




ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

REGENERATIVE MEDICINE AND TISSUE ENGINEERING

Tissue healing and regeneration: filling the gap from preclinical and experimental intervention to routine clinical practice.

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- **Preclinical research develops regenerative medicine approaches** based on the combination of polymeric and ceramic biomaterials, cells, physical energies, and bioactive drugs for in vivo applications (self-repair stimulation) and for developing implantable devices (controlled release of drugs, cells and cell derivatives such as exosomes)
 - **The clinical targets of preclinical investigations include** Central Nervous System repair following neonatal hypoxia and traumatic injuries or stroke, with a primary focus on myelin repair, repair of chronic and diabetic ulcers, the differentiation of human amniotic epithelial cells into insulin-producing cells, and the reconstruction of musculoskeletal tissues following surgical or traumatic loss
 - **A Good Laboratory Practice (GLP) facility for preclinical validation of processes/products** is currently being implemented. Clinical application of regenerative medicine and tissue engineering are already routine at the Istituto Ortopedico Rizzoli, a research and teaching hospital connected to the University of Bologna, for orthopaedic applications and at the University Hospital S-Orsola Malpighi for maxillofacial reconstruction

HIGHLIGHTS

Excellence at the University of Bologna encompasses a number of EU-funded projects in the regenerative medicine sector, such as H2020 [ORTHOUNION](#), which aims at combining expanded cells with ceramics to promote bone healing in non-unions of long bones, and H2020 [ADIPOA-2](#), which consists in a clinical trial of autologous adipose-derived mesenchymal stromal cells in the treatment of mild to moderate osteoarthritis.