

1. Institution

Profesor Titular, Genetics Unit, Faculty of Medicine, University of Barcelona, and Consultor, Biochemistry and Molecular Genetics Service, Hospital Clinic, C/ Casanova 143, 08036 Barcelona, Spain.

E-mail: roliva@ub.edu

<http://www.ub.edu/humangen>

2. Principal investigator and contact person

Rafael Oliva (roliva@ub.edu)

3. Key personnel

NAME	EMAIL	RESEARCH AREA DETAILS
Josep Oriola	joriola@clinic.ub.es	Mutational studies and sequencing of genes
Josep Lluís Ballescà	jllballesca@gmail.com	Clinical andrologist
Sara de Mateo	sarademateo@ub.edu	Proteomic characterization of the spermatozoon
Meritxell Jodar	m.jodar.bifet@gmail.com	RNA in sperm cells. Mutational studies

4. Research profile

We have recently contributed to characterize the normal human sperm overall proteome, of relevance for subsequent basic research, and identified several proteomic anomalies present in infertile patients, demonstrating the potential diagnostic application of the proteomic analysis of human spermatozoa. We are presently focussing in the proteomic characterization of the sperm cell nuclei, the presence of protamine alterations in infertile patients and the potential epigenetic impact on the embryo. Additionally our research group is also interested in the identification of gene mutations and polymorphisms related to male infertility. As part of our proteomic projects we have found that the sperm cell also contains transcription factors and many potentially chromatin interacting proteins, in addition to histones and protamines. We are presently interested in further characterizing the potential function of these proteins and specifically its potential epigenetic impact in the early embryo.

5. Key technologies and tools

Our group has contributed to the characterization of the changes in protein composition in spermatogenesis through the application of cell separation methodologies conventional and two-dimensional gel electrophoresis, and sequencing of genes and proteins. Our team is also presently involved in mutational studies, and more recently in the characterization of alterations of the integrity of the germ line in infertile patients.

6. Selected publications (max. 5)

de Mateo S, Gázquez C, Guimerà M, Balasch J, Meistrich ML, Ballescà JL, Oliva R (2008) Protamine 2 precursors (pre-P2), protamine 1 to protamine 2 ratio (P1/P2), and assisted reproduction outcome. *Fertility and Sterility*, Mar 1, PMID: 18314125

Gázquez C, Oriola J, de Mateo S, Vidal-Taboada JM, Ballescà JL and Oliva R (2008) A common protamine 1 promoter polymorphism (-190 C to A) correlates with abnormal sperm morphology and increased protamine p1/p2 ratio in infertile patients. *J Androl*, 29:540-8.

de Mateo S, Martínez-Heredia J, Estanyol JM, Domínguez-Fandos D, Vidal-Taboada JM, Ballescà JL and Oliva R (2007) Marked correlations in protein expression identified by proteomic analysis of human spermatozoa. *Proteomics* 2007;7:4264-77.

Oliva R (2006) Protamines and male infertility. *Hum Reprod Update*. 12(4):417-435.

Oliva, R. and Dixon, G.H. (1991) Protamine genes and the histone to protamine replacement reaction. *Progress in Nucleic Acids Research and Molecular Biology* 40, 25-94.