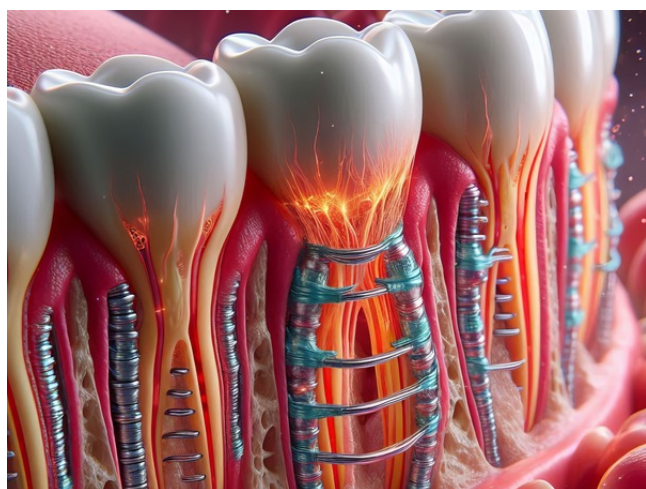




Biomimetic Hertwig's Epithelial Root Sheath (Hers)-Like Tissue Scaffold to Guide Periodontal Ligament Regeneration

TECHNOLOGY NUMBER: 2024-395



OVERVIEW

A breakthrough biomimetic scaffold technology mimics the natural structure that guides tooth ligament attachment, offering unprecedented control over dental tissue regeneration for tooth-saving dental treatments.

- Features a precisely micro-engineered, biodegradable membrane with specialized channels that direct cell growth and attachment exactly where needed for optimal periodontal ligament regeneration.
- Addresses the \$13B+ global market for periodontal and regenerative dental therapies, enabling more predictable, reliable tooth saving, and facilitating the next generation of dental and oral surgery products.

BACKGROUND

Periodontal disease (gum disease) affects nearly half of adults globally and is the leading cause of adult tooth loss, resulting in a demand for advanced dental solutions to restore tooth function and oral health. Current therapies such as grafts, synthetic membranes, and growth factors can slow disease or promote some tissue regrowth, but fail to accurately restore the critical ligament that connects teeth to bone, resulting in unpredictable and often disappointing outcomes for patients and practitioners alike. The persistent inability to consistently and reliably

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Medical Devices

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regenerate a functional tooth attachment is a major unmet clinical need and a significant market opportunity in the rapidly growing field of dental regeneration, fueled by patient demand for less invasive, tooth-saving options and expanding insurance coverage.

INNOVATION

This technology replicates the natural developmental architecture that guides tooth ligament formation by embedding a series of tiny, well-aligned channels into a biocompatible, dissolvable membrane. When placed next to a tooth root during dental surgery, the scaffold gives incoming cells a physical “track” to follow, ensuring they grow in the right direction and connect bone to tooth—restoring crucial tooth stability. Unlike existing methods that allow tissue to form haphazardly, resulting in poor attachment and weak clinical results, this approach ensures every new ligament fiber is precisely guided to maximize strength and integration. The design is compatible with existing dental implant workflows, can deliver regenerative therapeutics or stem cells, and is fabricated using scalable laser-based manufacturing, making it a versatile platform for the next generation of dental and craniofacial applications.

ADDITIONAL INFORMATION

INTELLECTUAL PROPERTY:

Patent application pending.