



MONICA DE LOS REYES S. Chilean, Veterinarian, Master of Sciences on Biology of Reproduction (MSc). Doctor of Veterinary Sciences (PhD). Full Professor at Reproduction Unit, Faculty of Veterinary Sciences, University of Chile. Research area: Small Animal Reproduction, Reproductive Biotechnology, In vitro Gametes interaction and Development. Professor of Reproduction, Obstetrics and Gynecology courses. Supervisor of several undergraduate and graduate students. Head of the Laboratory of Animal Reproduction and Coordinator of the Reproduction Unit, Faculty of Veterinary Sciences, University of Chile. Director Diploma of Animal Reproduction in University of Chile. Ex Director of Animal Health and Production Studying Group of National Foundation for Sciences and Technologies, ANID. Visiting Professor, P Catholic University of Chile, University of Cordoba, Spain. Guest speaker at scientific meeting, congress and international courses. Main Researcher of scientific projects involving small animal reproduction studies such as oocyte maturation, sperm cryopreservation, in vitro fertilization, leading to several publications on International indexed journals, books and presentations on international Congress and meeting. Member of the Society for the Study of Reproduction (SSR), Member of International Embryo Transfer Society (IETS), Member of the Reproduction and development Chilean Society (SChRD),

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EDUCATION

- Doctor of Veterinary Science (PhD), University of Cordoba, Spain.
- Master of Science, Biology of Reproduction. (MSc) Faculty of Medicine. University of Chile
- Veterinarian; Faculty of Veterinary Science. University of Chile,

RESPONSIBILITIES

- Professor of under and post graduates students in Reproduction, Obstetrics and Gynecology, Faculty of Veterinary Sciences, University of Chile.
- Head of the Laboratory of Animal Reproduction, Faculty of Veterinary Sciences, University of Chile
- Director Diploma of Animal Reproduction
- Research Department of Animal Sciences. Faculty of Veterinary Sciences, University of Chile.

PROFESSIONAL AND ACADEMIC ACTIVITIES

I Teaching: Courses held for Undergraduates and Postgraduates students

Faculty of Veterinary Sciences, University of Chile

- Animal Reproduction
- Gynecology & Obstetrics
- Reproductive Biotechnologies
- Visiting Professor; University of Concepción Chile, P Catholic University of Chile, University of Cordoba, Spain

II Offices Held

- Coordinator of the Reproduction Unit, Faculty of Veterinary Sciences, University of Chile
- Head of Reproduction Laboratory Faculty of Veterinary Sciences, University of Chile
- President of the Local Academic Evaluation Committee. Faculty of veterinary Sciences, University of Chile
- Animal Health and Production Studying Group of National Foundation for Sciences and Technologies (FONDECYT), CONICYT



AWARDS AND RECOGNITIONS (last 5 years)

- Top score by The National Foundation for Scientific and Technological Research FONDECYT 2017
- Distinguished by best score FONDECYT Regular projects 2014. Investigation and Development. University of Chile April 25, 2014-04-26
- Distinguished publications, ISI 10% higher area. Investigation and Development. University of Chile April 25, 2014-04-26
- Elsevier Reviewer Recognition. Top reviewer journal Theriogenology, 2015.

GUEST SPEAKER (last 5 years)

2016

- New Concepts in canine follicular development II Latin American Seminar in Canine and Feline Medicine, endocrinology and reproductive biotechnology. University Andrés Bello, October 20-21
- Advances in vitro maturation (IVM) in canine oocytes II Latin American Seminar in Canine and Feline Medicine, endocrinology and reproductive biotechnology. University Andrés Bello, October 20-21
- Animal Reproduction SYMPOSIA. Society of Reproduction and Development, SCHR. 2-5 September, Antofagasta Chile.

2014

- Paracrine factor on canine oocyte development. XXV Annual Meeting Chilean Society of Reproduction and Development, 4-6 September, Valdivia, Chile
- Growth factors during the ovarian follicular development in the bitch. II Latin American Symposium on Animal Reproduction. 13-14 Noviembre, Santiago, Chile

2013:

- Fertility abnormalities in frozen/thawed canine semen. 4th International of Veterinary Medicine Congress, June 19-22 Mexico City, Mexico



- Canine estrous cycle and ovulation time. 4th International of Veterinary Medicine Congress June 19-22 Mexico City, Mexico
- New insights of In vitro fertilization in canine. 4th International of Veterinary Medicine Congress June 19-22 Mexico City, Mexico
- Dog physiology and management. 4th International of Veterinary Medicine Congress. June 19-22 Mexico City, Mexico.

2012

- Proteins evaluation during canine in vitro maturation. Conferences of Reproductive Biotechnologies Updates. November 29, Santiago, Chile.

2011

- Sperm fertility in dogs after sperm cryopreservation. 1st Peruan Congress on Animal Reproduction. August 4-6 Lima, Perú
- Ovulation timing in bitches. 1st Peruan Congress on Animal Reproduction. August 4-6 Lima, Perú
- Nuclear and Cytoplasmic maturation in canines "Maduración nuclear y citoplasmática de ovocitos en caninos", 1st Peruan Congress on Animal Reproduction. August 4-6 Lima, Perú
- New Factors associated to canine oocytes development: a way for in vitro fertilization?. First Latinoamerican Symposium on Animal Reproduction. November 7-8. Viña del Mar, Chile
- Reproductive Physiology in bitches. First International Course on Reproduction and Artificial Insemination in small animals. May 6-8, Cordoba Spain.
- Reproductive Physiology in dogs. First International Course on Reproduction and Artificial Insemination in small animals. May 6-8, Campus Ravanales Cordoba Spain.

PROJECTS AS A RESPONSIBLE RESEARCHER (last 10 years)

- Unraveling the control of oocyte and cumulus cell cross-talk in canines: role of in vivo and in vitro paracrine factors. National Foundation for Scientific and Technology Sciences. Grant Regular FONDECYT 1171670 (2017-2021).
- New insights in temporal regulation of follicular-oocyte interactions in canine: functions of paracrine factors on in vivo and in vitro maturation



events. National Foundation for Scientific and Technology Sciences. Grant Regular FONDECYT 1140658 (2014-2017).

- “Flow Cytometry as a fundamental tool in advances researches of South Campus.” CONICYT. National Commission for Sciences and Technology Grant FONDEQUIP EQM 120156- (2012-2014).
- “Nuclear development and cytoplasmic dynamics interplay during in vivo and in vitro maturation in canine oocyte: role of oocyte secreted proteins”. National Foundation for Scientific and Technology Sciences Grant Regular FONDECYT 1110265 (2011-2014).
- “Ultrastructural and functional study of cytoplasmatic maturation in canine oocytes”. National Foundation for Scientific and Technology Sciences. Grant Regular FONDECYT 1080618 (2008-2010).
- “Acrosin activity and release during capacitation and acrosome reaction; relationship to sperm fertilizing ability in canines”. National Foundation for Scientific and Technology Sciences. Grant Regular FONDECYT 1060602 (2006-2008).
- “In vitro sperm capacitation and fertilization in canines: functional relationship to sperm fertilizing ability”. University of Chile. Grant: ENL 05/8 DID, (2005-2006).
- “Study of canine sperm and canine oocytes and its relationship to in vitro fertilization”. National Foundation for Scientific and Technology Sciences. Grant Regular FONDECYT 1030380 (2003-2005).

MAIN PUBLICATIONS (last 10 years)

Publications on International journals indexed in PubMed

- **De los Reyes M.**, Araujo, A, Flores, J, Ramirez G., Palomino J., Aspee K. Cyclooxygenase-2 messenger RNA levels in canine follicular cells: Interrelationship with GDF-9, BMP-15 and progesterone. Dom Anim Endocrinol 2020 (Submitted).
- Palomino J., Gallegos C., Espinoza R., Ramirez G. Dettleff P, Peralta O.A., Parraguez V.H., **M. De los Reyes**. Gene and protein expression of connexin 37 and 43 in canine cumulus-oocytes-complexes throughout the follicular development. J Repro Fertil Dev (Submitted)



- Ramirez G., Palomino J., Peralta Oscar A, Parraguez Victor H, **De los Reyes M.** GDF-9 and BMP-15 mRNA levels in canine cumulus cells are related to cumulus expansion and maturation process. *Animals* 2020, 10 (3) 462-462; [doi:10.3390/ani10030462](https://doi.org/10.3390/ani10030462)
- Sales F., Peralta OA, Narbona E, McCoard S, Lira, **De Los Reyes M**, González-Bulnes A, Parraguez VH. Maternal Supplementation with Antioxidant Vitamins in Sheep Results in Increased Transfer to the Fetus and Improvement of Fetal Antioxidant Status and Development. *Antioxidants*. [doi:10.3390/antiox8030059](https://doi.org/10.3390/antiox8030059). 2019.
- Segunda M.N., Bahamonde J., Muñoz I., Sepulveda S., Cortez J., **De los Reyes M.**, Palomino J., Torres C.G., O.A. Peralta. Sertoli cell-mediated differentiation of bovine fetal mesenchymal stem cells into germ cell lineage using an in vitro co-culture system. *Theriogenology* 130 :8-18 <https://doi.org/10.1016/j.theriogenology>. 2019.02.034
- Garcia P, Karla Aspee A, Ramirez G, Dettleff P, Palomino J, Peralta OA, Parraguez VH, **De los Reyes M.** Influence of GDF-9 and BMP-15 on in vitro maturation of canine oocytes. *Reprod Dom Anim* 2019 Feb;54(2):373-380. [doi: 10.1111/rda.13371](https://doi.org/10.1111/rda.13371). Epub 2018 Dec 3.
- Sales F, Peralta OA., Narbona E, McCoard S, **De los Reyes M**, González-Bulnes A., Parraguez VH. Hypoxia and oxidative stress are associated to reduced fetal growth in twin and/or undernourished sheep pregnancies. *Animals* 2018, 8, 217; [doi:10.3390/ani8110217](https://doi.org/10.3390/ani8110217)
- **De los Reyes M.** New understanding of canine reproduction. *Science Impact* 2 (6): 56-57,2018.
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- Cortez, J, Bahamonde, J, **De los Reyes, M**, Palomino, J, Torres, C, Peralta, OA. In Vitro differentiation of bovine bone marrow-derived mesenchymal stem cells into male germ cells by exposure to exogenous bioactive factors. *Reprod Dom Anim* 1-10 2018. DOI: 10.1111/rda.13160
- Torres JL, Palomino J, Moreno, RD, **De los Reyes, M.** Pannexin channels are involved in freezing/thawing IP-permeability increase in dog spermatozoa. *Reprod Fertil Dev* 2017. 29(11) 2269-2276.



- **De los Reyes M**, Palomino M, Parraguez VH, Ramirez F. Analysis of LH receptor in canine ovarian follicles throughout the estrous cycle. *Theriogenology* 2017, 93: 71-77.
- Cofré E., Peralta OA, Raggi, A, **De los Reyes M**, Sales F, González-Bulnes A, Parraguez VH. Ram semen deterioration by short-term exposure to high altitude is prevented by improvement of antioxidant status. *Animal* 2017 doi:10.1017/S1751731117002452
- **De los Reyes M**, Palomino M, Parraguez VH, Ramirez F. 2017. Analysis of LH receptor in canine ovarian follicles throughout the estrous cycle. *Theriogenology* 93: 71-77.
- Palomino J, **De los Reyes M**. 2016. Temporal expression of *GDF-9* and *BMP-15* mRNAs in canine ovarian follicles. *Theriogenology* 86:1541-1549.
- Fernandez T, Palomino J, Parraguez VH, Peralta OA, **De los Reyes M**. 2016. Differential expression of *GDF-9* and *BMP-15* during follicular development in canine ovaries evaluated by Flow Cytometry. *Anim Reprod Sci* 167: 59-67.
- Parraguez VH, Mamani S , Cofré E , Giorgio Castellaro , Urquieta B, **M De los Reyes**, Astiz S, Gonzalez-Bulnes A. 2015. Disturbances in maternal steroidogenesis and appearance of Intrauterine growth retardation at High-Altitude environments are established from early pregnancy. Effects of treatment with antioxidant vitamins. *PLOS ONE* DOI:10.1371/journal.pone.0140902.
- Maupeu D, Palomino J, **De los Reyes M**. 2014. Immunohistochemistry localization of growth differentiation factor 9 (*GDF-9*) and bone morphogenic protein 15 (*BMP-15*) in canine follicles throughout estrus cycle. *Reprod Fertil Dev*; 27:182.
- Parraguez VH, Diaz F, Cofre E, Urquieta B, **De Los Reyes M**, Astiz S Gonzalez-Bulnes A. 2014. Fertility of a High-Altitude Sheep Model is compromised by deficiencies in both preovulatory follicle development and plasma LH availability. *Reprod Dom Anim*: 49 : 881–1078.
- Dueñas F, Becerra V, Cortes Y, Vidal S, Sáenz L, Palomino J, **De los Reyes M**, Peralta OA. 2014. Hepatogenic and neurogenic differentiation of bone marrow mesenchymal stem cells from abattoir-derived bovine fetuses. *BMC Veterinary Research*, 10:154.
- **De los Reyes M**, Parraguez VH, Rojas C, Palomino J. 2013. Expression of Growth differentiation factor 9(*GDF-9*) during in vitro maturation in canine oocytes. *Theriogenology* 80, 587-596.



- Parraguez VH, Bessie Urquieta BE, **De los Reyes M**, Gonzalez-Bulnes A, Astiz S, Munoz A. 2013. Steroidogenesis in sheep pregnancy with intrauterine growth retardation by high-altitude hypoxia: effects of maternal altitudinal status and antioxidant treatment. *Reproduction, Fertility and Development*. 25, 639–645
- **De los Reyes M**, Palomino J, Rojas C. 2013. Analysis of GDF-9 expression in canine oocytes *Reprod Dom Anim* 48 (Suppl. 1), 1
- Parraguez VH, Urquieta B, Pérez L, Castellaro G, **De los Reyes M**, Torres-Rovira L, Aguado-Martínez A, Astiz S González-Bulnes A. 2013. Fertility in a high-altitude environment is compromised by luteal dysfunction: the relative roles of hypoxia and oxidative stress. *Reprod Biol Endocrinol*, 11:24
- **De los Reyes M**, Palomino J, Jofré S, Villarroel A, Moreno R. 2012. Golgi Apparatus and Endoplasmic Reticulum dynamic during meiotic development in canine oocytes. *Reprod Dom Anim* 47 (Suppl. 6): 93-97.
- **De los Reyes M**, Palomino J, Parraguez VH, Vergara J. 2012. Sperm nuclear decondensation after *in vitro* and *in vivo* maturation of canine oocytes. *Reprod Dom Anim* 47 (Suppl. 6), 98-101.
- **De los Reyes M**, Palomino J, Martinez, V, Rojas C. 2012. Immunolocalization of GDF9 and BMP15 during *in vitro* maturation of canine oocytes. *Reprod Dom Anim* 46 (Suppl 4) 935
- **De los Reyes M**, Palomino J, Martinez V, Arefio C, Gutierrez M. 2011. Acrosin evaluation during *in vitro* capacitation of fresh and frozen-thawed dog sperm. *Biol Res*. 4: 139-144.
- **De los Reyes M**. 2011. Some aspects of mammal fertilization. *Int J Morph*. Vol 28 (Supl 1) Cap 6.
- **De los Reyes M**, Vergara J, Palomino J. 2011. Sperm nuclear decondensation ability of *in vitro* matured canine oocytes. *Reprod Fertil Dev* 23 (1): 225-226.
- Parraguez VH, Atlagich M, Araneda O, García C, Muñoz A, **De los Reyes M**, Urquieta B. 2011. Effect of antioxidant vitamins on newborn and placental traits in gestations at a high altitude: comparative study in high- and low- altitude native sheep. *Reprod Fertil Dev* 23, 285–296.
- **De los Reyes M**, Palomino J, Parraguez VH, Hidalgo, M, Saffie P. 2011. Mitochondrial distribution and meiotic development in canine oocytes during *in vitro* and *in vivo* maturation. *Theriogenology* 75 : 346-353.



- **De los Reyes M**, Luna D, Palomino J. 2010. Meiotic development and cortical granules distribution in canine oocytes during *in vitro* maturation. *Reprod Fertil Dev* 22 :324-325.
- Parraguez VH, Atlagich MA, Urquieta B, Galleguillos M, **De los Reyes M**, Kooyman DL, Araneda S, Raggi LA. 2010. Vascular endothelial growth factor and endothelial nitric oxide synthase are increased in the placenta of sheep at high altitude. *Can J Vet Res* 74:193–199.
- **De los Reyes M**, Medina G, Palomino J. 2009. Western blot analysis of preacrosin/acrosin in frozen dog sperm during *in vitro* capacitation. *Reprod Dom Anim.* 44 (Suppl. 2): 350-353.
- Palomino J, **De los Reyes M**. 2009. A scanning electron microscopy study of frozen/thawed dog sperm during *in vitro* gamete interaction. *Reprod Dom Anim.* 44, 278–283
- **De los Reyes M**, Hetz J, Palomino J. 2009. Ultrastructural study of the canine zona pellucida surface during *in vitro* maturation. *Reprod Dom Anim.* 44 (Suppl. 2): 247-250.
- **De los Reyes M**, de Lange J, Anguita C Palomino J, Barros C 2009. *In vitro* sperm penetration through the zona pellucida of immature and *in vitro* mature canine oocytes using fresh, chilled and frozen dog semen. *Anim Reprod Sci* 110 (1 – 2): 37 – 45.

Book, editor, chapter

- **Mónica De los Reyes**. Reproducción y Fertilidad en los animales,. En *Reproducción Humana e Infertilidad*, A Mackenna ed. Editorial Mediterráneo, Santiago, Chile. pp 27-34, 2013.
- **De los Reyes M**, Duchens M. I Simposio Latinoamericano de Reproducción Animal. Libro de conferencias. De los Reyes M y Duchens M. (eds). Ediciones Gráfica Lom Ltda. ISBN 978-956-345-700-4, Chile 2011.
- **Mónica De los Reyes**. New factors associated to canine oocyte development: a way for *in vitro* fertilization?. En: I Simposio Latinoamericano de Reproducción Animal, Libro e conferencias. De los Reyes M y Duchens M. (eds). Pp 159-166, 2011.
- **De los Reyes, M**. Congelación de semen canino. En “Temas de Reproducción de Caninos y Felinos por Autores Latinoamericanos”.



Gobello C. (ed) Capítulo 2; 15-24. Ed: Gráfica Latina, Buenos Aires-Argentina 2007. Segunda Edición 2007. ISBN 978-978-23890

SCIENTIFIC REVIEWER

- National Research Projects: FONDECYT; FONDEF, DTI, University of Chile,; Catholic University of Temuco; Austral University of Chile, University of Concepción; CORFO Chilean Government .
- International Research Projects: TWAS (The Academy of Sciences for the developing World, Research Grant Program); FONCY Argentina, BSF (Binational Science Foundation; USA-Israel).
- Scientific Journal on Animal Reproduction: Theriogenology, Animal Reproduction Science; Reproduction in Domesticated Animals, Reproductive Biology, Cryobiology, Zygote, PlosOne (average 8/year)
- Local Scientific Journals: Archivos de Medicina Veterinaria; Ciencia e Investigación Agraria, Agro Ciencia, Biological Research (average 2/year)
- Committee, chairman, speaker of Scientific International and National Meeting and Congress

Associations

- Member of the Reproduction and development Chilean Society
- Member of the Chilean Association of Veterinary Sciences
- Member of the Society for the Study of Reproduction (SSR)
- Member of IETS (International Embryo Transfer Society)
- Member of the Latin-American Society for Reproduction