

Video Article

ISOLATION OF MOUSE SALIVARY GLAND STEM CELLS FROM SALISPHERES

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URL: <http://www.jove.com/video/2553>

DOI: [doi:10.3791/2553](https://doi.org/10.3791/2553)

Keywords: Murine salivary glands, stem cells, isolation, tissue culture.

Date Published: 6/15/2015

Citation: Pringle, S., Nanduri, L.S.Y., Marianne, v.d.Z., Ronald, v.O., Coppes, R.P. ISOLATION OF MOUSE SALIVARY GLAND STEM CELLS FROM SALISPHERES. *J. Vis. Exp.* (), e2553, doi:10.3791/2553 (2015).

Abstract

Mature salivary glands of both human and mouse origin comprise a minimum of five cell types, each of which facilitates the production and excretion of saliva into the oral cavity. Serous and mucous acinar cells are the protein and mucous producing factories of the gland respectively, and represent the origin of saliva production. Once synthesised, the various enzymatic and other proteinaceous components of saliva are secreted through a series of ductal cells bearing epithelial-type morphology, until the eventual expulsion of the saliva through one major duct into the cavity of the mouth. The composition of saliva is also modified by the ductal cells during this process. In the manifestation of diseases such as Sjgren s syndrome, and in some clinical situations such as radiotherapy treatment for head and neck cancers, saliva production by the glands is dramatically reduced 1,2. The resulting xerostomia, a subjective feeling of dry mouth, affects not only the ability of the patient to swallow and speak, but is also encourages the development of dental caries and can be socially debilitating for the sufferer. The restoration of saliva production in the above-mentioned clinical conditions therefore represents an unmet clinical need, and as such several studies have demonstrated the regenerative capacity of the salivary glands 3-5. Further to the isolation of stem cell-like populations of cells from various tissues within the mouse and human bodies 6-8, we have shown using the described method that stem cells isolated from mouse salivary glands can be used to rescue saliva production in irradiated salivary glands 9,10. This discovery paves the way for the development of stem cell-based therapies for the treatment of xerostomic conditions in humans, and also for the exploration of the salivary gland as a microenvironment containing cells with multipotent self-renewing capabilities.

Disclosures

No conflicts of interest declared.