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Dental derived mesenchymal stem cells: From batch to banking

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Regenerative medicine is a growing field of biomedicine able to merge many different aspects of tissue engineering and medical biology, taking into high consideration topics related to molecular biology, biomaterials, and biomedical engineering. The TERM activity is to aid surgeons/clinicians to regenerate, repair or replace tissues. The oral surgery and maxillofacial surgery have a daily commitment towards the treatments of trauma, of degenerative diseases and of many pathological conditions leading to a tissue loss. Researchers from all the world continuously try to find the proper treatment to regenerate damaged tissues: A promising technique is based on the use of growth factors and platelet concentrates in oral and maxillofacial applications. The new actors of regenerative medicine are undoubtedly the mesenchymal stem cells (MSCs): The most recent studies have demonstrated to regenerate part of damaged tissues by using MSCs taken from sites in several parts of human body. The challenge has been to find anatomical sites easy to manage and rich in stem cells: The oral cavity seemed to address such requirements. Oral cavity can offer different and reliable sites where to collect MSCs: Dental pulp, periodontal ligament, apical papilla, dental follicle, and recently also periapical inflammatory cysts. The future is the use of dental tissues for *in-vivo* applications, but the early stage of this process will be to understand the proper and standardized storing of dental-derived stem cells in cryo-banks. The challenge will be between public hospitals and private labs, and who first will invest time and resources in this field will manage this activity; of course, the employment of top-level researchers will be crucial to gain the best knowledge in the less time.

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