortiz S,** Quirk GJ. Consolidation of fear extinction involves protein synthesis and c-Fos in medial prefrontal cortex. ***Journal of Neuroscience,*** 2004, 24:5704-10.

21. Al Banchaabouchi M, **Peña de Ortiz S**, Menéndez R, Ren K, Maldonado-Vlaar CS. Chronic Lithium Decreases Basal HZF-3 Expression in the Rat Brain and Impairs the Initial Acquisition of Spatial Discrimination. ***Physiology, Biochemistry & Behavior***, *2004, 79:607-621*

22. Quirk GJ & **Peña de Ortiz S.** Stuck in time without a nucleus: Theoretical Comment on Sangha et al. (2005). Stuck in time without a nucleus: theoretical comment on sangha et Al. (2005). ***Behavioral Neuroscience***, 119(4):1155-7.

23. Colón-Cesario M, Wang J, Ramos-Sepúlveda X, García HG, Dávila JJ, Laguna J, Rosado C, and **Peña de Ortiz S.** (2006) An Inhibitor of DNA Recombination Blocks Memory Consolidation, but not Reconsolidation, in Context Fear Conditioning. ***Journal of Neuroscience, 26:5524-5533***

24. Colón-Cesario WI, Martínez-Montemayor MM, Morales S, Félix J, Cruz J, Adorno M, Pereira L, Colón N, Maldonado-Vlaar CS, and **Peña de Ortiz S.** (2006) Knockdown of Nurr1 in the Rat Hippocampus: Implications to Spatial Discrimination Learning and Memory. ***Learning &***

Memory, 13:734-744.

25. Ortiz-Zuazaga, HG. **Peña de Ortiz, S**. Moreno de Ayala, O. (2007) Error Correction and Clustering Gene Expression Data Using Majority Logic Decoding. ***Proceedings of The 2007 International Conference on Bioinformatics and Computational Biology.***

26. Arroyo Gonzalez N., Vázquez A, Ortiz Zuazaga H.G., Sen A., Luna Olvera H., **Peña de Ortiz S**., and Govind N.S. (2009) Genome wide expression profiling of theosmoadaptation response of Debaryomyces hansenii. ***Yeast*** 26:111-124.

27. Saavedra-Rodríguez L., Vázquez A., Ortiz-Zuazaga HG, Chorna NE, González FA, Andrés L., Rodríguez K, Ramírez F, Rodríguez A., and **Peña de Ortiz S.** (2009) Identification of flap-structure specific endonuclease 1 as a factor involved in long-term memory formation of aversive learning. ***Journal of Neuroscience,*** 29:5726-37.

28. Huguet G., Aldavert-Vera L., Elisabeth E., **Peña de Ortiz S.,** Morgado-Bernal I., Segura-Torres P. (2009) Intracranial self-stimulation to the lateral hypothalamus, a memory improving treatment, results in hippocampal changes in gene expression. ***Neuroscience,*** 162:359-374.

30. Santos-Soto I.J., Chorna N., Vélez-Bartolomei J.G., Chornyy A, Méndez A.T., Carballeira N.M., **Peña de Ortiz S.** Voluntary Running in Young Adult Mice Reduces Behavioral Anxiety and Increases the Accumulation of Bioactive Lipids in the Cortex. ***PLoS ONE*** – Resubmitted maniscript in revision*, 2012.*

29. Chorna N., Santos-Soto I.J., Vázquez-Montes A., Chornyy A., Carballeira N.M., and **Peña De Ortiz S.** The use of Neurolipidomics to determine the effects of voluntary exercise on hippocampal lipogenesis in mice: implications to spatial learning and neurogenesis. ***PNAS****, To be Submitted.*

31. Rivera-Beltrán S.V., Wang J., Vázquez-Montes A., Pérez-Carambot M., Félix-Ortix A., Cepeda K., Chévere-Torres I., and **Peña de Ortiz S**. Subregional Dissociation of the Effects of Hippocampal Nurr1 Knockdown For Consolidation of Context Fear Conditioning. ***Biological Psychiatry*****,** *In Preparation.*