

# **GRAFTON<sup>®</sup>** **DEMINERALIZED BONE MATRIX**

# EXCLUSIVE, PATENTED FIBER TECHNOLOGY



Patented fiber technology offers an osteoconductive scaffold

Studies show that DBM fiber technology provides the osteoconductive properties necessary for bone healing

SPINE Volume 24, Number 7, pp 637-643  
©1999, Lippincott Williams & Wilkins, Inc.

**New Formulations of Demineralized Bone Matrix as a More Effective Graft Alternative in Experimental Posterolateral Lumbar Spine Arthrodesis**

George J. Martin, Jr, MD,\* Scott D. Boden, MD,† Louisa Titus, PhD,†  
and Nelson L. Scarborough, PhD‡

# PROVEN OSTEOINDUCTIVE

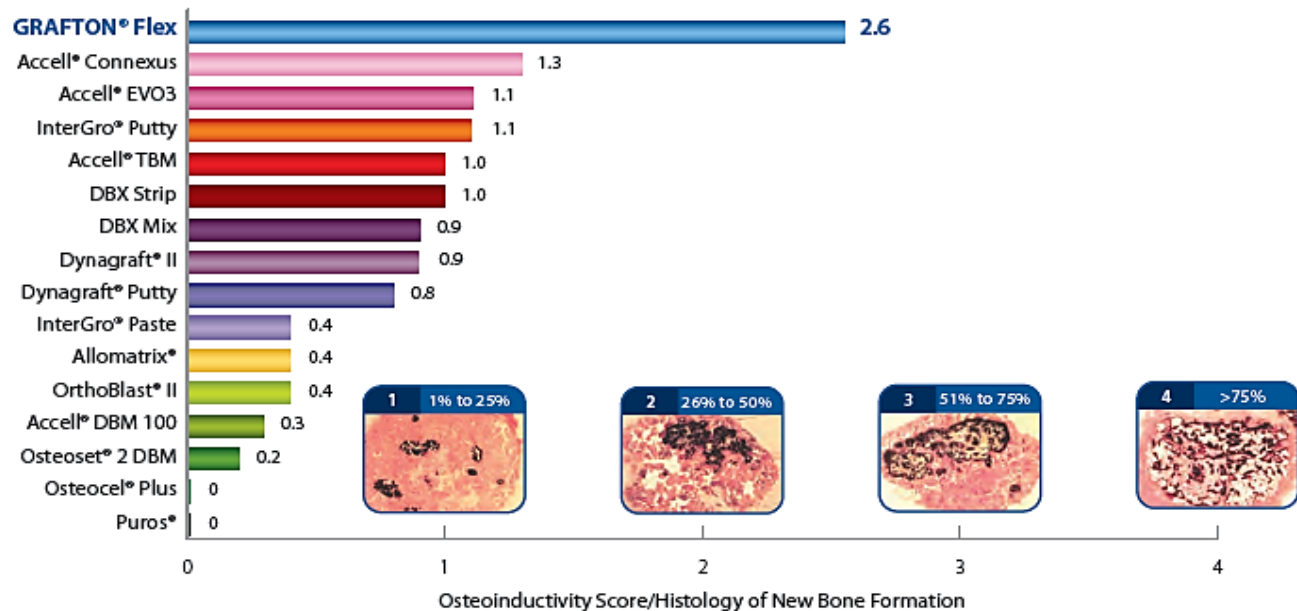
- Shown to be the most osteoinductive DBM available among major brands
- Exhibits higher OI scores than any other DBM in the validated athymic rat model



# 2.6

Edwards Histology Scale

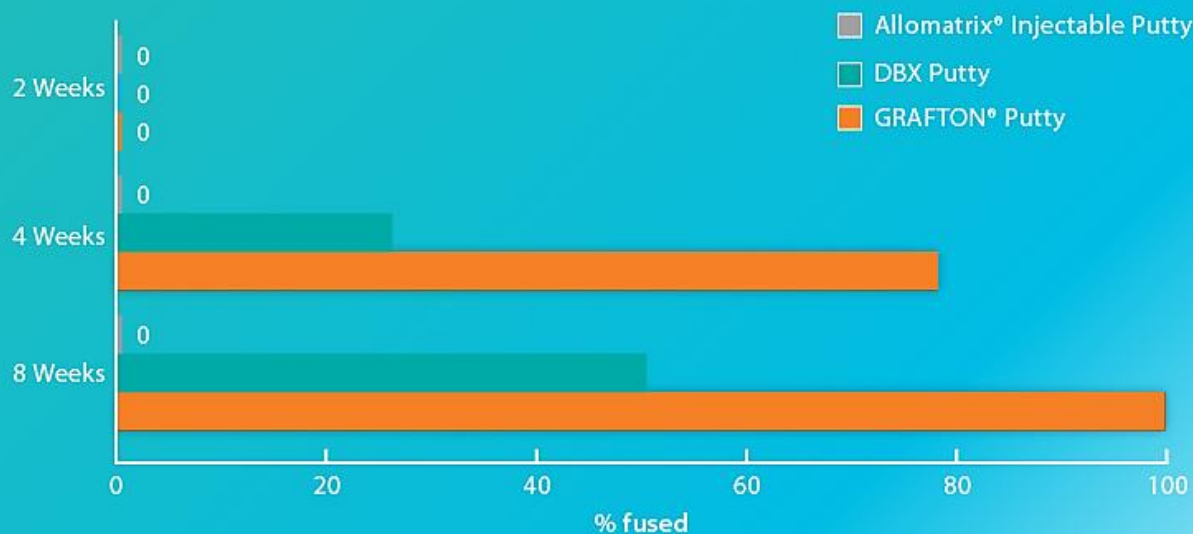
Demonstrated the Most Osteoinductive Demineralized Bone Matrix (Pre-Clinical Model)<sup>6-7</sup>



# PROVEN OSTEOINDUCTIVE

- Significantly outperforms other DBM formulations in an MTF-funded competitor athymic rat study

Comparison of fusion induction athymic rat spine model



MTF=Musculoskeletal Transplant Foundation. Peterson B et al Bone Joint Surg Am 2004;86-A(10):2243-2250.

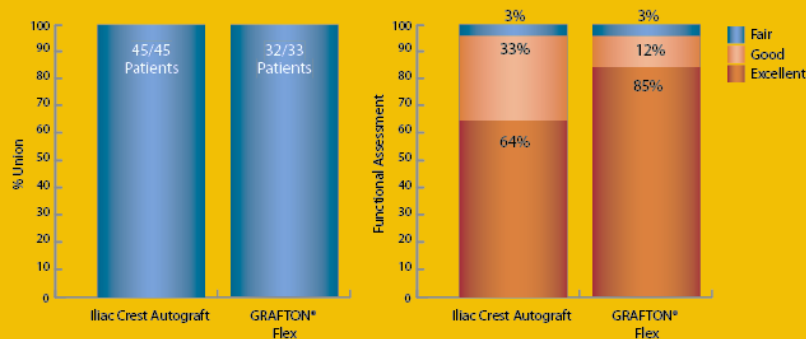
**100%**  
**FUSION**  
**AT EIGHT**  
**WEEKS**

# MORE STUDIES AND HIGHER LEVELS OF CLINICAL EVIDENCE

- Shown to be as effective as iliac crest in peer-reviewed, prospective clinical studies

*JBJS*, Plate fixation of ununited humeral shaft fractures: effect of type of bone graft on healing. 2006;88-A(7):1442-1447. Hierholzer, C, Sama, D, Helfet, DL, et al.

78 Patient Retrospective Cohort Series with Minimum One-Year Follow-Up

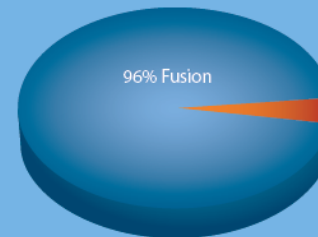


- » GRAFTON® Flex was successful for graft augmentation in the treatment of humeral nonunion and delayed unions without the need to recover iliac crest autograft and the associated donor site morbidity.
- » 44% of the patients treated with iliac crest autograft had minor to major donor site morbidity.
- » Patients treated with GRAFTON® Flex showed statistically better ( $p=0.04$ ) elbow scores.

*Neurosurg Q*, Safety and efficacy of demineralized bone matrix used in posterolateral lumbar spine fusion. 2006;16(1):35-39. Bose B

68 Patient Retrospective Review with Minimum One-Year Follow-Up

- » GRAFTON® Flex demonstrated 96% successful fusion (65/68 patients)



Successful Fusion in 65/68 Patients

Number of Levels Fused	Patients
1	24
2	29
3	10
4	3
5	2

# MORE **STUDIES** AND HIGHER LEVELS OF CLINICAL EVIDENCE

- Over 70 studies published in peer-reviewed journals
- Studies on Spine, Neurosurgery, Orthopaedic Trauma and Reconstructive Surgery, Craniomaxillofacial

Product (Manufacturer)	Carrier	Preclinical Studies				Clinical Studies	
		In Vitro	Rats	Rabbits	Primates	Case Series	Prospective Trials
GRAFTON® DBM (Medtronic)	Glycerol	No	YES	YES	YES	YES	YES
Dynagraff (GenSci Orthobiologics)	Pluronic polymer	YES	YES	No	No	No	No
Allomatrix (Wright Medical Technologies)	Calcium sulfate/ carbomethyl cellulose	YES	YES	No	No	No	No
DBX (Musculoskeletal Transplant Foundation)	Hyaluronic acid	No	YES	No	No	No	No

Khan SN et al J Am Acad Orthop Surg 2005;13(2):129-137.

# HERITAGE OF **SAFE** CLINICAL SUCCESS



20 Years and over 1 Million procedures of safe clinical use

Two-stage screening process to eliminate high risk donors

Elimination of pathogens via process treatments; yielding product 2-billion times safer than screened blood

# FORMS

## Fiber Technology



**GRAFTON® CRUNCH® Graft DBM**  
GRAFTON® CRUNCH® Graft DBM is a ready-to-use mixture of demineralized bone fibers and demineralized cortical bone chips that packs into bone defects.

Chip Size: 2mm-4mm

Common Uses: Spine, Trauma, Pelvis, Extremities



**GRAFTON® Putty**  
GRAFTON® Putty consists of demineralized bone fibers and can be mixed with either allograft or autograft bone.

Common Uses: Spine, Trauma, Pelvis, Extremities



Large Defect

**GRAFTON® Orthoblend—Large Defect**  
**GRAFTON® Orthoblend—Small Defect**  
GRAFTON® Orthoblend, available in two distinct formulations, combines demineralized bone fibers with cancellous chips or crushed cancellous chips.

LG Chip Size: 2mm-10mm

SM Chip Size: 0.1mm-4mm

Common Uses: Spine, Trauma, Pelvis, Extremities



Small Defect

## Preformed Fiber Technology



### GRAFTON® Flex

GRAFTON® Flex is a flexible sheet that can be applied whole, or cut into strips or smaller pieces.

Common Uses: Trauma, Extremities



### GRAFTON® Matrix

GRAFTON® Matrix has a unique trough-like design that allows for use with allograft/autograft bone. Two grafts per package.

Common Uses: Spine



### GRAFTON® Strips

GRAFTON® Strips are long, narrow strips of demineralized bone matrix that overlap for contiguous bone graft contact. Two grafts per package.

Common Uses: Spine

## Injectable (Non-Fiber)



### GRAFTON® Paste

GRAFTON® Paste is moldable and can be mixed with allograft or autograft bone.

Common Uses: Spine, Trauma, Pelvis, Extremities



### GRAFTON® Gel

GRAFTON® Gel can be injected percutaneously and can be mixed with cancellous chips.

Common Uses: Trauma, Extremities



**THANK YOU**