

## BST-CarGel® for Cartilage Repair

Currently under clinical development



Animal study showing  
cartilage regeneration  
with BST-CarGel®  
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Focal cartilage lesions occur in patients as a result of trauma, injury or excessive physical activity or those suffering from "secondary osteoarthritis" (OA). Adult articular cartilage does not have the capacity to repair such structural damage. This limited healing potential arises primarily due to the lack of both blood supply and a cellular repair response. The resulting joint pain and loss of mobility is debilitating for millions of people worldwide.

In many cases, treatment of either acute or chronic focal cartilage injuries involves use of various surgical measures aimed at regenerating cartilage in the damaged area. Bone marrow stimulation (e.g. microfracture), mosaicplasty and autologous chondrocyte implantation are several techniques which are currently used but still have inherent drawbacks.

**BST-CarGel®** is a promising new therapeutic approach for repair of localized cartilage lesions. **BST-CarGel®** is mixed at the time of surgery with the patient's own blood and applied during minimally-invasive surgery to the surgically prepared lesion. Our animal studies have shown that **BST-CarGel®** fills and sticks to the cartilage lesion, where it acts as a 3-dimensional scaffold in what is called **Scaffold-Guided Regenerative Medicine (SGRM)**. Due to the chitosan component and its unique muco-adhesive nature, the residency of **BST-CarGel®** is maintained.

Since the repair of the cartilage occurs within the body, and not in a laboratory, it is termed ***In Situ* ChondroInduction (ICI)**. The *In Situ* ChondroInduction approach offers interesting benefits, as it requires only one surgery and simply guides the repair of the damaged cartilage.



During the regeneration process, our animal studies have demonstrated that **BST-CarGel®** is completely degraded, as the cartilage naturally regenerates, which results in dramatically improved cartilage repair over matched controls.

## BST-DermOn™ for Chronic Wound Healing Currently under clinical development

It is estimated that approximately 3.7 million patients in the US currently suffer from chronic wounds, which include pressure ulcers, diabetic foot ulcers and venous leg ulcers. These wounds are particularly difficult to heal, impair the patient's quality of life and can lead to serious complications, such as amputations.

The cost of such chronic wound care is estimated to be over \$1 billion dollars a year in the US. Current treatments include advanced wound dressings, growth factor gels or bioengineered tissue products.

**BST-DermOn™** is a topical therapy, which conforms well to the wound and helps stimulate the natural healing process. It may maintain the wound's moist environment while allowing gas exchange. The wound healing, as well as inherent hemostatic and bacterio-static properties of the chitosan component of **BST-DermOn™** has been well-documented in the scientific literature. Our animal studies have shown that it stimulates and supports the intrinsic healing process of open wounds.



## BST-InPod™ for Heel Pain Currently under clinical development

*"Heel pain is a complaint voiced by 14 percent of the adult population and [the American College of Foot and Ankle Surgeons] suspects that millions more silently cope with it."*



Chronic heel pain is often associated with thinning of the calcaneal fat pads, interconnected pockets filled with fat that serve as the natural shock absorbers of the foot. Thinning and fat atrophy associated with diabetes, obesity, inadequate shoes and high-impact sports diminishes the ability of the pads to biomechanically distribute pressure, which leads to localized areas of increased pressure and pain.

**BST-InPod™** is designed to restore the comfort normally provided by the fat pads, and could represent the first implantable therapy for heel pad thinning and fat atrophy. Composed only of naturally occurring substances in the human body, **BST-InPod™** will be injected into the foot fat pad, and is expected to result in improved cushioning and a reduction in pain.

