

Curriculum vitae

Luis Rene Garcia

Undergraduate Institution: University of Texas at Austin

Major: Microbiology

Degree & Year: BS with Special Honors, 1990

Graduate Institution: University of Texas at Austin

Major: Microbiology

Degree & Year: PhD 1996

Postdoctoral Institution: California Institute of Technology

Area: Behavioral and Developmental Genetics

Positions and Employment

1. 1990: Research Intern. NIH, Bethesda, Maryland. Supervisor: Dr. Rose Mage.
2. 1990-1996: Graduate Student. University of Texas at Austin, Dept of Microbiology. Supervisor: Dr. Ian J. Molineux
3. 1997-2000: Postdoctoral Scholar and NRSA Fellow. California Institute of Technology, Division of Biology. Supervisor: Dr. Paul W. Sternberg
4. 2000-2002: Howard Hughes Postdoctoral Scholar. California Institute of Technology, Division of Biology and Associate, Howard Hughes Medical Institute. Supervisor: Dr. Paul W. Sternberg
5. 2002-2008 Assistant Professor, Department of Biology; Texas A&M University
6. 2008- 2015 Associate Professor, Department of Biology; Texas A&M University
7. 2008- 2016 Howard Hughes Medical Institute Investigator,
7. 2015- Present. Professor Department of Biology; Texas A&M University

Honors

1. The Texas Achievement Award (5 year undergraduate scholarship)
2. NSF minority pre-doctoral fellowship (accepted)
3. Ford Foundation pre-doctoral fellowship (declined in order to accept the NSF Award)
4. University of Texas Ex Students' Association Ethel and Robert L. Terry Memorial Scholarship.
5. National Research Service Award Postdoctoral fellowship.
6. Searle Scholars Award
7. Presidential Early Career Award for Scientists and Engineers
8. Howard Hughes Medical Institute Investigator

Appointments:

September 2015: Professor

September 2008-2016: Howard Hughes Medical Institute

September 2008-2015: Associate professor Department of Biology, Texas A&M University

September 2002-2008: Assistant professor Department of Biology, Texas A&M University

Research Support

Howard Hughes Medical Institute (2008-August 2016). Role PI

Environmental and Genetic Regulation of Motivated Behavior

Purpose of the study is to deeply dissect the molecular signal transduction and interconnectivities of different sensory motor units used in the modulation of innate motivated behaviors. The project also involved the development/optimization of optical tools to analyze circuit function in behaving animals.

RO1 GM70431 NIH (2003-2010). Role PI

Genetic Regulation of Mating Behavior in *C. elegans* males.

Purpose of the study was to use *C. elegans* mating behavior as a model to dissect the molecular interactions between dopaminergic signal transduction and ionotropic acetylcholine signaling that regulates the termination or persistence of behavioral sub-routines.

Searle Scholars Program (2003-2006). Role PI

Identification of ERG K channel-regulated pathways used in *C. elegans* male mating behavior.

Purpose of the study was to identify alternative K⁺ channels that can compensate for the loss of ERG-type K⁺ channels. The ERG K⁺ channels are essential for regulating cardiac rhythms.

Publications

Barr MM, **García LR**, Portman DS. 2018. Sexual dimorphism and sex differences in *Caenorhabditis elegans* neuronal development and behavior. **Genetics** 208: 909-935.

Versaw WK, **García LR**. 2017. Intracellular transport and compartmentation of phosphate in plants. **Curr Opin Plant Biol.** 39:25-30.

Serrano-Saiz E, Pereira L, Gendrel M, Aghayeva U, Battacharya A, Howell K, **García, LR**, Hobert O. 2017. A Neurotransmitter Atlas of the *Caenorhabditis elegans* Male Nervous System Reveals Sexually Dimorphic Neurotransmitter Usage. **Genetics** 206:1251-1269.

Leboeuf, B and **García, LR**. 2017 *C. elegans* male copulation circuitry incorporates sex-shared defecation components to promote intromission and sperm transfer. **G3**. 7:647-662.

Jee C, Goncalves JF, LeBoeuf B, **García LR**. 2016. CRF-like receptor SEB-3 in sex-common interneurons potentiates stress handling and reproductive drive in *C. elegans*. **Nat Commun.** 7:11957.

García LR, Portman DS. 2016. Neural circuits for sexually dimorphic and sexually divergent behaviors in *Caenorhabditis elegans*. **Curr Opin Neurobiol.** 38:46-52.

Rosas PC, Nagaraja GM, Kaur P, Panossian A, Wickman G, **García LR**, Al-Khamis FA, Asea AA. 2016. Hsp72 (HSPA1A) Prevents Human Islet Amyloid Polypeptide Aggregation and Toxicity: A New Approach for Type 2 Diabetes Treatment. **PLoS One.** 9;11(3):e0149409.

Banerjee S, **García LR**, Versaw WK. 2016. Quantitative Imaging of FRET-Based Biosensors for Cell- and Organelle-Specific Analyses in Plants. **Microsc Microanal.** 22(2):300-10.

- Correa PA, Gruninger T, **García LR**. 2015. DOP-2. D2-Like Receptor Regulates UNC-7 Innexins to Attenuate Recurrent Sensory Motor Neurons during *C. elegans* Copulation. **J Neurosci**. 8;35(27):9990-10004.
- Pereira L, Kratsios P, Serrano-Saiz E, Sheftel H, Mayo AE, Hall DH, White JG, LeBoeuf B, **García LR**, Alon U, Hobert O. 2015. A Cellular and regulatory map of the cholinergic nervous system of *C. elegans*. **eLife**. 4: e12432.
- Banerjee S, Versaw, WK and **García LR**. 2015. Imaging Cellular inorganic phosphate in *Caenorhabditis elegans* using a genetically encoded FRET-Based Sensor. **PLoS One**. 10(10): e0141128.
- Mukherjee P, Banerjee S, Wheeler A, Ratliff LA, Irigoyen S, **García LR**, Lockless SW, Versaw WK. 2015. Live Imaging of Inorganic phosphate in plants with cellular and subcellular resolution. **Plant Physiol**. 2015 Mar;167(3):628-38.
- Zhang, L., Gualberto, D.G., Guo, X, Correa, P., Jee, C., and **García, L.R.** 2015. TMC-1 attenuates *C. elegans* development and sexual behavior in a chemically defined food environment. **Nature Commun**. 6:6345.
- Jobson MA, Valdez CM, Gardner J, **García LR**, Jorgensen EM, Beg AA. Spillover transmission is mediated by the excitatory GABA receptor LGC-35 in *C. elegans*. **J Neurosci**. 2015 Feb 11;35(6):2803-16.
- Chen, X and **García, LR**. 2015. Developmental Alterations of the *C. elegans* Male Anal Depressor Morphology and Function Require Sex-Specific Cell Autonomous and Cell Non-Autonomous Interactions. **Developmental Biology**. 398:24-43.
- García, LR. 2014. Regulation of sensory motor circuits used in *C. elegans* male intromission behavior. **Seminars in Cell and Developmental Biology**. 33:42-49.
- Leboeuf, B and **García, LR**. 2014. A network of sensory-motor neurons and dopaminergic support cells couples ejaculation and satiation in *C. elegans* males. **eLife** 2014;10.7554/eLife.02938
- Guo, X and **García, LR**. 2014. SIR-2.1 integrates metabolic homeostasis with the reproductive neuromuscular excitability in aging male *C. elegans*. **eLife**:3:e01730
- Markert, M and **García, LR**. 2013. Virgin *Caenorhabditis remanei* females are attracted to a colial pheromone released by con-specific copulating males. **Worm**. (2):e24448.
- Correa P, LeBoeuf B, **García LR** . 2012. *C. elegans* dopaminergic D2-like receptors delimit recurrent cholinergic-mediated motor programs during a goal-oriented behavior. **PLoS Genet**. (11):e1003015.
- Leboeuf B and **García LR**. 2012. Genetic interactions between BK channels and EAG family K⁺ channels regulate the neuromuscular circuitry that controls *C. elegans* male mating behavior. **Genetics**. 190(3):1025-41..
- Guo, X, Navetta, A., Gualberto, D.G., and **García, LR**. 2012. Behavioral decay in aging male *C. elegans* correlates with increased cell excitability. **Neurobiology of Aging**. (7):1483.e5-23.

Liu Y, LeBoeuf B, Guo X, Correa PA, Gualberto DG, Lints, R and **García, LR. 2011.** A cholinergic-regulated circuit coordinates the maintenance and bi-stable states of a sensory-motor behavior during *Caenorhabditis elegans* male copulation. **PLoS Genetics** 7(3):e1001326.

Leboeuf B, Guo X, and **García LR. 2011** The effects of transient starvation persist through direct interactions between CaMKII and ether-a-go-go K⁺ channels in *C. elegans* males. **Neuroscience**. 175:1-17.

Gruninger, T.R., Gualberto, D.G. and **García, LR. 2008.** Sensory Perception of Food and Insulin-like Signals Influence Seizure Susceptibility. **PloS Genetics**. 4(7):e1000117.

∇LeBoeuf, B., ∇Gruninger, T.R., (∇Co-first Authors) and **García, LR. 2007.** Food deprivation suppresses defective ERG K⁺ channel-induced muscle seizures through CaMKII and EAG K⁺ channels. **PloS Genetics**.3(9): e156.

Gruninger, T.R., LeBoeuf, B, Liu, Y, and **García, LR. 2007.** Molecular Signaling Involved in Regulating Feeding and Other Motivated Behaviors. **Molecular Neurobiology**. 35: 1-20.

García, LR. LeBoeuf, B, and Koo, P, **2007.** Diversity in Mating Behavior of Hermaphroditic and Male-Female *Caenorhabditis* Nematodes. **Genetics**. 175:1761-1771.

Liu Y, LeBoeuf, B, and **García, LR. 2007.** Gαq-coupled Muscarinic Acetylcholine Receptors Enhance Nicotinic Acetylcholine Receptor Signaling in *C. elegans* Mating Behavior. **J. Neurosci**. **27**: 1411-1421.

Reiner, DJ., Weinshenker, D., Tian, H., Thomas, J.H., Hishiwaki, K., Miwa, J., Gruninger, T., LeBoeuf, B., **García, LR. 2006.** Behavioral Genetics of *Caenorhabditis elegans unc-103*-encoded ERG-like K⁺ Channel. **J. Neurogenetics**. 20:41-46.

Gruninger, T.R., Gualberto, D.G., LeBoeuf, B., and **García, LR. 2006.** Integration of Male Mating and Feeding Behaviors in *Caenorhabditis elegans*. **J. Neurosci**. **26**:169-179.

Kemp, P., **García, LR.** and Molineux, I.J. **2005.** Changes in bacteriophage T7 virion structure at the initiation of infection. **Virology**. 2:307-317.

Barr, M. and **García, LR. 2005.** Male Mating behavior. WormBook, ed. The *C. elegans* Research Community, **WormBook**, doi/10.1895/wormbook.1.7.1, <http://www.wormbook.org>

∇Moghal, N., *∇ **García, LR.**(∇Co-first Authors)_Khan, L.A., Iwasaki, K., Sternberg, P.W. **2003** Modulation of EGF receptor-mediated vulval development by Gαq and excitable cells in *C. elegans*. **Development**. 130:4553-4566.

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García, LR. and I. J. Molineux. **1999.** Translocation and cleavage of bacteriophage T7 DNA by the type I restriction enzyme *EcoKI* *in vivo*. **PNAS.** 96:12430-12435.

García, LR. and I. J. Molineux. **1996.** Transcription-independent DNA translocation of bacteriophage T7 DNA into *Escherichia coli*. **J. Bacteriol.** 178:6921-6929.

García, LR. and I. J. Molineux. **1995.** Incomplete entry of bacteriophage T7 into F plasmid containing *Escherichia coli*. **J. Bacteriol.** 177:4077-4083.

García, LR. and I. J. Molineux. **1995.** Rate of translocation of bacteriophage T7 DNA across the membranes of *Escherichia coli*. **J. Bacteriol** 177:4066-4076.

Hole, N. J. K., N. Harindranath, G. O. Young-Cooper, **R. Garcia**, and R. G. Mage. **1991.** Identification of enhancer sequences 3' of the rabbit Ig Kappa l chain loci. **J. Immunol.** 146:4377-4384.