Rolando Garcia, Ph.D.

Research Molecular Biologist
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Grand Forks Human Nutrition Research Center
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EDUCATION

Ph.D. Nutrition, Cornell University, Ithaca, New York, 1990
Major: Nutritional Biochemistry
Minor: Biochemistry

M.S. Nutrition, Cornell University, Ithaca, New York 1987
Major: Nutritonal Biochemistry
Minor: Biochemistry

B.S. Biology, Universidad Simón Bolívar, Caracas, Venezuela 1984

PROFESSIONAL APPOINTMENTS

Research Molecular Biologist 07/2014-Present
Human Nutrition Research Center, 2420 2nd Ave N. Grand Forks, ND 58202
Healthy Body Weight Research Unit

Scientist III 02/2007-02/2013
Wellstat Therapeutics, 930 Clopper Road,Gaithersburg, Maryland, 20878
Unit of Physiology and Pharmacology

Scientist II 02/2001-02/2007
Wellstat Therapeutics, 930 Clopper Road,Gaithersburg, Maryland, 20878
Unit of Neuroscience

Visiting Scientist 04/1998-02/2001
National Institutes of Health, Building 49, Convent Drive, Bethesda, MD 20892.
Laboratory of Developmental Neurobiology (NICHD)

Researcher 01/1997-04/1998
Instituto de Estudios Avanzados, Carretera Nacional Hoyo de la Puerta, Baruta, Valle de Sartenejas, Caracas, Venezuela
Unit of Molecular Biology

Researcher 01/1991-12/1996
Instituto de Estudios Avanzados, Carretera Nacional Hoyo de la Puerta, Baruta, Valle de Sartenejas, Caracas, Venezuela
Unit of Neuroscience

HONORS AND AWARDS

1. Program for the Promotion of the Researcher, Level Candidate 1991-1994, National Council of Technological and Scientific Investigations (CONICIT), Venezuela.

2. Program for the Promotion of the Researcher, Level I 1994-1998, National Council of Technological and Scientific Investigations (CONICIT), Venezuela.

PROFESSIONAL ADVISORY AND CONSULTING ACTIVITIES

1. Ad hoc reviewer for the Journal Lipids and Scientific Reports (2014-2016)

2. Reviewer in special emphasis panel for the NIH Blueprint Neurotherapeutics Network evaluating translational neuroscience proposals (11-09-2015).

3. Editorial advisor for the Biochemical Journal 1994-1999.

4. Consulting and method development for the Unit for Screening of Inborn Errors of Metabolism and Congenital Hypothyroidism, IDEA, Caracas, Venezuela 1991-1996.

GRANTS

1. Training Grant ($2,980) from the Vollmer Foundation, Venezuela, 1998.

2. Training Grant, ($2,770), CONICIT, Venezuela, 1998.

3. Travel Grant, ($1,640), CONICIT, Venezuela, 1996.

4. Travel Grant ($1,280), CONICIT/Royal Society, 1996.

5. Study of the Glia-Neuronal Signaling in the Giant Axon of the Squid, research grant ($13,500)S1-2439 from the National Council of Technological and Scientific Investigations (CONICIT), Venezuela, 1992-1995.

SPECIAL INVITATIONS

1. Invited lecturer to the course “Introduction to Neurobiology” at Universidad Simón Bolívar, Caracas, Venezuela, 1995-1997 (Course Master: Dr. Domingo Balbi).

MENTORING

Undergraduate Student Research Experiences, ARS-USDA Grand Forks Human Nutrition Research Center

Mr. Levi Hoffman	Spring 2016
Mr. Justin LaFrancois	Summer 2016

Mentored two undergraduate students in their one year thesis work performed as part of the requirement for the Bachelor of Science degree from Universidad Simón Bolivar, Caracas, Venezuela.

1. Enzymatic Activities of Glutamate Metabolism in the Squid Nerve Fiber, Maldonado Celis, María Elena, 1996.

2. Study of Periaxonal Cells Maintained In Vitro of the Tropical Squid Sepioteuthis Sepioidea, Ruíz Jiménez, Alejandro Mariano, 1993.

MEMBERSHIP IN SOCIETIES

1. Experimental Biology
2. Society for Neuroscience

PEER REVIEWED JOURNAL ARTICLES

1 Evaluation of Markers of Beige Adipocytes in White Adipose Tissue of the Mouse, (2016) Garcia RA, Roemmich JN, Claycombe KJ, Nutrition and Metabolism (Lond) Mar 18; 13: 24..

2 Decreased beige adipocyte number and mitochondrial respiration coincide with increased histone methyl transferase (9Ga) and reduced FGF21 gene expression in Sprague Dawley rats fed prenatal low protein and postnatal high fat diets, (2016) Claycombe KJ, Vomhof-DeKrey EE, Garcia R, Johnson WT, Uthus E, Roemmich JN, **Journal of Nutritional Biochemistry**, May; 31: 113-21.

3. Uridine prodrug PN401 improves memory in Tg2576 and TAPP mice and reduces pathological factors associated with Alzheimer's disease in related models, (2013) Saydoff, JA, Olariu, A, Sheng, J, Hu, Z, Li, Q, **Garcia, RA**, Pei, J, Sun, GY and von Borstel, RW **Journal of Alzheimer's Disease**, 36(4):637-57

4. Oral uridine pro-drug PN401 is neuroprotective in the R6/2 and N171-82Q mouse models of Huntington's disease, (2006) Saydoff JA, **Garcia RA**, Browne SE, Liu L, Sheng J, Brenneman D, Hu Z, Cardin S, Gonzalez A, von Borstel RW, Gregorio J, Burr H, Beal MF. **Neurobiology of Disease** Dec;24(3):455-65.

5. Severe cytochrome c oxidase inhibition in vivo does not induce a pyrimidine deficiency; neuroprotective action of oral uridine prodrug PN401 requires supraphysiological levels of uridine, (2005) **Garcia RA**, Liu L, Hu Z, Gonzalez A, von Borstel RW, Saydoff JA. **Brain Research** Dec 20;1066(1-2):164-71.

6. Oral uridine pro-drug PN401 decreases neurodegeneration, behavioral impairment, weight loss and mortality in the 3-nitropropionic acid mitochondrial toxin model of Huntington's disease, (2003) Saydoff JA, Liu LS, **Garcia RA**, Hu Z, Li D, von Borstel RW. **Brain Research** Dec 19;994(1):44-54.

7. The neuregulin receptor ErbB-4 interacts with PDZ-containing proteins at neuronal synapses, (2000) **Garcia RA**, Vasudevan K, Buonanno A. **Proceedings of the National Academy of Science U S A** Mar 28;97(7):3596-601.

8. Neuregulin found in cultured-sciatic nerve conditioned medium causes neuronal differentiation of PC12 cells, (2000) Villegas R, Villegas GM, Longart M, Hernández M, Maqueira B, Buonanno A, García R, Castillo C. **Brain Research** Jan 10;852(2):305-18.

9. Glutamate metabolism by squid nerve fiber sheaths, (1998) **García RA**. **Glia** Aug;23(4):298-303.

10. Glutamate uptake by squid nerve fiber sheaths, (1996) **García RA. Journal of Neurochemistry** Aug;67(2):787-94.

11. Aspartate aminotransferase and glutamate dehydrogenase activities in the squid giant nerve, (1995) **García RA**, Villegas J. **Journal of Neurochemistry** Jan;64(1):437-42.

12. Neonatal screening of primary congenital hypothyroidism and hyperphenylalaninemias. (1993) Merzon Rosa Maria, Vidal Luis, De Lucca Marisel, Utrera Rene, Noris Karen J., Angulo de Diaz Ligia, Garcia de Blanco Matilde, **Garcia Garcia Rolando** and Villegas Polanco Jorge M. **Archivos Venezolanos de Puericultura y Pediatria**, 56, 1:1-12.

13. The splanchnic organs, liver and kidney have unique roles in the metabolism of sulfur amino acids and their metabolites in rats, (1992) **Garcia RA**, Stipanuk MH. **Journal of Nutrition** Aug;122(8):1693-701.

14. Cysteine concentration regulates cysteine metabolism to glutathione, sulfate and taurine in rat hepatocytes, (1992) Stipanuk MH, Coloso RM, **Garcia RA**, Banks MF. **Journal of Nutrition** Mar;122(3):420-7.

15. Measurement of cyst(e)amine in physiological samples by high performance liquid chromatography, (1988) **Garcia RA**, Hirschberger LL, Stipanuk MH. **Analytical Biochemistry** May 1;170(2):432-40.

16. Digestibility of the globulin fraction of Phaseoulus Vulgaris seeds in mice, (1986) Benshimol A. L. and **Garcia R.A. Nutrition Reports International** 1986 34:509-520.

BOOK CHAPTERS

1. Local program for the study of neonatal congenital primary hypothyroidism and hyperphenylalaninemias, in **Neonatology** (Quisber Luis: Editor), (1995) Merzon R.M., Vidal L., De Lucca M., Utrera R., Noris K.J., Angulo de Diaz L., Garcia de Blanco M., **Garcia R**., and Villegas Polanco J.M. Chapter #51, McGraw Hill, Nueva Editorial Interamericana, Mexico.

2. Inborn Errors of Metabolism, in **Neonatology** (Quisber Luis: Editor), (1995) Vidal Conde L., Merzon R., **Garcia R**., and Villegas Polanco J.M. Chapter #57, McGraw Hill, Nueva Editorial Interamericana, Mexico.

ABSTRACTS AT MEETINGS

Keystone Symposia on Obesity and Adipose Tissue Biology

Evaluation of Markers of Beige Adipocytes in White Adipose Tissue of the Mouse (2016)
Rolando A. Garcia, James N. Roemmich, and Kate J. Claycombe
USDA-ARS, Grand Forks Human Nutrition Research Center, Grand Forks, ND.

Experimental Biology

Decreased beige adipocyte number and mitochondrial respiration coincide with reduced FGF21 gene expression in Sprague Dawley rats fed prenatal low protein and postnatal high fat diets (2016) Kate J. Claycombe, Emilie E. Vomhof-DeKrey, **Rolando Garcia**, William Thomas Johnson, Eric Uthus, and James N. Roemmich, USDA, Grand Forks, ND. Presentation 912.11

Endocrine Modulators of Mouse Subcutaneous Adipose Tissue Beige Adipocyte Markers (2015) **R.A. Garcia Garcia**, K.J. Claycombe and J.N. Roemmich. USDA, Grand Forks, ND. Presentation 595.5

Society for Neuroscience

Uridine prodrug PN401 improves memory in APPswe + P301L Tau model of Alzheimer's disease. (2007) Olariu A., Hu Z., Sheng J., Liu L., **Garcia R.A.G.**, Li Q., Brenneman D., von Borstel R.W., and Saydoff J.A. Presentation 157.7

Uridine prodrug PN401 decreases neurodegeneration in models of Alzheimer's disease and neuroinflammation and decreases amyloid plaques in APPswe mice. (2005) Sheng, J., Li, Q., Hu, Z., Gonzalez, A., Liu, L., Brenneman, D., **Garcia, R. A. G.**, von Borstel, R. W., and Saydoff, J. A. Presentation 544.7

Uridine prodrug PN401 decreases neurodegeneration and huntingtin aggregates in N171-82Q mice with effects on BDNF and oxidative damage. (2005) **Garcia, R. A. G.**, Sheng, J., Hu, Z. Y., Li, Q., Gonzalez, A., Liu, L. S., Brenneman, D., von Borstel, R. W., and Saydoff, J. A. Presentation 1009.4

Uridine prodrug PN401 improves memory in APP2576 mice that model Alzheimer's disease and uridine decreases cell death due to chemical hypoxia in fibroblasts from patients with sporadic AD. (2003) Hu, Z. Y., Liu, L. S., **Garcia, R. A. G.**, Noble, M., Brenneman, D., von Borstel, R. W., and Saydoff, J. A. Presentation 525.23

Uridine prodrug PN401 is neuroprotective in the R6/2 and N171-82Q mouse models of Huntington's disease. (2003) Saydoff, J. A., Liu, L. S.; Brenneman, D., **Garcia, R. A. G.**, Hu, Z. Y., Cardin, S., Gonzalez, A., von Borstel, R., Beal, M., Browne, S. Presentation 130.11

Neuroprotective doses of the oral uridine prodrug PN401 greatly exceed doses required to correct a pyrimidine deficiency. (2002) **Garcia, R. A. G.**, Hu, Z. Y., Liu, L. S., Noble, M. M., Gonzalez A., and von Borstel, R. W. Saydoff, J. A. Presentation 685.15

PN401 in combination with coenzyme Q10 or creatine protect mice against 3-nitropropionic acid toxicity. (2001) Liu, L. S., Hu, Z. Y., **Garcia, R. A. G.**, Noble, M. M., von Borstel, R. W., and Saydoff, J. A. Presentation 968.12

Oral Uridine prodrug PN401 protects mice against azide toxicity in vivo: studies on the mechanism of uridine neuroprotection in vitro. (2001) Saydoff, J. A., Liu, L. S., Hu, Z. Y., Noble, M. M., Tandon, P., **Garcia, R. A. G.**, and von Borstel. Presentation 890.7

International Brain Research Organization (IBRO)

R.A.G. Garcia, J. Sheng, Z. Hu, L.S. Liu, Q. Li, R. von Borstel and J.A. Saydoff. PN401 an oral uridine pro-drug is neuroprotective in models of Alzheimer's, Huntington's and Parkinson's disease, excitotoxicity and neuroinflammation. (2007) POS-SUN-264

International Congress on the Prevention of Dementia Meeting

Saydoff, J., Sheng, J., Li, Q., Hu, Z.Y, Gonzalez, A., Liu, L.S., Brenneman, D., **Garcia, R.A.G.**, Cardin, S. and von Borstel, R. (2005) PN401 decreases neurodegeneration in models of Alzheimer's, Huntington's and Parkinson's disease, neuroinflammation, excitotoxicity and has antiepileptic activity. Abstract #321. Alzheimer's & Dementia 1:S68.

International Alzheimer's and Related Disorders Meeting

Saydoff, J.A., Olariu, A., Hu, Z.Y., Sheng, J., Pei, J., Li, Q., **Garcia, R.A.G.**, Brenneman, D. and von Borstel, R.W. (2008) PN401 Treatment Improves Memory In Tg2576 And TAPP Models Of Alzheimer's Disease P4-302; Alzheimer's & Dementia: 4, Suppl, T761-T762

American Society for Clinical Oncology (ASCO)

Uridine triacetate is an effective antidote in preclinical models of 5-FU overdoses and impaired 5-FU clearance (2016), Reid von Borstel, **Rolando Garcia**, Joel A. Saydoff, Michael K. Bamat; Wellstat Therapeutics Corporation, Gaithersburg, MD

Uridine triacetate for prevention of 5FU toxicity due to dihydropyrimidine dehydrogenase (DPD) deficiency.(2011) M. K. Bamat, R. Tremmel, S. F. Eberwine, **R. Garcia**, J. A. Saydoff, and R. von Borstel Abstract e19560