

Optimization of a Novel Organic-Mineral Bone Adhesive

Clinical Need

In the United States (US), more than 50% of adults over the age of 45 have one or more missing teeth. While dental implant devices have become the standard of care, only 2% of the eligible population receives a prosthetic tooth due to the cost factors, amount of available bone, and the length of time involved in these multi-stage procedures. While most of the bone grafting materials demonstrate osteoconductivity to regenerate bone, many suffer from poor mechanical properties. Due to the lack of structural integrity, these materials typically require the use of ancillary fixation or containment devices to prevent graft migration and ingrowth of fibrous tissue that impedes bone regeneration and remodeling.

Solution

Researchers at LaunchPad Medical are exploring a novel technology, Tetranite®, for bone grafting applications. Tetranite is an injectable, synthetic, wet-field bioresorbable biomaterial. Characterized as a strong, functional adhesive, Tetranite is able to create a load-bearing bond to wet bone tissue and metals. The material is chemically and structurally stable in a neutral pH aqueous environment and is degraded and resorbed in vivo without the loss of bond to bone resulting in continuous bone deposition to exposed surfaces.

Competitive Advantage

The unique hard-setting and adhesive properties of Tetranite enable it to conform and fixate to complex, open-walled, horizontal, and vertical defect sites. These properties of Tetranite are predicted to eliminate the cost and time associated with the use of ancillary or graft containment devices that are required to support the existing bone graft. In addition, the adhesive material enables immediate placement of implants simultaneous to the bone augmentation procedure. Overall, with the reduction in surgical intervention and costs, fewer patients may decline the invasive dental implant procedures.



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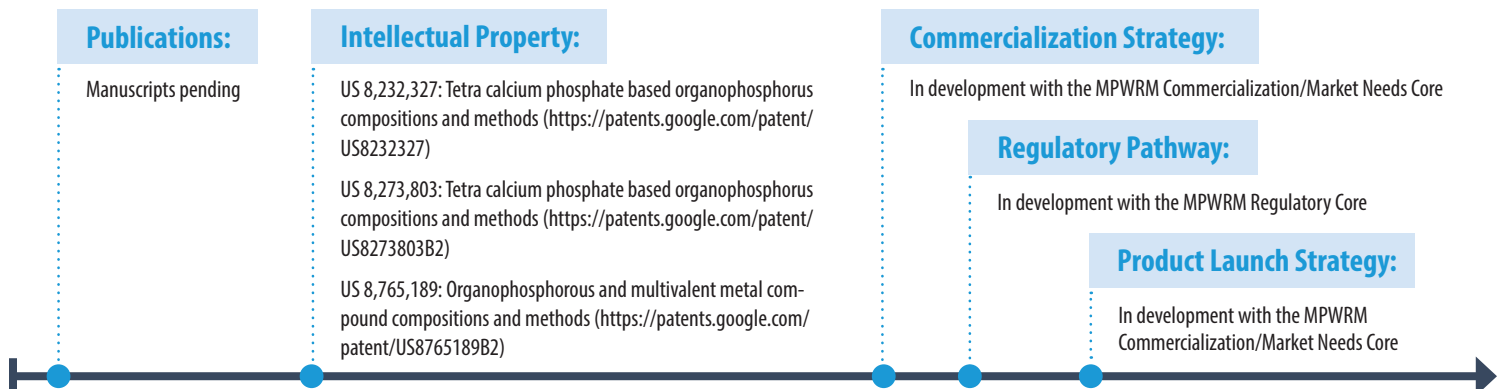
"The ITP program has been an innovative partnership between NIDCR, academia and a corporate entity. This partnership is ideally suited for a product such as Tetranite. With multiple resources available to all parties, the development process has been streamlined and made more efficient."

www.launchpadmedical.com/applications.html

How the ITP Program Supports this Project

The work supported by the ITP program is designed in preparation of the pivotal animal studies to assess the optimal Tetranite formulation for bone regeneration. The data from this investigation will better characterize the temporal formation of bone and resorption of the Tetranite graft material.

Clinical Translation Pathway



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