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# State of the art of regenerative veterinary medicine in Uruguay

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## Abstract

Mesenchymal Stem Cells (MSCs) are potential therapeutical biological products, to be used in Veterinary Medicine and animal models, due to their attractive characteristics: multipotentiality, immunomodulation, angiogenesis, tissue regeneration, homing to areas of injury and antimicrobial effect. MSCs are found in every organ of the body and are able to maintain their undifferentiated state for long periods of time and differentiate to specialized cells. Initially the most common MSCs source was bone marrow (BM), but now a days the adipose tissue (AT) source, is more commonly used. Lately other sources are been studied as Umbilical cord derived MSCs (UC-MSCs) and dental pulp stem cells (DPSC). At our lab the AT MSCs are isolated by enzymatic method and UC & DP derived MSCs are isolated by overgrowth method. In 2010 a domestic animal MSCs biobank was created as well as the Regenerative Veterinary Medicine (RVM) Service at the Immunology Area of Veterinary School, University of Uruguay. Also in 2010 we created the First RVM International group at the University of Uruguay. At the Veterinary Teaching Hospital through the RVM service, we treated orthopedic problems (nonunion fractures, osteomyelitis, tendon, ligament and joint injuries), skin lesions and mucosal inflammation problems, in canines, felines and equines. These clinical cases treated with allogenic AT-MSCs and Platelet Rich Plasma (PRP) end up being Graduate Thesis (n:7). I will be presenting the evolution of these RVM treatments n domestic animals. Basic research as isolation, characterization and genetic studies of MSCs, as well as studies on the use of platelet lysate (PL) as substitute of FBS in MSCs culture, end up in MSCs (n:2) and PhD (n:1) thesis. Future studies will be done with UC-MSCs and DPSC as well as with limbal derived MSCs. Pluripotency markers have been detected in DPSC, therefore they can also differentiate into neurogenic cells.

## Biography

Jacqueline Maisonnave has her DVM 1977 (Uruguay); MSc-Virology 1980, Auburn Alabama, USA; MPVM 1984, & PhD comparative pathology-immunology 1989, UC Davis, California, USA. I worked at PAHO Veterinary Public Health, Washington DC, USA (1988) and PAHO-CEPANZO, Buenos Aires, Argentina 1989. Since 1990 I have been teaching immunology graduate and under graduate & doing research at the veterinary school, Uruguay. In 2010, I started research and teaching regenerative veterinary medicine, mainly with AT-MSC and platelet rich plasma (PRP). Up to date, the regenerative veterinary group & service are the only ones in Uruguay. The RVM group is multidisciplinary (MD & DVM) & has Latin-American & European researchers. We got an award for a RVM publication (2019). I am a fellow at the National Veterinary Academy (2019). I am member in National and International Reviewer committees of scientific papers and projects. I also got an award, USAMRID for an Ebola Virus Project.

## Publications


1. Kevin Yaneselli; Laura Barrachina; Ana Rosa Remacha; Agustina Algorta; Arantza Vitoria;, Alina Cequier; Antonio Romero; Francisco José Vázquez; Jacqueline Maisonnave; Clementina Rodellar. Effect of allogeneic platelet lysate on equine bone marrow derived mesenchymal stem cell characteristics, including immunogenic and immunomodulatory gene expression profile. Veterinary Immunology and Immunopathology Volume 217, November 2019, 109944.
2. Kevin M. Yaneselli; Cristiana Palma Kuhl; Paula Barros Terraciano; Fernanda dos Santos de Oliveira; Sabrina Beal Pizzato; Kamila Pazza; Alessandra Bileski Magrisso; Vanessa Torman; Analía Rial; María Moreno; Silvia Llambí; Elizabeth Cirne-Lima; Jacqueline Maisonnave. Comparison of the characteristics of canine adipose tissue-derived mesenchymal stem cells extracted from different sites and at different passage numbers. J Vet Sci 2018, 19(1), 11-18 • https://doi.org/10.4142/jvs.2018.19.1.11
3. Yaneselli K; Campbell V; Algorta A; Bonfiglio C; Mirazo J; Fernández S; Ríos M; Llambí S; Maisonnave J. Isolation and characterization of canine, equine and feline mesenchymal stem cells in Uruguay. Veterinaria (Montevideo): 2018: 54(209): 14-19.
4. Mondino A: Yaneselli K: Ferreira O; Maisonnave J. Successful PRP and fibrin glue application on a clinical case in an equine. Veterinaria (Montevideo): 2016: 52 (203)) 10-17.
5. Semiglia G; Filomeno A; Yaneselli K; Díaz H; Zunino J; Maisonnave J: First regenerative treatment in Uruguay with mesenchymalstromal cells of a non-union femoral bone defect in a canine. VETERINARIA (Montevideo) 2014:50(196):65-77.

6. Yaneselli, K , Filomeno, A , Semiglia, G , Arce, C , Rial, A , Muños, N , Moreno, M, Erickson, K , Maisonnave,J. Allogeneic Stem Cell Transplantation for bone regeneration of a nonunion defect in a canine. J. Veterinary Medicine Research & Report. 2013: 4 :39-44,. ISSN: 22302034.

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