

BIOGRAPHICAL SKETCH

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NAME Antonio J. Giraldez, Ph.D.	POSITION TITLE Assistant Professor		
eRA COMMONS USER NAME giraldeza			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
University of Cadiz (Spain)	B.S.	1993-1996	Chemistry
University Autonoma of Madrid (Spain)	B.S.	1996-1998	Molecular Biology
European Molecular Biology Laboratory Skirball, New York University, School of Harvard University, MA.	Ph.D.	1998-2002	Developmental Biology
	Post. Doc.	2003-2006	Developmental Biology
	Post. Doc.	2006	Developmental Biology

A. Personal Statement

My laboratory studies the role of microRNAs in vertebrates and is currently focused in three areas of research: the molecular pathways that process microRNAs, the mechanisms of microRNAs function to regulate gene expression and the roles of microRNAs in vertebrate development. I have training the areas of developmental biology, bioinformatics, small regulatory RNAs and gene expression. As a graduate student at the European Molecular Biology Laboratories (under the supervision of Stephen Cohen), I identified a conserved antagonist of wnt signaling (*notum*). As a postdoctoral fellow at the Skirbal Institute (NYU) and Harvard University (under the supervision of Alexander Schier) I changed model systems (from *Drosophila* to Zebrafish) with the key focus of understanding the role of microRNAs in vertebrate development. During my training as a postdoc and faculty, I have uncovered fundamental principles in the microRNA pathway, including the identification of a novel miRNA family (miR-430) that regulates the maternal to zygotic transition, the identification of deadenylation as one of the molecular mechanisms that mediate miRNA-mediated repression, the regulation of TGFB signaling by miRNAs, and the identification of a novel miRNA processing pathway independent of Dicer function. My laboratory includes 13 scientists and combines expertise in the areas of Bioinformatics (3 post-docs), Biochemistry (2 post-docs and one PhD student), developmental biologists (4 post-docs and two PhD student) and one technician. Finally, we have extensively applied high-throughput sequencing to characterize the zebrafish transcriptome and small RNAs.

I am currently principal investigator on one RO1 and RC2 grants plus several foundation grants. In addition, I have successfully administered the projects (e.g. staffing, research protections, budget), collaborated with other researchers, and produced several peer-reviewed publications as a senior author from my laboratory, including two Science papers, one *Genes&Development* and one article in *Nature Genetics*. In summary, I have a demonstrated record of successful and productive research projects and have the necessary expertise in areas of high relevance for this project.

B. Positions and Honors.**Positions**

2011-Present	Associate Professor. Yale University School of Medicine. New Haven, Connecticut. USA
2007-2011	Assistant Professor. Yale University School of Medicine. New Haven, Connecticut. USA
2006	Postdoctoral Research, with Dr. Alexander F. Schier. Harvard University. Cambridge. MA.
2003-2006	Postdoctoral Research, with Dr. Alexander F. Schier. Skirball Institute. New York University School of Medicine. NY.
1998-2002	Ph.D with Dr. Stephen M. Cohen. Developmental Genetics. European Molecular Biology Laboratory. Heidelberg. Germany.

Honors

2008-2012	Pew Scholar
2007-2010	Lois E. and Franklin H. Top, Jr., Yale Scholar Award
2007	John Kendrew Young investigator Award EMBL, Heidelberg
2007	NYAS Blavatnik Young Investigator Award (Finalist)
2004-2007	HFSP Postdoctoral Fellowship
2003-2004	EMBO Postdoctoral Fellowship
2001-2002	EMBL Postdoctoral bridging fellowship.
1998-2001	EMBL PhD fellowship
1997-1998	Undergraduate Research Fellowship. CBMSO. UAM.
1998	3 rd National Prize Chemistry Degree. Ministry of Science. Spain

C. Selected peer-reviewed publications.

- (1) Staton AA, Knaut H and **Giraldez AJ**†. miRNA regulation of SDF1 chemokine signaling provides genetic robustness to germ cell migration. **Nature Genetics**. **2011**. Mar;43(3):204-11. Epub 2011 Jan 23.
- (2) Sander JD, Dahlborg EJ, Goodwin MJ, Cade L, Zhang F, Cifuentes D, Curtin SJ, Blackburn JS, Thibodeau-Beganny S, Qi Y, Pierick CJ, Hoffman E, Maeder ML, Khayter C, Reyon D, Dobbs D, Langenau DM, Stupar RM, **Giraldez AJ**, Voytas DF, Peterson RT, Yeh JR, Joung JK. Selection-free zinc-finger-nuclease engineering by context-dependent assembly (CoDA). **Nat Methods**. 2011 Jan;8(1):67-9. Epub 2010 Dec 12.
- (3) Cifuentes D, Xue H, Taylor DW, Patnode H, Mishima Y, Cheloufi S, Ma E, Mane S, Hannon GJ, Lawson N, Wolfe S, **Giraldez AJ**† A novel miRNA processing pathway independent of Dicer requires Argonaute2. **Science** **2010**, Jun 25;328(5986):1694-8. Epub 2010 May 6
- (4) Mishima Y, Abreu-Goodger C, Staton AA, Stahlhut C, Shou C, Cheng C, Gerstein M, Enright AJ and **Giraldez AJ**. Zebrafish miR-1 and miR-133 shape muscle gene expression and regulate sarcomeric actin organization. **Genes & Development**. **2009** Mar 1;23(5):619-32. Epub 2009 Feb 24. PMID: 19240126
- (5) Choi PS, Zakhary L, Choi WY, Caron S, Alvarez-Saavedra E, Miska EA, McManus M, Harfe B, **Giraldez AJ**, Horvitz RH, Schier AF, and Dulac C. Members of the miRNA-200 Family Regulate Olfactory Neurogenesis. **Neuron** **2008**. Jan 10, 57, 1–15.
- (6) Choi WY, **Giraldez AJ**†, Schier AF†. Target Protectors Reveal Dampening and Balancing of Nodal Agonist and Antagonist by miR-430. **Science**. **2007**. Oct 12;318(5848):271-4. †Corresponding authors.
- (7) Schier AF, **Giraldez AJ**. MicroRNA function and mechanism: insights from zebra fish. **Cold Spring Harb Symp Quant Biol**. **2006**. 71:195-203.
- (8) **Mishima Y**#, **Giraldez AJ**#, Takeda Y, Fujiwara T, Sakamoto H, Schier AF and Inoue K. Differential regulation of germline mRNAs in soma and germ cells by zebrafish miR-430. **Curr Biol**, **2006**. Nov 7;16(21):2135-42.
- (9) **Giraldez AJ**†, Mishima Y, Rihel J, Grocock R, van Dongen S, Inoue, K, Enright A, and Schier AF†. Zebrafish miR-430 promotes deadenylation and clearance of maternal mRNAs. **Science**. **2006** Apr 7;312(5770):75-9.
- (10) **Giraldez AJ**†, Cinalli RM, Glasner ME, Enright A, Thomson JM, Baskerville S, Hammond SM, Bartel D, and Schier AF†. MicroRNAs regulate brain morphogenesis in zebrafish. **Science**. **2005** May 6;308(5723):833-8.

† Corresponding authors.

Equal contribution

D. Research Support

Ongoing Research Support

R01 GM081602-05

7/2007-6/2012

NIH

Role: (P.I. Giraldez)

Title: "The Role of microRNAs in Vertebrate Development"

This project aims to understand the role of microRNAs in the regulation of gene expression during germ line specification and gastrulation in zebrafish.

OVERLAP: none

Pew Scholars in the Biomedical Sciences. 7/1/08-6/30/2012

Pew Charitable Trusts

Role: (P.I. Giraldez)

Title: The role of microRNAs in vertebrate development.

This project aims to understand the role of microRNAs in early vertebrate development from small RNAs discovery to target identification with emphasis in gastrulation and early neural development.

OVERLAP: none

MDA115608

1/1/09-12/31/11

Muscular Dystrophy Association

Role: (P.I., Giraldez)

Title: The role of microRNAs in muscle development and muscular dystrophy.

This project aims to uncover the gene regulatory network modulated by microRNAs in muscle development and their connection with muscular dystrophy.

OVERLAP: none

RC2 NIH Grant

9/1/09-8/30/2011

Role: Co-PI (PI Mathew State)

Title: Rapid analysis of rare ASD-related mutations using a Zebrafish model system.

This project aims to generate mutant zebrafish in candidate genes for Autism and to validate the isoforms identified in human patients in the zebrafish model system to characterize their level of activity.

Completed Research Support

None