# Harnessing biomaterial-based FTY720 immunotherapy to accelerate oral wound healing

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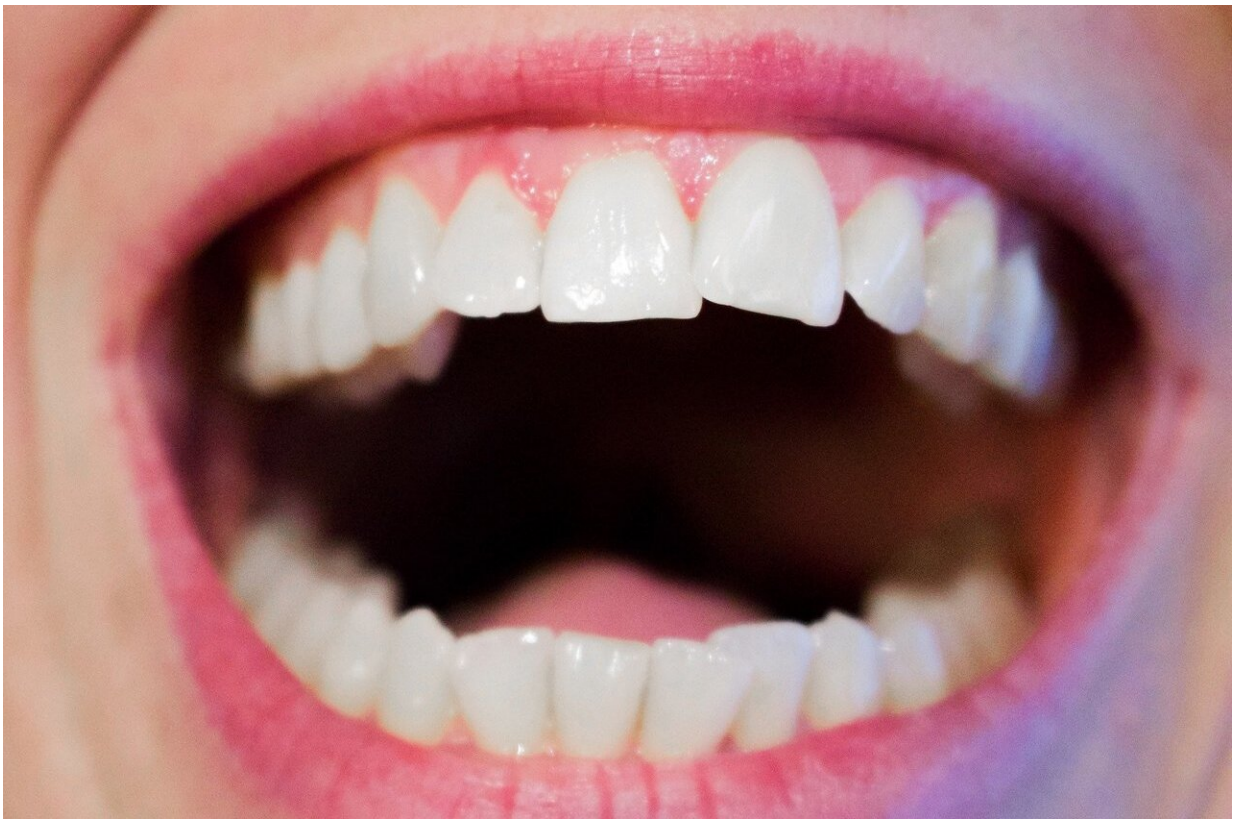

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A study aiming to deliver Fingolimod (FTY720) loaded polymer scaffolds to enhance oral wound healing by modulating pro-regenerative immune cell migration associated with improved vascularization and tissue remodeling was presented at the 102nd General Session of the IADR, which was held in conjunction with the 53rd Annual Meeting of the American Association for Dental, Oral, and Craniofacial Research and the 48th Annual Meeting of the Canadian Association for Dental Research, on March 13-16, 2024, in New Orleans, LA, U.S.

The abstract, "Harnessing Biomaterial-Based FTY720 Immunotherapy to Accelerate Oral Wound Healing," was presented during the "Improving Drug Delivery for Cancer Therapy and Tissue Healing" Oral Session on Wednesday, March 13, 2024, at 10:15 a.m. Central Standard Time (UTC-6).

The study, by Keerthi Priya Chinniampalayam Sekar of Emory University, Atlanta, GA, U.S., modeled an Oronasal Fistula (ONF) injury of 1.5mm as a critical-sized defect in the hard palate of C57BL/6 mice. FTY720-NF were implanted at the site of ONF injury, and hard palate mucosa was harvested at D1, 3, 5, and 7.

Flow cytometry and histology were used to investigate the contribution of FTY720 on pro-regenerative cell infiltration during ONF wound healing. Multiplex assays were used to measure cytokine production in Raw 264 and human tonsil-derived macrophages treated with FTY720-Phosphate.

Investigators observed a spatiotemporal response of immune cell recruitment to oral wound healing with greater effects on pro-regenerative subsets following FTY720 treatment. Dimensionality reduction analyses reveal the distinct pseudo-time trajectories of

immune cell activation with ONF injury. Histology and endoscopic images showed complete wound closure at D7 following FTY720-NF implantation.

Multivariate and clustering analyses indicate that delivery of FTY720 promotes a regenerative environment through the secretion of pro-regenerative cytokines and chemokines, leading to enhanced wound healing.

The study concluded that local delivery of FTY720 promotes complete oral wound closure through the recruitment of anti-inflammatory immune cells. By identifying the role of key immune regenerative cells in oral wound healing, FTY720 can be modulated with adopted cell therapy to accelerate tissue remodeling. These findings are significant as harnessing the effects of immunomodulation for oral wound healing provides greater opportunities for more personalized and efficacious treatment options.

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