

CURRICULUM VITAE ABREVIADO (CVA)

IMPORTANT – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.

Part A. PERSONAL INFORMATION

First name	ROSA		
Family name	ROY BARCELONA		
Gender (*)	Female	Birth date (dd/mm/yyyy)	
Social Security, Passport, ID number			
e-mail	rosa.roy@uam.es	URL Web https://www.researchgate.net/profile/Rosa_Roy https://portalcientifico.uam.es/ipublic/agent-personal/profile/iMarinaID/04-261336	
Open Researcher and Contributor ID (ORCID) (*)		0000-0003-0729-3849	

(*) Mandatory

A.1. Current position

Position	PROFESORA TITULAR GENÉTICA Coordinator of the Master in Genetics and Cell Biology		
Initial date	4/08/2011		
Institution	Universidad Autónoma de Madrid (UAM)		
Department/Center	Science	Biology	
Country	Spain	Teleph. number	9149726026
Key words	DNA damage, oxidative stress, sperm, protaminas, exosomes, -omics, Maedi-Visna		

A.2. Previous positions (research activity interruptions, indicate total months)

Period	
1997-1998	Collaboration Grant. University of Zaragoza.
1998-2002	Predoctoral Grant. University of Zaragoza.
2002-2003	Postdoctoral. INRA. Institute National de la Recherche Agronomique (France 14 months posdoct. + 1 year pre-doc, en total 26 months)
2003- 2005	Postdoctoral. CNB. National Center for Biotechnology (18 months)
April-Nov 2005	Postdoctoral. CNIC. National Center for Cardiovascular Research. (8 months)
2005-2008	Professor Assistant Doctor. Autonomous University of Madrid.
2007	Maternity. 5 months
2008-2011	Professor Doctor. Autonomous University of Madrid
2009	Maternity. 5 months
2011-Currently	Associate Professor of Genetics. Autonomous University of Madrid.
2022-2023	Requalification stay at the University of Zaragoza (12 months)

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Graduate in Veterinary	University of Zaragoza /Spain	1998
Graduate in Biochemistry	University of Zaragoza/ Spain	2002
PhD	University	Year
Veterinary	University of Zaragoza	2002

Part B. CV SUMMARY (max. 5000 characters, including spaces)

I have published more than 50 articles in indexed journals, with an average impact factor of 5.7, with more than 1800 citations. H=23 (<https://www.researchgate.net/profile/Rosa-Roy>). **In the last 5 years I have had around 1000 citations and in the 2025 year I have had around 70 citations** (scholar.google.es/citations)

I have participated in 19 research projects, in **six** of them, I have been the principal researcher. The main results obtained have been presented in more than 40 congress; **4 research “sexenios” (last in 2022); 3 teaching “quinquenios” (Last in 2020)**. I have supervised 3 **Doctoral Theses**. (<https://portalcientifico.uam.es/es/ipublic/researcher/261336>)

My research work began in 1998 with a collaboration grant in last year of Veterinary degree, and it has been mainly developed in three different lines. All of them can be included in the area of **Structural and Functional Genomics**.

Line 1: **Structural and functional analysis of genes related to animal production** (1998-2003).

Relevant activities within the line: The results produced in this line, have been published in **12 International articles**. The Coris Prize was obtained in the year 2004. A Degree Thesis and a Doctoral Thesis was presented in the University of Zaragoza (2002). Several grants have been obtained: a collaboration grant, a predoctoral grant (FPU) and several aids for stays in other international research centres. I was granted with two stays of 6 months during the pre-doctoral period in the INRAe (Laboratoire de Cytogénétique et Génétique Biochimique) in France and for one year in the postdoctoral period.

Line 2: **Regulation of gene expression. Functional genomic by means of transgenic animals and cellular lines** (2003-2008).

Relevant activities within the line: In CNB (*National Center for Biotechnology*), by means of sequence analysis we have studied both at the structural (chromatin, methylation, binding factors) and functional level the 5' and 3' flanking sequences of the WAP locus, as well as a SINE of the GH locus. We have been able to do studies of genetic transference and to evaluate their function in cellular cultures and transgenic animals. The characterization of these expression domains has contributed to clarify which were their regulating elements and their relevance in the control of gene expression. Results under this line were published in several articles, one of them was published in **Science**. Also I have participated in two National projects. I presented the results in three international meetings.

In CNIC (*National Center for Cardiovascular Research*), I worked about COX-2 and CAV-1 human genes in mice models, the results have been published in *three articles*, two of them in *Hepatology*.

Line 3: **Development of new genetic markers related to the fertility in seminal samples and oocytes**. (2009-Present)

Since I obtained a position as Associate Professor of Genetics in the Department of Biology at the Autonomous University of Madrid in 2011, I have been leading my own lines of research related to human and animal fertility issues in the REDA group (reproduction and damage), a consolidated group. In the last years we have worked in developing new fertility markers focused in **extracellular vesicles** (Exosomes) from seminal plasma. We have fine-tuning in our group of different methodology for the isolation of exosomes: ultracentrifugation, exclusion chromatography and different commercial kits. The group's experience in this technology was reinforced with the visit by Anaís García Rodríguez to the laboratory directed by Dr. Jan Lötvald (University of Gothenburg, Sweden), the first president of ISEV, as well as with the collaboration with Dr. Héctor Peinado (CNIO), both international experts in this field. During 2022, I have been in University of Zaragoza with a “recualification grant” for EV isolating from mesenchymal cell culture and use them as a treatment. In this new line I have achieved five projects as a IP and 3 Doctoral Theses:

- Anaís García Rodríguez "ANALYSIS OF NEW MARKERS OF MALE INFERTILITY" 2014-2018. Presented in **2018**. Sobresaliente “*cum laude*”
- Clara González Marín "Development of a methodology that improves sex-sorted bovine sperm integrity and fertility" 2015-2020. Presented in **2020**. Sobresaliente “*cum laude*”
- Alejandro Baratas. Búsqueda de marcadores en las células de la granulosa como indicadores de fertilidad del ovocito. Presented in **2024**. Sobresaliente “*cum laude*”
- Victoria Pérez Quiroga. **Doctorado industrial CAM. 2025-2028**

Since 2011, I am Professor at Biology Department in Autonomous University of Madrid. During this last period I have developed important teaching activities in four different subjects in Biology Degree. I have supervised final projects in Biology Degree (23), Master's degree (8). Some of these works have been published or presented at conferences. 2 students have obtained

competitive grants to carry out their thesis and in the 2021 call, one student has obtained a collaboration grant. We also obtained a pre-doctoral grant from the CAM in 2017.

Also I have go on with my formation in the use of different software for the massive analysis of sequence and expression data. I have coordinated 3 teaching innovation projects. I have carried out a teacher change project and I am participating in a program organized by the UAM to obtain the Expert Title in University Teaching Mentoring (TEMU). I have also generated practical materials for teaching Molecular Genetics based on problems. As well as laboratory practices based on the use of CRISPR tools.

Currently, I am the coordinator of the interuniversity Master's Degree in Genetics and Cellular Biology and I have held other academic management positions.

Part C. RELEVANT MERITS (*sorted by typology*)

C.1. Publications

Escalona M, **Roy R**. Evolutionary Restructuring and systematic review of the NBPF Gene Family: Comparative Genomics, Functional Divergence, and Disease-Linked Pathways. J of Developmental Biology. 2025 (accepted). **2/2**

Roy R, Lorca C, Mulet M, Sánchez Milán JA, Baratas A, de la Casa M, Espinet C, Serra A and Gallart-Palau X. Altered ureido protein modifications profiles in seminal plasma extracellular vesicles of non-normozoospermic men. Front Endocrinol (Lausanne). 2023 Mar 22;14:1113824. doi: 10.3389/fendo.2023.1113824. **1/9**

Baratas A, Gosálvez J, De la Casa M, Camacho S, Dorado M, Johnston S, **Roy R**. Cumulus Cell DNA Damage as an Index of Human Oocyte Competence. Reproductive Sciences. 2022. 29 (11), 3194-3200. **7/7 DOI**

Roy R. Impact of polymorphism in DNA repair genes OGG1 and XRCC1 on seminal parameters and human male infertility: Response to rebuttal. Andrologia. 2021.53(1):e13648. **DOI**

Blanco E, Vázquez L, del Pozo M, **Roy R**, Petit-Domínguez M, Quintana C, Casero E. Electrochemical evaluation of oxidative stress: Nanoparticles based electrochemical sensors development for hydrogen peroxide determination in human semen samples. Bioelectrochemistry. 2020. Feb;135:107581. **4/7 DOI**

García-Rodríguez A, de la Casa M, Johnston S, Gosálvez J, **Roy R** Association of polymorphisms in genes coding for antioxidant enzymes and human male infertility. Ann Hum Genet. 2019 83(1):63-72. **5/5 DOI**

Johnston SD, López-Fernández C, Arroyo F, **Roy R**, Holt WV, Gosálvez J. Protamine composition of koala and wombat spermatozoa provides new insights into DNA stability following cryopreservation. Reprod Fertil Dev. 2019. 31(10): 1558-1566. **4/6 DOI**

García-Rodríguez A, Gosálvez J, Agarwal A, **Roy R***, Johnston S*. DNA Damage and Repair in Human Reproductive Cells. Int J Mol Sci. 2018 21;20(1):31. **4/5**. *Corresponding. **DOI**:

García-Rodríguez A, de la Casa M, Gosálvez J, **Roy R**. CAT-262CT Genotype shows higher catalase activity in seminal plasma and lower risk of male infertility. Meta Gene Volume 18, December 2018, 16-22. **4/4 DOI**

García-Rodríguez A, de la Casa M, Serrano M, Gosálvez J, **Roy Barcelona R**. Impact of polymorphism in DNA repair genes OGG1 and XRCC1 on seminal parameters and human male infertility. Andrologia. 2018 Jul 25:e13115. **5/5 DOI**

García-Rodríguez A, de la Casa M, Peinado H, Gosálvez J, **Roy R**. Human protasomes from normozoospermic and non-normozoospermic men show a differential protein expression pattern. Andrology. 2018 Jul;6(4):585-596. **5/5 DOI**

García-Rodríguez A, **Roy R**. Human protamine genes' polymorphisms as a possible cause underlying male infertility. Reproductomics: The –Omics Revolution and its Impact on Human Reproductive Medicine. 2018 Book Elsevier. ISBN-10: 0128125713. **2/2**

Barrachina L, Remacha AR, Romero A, Vázquez FJ, Albareda J, Prades M, Gosálvez J, **Roy R**, Zaragoza P, Martín-Burriel I, Rodellar C. Priming Equine Bone Marrow-Derived Mesenchymal Stem Cells with Proinflammatory Cytokines: Implications in Immunomodulation-Immunogenicity Balance, Cell Viability, and Differentiation Potential. Stem Cells Dev. 2017 Jan 1;26(1):15-24. **8/11 DOI**

Johnston SD, López-Fernández C, Arroyo F, Fardell S, **Roy R**, Gosálvez J. Spermatozoa of Sminthopsis murina (Mammalia: Metatheria) exhibit an unusually high degree of chromatin stability in the absence of disulphide bonding in protamine 1. Reprod Fertil Dev. 2015. **5/6 DOI**

González-Marín C, Gosálvez J, **Roy R**. Types, causes, detection and repair of DNA fragmentation in animal and human sperm cells. Int J Mol Sci. 2012; 31;13(11):14026-52. **3/3 DOI**

Karoui S, Díaz C, González-Marín C, Amenabar ME, Serrano M, Ugarte E, Gosálvez J, López-Fernández C, **Roy R**, Carabaño MJ. Is sperm DNA fragmentation a good marker for field AI bull fertility? J Anim Sci. 2012;90(8):2437-49. [9/10 DOI](#)

González-Marín C, **Roy R**, López-Fernández C, Díez B, Carabaño MJ, Fernández JL, Kjelland ME, Moreno JF, Gosálvez J. Bacteria in bovine semen can increase sperm DNA fragmentation rates: a kinetic experimental approach. J Anim Reprod Sci. 2011;123(3-4):139-48. [2/9 DOI](#)

C.2. Congress

I have presented more than 40 communications. The last ones are:

- BARATAS A, BRIEGA I, AQUILINO M, SÁNCHEZ I, DE LA CASA M, PLANELLO R, ROY R. **Analysis of the expression of angiopoietins 1 (angpt1) and 2 (angpt2) in granulosa cells from patients and donors as indicators of oocyte quality**. POSTER. 44 CONGRESO DE LA SEBBM. MÁLAGA 2022.
- BARATAS A, SERRANO M, AGUIRRE D, RAMOS R, **ROY R**. **Comparison of bioinformatics tools through the galaxy platform**. 43 CONGRESO DE LA SEBBM. MADRID 2021.
- BARATAS A, GARCÍA-RODRÍGUEZ A, GÓMEZ S, ARRANZ M, SERRANO M & **ROY R**. **Analysis of dna content in prostasomes from normozoospermic and non-normozoospermic men**. CONGRESO: 5TH GIVEX, CONGRESO INTERNACIONAL DE VESÍCULAS. POSTER y ORAL COMUNICATION. GRANADA 2019.
- A. GARCÍA RODRÍGUEZ, M. DE LA CASA, M. PACHECO, J. GOSÁLVEZ, H. PEINADO, D. OLMOS, **R.ROY**. **Caracterización de la carga de prostasomas presente en el plasma seminal de muestras normozoospermicas vs patológicas**. ASEBIR. ORAL COMUNICATION. MADRID 2017
- GARCIA-RODRÍGUEZ A, DE LA CASA M, GOSALVÉZ J & **ROY R**. **El snp cat c-262t está asociado con la infertilidad masculina**. ORAL COMUNICATION. CONGRESO DE LA SOCIEDAD ESPAÑOLA DE FERTILIDAD (SEF). MÁLAGA 2016.
- GARCIA-RODRÍGUEZ A, DE LA CASA M, GOSALVÉZ J & **ROY R**. **xrcc1 polymorphism arg399gln is associated with male infertility**. POSTER. CONGRESO: 32TH EUROPEAN SOCIETY OF HUMAN REPRODUCTION AND EMBRIOLOGY. HELSINKI JULY 2016
- SÁNCHEZ-ESPADA AI, SERRANO M, MARTIN B, ARROYO F, GONZÁLEZ C, GOSÁLVEZ J, Y **ROY R**. **Estudio de los niveles de protamina1 y fragmentación del dna en esperma de morueco extraído en primavera y verano**. ORAL COMUNICATION. CONGRESO DE PRODUCCIÓN ANIMAL. ITEA. ZARAGOZA 2015.
- GONZÁLEZ-MARÍN C, **ROY R**, LÓPEZ-FERNÁNDEZ C, FERNÁNDEZ JL, KJELLAND ME, MORENO JF, GOSÁLVEZ J. **Quinolones abolish bacterial presence in holstein bull sperm samples and indirectly modulate the kinetics of sperm dna damage**. POSTER. CONGRESO: 44th Annual Meeting of the Society for the Study of Reproduction. PORTLAND. 2013.

C.3. Research projects, indicating your personal contribution. In the case of young researchers, indicate lines of research for which they have been responsible.

1. PID2022-136444OB-C31 Diagnosis of Maedi-Visna virus in sheep and detection of its presence in exosomes by Nanopore sequencing. Duration: 2022-2025. **Co-IP: Rosa Roy**
2. Validation of proteins related to seminal quality present in prostasomes isolated from human seminal plasma. Finance source: Biology Department (UAM). Duration: 2021-2022 IP: **Rosa Roy**.
3. Project REACT. Platforms and preclinical models for the multidisciplinary approach in COVID-19 and in response to future pandemics. Finance source: Comunidad de Madrid: 2021-2022 Project CBM+UAM. Our part is to study how covid-19 affects fertility. IP: **Rosa Roy**.
4. Searching for molecular markers in granulosa cells associated with the fertility potential of oocytes. Finance source: Banco Santander. Duration, 2015-2016. IP: **Rosa Roy**.
5. Development of new biomarkers to analyze the origin of DNA damage sperm. Finance source: MINECO. Duration: 2014- 2018. IP: Jaime Gosálvez.
6. Development of new indicator of quality seminal: expression protamine levels and DNA fragmentation speed in ovine spermatozoa. Finance source: Universidad Autónoma de Madrid (UAM). Duration: 2011-2012 IP: **Rosa Roy**.
7. Iatrogenic damage in mammals sperm samples. Finance source: MCYT. Duration: 2010- 2013 IP: Jaime Gosálvez.
8. DNA fragmentation analysis and mRNA in spermatozoa like fertility potential indicators from sperm samples. Finance source: UAM. Duration: 2009-2010 IP: **Rosa Roy**.

C.4. Contracts, technological or transfer merits

We are currently trying to get financing through companies and investors participating in an entrepreneurship program (UAM-Emprende), trying to improve and validate an electrochemical sensor (X-perm) that we have developed together with researchers from the Analytical Chemistry Department to measure oxidative stress levels in seminal samples. We are studying the intellectual protection of the naosensor: <https://view.genial.ly/60a21c5d8300ea0d4ba5463f/presentation-animal-short-x-perm-presentation>

- We have submitted to GenBank more than 100 nucleotide sequences of different genes.
- We have established the proteome of fertile and infertile man exosomes.