Rosa M. Alcazar

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Education

1998– 2007	**Doctorate** · Biology · Johns Hopkins University, Baltimore, MD
1995 – 1998	**Bachelor of Science** · Biology · University of California, Riverside, CA
1992 – 1995	**Associate of Science**· Business Administration · Pasadena City College, Pasadena, CA

Research Experience

1/2009 – Present **Postdoctoral Fellow** · *Stanford University · PI: Russell Fernald*

- Identified phylogenetically conserved and novel microRNAs expressed in the brain, testes and eggs of the African cichlid fish, *Astatotilapia burtoni*
- Developed a paradigm to study proximal mechanisms of endocrine response to stress in hyper-aggressive *A. burtoni* males
- Developed microRNA in situ protocol for *A. burtoni* and mapped expression of 7 microRNAs in the *A. burtoni* brain

8/2007 – 12/2008 **Postdoctoral Fellow** · *Stanford University · PI: Andrew Fire*

- Developed *oma-1* heritable silencing assays to determine the structural and biochemical requirements for the transmission and heritability of RNA molecules
- Performed screening to isolate animals with acquired epigenetic traits

1999-2007 **Graduate Research** · *John Hopkins University and Carnegie Institution · PI: Andrew Fire · Thesis*: "Analysis of heritable silencing induced by dsRNA"

- Characterized the multi-generational transmission of RNA molecules from oocytes and sperm
- Discovered RNA transmission depends on the presence of an original RNA trigger, which challenged the predominant notion that RNA was converted to a DNA signal prior to transmission

1998 **Undergraduate Research** · *UC Riverside · PI: Mark Springer*

- Examined retroviral sequences in marsupials and mammals

1997 **Summer Intern** · *University of New Hampshire · PI: John Collins*

- Mapped the *mut-2* mutator gene in *C. elegans*

Teaching

2000 **Teaching Assistant** · *Cell Biology · John Hopkins University*

1999 **Teaching Assistant** · *Genetics · John Hopkins University*

1996 – 1998 **Instruction Leader** · *General Chemistry · Learning Center, UC Riverside*

- Led study groups and tailored lectures on most challenging concepts
- Designed course materials to improve test taking skills

1997-1998 **Tutor** · *Biology, General Chemistry and Genetics · UC Riverside*

- Provided individual instruction in General Chemistry to freshmen, and upper level Genetics and Biology to juniors and seniors

Mentoring

2011-2013 **Honors student:** Michael Bernaba · *Dept. of Biology, Stanford University*

- Thesis: Behavior Based on Early Life Experiences in *A. burtoni*

2011-2013 **Undergraduate researcher:** George Michopholous · *Dept. of Computer Science, Stanford University*

- Project: MicroRNA and target mRNA expression patterns in socially regulated phenotypes of *A. burtoni*

2011-2012 **Undergraduate researcher** · Catherine Lu · *Dept. of Computer Science, Stanford University*

- Project: Small RNA Expression in *A. burtoni* Oogenesis

2010-2012 **Honors student:** Kevin Smith · *Dept. of Human Biology, Stanford University*

- Thesis: Brain localization of *miR-124*

2010-2011 **Undergraduate intern:** Jean Ansolabehere · *Dept. of Human Biology, Stanford University*

- Project: Generating sequencing libraries from *A. burtoni* brain tissue

2009-2011 **Honors student:** Shruti Tiberwala · *Dept. of Biology, Stanford University*

- Thesis: MicroRNA regulation of fertility and egg quality in *A. burtoni*

2009-2011 **Honors student:** Jennifer Levy · *Dept. of Biology, Stanford University*

- Thesis: MicroRNA expression in the juvenile *A. burtoni* brain

Work Presented

10/2014 **Alcazar RM,** Becker L, Hilliard AT, Fernald RD. Poster. Ford Fellowship Convention. Irvine, CA. *Variations in aggressive response and stress behavior.*

9/2013 **Alcazar RM.** Talk. Visiting Scholar at Carnegie Institution of Science, Baltimore, MD. *Exploring the roles of miRNAs in phenotypic plasticity*.

8/2010 **Alcazar RM,** Maruska KP, DiPalma F, Parameswaran P and Fernald RD. Poster. Bay Area RNA Club Meeting, Berkeley, CA. *Small RNA expression in fish testes where adult spermatogenesis is regulated by social rank.*

5/2010 **Alcazar RM,** Maruska KP, DiPalma F, Parameswaran P and Fernald RD. Talk. Broad Institute. *miRNA expression in Astatotilapia burtoni*

1/2010 **Alcazar RM,** Maruska KP, DiPalma F, Parameswaran P, and Fernald RD. Poster. Keystone Symposia, Keystone, CO. *Small RNA expression in fish.*

7/2004 **Alcazar RM** and A Fire. Poster. First Annual Bay Area Symposium on Modulatory Small RNAs, UCSF Mission Bay, CA. *Heritable silencing triggered by RNAi.*

12/2007 **Alcazar R**M and A Fire. Talk. The First Bay Area All RNA Meeting, UCSF Mission Bay, CA. *Heritable silencing triggered by RNAi.*

6/2003 **Alcazar RM** and A. Fire. Poster, Plant Genetics, Mechanisms of Genetic Variation, Snowbird, UT. *Heritable RNAi in the nematode C. elegans*.

6/1999 **Alcazar R**M and A Fire. Poster. West Coast C. elegans Meeting, Madison, WI. *RNAi and Cosuppression in the C. elegans germline*.

9/2004 **Alcazar RM** and A Fire. Poster. Gordon Research Conference, Mutagenesis, Oxford, UK. *Heritable silencing triggered by RNAi.*

8/2004 **Alcazar RM** and A Fire. Poster. West Coast Worm Meeting, Santa Barbara, CA. *Heritable silencing triggered by RNAi.*

6/2000 **Alcazar R**M and A Fire. East Coast *C. elegans* Meeting. *Genetic and molecular analysis of intron requirements for gene activity.*

6/1998 Boese QF, **Alcazar RM**, Pelliccia JG, Collins JJ. International *C.elegans* Meeting. *Mapping and Cloning the mut-2 Mutator.*

Publications

Alcazar RM, Tan FJ, J Loveland, Maruska K, Fernald RD. Brain atlas: miRNA expression in the *Astatotilapia burtoni* brain. (in preparation)

Alcazar RM, Becker L, Hillard AT, Fernald RD. Variability in aggressive responses in dominant cichlid fish: A role for the HPA axis. (submitted)

Alcazar RM, Hillard AT, Becker L, Bernaba B, Fernald RD (2014) "Brains Over Brawn: Experience Overcomes A Size Disadvantage In Fish Social Hierarchies" J. Exp. Biol. 217 (9):1462-8

Brawand D, Wagner CE, Li YI, Malinsky M, Keller I, et al. (2014) The genomic substrate for adaptive radiation in African cichlid fish. Nature 513: 375–381. doi:10.1038/nature13726

Alcazar RM, Lin R, Fire A (2008) "Transmission Dynamics of Heritable Silencing Induced by double-stranded RNA in *Caenorhabditis elegans*" Genetics 180(1): 1275-1288

Fire A, **Alcazar RM**, Tan F (2006) "Unusual DNA Structures Associated With Germline Genetic Activity in *Caenorhabditis elegans*" Genetics 173(3): 1259-1273

Provost E, Hersperger G, Timmons L, Ho WQ, Hersperger E, **Alcazar R,** Shearn A (2006) "Loss-of-function mutations in a glutathione S-transferase suppress the prune-Killer of prune lethal interaction" Genetics 172(1): 207-19

Honors and Awards

2013 **Postdoctoral Ford Fellowship** · *Ford Foundation*
2013 **Visiting Scholar** · *Carnegie Institution of Science*
2010 **Poster Award** · *Keystone Symposia*
2004 **Robert Wood Johnson Travel Award** · *Gordon Mutagenesis Conference*
1998 **Cum Laude** · *University of California Riverside*
1997 **McNair Scholar Program** · *University of New Hampshire*
1996 **Minority Medical Education Program**· *Rush University*· *University of Chicago*· *Loyola University* · *Northwestern University*

Grants awarded

12/04/09 — 11/30/11
R21 NIH 1R21MH087930 Russell D. Fernald (PI)

Title: *Small RNA-mediated regulation of adult neuronal plasticity in vivo*
Developed proposal to obtain preliminary data needed to set up miRNA genome-wide studies of neuronal plasticity in the *A. burtoni* model system.
Role: Designed, co-wrote, supervised and performed experiments.

06/30/13 — 06/30/15
R03 NIH R03MH101373 Russell D. Fernald (PI)

Title: Dynamics of targeted gene knockdown in *A. burtoni*
Developed proposal to test functional roles of microRNAs in social behavior.
Role: Designed, co-wrote, supervised and performed experiments.

Minority Outreach

Stanford Medical School Diversity and Outreach programs
2007- Presentations to recruit minority students for graduate programs
Howard University, MD
University of Maryland, MD
University of California Riverside, CA
Meetings I attended as a participant and for outreach purposes
2007- Annual Biomedical Research conference (ABRCMS) , Austin TX

2008- Moderator and panelist at the Scientific Empowerment Movement at University of California San Francisco
2011- the Society for Advancement of Hispanics/Chicanos and Native American in Science (SACNAS) San Jose, CA
2013- Ford Fellowship Conference Washington, DC
2014- Ford Fellowship Conference Irvine, CA

References

Andrew Z. Fire
George D. Smith Professor in
Molecular and Genetic Medicine
Professor of Genetics
Departments of Pathology and Genetics
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Russell D. Fernald
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