1. Institution

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2. Principal investigator and contact person

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3. Key personnel

Franck BONTEMS	franck.bontems@zoo.unige.ch	Embryology, biochemistry
Jacqueline LYAUTEY	lyautey@zoo.unige.ch	Genomics, imaging
Andre SOLARO	andre.solaro@zoo.unige.ch	Genomics, genetics
Sabrina, MEHENNI	sabrina.mehenni@zoo.unige.ch	Genomics, genetics

4. Research profile

Our goal is to identify and molecularly characterize genes controlling oogenesis in vertebrates using the zebrafish, *Danio rerio*, as a model organism. The zebrafish combines a number of suitable properties for studies on molecular-genetic reproduction, which we exploited to isolate several mutations in key regulators. Our current research focuses on two processes and their control genes: The first group of genes regulates the formation of germ plasm in the oocyte controlling the fertility of the next generation. The second group of genes is required for endocytosis of yolk proteins during vitellogenesis of the oocyte providing the nutrition for the developing embryo. Together these genes form an entry point to molecularly analyze the cellular mechanisms occurring during zebrafish oogenesis. The long-term aim of our research is to apply our knowledge about zebrafish oogenesis to mammals and in particular humans, to study the implication of the homologous genes in defects of fertility and development.

5. Key technologies and tools

Classical and molecular genetics – Genomics – Bioinformatics – Expression analysis (mRNA whole-mount *in situ* hybridization, real-time PCR) – Oocyte and embryo microinjection – Oocyte culture – Immunhistochemistry

6. Selected publications (max. 5)

Hogg, R. C., Bandelier, F., Benoit, A., Dosch, R. and Bertrand, D. An automated system for intracellular and intranuclear injection. J Neurosci Methods. 2008; 169: 65-75

Panzer, J. A., Gibbs, S. M., Dosch, R., Wagner, D., Mullins, M. C., Granato, M. and Balice-Gordon, R. J. Neuromuscular synaptogenesis in wild-type and mutant zebrafish. Dev Biol 2005; 285: 340-57

Dosch, R., Wagner D. S., Mintzer, K. A., Runke, G., Wiemelt, A. P. and Mullins M. C. Maternal Control of Vertebrate Development before the Midblastula Transition: Mutants from the Zebrafish I. Dev Cell 2004; 6: 771-780

Wagner, D. S., Dosch, R., Mintzer, K. A., Wiemelt, A. P. and Mullins, M. C. Maternal Control of Vertebrate Development at the Midblastula Transition and Beyond: Mutants from the Zebrafish II. Dev Cell 2004; 6: 781-790

Farber, S., Pack, M., Ho, S.-H., Johnson, I., Wagner, D., Dosch, R., Mullins, M., Hendrickson, S., Hendrickson, E., and Halpern, M. Genetic Analysis of Digestive Physiology Using Fluorescent Phospholipid Reporters. Science 2001; 292: 1385-8