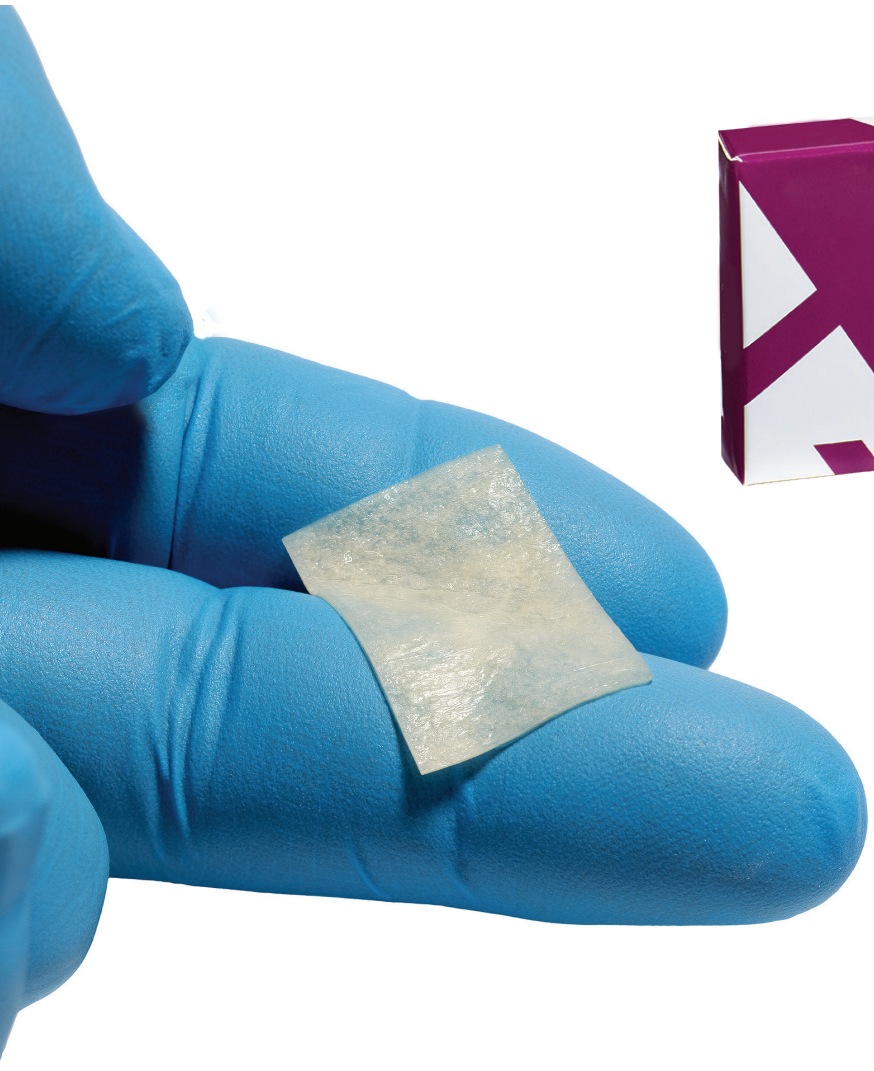
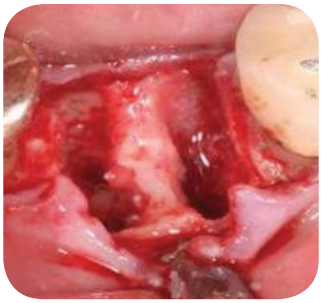
Keystone DENTAL

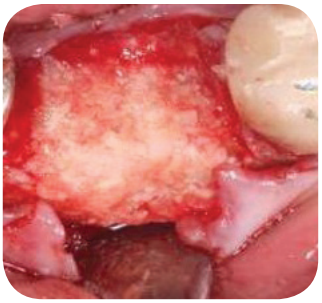
DynaMatrix® Bioactive Membrane



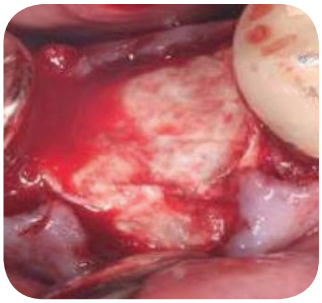
Strong • Flexible • Predictable



Tooth # 30 extracted



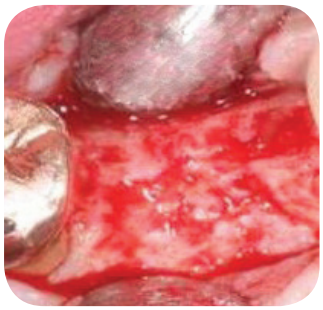
Grafted with DynaBlast®



DynaMatrix® placed for containment of graft material

Tension free closure with DynaMatrix® exposed

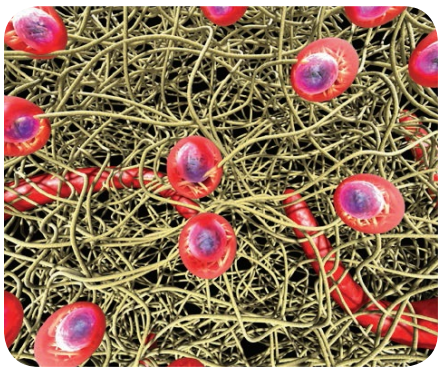
Healing at 4 months



Bone regenerated at 4 months

Courtesy:
Timothy Blieden, DDS
Webster, NY

DynaMatrix® Uses Scaffold and Signals to Stimulate Tissue Remodeling.

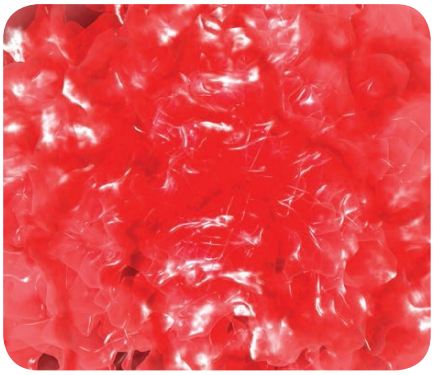


After DynaMatrix® is implanted, tissues adjacent to DynaMatrix® deliver cells and nutrients.

The cells rapidly invade DynaMatrix®.

Capillary growth follows and allows nutrients to enter the matrix.

DynaMatrix® is remarkably strong at the time of implant, and is gradually remodeled while the host system reinforces and rebuilds the damaged site with host tissue.

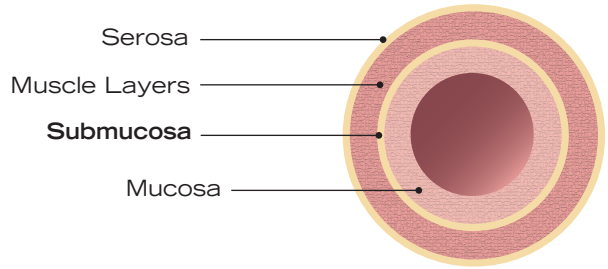


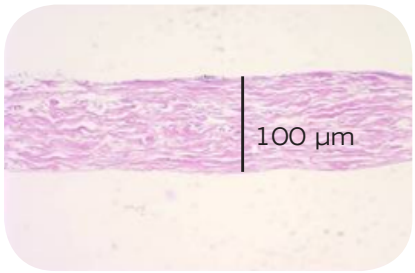
The integrity of the repair is maintained, and the new tissue becomes part of the existing tissue.

DynaMatrix® is an intact extracellular membrane (ECM) designed to remodel soft tissue.

Composition and Structure

DynaMatrix® is derived from porcine small intestinal submucosa (SIS). The three-dimensional structure is isolated from the intestine in a manner that removes all cells, but leaves most of the complex matrix structure and composition intact.

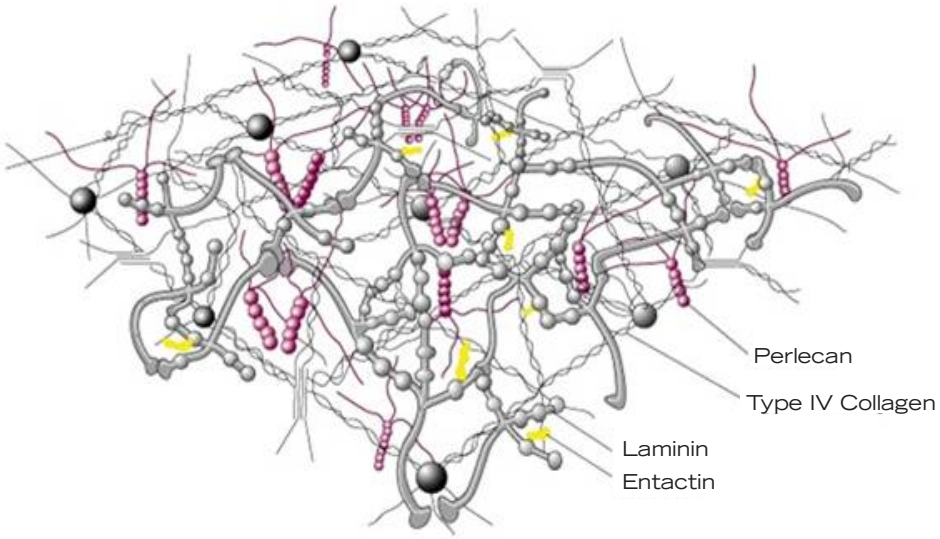




Stronger Tissue Sooner

DynaMatrix® offers a 3-dimensional scaffold important for host tissue remodeling, while its signaling proteins within the membrane, stimulate the natural healing process[2] and facilitate soft tissue healing.

- Retains the natural composition of matrix molecules such as collagen (Type I, III, IV, VI), glycosaminoglycans (hyaluronic acid), glycoproteins (fibronectin) and growth factors[1,2]
- Regulates cell adhesion, migration, division and differentiation[3,4,5]
- Facilitates angiogenesis[6]



Basic Structure and Organization of the ECM
Kreis T, Vale R., Eds. Guidebook to the Extracellular Matrix, Anchor and Adhesion Proteins. Oxford University Press: Oxford, UK 1999.

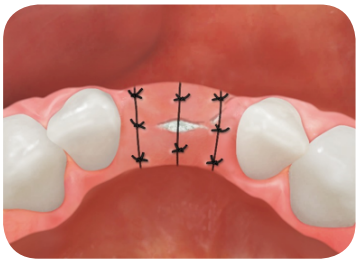
Ridge augmentation procedure

1. Ridge defect exposed

2. Site decorticated

3. Accell Connexus placed

4. DynaMatrix® placed to cover the graft site



5. Site sutured

DynaMatrix® features two essential biological components required for natural healing - **Signals and Scaffold.**

Scaffolds

The collagen foundation and three-dimensional structure of DynaMatrix® supply the scaffold for tissue regeneration

The Keystone Tissue Growth Dynamic

Cells

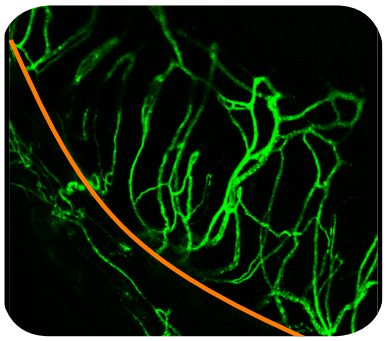
The unique components of DynaMatrix® work together to stimulate the body's recruitment of cells - critical for healing and tissue remodeling

Signals

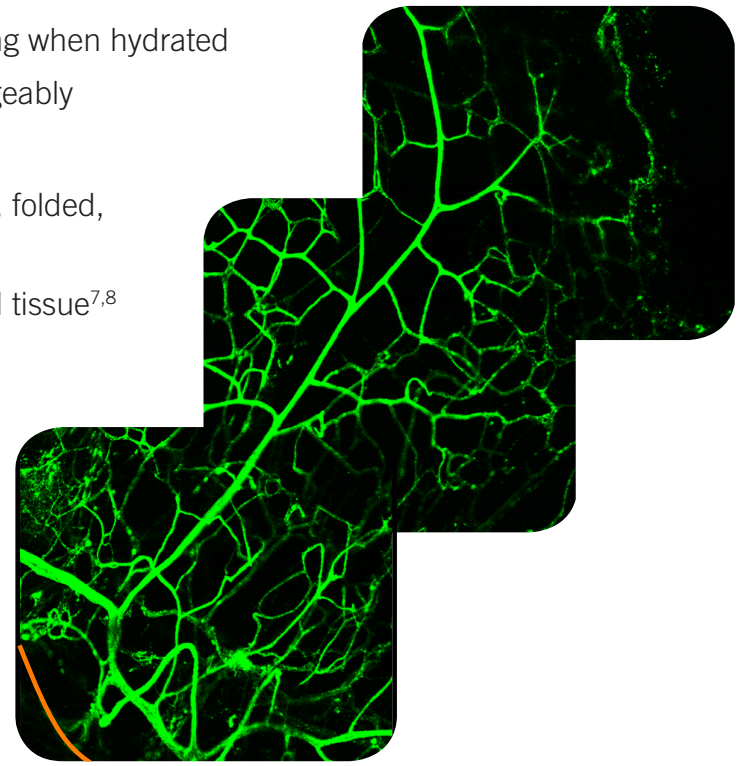
ECM components in DynaMatrix® interact with cells and with each other to form a highly complex communication network necessary for remodeling

Easy Handling & Bioactive Design

- Combines substantial strength and flexible handling when hydrated
- Both sides of DynaMatrix® can be used interchangeably
- SIS can be left exposed for tension-free closure
- Drapes easily and flexible enough to be cut, rolled, folded, tacked or sutured
- Completely remodels into strong, fully vascularized tissue[7,8]



Scaffold only



DynaMatrix® facilitates angiogenesis[7,8]

Dynamatrix® Extracellular Membrane	Catalog Number
15x20 single pack	10.401.1520
20x30 single pack	10.401.2030
30x40 single pack	10.401.3040

Dynamatrix® Plus Extracellular Membrane	Catalog Number
10x20 single pack	10.501.1020
10x30 single pack	10.501.1030
20x40 single pack	10.501.2040

DynaMatrix® Safety

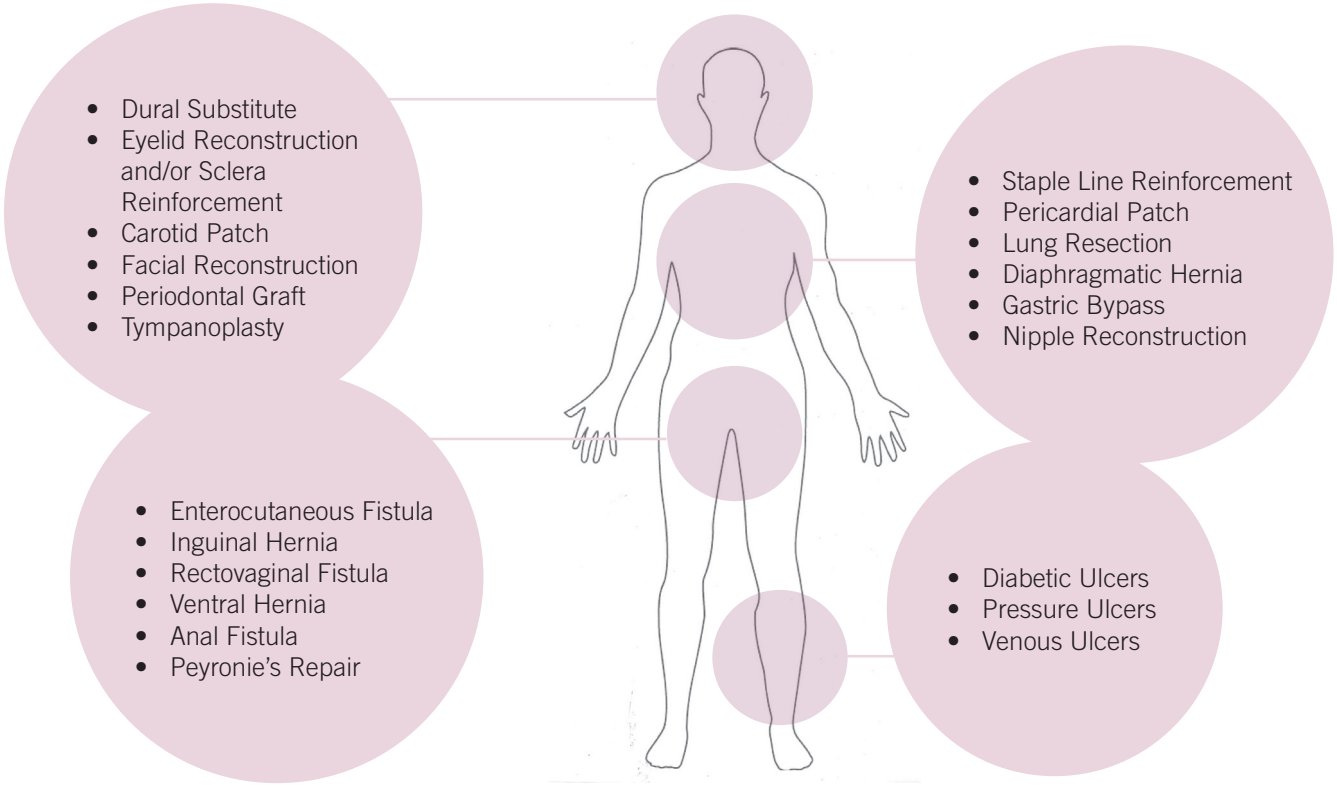
Numerous steps have been taken to ensure the safety of DynaMatrix®:

- Independent laboratory testing to verify biocompatibility
- Strict control of source animals in certified animal production facilities
- Decellularization process minimizes rejection responses following exposure[9]
- In vitro and in vivo studies have demonstrated that the human complement cascade is not activated following exposure[10]
- Terminally sterilized by ethylene oxide to eliminate cell-borne pathogens and provided in sealed packages

A History of Clinical Applications

Published clinical studies are available to date on this SIS technology. Due to its inherent strength, complex composition and natural source, SIS biomaterials offer a functional, long-lasting regeneration without the presence or uncertainty of a permanent foreign body.

SIS technology has over 1200 peer-reviewed published articles including 403 clinical articles.



REFERENCES

1. Hodde J, Janis A, Ernst D, Zopf D, Sherman D, Johnson C. Effects of sterilization on an extracellular matrix scaffold: part I. Composition and matrix architecture. J Mater Sci Mater Med. 2007 Apr;18(4):537-43.
2. Hodde JP, Ernst DM, Hiles MC. An investigation of the long-term bioactivity of endogenous growth factor in OASIS Wound Matrix. J Wound Care. 2005 Jan;14(1):23-5.
3. Lindberg K, Badylak SF. Porcine small intestinal submucosa (SIS): A bioscaffold supporting in vitro primary human epidermal cell differentiation and synthesis of basement membrane points. Burns 2001; 27:254-266.
4. Badylak S, Liang A, Record R, Tullius R, Hodde J. Endothelial cell adherence to small intestinal submucosa: An acellular bioscaffold. Biomaterials 1999; 20: 2257-2263.
5. Badylak SF, Park K, Peppas N, McCage G, Yoder M. Marrow-derived cells populate scaffolds composed of xenogeneic extracellular matrix. Exp Hematol 2001; 19: 1301-1218.
6. Nihsen ES, Johnson CE, Hiles MC. Bioactivity of small intestinal submucosa and oxidized regenerated cellulose/collagen. Adv Skin Wound Care 2008; 21:479-486.
7. Rice RD, Ayubi FS, Shaub ZJ, Parker DM, Armstrong PJ, Tsai JW. Comparison of Surgisis, Alloderm, and Vicryl Woven Mesh Grafts for abdominal wall defect repair in an animal model. Aesthet Plast Surg. 2010;34:290-296.
8. Nevins M, Nevins ML, Camelo M, Camelo JM, Schupbach P, Kim DM. The Clinical Efficacy of DynaMatrix Extracellular Membrane in Augmenting Keratinized Tissue. Int J Periodontics Restorative Dent. 2010 Apr;30(2):151-61.
9. McPherson TB, Liang H, Record RD, et al. "Gala (1,3) Gal Epitope In Porcine Small Intestinal Submucosa (SIS)." Tissue Engineering 2000; 6: 233-239.
10. Allman AJ, McPherson TB, Badylak SF, Merrill LC, Kallakury B, Sheehan C, Raeder RH, Metzger DW. Xenogeneic extracellular matrix grafts elicit th2-restricted immune response. Transplantation. 2001;91:1631-1640.

154 Middlesex Turnpike • Burlington, MA • 01803 • 1.866.902.9272
www.keystonedental.com •