

CURRICULUM VITAE (CVA – 4 pages max)

CV date	01/09/2024
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Part A. PERSONAL INFORMATION



First name	Dimitrios		
Family name	Rizos		
Gender (*)	Male	Birth date	15/03/1968
ID number	55529187B		
e-mail	drizos@inia.es	www.inia.es	
Open Research and Contributor ID (*): ORCID	0000-0001-6813-3940		
	Researcher ID (Wos)	E-7058-2012	
	Author ID (SCOPUS)	55946184900	

(*) Mandatory

A.1. Current position

Position	Professor of Research / Senior Researcher		
Initial date	16/11/2006 Científico Titular - 06/08/2018 Investigador Científico - 15/02/2021 Profesor de Investigación		
Institution	National Institute for Agriculture and Food Research and Technology (INIA-CSIC)		
Department/Center	Animal Reproduction / CSIC-INIA		
Country	Spain	Teleph. number	913474045
Key words	Assisted Reproductive Technologies; Preimplantation Embryology; Embryo-Maternal Communication; Reproductive Biotechnology; Fertility in Dairy Cattle		

A.2. Previous positions (research activity interruptions, art. 45.2.c)

Period	Position/Institution/Country/Interruption cause
09/2004 - 11/2006	Researcher Ramón y Cajal , Department of Animal Reproduction, INIA, Madrid, Spain
01/2002 - 08/2004	Embryologist/Andrologist , Merrion Fertility Clinic, National Maternity Hospital, Dublin, Ireland
05/2002 - 08/2004	Post-Doctoral Fellow , Department of Animal Reproduction, School of Agriculture and Food Science, UCD, Ireland
10/1999 - 04/2002	Pre-Doctoral Fellow - PhD Student , Department of Animal Reproduction, School of Agriculture and Food Science, UCD, Ireland
01/1992 - 12/1998	Research Assistant , Department of Animal Production, Faculty of Agriculture, Aristotle University of Thessalonika, Greece
03/1991 - 11/1991	Scholar U.E - COMETT , Department of Animal Reproduction, School of Agriculture and Food Science, UCD, Ireland

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Bachelor in Animal Production Technology	Technological Education Institute of Western Macedonia, Greece	1990
Bachelor in Agriculture - Animal Production	Aristotle University of Thessaloniki, Greece	1997
PhD in Animal Reproduction	University College Dublin, Ireland	2002

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

My Main research lines are: Analyze early embryonic development in vivo and in vitro in mammals, from the day of conception until the start of the implantation; understand the genetic and epigenetic mechanisms that controls the preimplantation embryo development; determine the factors that affect the production of embryos in vitro and their quality (morphology, transcriptome etc); understand the mechanisms that control embryo-maternal interactions; and study factors responsible for infertility in dairy cows. I am the director of the department of Animal Reproduction since January 2023. **I am responsible for the laboratory "Preimplantation embryology"** (since 2006) and head of the "Assisted Reproduction and Preimplantation Embryology in Bovine" research group in the Dept. of

Animal Reproduction, CSIC-INIA. **My research provided new insights** essential to solve important problems related to infertility and embryo loss, which are the main problems in the dairy industry. In addition, **our results represent a technological improvement in reproductive biotechnology** that allows the generation of better quality embryos in vitro, capable of establishing a pregnancy after transfer to a recipient without short- or long-term anomalies, such as the well-known large offspring syndrome. Moreover, **we are pioneers** in evaluating the effect of reproductive fluids and their Extracellular Vesicles (EVs) on the development and quality of bovine embryos produced in vitro.

Key contributions and achievements in the generation of knowledge: My research activities are collected in **12 national** and **18 international** research projects collaborations, **2 European actions** in the area of biotechnology and **2 European project** in the area of "Innovative Training Network", being the principal investigator in 8 of them with a total amount of around **8.000.000 €**. I have published **128 scientific articles** in high indexed journals (Q1>75%), **8 dissemination** articles, **10 book chapters** and **>170 short communications** to international conferences. *See representative examples in section C1-2.* My scientific knowledge has been awarded with **4 “sexenios”** (2000-2005; 2006-2011; 2012-2017; 2018-2023) and **4 “quinquenios”** (2000-2004; 2005-2009; 2010-2014 ;2015-2019), while my **h index** is **63**-Google scholar / **52**-web of science / **53**-scopus.

Key achievements in the development of individuals: **Teaching experience in Pre- and post-graduate courses** on “*Reproductive Physiology & Assisted Reproductive Technologies*” at: University College Dublin, University of Murcia, University Complutense of Madrid, Polytechnic University of Valencia, University Autònoma of Barcelona. **Honorific professor** at the Veterinary Faculty, University Complutense of Madrid. **Invited Professor in specific courses** on “*Reproductive Biotechnologies*” at: University of Córdoba; University of Leon; University of Sao Paolo; University of Bonn; Universidad Peruana Cayetano Heredia; University of Buenos Aires; Universidad Nacional Mayor de San Marcos, Peru; Universidad de Concepción, Chile. I have directed **15 PhD theses** and **20 master theses**; **mentoring >70 undergraduate** students, **technicians** and **visiting scientists**. All **doctors graduated** have an outstanding scientific/professional development proven by their current leading positions at national and international Universities, Research Institutes or private companies.

Key achievements supporting the research community: **Chief Scientific Editor** of the *Spanish Journal of Agricultural Research* (SJAR); **Management Committee** COST CA16119: "In vitro 3-D total cell guidance and fitness"; Elected **President** of the European Embryo Transfer Association (AETE); Elected **Board member** of the International Embryo Transfer Society (IETS) and AETE; **Management committee** COST EPICONCEPT FA1201 "Epigenetic and periconceptual Environment"; **Scientific Program committee** of the IETS and AETE; **Member of the Evaluation of the Student Competition** for AETE and IETS; **Member of international societies** (SSR, AETE, IETS, ICAR, AERA etc); **Plenary Lectures at International Conferences** (ICAR, SBTE, AETE, IETS, IRRS, ESDAR etc); **External Examiner for PhD and Master thesis** in foreign and national universities; **Reviewer for the leading international journals** in my area, (BOR, PlosOne, RFD, Reproduction, Scientific Reports, Theriogenology, FASEB; Journal of Extracellular Vesicles etc.); **Regular invitations to chair plenary sessions and/or moderate workshops** at national and international conferences (AETE, IETS, AERA, etc.); **Regular invitations to act as referee by major national international competitive grant awarding organizations** (ANEP, Spain; Research Foundation-Flanders (FWO) & National Fund for Scientific Research (FNRS), Belgium; FONDECYT NATIONAL RESEARCH FUNDING, Chile; EUROSTARS-EURECA - Horizon 2020, EU; ERC- European grants; National Science Centre (NCN), Poland; Innovation Fund Denmark, etc); Swiss National Science Foundation (FNSNF), Switzerland.

Key Achievements Supporting Broader Society and the Economy: my Research bridge basic and applied research such as one of my major **scientific goals** is to identify the mechanisms of the interaction between the developing embryo and the maternal reproductive tract which is essential for the establishment of gestation. This knowledge will help the **development of new strategies** to improve **competitiveness, efficiency and sustainability in livestock industry**. Due to my extensive experience in “*Cattle Reproductive Biotechnologies*” I have been invited to give specific **hand-on courses** and **Workshops** for Veterinarians, technicians etc (AECID Colombia; AECID Bolivia; University ISA Dominican Republic; ARBiotech, Culiacan, Mexico; IETS, AETE, AERA). Extensive collaboration with industry in such as the pharmaceutical companies specialising in fertility products (e.g., CEVA, Divasa-Farmavic), as well as Dairy Cattle Industry (e.g.: COVAP, San Isidro SCA, Vet-Rumen S.I).

Part C. RELEVANT MERITS (sorted by typology)

C.1. Publications (see instructions)

I have published **128 scientific articles** in high indexed journals (Q1>75%; h index=63). Visit my **ORCID (0000-0001-6813-3940)** to see the complete list. *Representative examples:*

1. Mazzarella R, Cañón-Beltrán K, Cajas YN, Hamdi M, González EM, da Silveira JC, Leal CLV, Rizos D. Extracellular vesicles-coupled miRNAs from oviduct and uterus modulate signaling pathways related to lipid metabolism and bovine early embryo development. *J Anim Sci Biotechnol*. 2024 Apr 4;15(1):51. doi: 10.1186/s40104-024-01008-5.
2. Cañón-Beltrán K, Cajas YN, Almpanis V, Egido SG, Gutierrez-Adan A, González EM, Rizos D. MicroRNA-148b secreted by bovine oviductal extracellular vesicles enhance embryo quality through BPM/TGF-beta pathway. *Biol Res*. 2024 Mar 23;57(1):11. doi: 10.1186/s40659-024-00488-z.
3. Sakr OG, Gad A, Cañón-Beltrán K, Cajas YN, Prochazka R, Rizos D, Rebollar PG. Characterization and identification of extracellular vesicles-coupled miRNA profiles in seminal plasma of fertile and subfertile rabbit bucks. *Theriogenology*. 2023 Oct 1;209:76-88. doi: 10.1016/j.theriogenology.2023.06.020.
4. Leal CLV, Cañón-Beltrán K, Cajas YN, Hamdi M, Yaryes A, Millán de la Blanca MG, Beltrán-Breña P, Mazzarella R, da Silveira JC, Gutiérrez-Adán A, González EM, Rizos D. Extracellular vesicles from oviductal and uterine fluids supplementation in sequential in vitro culture improves bovine embryo quality. *J Anim Sci Biotechnol*. 2022 Oct 25;13(1):116. doi: [10.1186/s40104-022-00763-7](https://doi.org/10.1186/s40104-022-00763-7)
5. Hamdi M, Cañón-Beltrán K, Mazzarella R, Cajas YN, Leal CLV, Gutierrez-Adan A, González EM, Da Silveira JC, **Rizos D**. Characterization and profiling analysis of bovine oviduct and uterine extracellular vesicles and their miRNA cargo through the estrous cycle. *FASEB J*. 2021 Dec;35(12):e22000. doi: [10.1096/fj.202101023R](https://doi.org/10.1096/fj.202101023R)
6. Cañón-Beltrán K, Cajas YN, Pérez-Cerezales S, Leal CLV, Agirregoitia E, Gutierrez-Adán A, González EM, **Rizos D**. Nobiletin enhances the development and quality of bovine embryos in vitro during two key periods of embryonic genome activation. *Sci Rep*. 2021 Jun 3;11(1):11796. <https://doi.org/10.1038/s41598-021-91158-7>
7. Kordowitzki P, Hamdi M, Derevyanko A, **Rizos D**, Blasco M. The effect of rapamycin on bovine oocyte maturation success and metaphase telomere length maintenance. *Aging (Albany NY)*. 2020 Apr 27;12(8):7576-7584. doi: [10.18632/aging.103126](https://doi.org/10.18632/aging.103126)
8. Rodríguez-Alonso B, Sánchez JM, Hamdi M, McDonald M, Havlicek V, Besenfelder U, Lonergan P, **Rizos D**. Asynchrony between the early embryo and the reproductive tract affects subsequent embryo development in cattle. *Reprod Fertil Develop*. 2020; 32(6) 564-571. Doi: [10.1071/RD19360](https://doi.org/10.1071/RD19360)
9. Hamdi M, Sánchez Calabuig MJ, Rodríguez-Alonso B, Bagés-Arnal S, Roussi K, Sturme RGS, Gutierrez-Adan A, Lonergan P, **Rizos D**. Gene expression and metabolic response of bovine oviduct epithelial cells to the early embryo. *Reproduction*. 2019 Apr 1. pii: REP-18-0561.R2. <https://doi.org/10.1530/REP-18-0561>.
10. Rodríguez-Alonso B, Hamdi M, Sánchez JM, Maillou V, Gutierrez-Adan A, Lonergan P, **Rizos D**. An approach to studying the local embryo effect on gene expression in the bovine oviduct epithelium in vivo. *Reprod Domest Anim*. 2019 54(12):1516-1523. <https://doi.org/10.1111/rda.13558>

C.2. Congress

I have published **>170 short communications/Abstracts** to national/international conferences including: International Embryo Technology Association (IETS), Association of Embryo Technology in Europe (AETE), European Society for Domestic Animal Reproduction (ESDAR), International Congress of Animal Reproduction (ICAR), International Ruminant Reproduction Symposium (IRRS), Brazilian Embryo Technology Society (SBTE), COST-Actions, Asociacion Española de Reproduccion Animal (AERA) etc. Several have been selected for the student competition and >10 have won the 1st prize or being 2nd/3rd run-up.

I have been **invited to give plenary talks** at several international conferences. *Representative in the last 5 years are:* IETS, USA 2022; ICAR, Italy 2022; ESDAR, Greece 2022; XXIV Congresso Brasileiro de Reprodução Animal e VIII International Symposium on Animal Biology of Reproduction, Brazil 2021; EV Symposium, Estonia 2021; Congreso de Reproducción Animal (META), Mexico 2020; 3rd International Congress of Animal Reproduction, Ecuador 2019; 10th International Ruminant

Reproduction Symposium (IRRS), Brazil 2018; 6o Greek congress of technology in animal production, Greece, 2017; 2o Congreso Colombiano de Bioquímica y Biología Molecular, Medellín, Colombia, 2016; XXX Annual Meeting of the Brazilian Embryo Technology Society (SBTE), Brazil 2016; ICAR France, 2016; ICAR Italia 2022, ESDAR 2022....etc.

C.3. Research projects

I have been involved in **12 national** and **18 international** research projects collaborations, **2 European actions** in the area of biotechnology and **2 European project** in the area of "Innovative Training Network", being the principal investigator in 8 of them with a total amount of around **8.000.000 €**. Representative from the last 10 years are:

- **Title:** Advancing Fertility and Reproduction through Dedicated and Innovative Technological Applications (**AFRODITA- 101120126**)-HORIZON-MSCA-2022-DN-01-01. **PI:** Dr. Senastian Canovas (Spain) **Duration:** 2024 - 2028 / **Value:** 4.5 mil € / **Role:** Main Scientific Partner.
- **Title:** "Application of Reproduction Biotechnologies to increase the efficiency of dairy and meat bovine farms" **TED2021-129764B-I00** - Spanish Minister of Science and Innovation **PI: Dimitrios Rizos** (INIA-CSIC); **Duration:** 2022-2024 / **Value:** 220.000 €.
- **Title:** "Aplicación de la biotecnología de la reproducción en el ganado vacuno extensivo de la Comunidad de Madrid y su impacto en la transición ecológica y el ámbito rural" **IND2022/BIO-23547**- Comunidad de Madrid-Doctorados Industriales **PI: Dimitrios Rizos** (INIA-CSIC); **Duration:** 2022-2025 / **Value:** 90.000 €.
- **Title:** "EXtracellular vesicles: mOdulatorS of Embryo-Maternal interactionS and fertility in cattle (EXOSOMES)" **PID2019-111641RB-I00** - Spanish Minister of Science and Innovation **PI: Dimitrios Rizos** (INIA); **Duration:** 2020-2024 / **Value:** 226.270 €+ 80.000 € (PhD Scholarship).
- **Title:** **CA 16119** - In vitro 3-D total cell guidance and fitness - European Cooperation in Science and Technology - **PI:** Dr. Tiziana Brevini (Italy); **Duration:** 2017-2021 / **Value:** 700.000 € / **Role:** Scientific Colaborator; Deputy official representative of Spain; Working Group 3 Co-Leader.
- **Title:** "EMBRYO-maternal interaction: Fundamental balance for Reproductive success In cattle-EMBRYOFERTIL" **AGL2015-70140-R/GAN** - Spanish Minister of Economy and competitiveness - **PI: Dimitrios Rizos** (INIA); **Duration:** 2016-2020 / **Value:** 212.960 €
- **Title:** "Embryo-maternal communication in the bovine oviduct: crucial for successful embryo development." **TAD/CRP – JA00092482** - OECD Co-operative Research Program **PI: Dimitrios Rizos** (INIA); **Duration:** 2017 / **Value:** 8.865 €
- **Title:** "European Joint Doctorate in Biology and Technology of Reproductive Health" **675526-REP-BIOTECH** - The EU Framework Programme for Research and Innovation - **PI:** Dr. Pilar Coy, UM; **Duration:** 2015-2019 / **Value:** 3.700.000 € / **Role:** Scientific Colaborator.
- **Title:** "Improving fertility and new reproductive techniques in two indigenous cattle breeds in extensive farming systems" **MAGRAMA 20140020001859** - Spanish Ministry of Agriculture food and Environment, Vacuno Avileno de Calidad SCA, Ganaderos de Morucha S.Coop - **PI:** Clara Diez (INIA); **Duration:** 2014-2016 / **Value:** 100.000 € / **Role:** Scientific Colaborator.
- **Title:** **Cost Action FA10296: "EPICONCEPT"** Periconception environment as an epigenomic lever for optimising food production and health in livestock - European Cooperation in Science and Technology - **PI:** Dr. Ann Van Soom (Belgium); **Duration:** 2013-2016 / **Value:** 650.000 € / **Role:** Scientific Colaborator; Deputy official represent Spain.
- **Title:** "Oviduct-embryo interactions in cattle: a central role in the establishment of pregnancy" **AGL2012-37510/GAN** - Spanish Minister of Economy and competitiveness - **PI: Dimitrios Rizos** (INIA); **Duration:** 2013-2015 / **Value:** 187.200 € + 80.000 € (PhD Scholarship).

C.4. Contracts, technological or transfer merits

- Signed Agreement (Convenio) between CSIC-INIA (PI: D. Rizos & J. M. Sánchez) and AGROTECNIO (PI: I. García-Insperto) with the aim to increase the sustainability and profitability of dairy farms by using ARTs (BOE-A-2021-18700). **Duration:** 2021-2025. **Value:** 364,712 €.
- Contract between CSIC-INIA (PI: D Rizos) and University of Thesaly (PI: G. Amiridis) with the aim to "Study of structural and functional characteristics of oviductal extracellular vesicles from dairy cattle during summer and winter" (TE-RA). **Duration:** 2020. **Value:** 6.969 €.