

Alejandro Valdivieso Muñoz

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Google: <https://scholar.google.com/citations?user=REkiwt8AAAAJ&hl=es>

Education:

- Doctoral Degree in Genetics, University of Barcelona (2015–2020)
- Master Degree in Genetic and Genomics, University of Barcelona (2013–2014)
- Biology Degree, University of Girona (2003–2009)

Professional experience

Institute: Consejo Superior de Investigaciones Científicas (CSIC) - Institut de Ciències del Mar (ICM-CSIC) (www.icm.csic.es)

Type of contract: Higher Degree in Technical and Professional Activities associate to PERFORMFISH European project: (<http://performfish.eu/>)
(12/01/2019 – 12/31/2020)

To improve the predictability, quality and sustainability of the rearing phase of seabream (*Sparus aurata*) and seabass (*Dicentrarchus labrax*) by exploiting existing technical and biological knowledge. The functions to be carried out consist of processing sea bass larvae, muscle and gonads samples to extract DNA / RNA. Perform the techniques of Reduced Representation Bisulfite sequencing (RRBS), Multiplex Bisulfite Sequencing (MBS) and RNA-sequencing for studies of temperature effects during the development of seabass at 14C, 17C and 20C. To study the levels of methylation and expression through bioinformatics programs. Analysis of the data paying special attention to the promoter regions of genes and search for binding sites of transcription factors affected by methylation.

Type of contract: Pre-doctoral Scholarship
Training of Research Personnel (FPI).
Number BES-2014-069051 associated with project AGL2013-41047-R (EPIFARM).
(10/01/2015 – 8/31/2019)

The doctoral thesis had the general objective of understanding the effects of environmental conditions on the phenotype of fish, specifically the sexual phenotype and control of sex ratios. For this, the zebrafish (*Danio rerio*) was used as a model. The laboratory strains of this animal have a polygenic type sex determination system, therefore, comparable with the sex determination system of some important species for aquaculture such as seabass (*Dicentrarchus labrax*) and hence its suitability as a model. The title of the thesis is: “Environmental effects during gonadal development in fish: role of epigenetics” defended in University of Barcelona. From this thesis 4 papers have been published in international journals.

During thesis program I did a research stay in University of Oregon (Oregon, USA) for 6 months to consolidate my bioinformatic knowledge and working with different strains of zebrafish at the lab of Professor John Postlethwait.

Type of contract: Higher Degree in Technical and Professional Activities
(03/01/2015 – 06/31/2015)

To study epigenetic regulation of gene expression in cultured fish and effects of conditions on the methylome and transcriptome of the fish: 1) Experiments with animals subjected to stress conditions during the gonadal differentiation process that involved the daily maintenance of several tanks (control of water quality, food, etc.) 2) Collection of biometric data and sex proportions. 3) Sampling for histological studies and for molecular analysis. 4) Study of the DNA methylation of the gonads by Multiplex Bisulfite sequencing technique (MBS) at level of methylation of 40 promoters. 5) Epigenetic regulation studies using microRNAs. 6) Transcriptional analysis using molecular real-time PCR and RNA-seq techniques.

Research courses:

- R course: An introduction to R with applications to Biology
- Course of Epigenetics in Biology of Reproduction
- Microscopy and Image Analysis Course
- Training Course for Research Staff Using Experimental Animals

Published articles:

1) – “*Appropriate rearing density in domesticated zebrafish to avoid masculinization: links with the stress response*”.

Doi: 10.1242/jeb.144980

Authors: L. Ribas, **A. Valdivieso**, N. Díaz, F. Piferrer.

Year: 2017

Journal of Experimental Biology 220 (6), 1056-1064

2) – “*Response to “The importance of controlling genetic variation – remarks on ‘Appropriate rearing density in domesticated zebrafish to avoid masculinization: links with the stress response’*”

Doi:10.1242/jeb.167437

Authors: L. Ribas, **A. Valdivieso**, N. Díaz, F. Piferrer.

Year: 2017

Journal of Experimental Biology 220 (6), 4079-4080

3) – “*Ovarian transcriptomic signatures of zebrafish females resistant to different environmental perturbations.*”

Doi:10.1002/jez.b.22848

Authors: **A. Valdivieso**, L. Ribas, F. Piferrer

Year: 2019

Journal of Experimental Zoology Part B: Molecular and Developmental Evolution

4) – *“The model of the conserved epigenetic regulation of sex”*.

Doi: 0.3389/fgene.2019.00857

Authors: F. Piferrer, D. Anastasiadi, **A. Valdivieso**, N. Sánchez, J. Moraleda and L. Ribas

Year: 2019

Journal: *Frontiers in Genetics*

5) – *“Exposure of zebrafish to elevated temperature induces sex ratio shifts and alterations in the testicular epigenome of unexposed offspring”*

Doi: 10.1016/j.envres.2020.109601

Authors: **A. Valdivieso**, L. Ribas, A. Monleón-Getino, L. Orbán, F. Piferrer.

Journal: *Environmental Research*, 109601

6) – *“Epigenetic differences in the innate response after immune stimulation during zebrafish sex differentiation”*.

Doi: 10.1016/j.dci.2020.103848.

Authors: J. Moraleda-Pradosa, M. Caballero Huertas, **A. Valdivieso**, S. Joly, J. Jic, N. Roher, L. Ribas.

Year: 2020

Journal: *Developmental & Comparative Immunology*, (114) 103848