

Gene - Cell Therapy

Produce

1. Adenoviral vector for cervical cancer.
2. 3C implant for bone (in develop).
3. 3C implant for cartilage (in develop).

Services

1. Adult stem cell isolation and characterization.
2. Preclinical production of adenoviral vectors.

Description

1. Ad-URRD24. We developed this oncolytic adenoviral vector that is suitable for tumors associated to the human papillomavirus (HVP) (Delgado-Enciso I, et al. A potent replicative delta-24 adenoviral vector driven by the promoter of human papillomavirus 16 that is highly selective for associated neoplasms. *J Gene Med.* 2007.9:852-861). Vector replication and expression are driven by the Upstream Regulatory Region (URR) of the HPV-16, a high-risk strain of the virus. It also contains the delta 24 mutation in the CR2 region of the adenoviral E1A gene. These two modifications confine vector replication and transduction to tumor epithelial cell/tissues. The vector was granted a patent from the Mexican Institute for Intellectual Property in 2011 (IMPI 287339). Available for licensing.
2. 3C-Implant for Bone. We are developing a bone implant for preclinical and clinical trials. This implant was made of autologous mesenchymal stem cells derived from adipose tissue and transduced with adenoviral vectors producing the BMP2 and BMP7 bone factors for osteogenic differentiation. This implant has potential uses in applications requiring bone replacement in fields like dentistry, orthopedics, plastic/oncologic surgery, and veterinary. We have recently described the use of this implant in an animal model of mandible bone distraction (Castro-Govea Y, et al. Human bone morphogenetic protein 2-transduced mesenchymal stem cells improve bone regeneration in a model of mandible distraction surgery. *J Craniofac Surg.* 2012. 23:392-396). This technological development is currently under evaluation by the Mexican Institute for Intellectual Property for patenting.
3. 3C-Implant for Cartilage. We are developing an implant for cartilage replacement suitable for preclinical and clinical trials. This implant is autologous mesenchymal stem cells expressing combinations of known chondrogenic factors through adenoviral transduction. We are currently conducting preclinical trials in knee joints of sheep to test the performance of this implant. The implant is also under evaluation by the Mexican Institute for Intellectual Property for patenting.
4. Isolation and characterization of adult stem cell. Our laboratory has state of the art technologies and trained personnel for isolation of adult stem cells from diverse tissues for preclinical studies and several characterization methods for stem cell phenotypification (flow cytometry, confocal microscope analyses, molecular characterization of stem mRNA and protein markers).



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CENTRO DE INVESTIGACIÓN
Y DESARROLLO EN
CIENCIAS DE LA SALUD

5. Our Laboratory has capabilities and personnel for production of adenoviral and retroviral vectors for preclinical studies upon demand.

Responsible (Name, position)

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