MEDLINE**UNITE**® Orthobiologics

ACTIVATE YOUR FUSION.

Advanced orthobiologic solutions designed for reconstructive **foot & ankle** surgery.

MEDLINE**UNITE**® Orthobiologics

The Right Product for the Right Patient and Procedure

Options within all Key Segments

- ✓ ACTI**VI**™ Fiber Viable Bone Matrix
- ✓ ACTI**GLASS**™ Synthetic Bioactive Bone Graft
- ✓ ACTI**STIM**™ Demineralized Fiber Putty

Best-in-Class Technology for Improved Ease of Use and Outcomes

- ✓ **Improved Cellular Health** for osteogenic potential[1]
- ✓ **Improved Osteoinductivity** from greater BMP-2/BMP-7 within fibers[1,3]
- ✓ **Osteostimulative Effect** from bioactive glass[2]
- ✓ **Balanced Resorption** from optimized mineral composite ratio[2]
- ✓ **Superior Scaffold** for cellular attachment (osteoconductivity)[1,2,3]
- ✓ **Superior Handling** from cortical fiber and/or alkylene oxide carrier[1,2,3]
- ✓ **Easy to Use** with little or no required preparation[1,2,3]

[1] ACTI**VI**™ Fiber Viable Bone Matrix
[2] ACTI**GLASS**™ Synthetic Bioactive Bone Graft
[3] ACTI**STIM**™ Demineralized Fiber Putty

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Comparison of Bone Grafting Options

Category	Autograft	Recombinant Growth Factors (BMP/PDGF)	Viable Cellular Bone Matrix	Synthetic Bone Graft	Demineralized Bone Matrix (DBM)
Examples	From patient's Iliac Crest , Tibia, or Calcaneus	Medtronic INFUSE rhBMP Wright AUGMENT rhPDGF	MEDLINE**UNITE**® ACT**IVI**™ MTF/Orthofix Trinity Stryker BIO4 NuVasive Osteocel DePuy Synthes ViviGen	MEDLINE**UNITE**® ACTI**GLASS**™ Stryker Vitoss Medtronic Mastergraft Baxter Actifuse DePuy Synthes chronOs	MEDLINE**UNITE**® ACTI**STIM**™ MTF/Synthes DBX Medtronic Grafton Arthrex StimuBlast Wright Allomatrix SeaSpine Evo3
Osteoconductive	Yes	Yes	Yes	Yes	Yes
Osteoinductive	Yes	Yes	Yes	No (Some are osteostimulative)	Yes
Osteogenic	Yes	No	Yes	No	No
Source	Patient-Derived	Synthetic	Allograft (Cadaver)	Synthetic (Beta Tricalcium Phosphate, Calcium Sulfate)	Allograft (Cadaver) – Some may be mixed with synthetics
Regulatory	NA (Patient-Derived)	PMA (Premarket Approval) or FDA 510K	HCT/P (Human Cell & Tissue Products)	510K	510K if product contains synthetic carrier or synthetic bone graft If not, then HCT/P (Human Cell and Tissue Products)
Indications	Can be used anywhere bone graft is needed as a supplement to bone graft (osteogenic component)	Limited for certain fusions (INFUSE for Lumbar Spine, AUGMENT for Hindfoot/Ankle)	Can be used anywhere bone graft is needed	Can be used anywhere bone graft is needed	Can be used anywhere bone graft is needed as a standalone bone void filler or autograft extender
Advantages	-Gold Standard -Cells are osteogenic -Osteoconductive	-No autograft required -Highly osteoinductive -Commercially available	-Osteoconductive -Osteoinductive -Osteogenic -Commercially available	-Osteoconductive -Bioglass Options -Excellent Handling -Readily Available	-Osteoconductive -Osteoinductive -Good Handling -Most affordable
Disadvantages	-Second surgical site -Donor site morbidity -Limited availability	-Very expensive -Limited indications	-Expensive -Handling? -Marketing claims…	-Not osteogenic -More $ than DBM	-Not osteogenic -Inferior handling to certain synthetic grafts

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Category Differences Impacting Purchasing Decisions

Category	Demineralized Bone Matrix	Synthetic Bone Grafts	Advanced Cellular & Recombinant
Cost per CC	$$$	$$$	$$$
Differentiation	Minimal	High	High
Surgeon Preference	Little or None	High	High
Indications	Broadly used as a general bone void filler.	Limited; specific circumstances or indications (comminuted fractures with large voids, backfill osteochondral defects)	Limited; specific patients (non-compliant, comorbidities, age) and major cases or revisions
Rep Involvement (Logistics)	Low; can be purchased and stocked on the shelf due to low cost and room temp storage	High; rep coordinates delivery or brings it in depending on the case	High; coordinated delivery for specific pre-approved cases (frozen)
Graft Preparation	No or minimal preparation	Some products require preparation. Medline's does NOT require preparation!	Cryopreserved; some products require preparation. Medline's does NOT require preparation.

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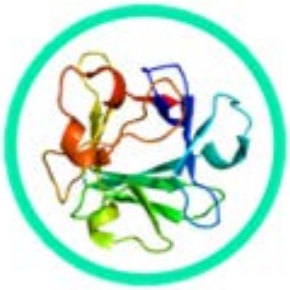
The Three "O's" of Bone Regeneration

Osteogenesis

- Cells that differentiate and develop into osteoblasts which form new bones
- ***Sources:*** Cells from Autograft Bone, Bone Marrow Aspirate (BMA), Cryopreserved Allograft Bone Cells



Osteoinductivity

- Growth factors such as BMPs that recruit and stimulate osteoprogenitor cells (stem cells) to differentiate into osteoblasts
- ***Sources:*** BMPs (Growth Factors) from Allograft Demineralized Bone Matrix and recombinant (engineered) human growth factors

Osteoconductivity

- Physical scaffold that supports cellular activity and boney ingrowth
- ***Sources:*** Allograft Bone Chips, Bone Fibers, and Synthetics/Ceramics (e.g. Calcium Phosphate)

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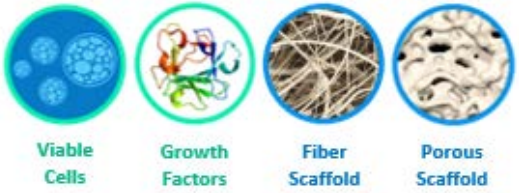
Portfolio & Options

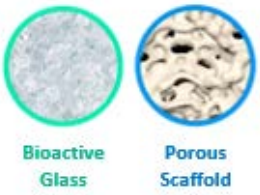
ACTI**VI™ Fiber Viable Cellular Bone Matrix**

- >650,000 cells (cryo)
- Unique processing preserves cell viability, slows cell death
- Demineralized Fibers improve handling characteristics
- Sizes: Extra Small (1cc), Small (2cc), Medium (5cc), Large (10cc)



ACTI**GLASS™ Synthetic Bioactive Putty**

- Contains Bioglass and β-TCP/HA granules
- Osteostimulative and osteoconductive properties
- Waxy carrier for unparalleled handling/moldability
- Sizes: Small (3.75g), Medium (7.5g), Large (15g)



ACTI**STIM™ Demineralized Fiber Putty**

- 100% allograft w/ demineralized cortical fibers (increased surface area)
- Lot-tested for osteoinductive potential (presence of BMP-2)
- Crunch and Gel Paste options available
- Sizes: 1, 2.5, 5, 10cc

MEDLINE**UNITE® Pre-Hydrated Foot Recon Bioimplants**

- Save time in the OR – no need to cut or hydrate, trials included
- Made from dense cancellous bone of the patella or talus
- Calcium chloride solution outperforms freeze-dried grafts
- Sizes: Evans (6, 8, 10, 12mm), Cotton (5, 6, 7mm), Utility (12mm)

MEDLINE**UNITE® Amnion**

- Safe, natural graft containing growth factors
- Liquid available in cryo or ambient temperature
- Patch available in dual- or single-layer
- Sizes: Liquid (0.5, 1.0, 2.0mL), Patch (2x3, 4x4, 4x6, 4x8cm)

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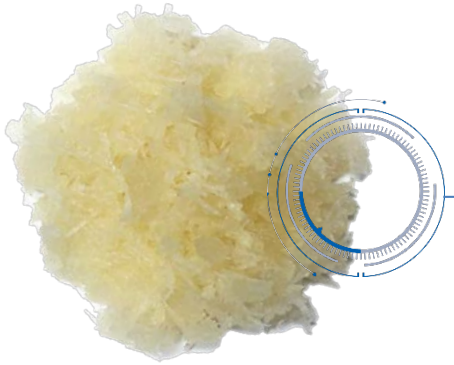
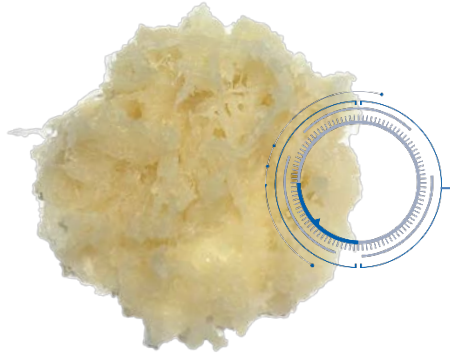


ACTIVI™
FIBER VIABLE
BONE MATRIX

ACTIGLASS™
SYNTHETIC BIOACTIVE
BONE GRAFT



ACTISTIM™
DEMINERALIZED
FIBER PUTTY

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ACTIVI™
FIBER VIABLE
BONE MATRIX

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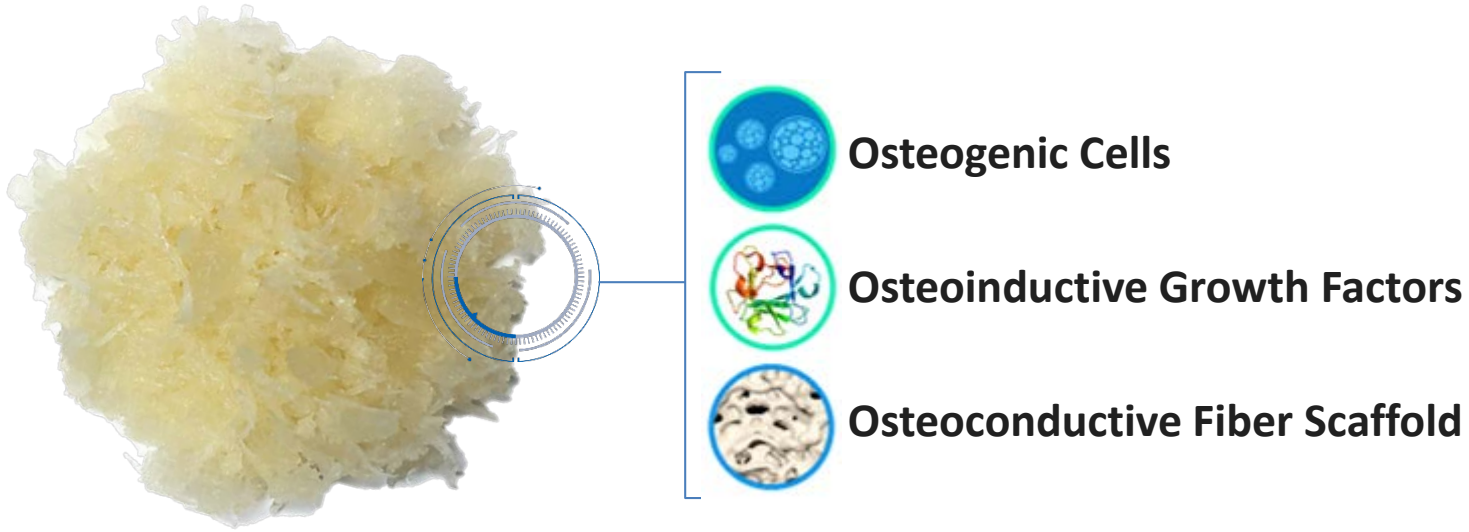
ACTIVI™ Fiber Viable Bone Matrix Key Advantages

- Latest generation cryopreserved osteogenic viable bone allograft
- >650,000 viable cells per cc including MSCs, Osteoprogenitors, and Osteoblasts
- Optimized proprietary processing protects cellular health and viability
- Greater osteoinductive and osteogenic potential and cell proliferation (in vitro assays)
- 3D interwoven fiber scaffold for improved handling, wicking and mixing
- Improved intraoperative efficiency – no decanting, rinsing, or mixing required
- Thaws in a closed jar in warm saline in as little as 5 minutes for smaller sizes



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Not All Cellular Bone Grafts are Created Equal.

- **Cell Quantity + Quality**
  - ACTIVI™ contains >650,000 viable cells[1] per cc post-thaw (e.g. when graft is ready to be implanted).
  - Specific cells in the matrix include Mesenchymal Stem Cells (MSCs), Osteoprogenitors, and Osteoblasts.
  - Although competitors traditionally focus on “cell count” (quantity), “cell health” (quality) is critical.

- **Impact of Tissue Processing on Cellular Health and Viability**
  - Exposure to time, heat, chemicals, etc. during tissue processing causes cell stress which triggers apoptosis.
  - Apoptosis is form of programmed cell death (cell suicide), in contrast to necrosis (traumatic cell death).
  - Most common method for measuring cell viability (quantity) is called the trypan blue staining assay.
  - With this method, dead cells are stained as blue dye penetrates the compromised cell membrane.
  - The remaining, unstained cells are presumed to be alive/viable.
  - Because apoptotic cells are not yet dead (i.e. the cell membrane is still intact), they do not appear stained.
  - Even though these cells are dying, they are considered to be alive/viable!

- **A Better Process for Healthier Cells**
  - Our validated process limits the time that cells are out of a physiological environment.
  - Limits the period of time between donor recovery, aseptic processing, and cryopreservation.
  - Limits exposure to heat, reactive oxygen species, and chemicals.
  - Process results in decreased cell stress and improved cellular health and viability.
  - The impact on cellular health is demonstrated via several in vitro assays.
  - Assays compare ACTIVI™ to a Control (traditionally processed cellular graft using the same donor bone).

1. Actual average cell number of 661,905 via trypan blue exclusion dye (N=21)

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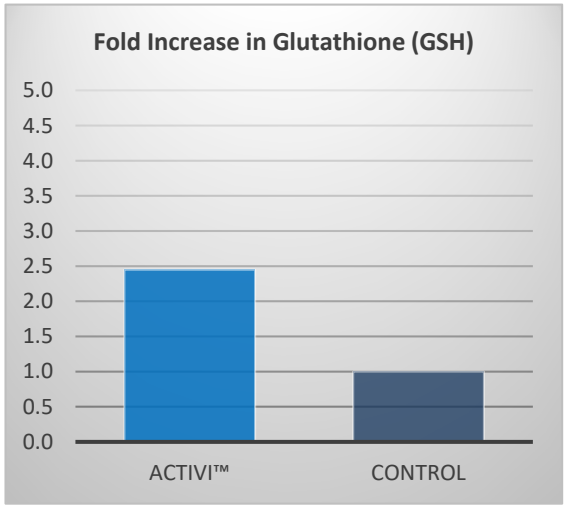
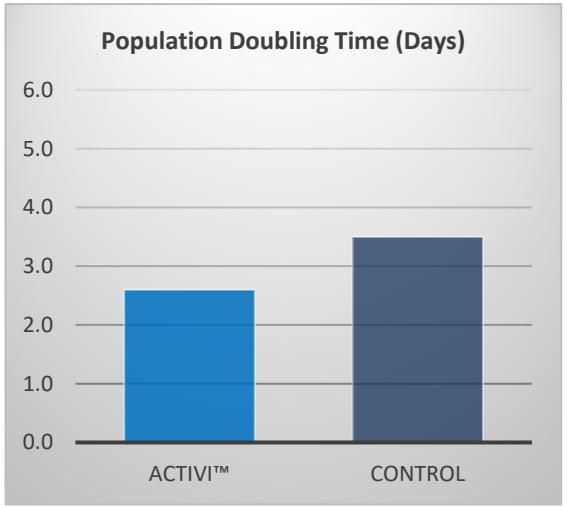
Assays to Determine Improved Cellular Health and Osteogenic Potential



Analysis of GSH concentration (N=11)

Glutathione (GHS) Concentration

- GHS is a natural antioxidant that plays a critical role in preventing cell damage.
- Healthy cells have high levels of GSH whereas unhealthy, dying cells have depleted levels.
- In vitro assays demonstrated that ACTIVI™ GSH levels were higher than the control indicating **better cellular health**.



Cell number analysis via ATP (N=6)

Adenosine Triphosphate (ATP) Test

- ATP is a molecule found in and around living cells, which gives a direct measure of biological concentration and health.
- ATP testing is commonly used to determine cell proliferation.
- In vitro assays showed **greater cell proliferation capability** for ACTIVI™ with cell counts doubling in 2.6 days vs. 3.5 days for the control.

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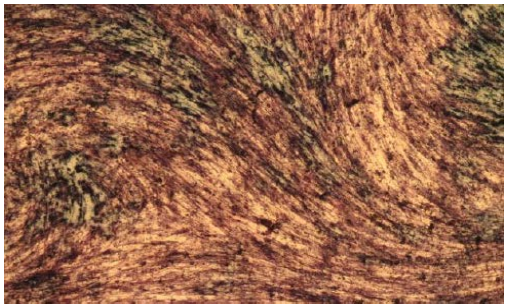
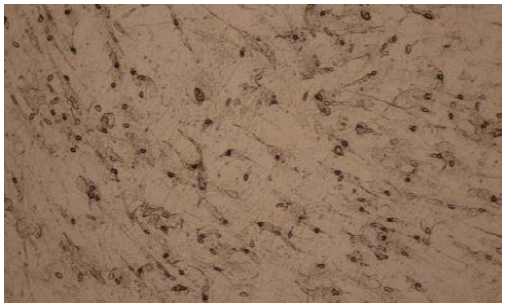
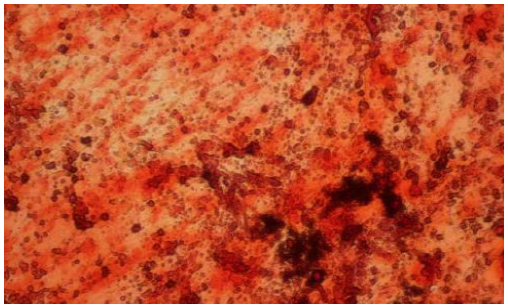
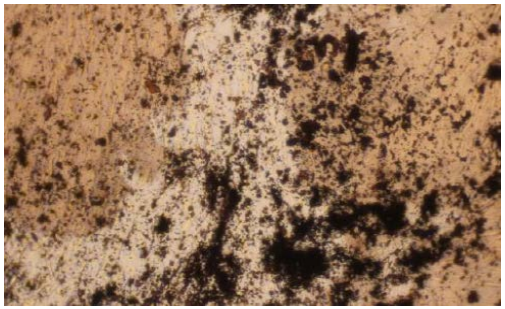
In Vitro Histological Cell Staining Assay Results

Summary: Three staining methods (Alkylene Phosphatase, Alizarin Red S, and Van Kossa) were used to determine osteogenic differentiation of Mesenchymal Stem Cells (MSCs) in ACTIVI™ Fiber Viable Bone Matrix vs. a control. Cells were cultured and stained at day 21.

Results: *Alkylene Phosphatase (ALP)* is a bone cell-specific marker. Proliferating osteoblasts show ALP protein enzyme activity which is greatly enhanced during in vitro bone formation. Staining indicates differentiated osteoblasts. *Alizarin Red S (ARS)* stains calcium deposits in a bright orange-red color. Undifferentiated Mesenchymal Stem Cells have no extracellular calcium deposits, whereas differentiated osteoblasts feature vast extracellular calcium deposits *in vivo* and *in vitro*. Calcium deposits are an indication of successful differentiation of MSCs into osteoblasts and *in vitro* bone formation. The *Van Kossa* staining method is used for histological visualization of calcium deposits. Mass deposits are the dark areas.

Conclusion: Cells isolated from ACTIVI™ Fiber Viable Bone Matrix differentiated to osteogenic lineage more effectively than the control, indicating ***greater osteogenic potential***.

Alkaline Phosphatase (ALP)	Alizarin Red S (ARS)	Van Kossa	
			Control
			ACTIVI™

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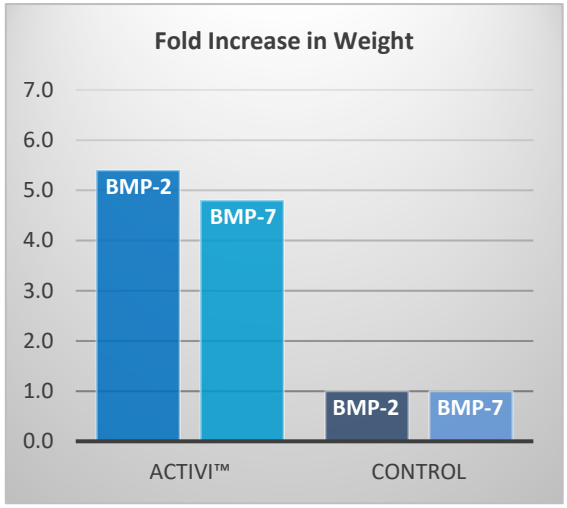
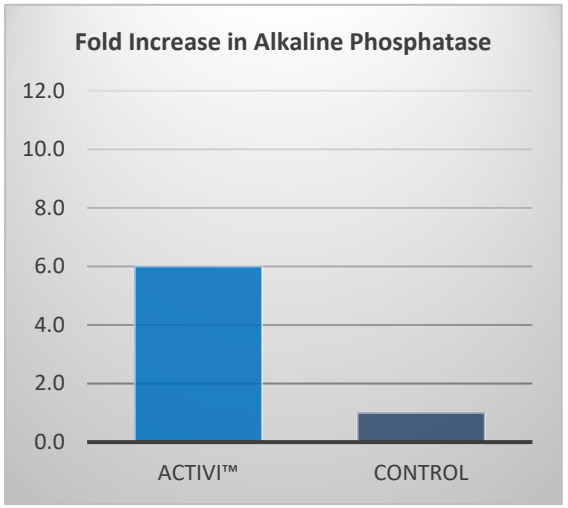
Assays to Determine Improved Osteoinductive Potential



Analysis of BMP-2 and BMP-7 level via ELISA (N=3)



Analysis of ALP level after 3 wk culture on C2C12 cell line (N=3)

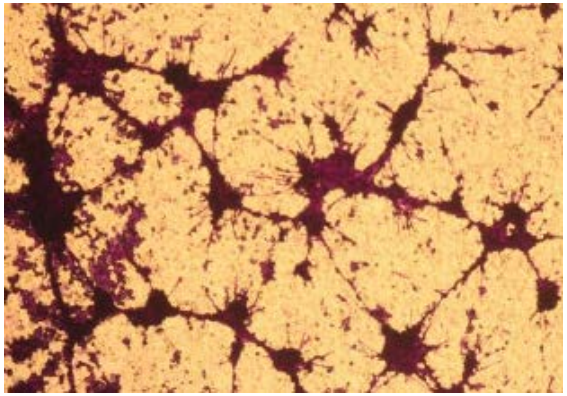
In Vivo Osteoinductivity (OI) Scores	
ACTIVI™	**Control**
2 ± 0.5	**1 ± 0.5**

OI Score and % New Bone Formation

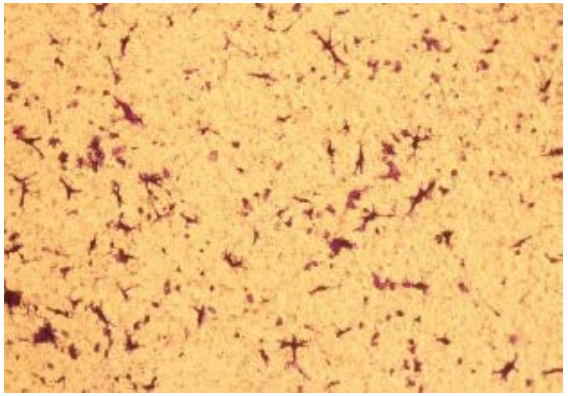
0 = No New Bone Formation
1 = 0 – 25% New Bone
2 = 26 – 50% New Bone
3 = 51 – 75% New Bone
4 = >75% New Bone

Analysis of OI score on inter- and intramuscular of rat implantation for 28 days (N=3,n=2)

ACTIVI™



Control



Analysis of cell number migrated to underside of transwells after 24 hour culture (N=3)

ACTIVI™ **recruited 4.7x higher number of cells** than the control.

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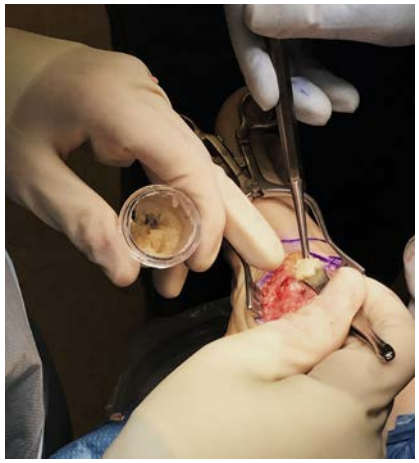
Intraoperative Application

- Refer to product IFU before use.
- ACTIVI™ is cryopreserved and stored at -75°C in order to maintain cell viability.
- The product has a 2 year shelf life.
- The product is supplied in a sterile polycarbonate jar placed in a sterile peel pouch within a box.
- Do not use if the integrity of the pouch has been compromised.

- ACTIVI™ does not require decanting or mixing.
- Place the sealed jar standing upright in a sterile basin and fill with warm saline (37°C) to just below the jar lid but do NOT submerge the jar.
- Thaw time varies from ~5 minutes for the smallest size to ~20 minutes for the largest.
- When properly thawed, the product should be pliable, and may be warmed in sterile gloved hands if still frozen.



- ACTIVI™ maintains cell viability and working back table time of up to 2 hours from thaw.
- Thaw as close to implantation time as possible.
- Keep the jar sealed until ready to use to minimize exposure to the ambient environment.

- ACTIVI™ contains a 3D interwoven fiber scaffold for improved handling and wicking.
- If desired, the product can be mixed with blood, bone marrow aspirate, autograft bone, or other forms of allograft bone.

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ACTIGLASS™
SYNTHETIC BIOACTIVE BONE GRAFT

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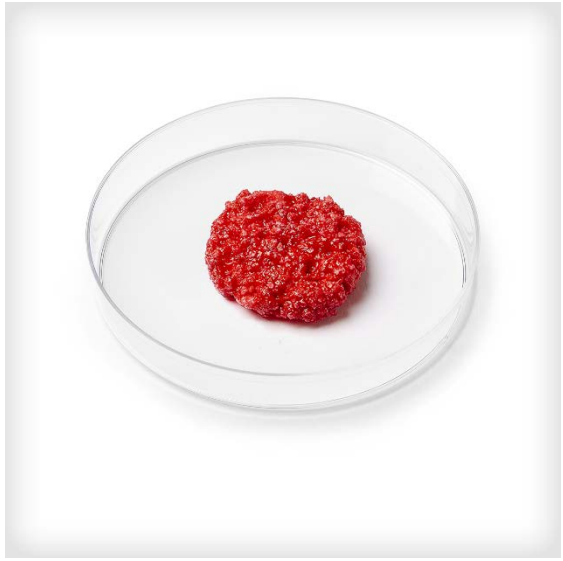

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Principles of Bone Healing

	Healing Cascade	ACTIGLASS™ Mode of Action
Reparative Phase	1. Cellular infiltration and migration to site (fibroblasts, macrophages, mesenchymal stem cells) 2. Granular tissue formation and vascularization 3. Cell differentiation into osteoclasts and osteoblasts 4. Collagen matrix deposition and mineralization 5. Woven bone formation	1. Resorption of carrier 2. Biological fluid adsorption and infiltration 3. Dissolution of graft materials 4. Biostimulative effects (bioactive, osteostimulatory) 5. Cellular attachment, proliferation and differentiation 6. Osteoclast resorption and osteoblast deposition of new bone on graft materials 7. Osteoconduction of new host bone 8. Woven bone matrix bridging between granules
Remodeling Phase	1. Replacement of woven bone with lamellar bone 2. Structural orientation of maturing fusion bed 3. Marrow space formation 4. Restoration of normal bony architecture and strength	1. Continued dissolution and resorption of graft material 2. Gradual replacement with new host bone

References: 1) Zipfel G, Guiot B, Fessler R. Bone Grafting. *Neurosurg Focus*, 2003;14(2):e8. 2) Kalfas I. Principles of Bone Healing. *Neurosurg Focus*, 2001;10(4):E1. 3) Sfeir C, Ho L, Doll B, Azari K, Hollinger J. Fracture Repair. In: Lieberman JR, Friedlaender GE, eds. *Bone Regeneration and Repair Biology and Clinical Applications*. New York, NY: Humana Press; 2005:21-44.

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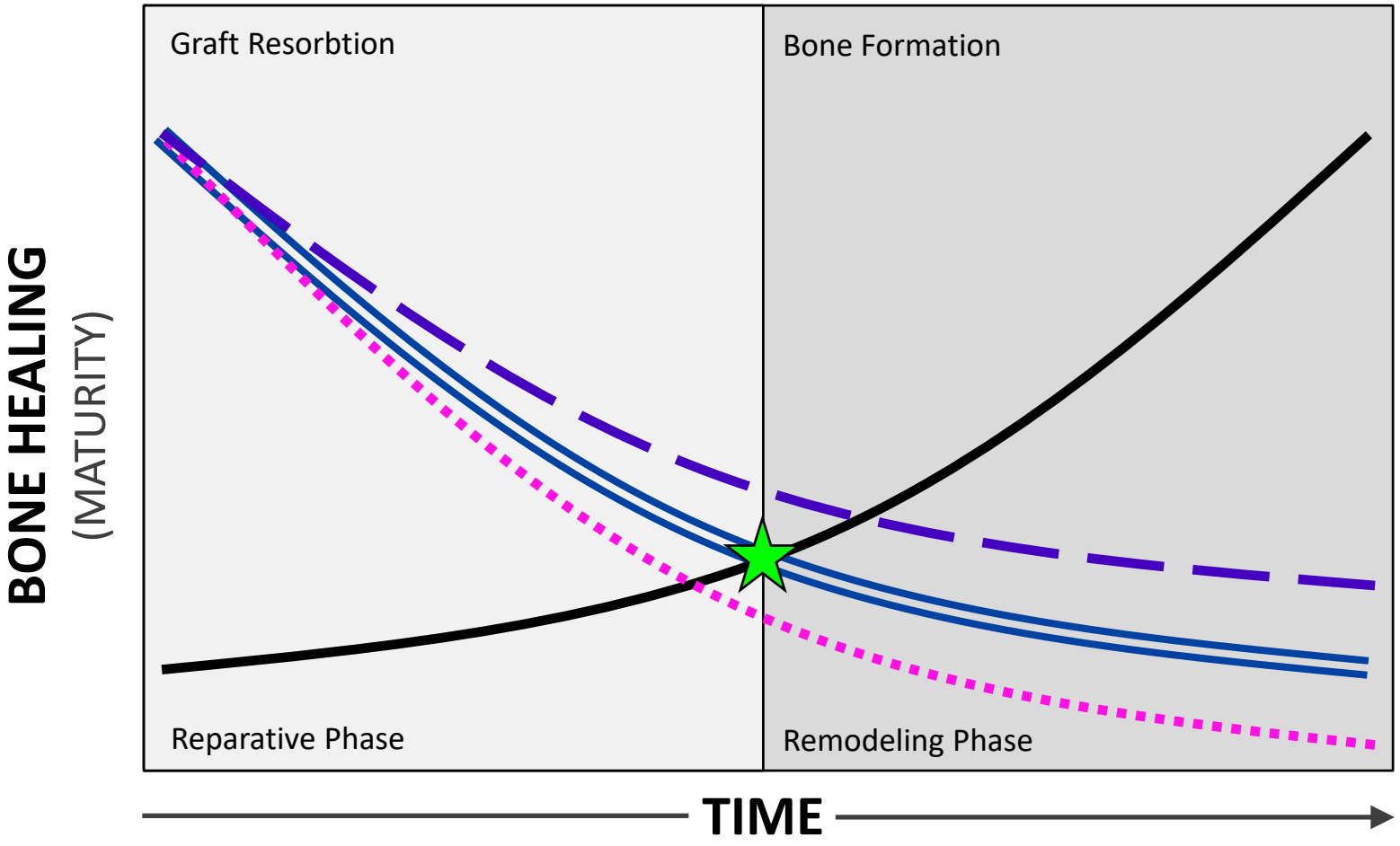
Bone Healing Phases



Rapid resorption impact: **Formation of non-mineralized fibrous tissue at the implant site.**

Slow resorption impact: **Limited remodeling, leaving defect site susceptible to focused mechanical stress.**

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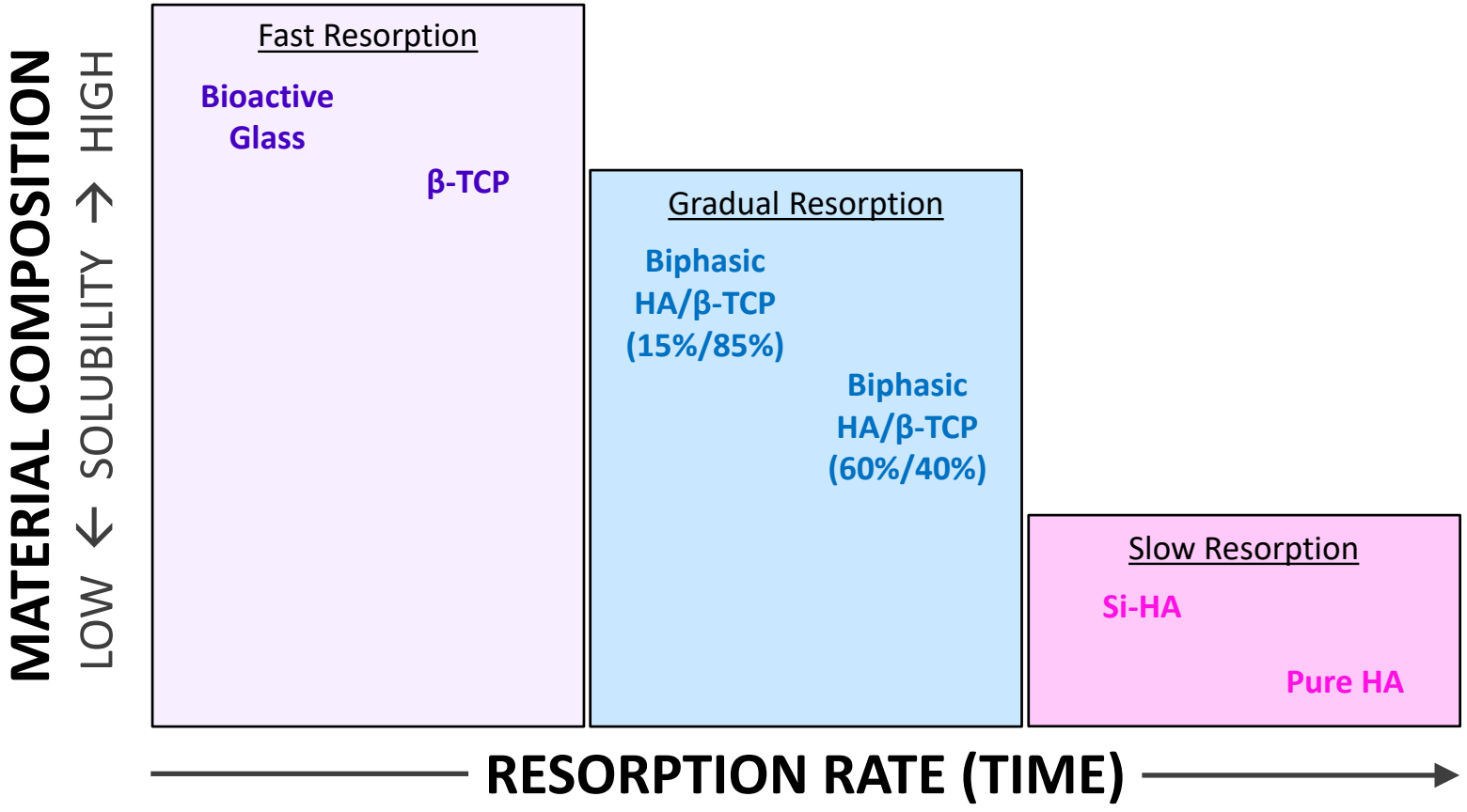
Resorption Rates by Material



Rapid resorption impact: **Formation of non-mineralized fibrous tissue at the implant site.**

Slow resorption impact: **Limited remodeling, leaving defect site susceptible to focused mechanical stress.**

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ACTI**GLASS**™ Design Rationale

Patented Formulation of Proven Biomaterials

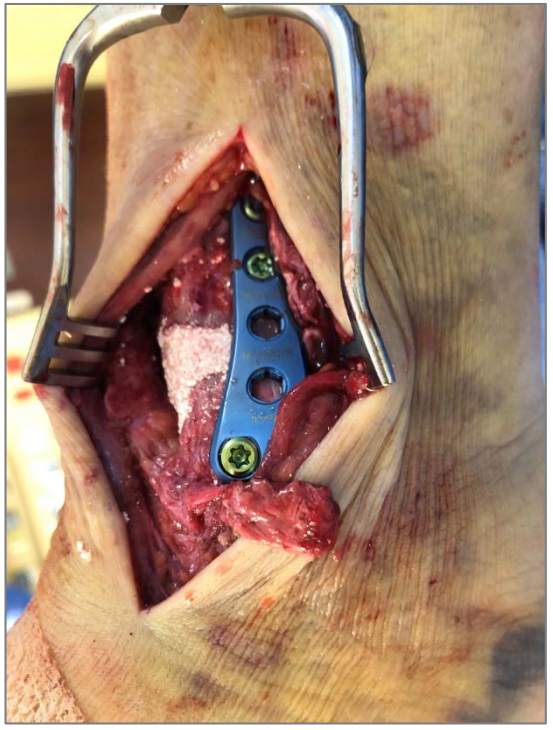
- Synthetic osteostimulative graft
- Engineered to support bone healing at all stages
- 20% Bioactive Glass, 32% β-TCP Granules, 48% HA Granules

Unparalleled Handling

- Rapid 24 hour resorption of biocompatible carrier
- Waxy, desirable viscosity with exceptional moldability
- Excellent graft adherence and containment

Surgery-Ready Convenience

- Stored at room temperature (no thawing)
- No mixing, re-hydration, or special preparation required
- Can be mixed with autograft



ACTI**GLASS**™ application for large defect in comminuted distal tibia fracture.

INDICATIONS: MEDLINE**UNITE** ACTI**GLASS™** Synthetic Bioactive Bone Graft is a bone void filler device intended for use in bony voids or gaps that are not intrinsic to the stability of the bony structure. These defects may be surgically created osseous defects or osseous defects created from traumatic injury to the bone. MEDLINE**UNITE** ACTI**GLASS™** Bioactive Bone Graft is indicated to be packed gently into bony voids or gaps of the skeletal system (i.e., extremities, pelvis and posterolateral spine fusion procedures). MEDLINE**UNITE** ACTI**GLASS™** Synthetic Bioactive Bone Graft can also be used with autograft as a bone graft extender in posterolateral spine. The device provides a bone void filler that is resorbed and replaced with host bone during the healing process.

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Bioactive Glass (Bioglass)

- Silicon Dioxide (SiO_2)
- Calcium Oxide (CaO)
- Sodium Oxide (Na_2O)
- Phosphorous Pentoxide (P_2O_5)
- Irregularly shaped granules
- Patented particle size range (200 – 420µm)

Low Magnification

High Magnification

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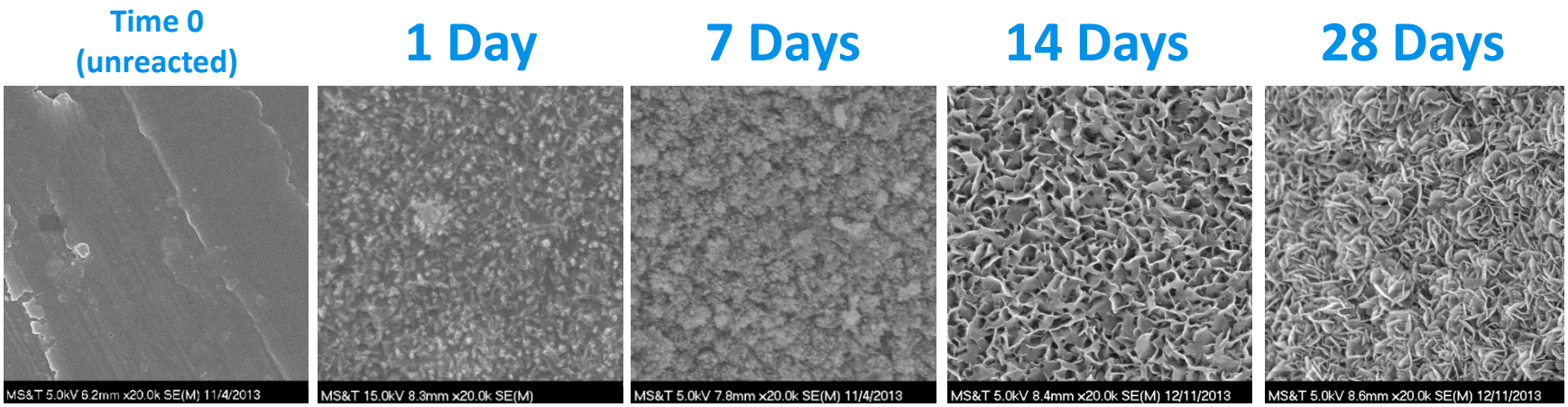
Bioactive Properties

- Bioactive glass ions released following carrier resorption
- Ions reacts with body fluids and stimulate formation of osteoconductive apatite layer
- Ionic dissolution products of bioactive glass have been shown to:
  - Increase osteoblast differentiation and proliferation (e.g. osteostimulative effect)
  - Upregulate osteogenic gene expression
  - Stimulate angiogenesis
  - Minimize persistence of inflammatory responses
  - Have antimicrobial effectiveness



Scanning electron microscopy (SEM) images of the apatite layer formation on the implant surface following immersion in simulated body fluid (SBF). In vitro performance may not be predictive of performance in humans.

References: 1) Hench LL. The story of Bioglass. *J Mater Sci Mater Med.* 2006;17(11):967-78. 2) Gerhardt LC, Boccaccini AR. Bioactive glass and glass-ceramic scaffolds for bone tissue engineering. *Materials*.2010;3(7):3867-910. 3) Xynos ID, Edgar AJ, Buttery LDK, Hench LL, Polak JM. Gene expression profiling of human osteoblasts following treatment with the ionic products of Bioglass 45S5 dissolution. *J Biomed Mater Res*. 2001;55(2):151-7. 4) Greenspan DC. Bioactive glass: mechanism of bone bonding. *Tandläkartidningen Ärk.* 1999;91(8)1-32. 5) Stoor P, Söderling E, Salonen JI. Antibacterial effects of a bioactive glass paste on oral microorganisms. *Acta Odontol Scand*. 1998;56(3):161-5.

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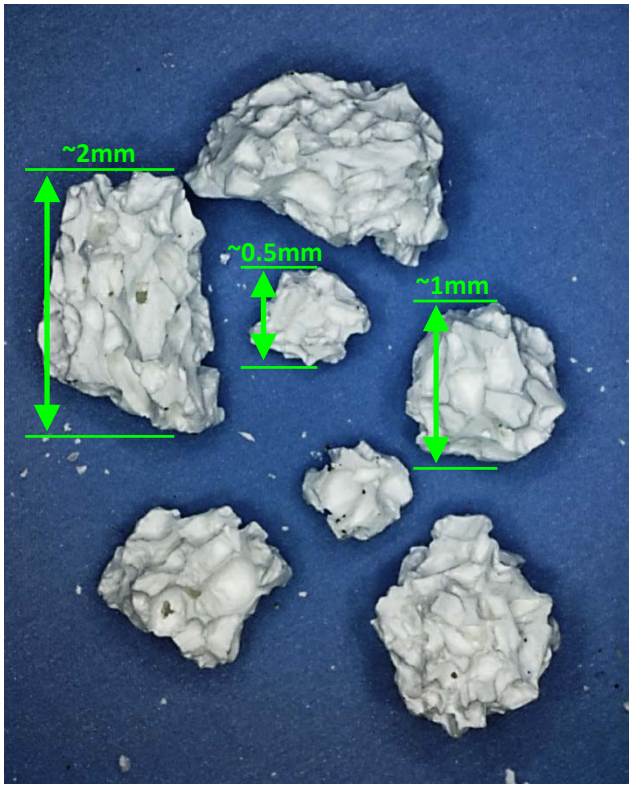
Biphasic β-TCP/HA

- Combines the long-term stability of HA with the rapid solubility of β-TCP.
- Provides a more gradual and optimized resorption profile.
- More amenable to the body's natural bone healing process.



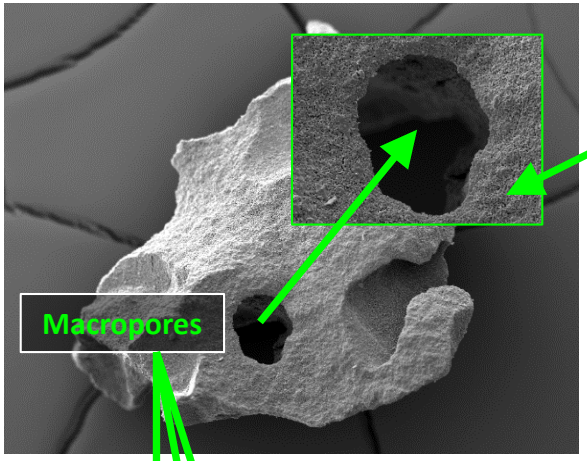
Patented Granules

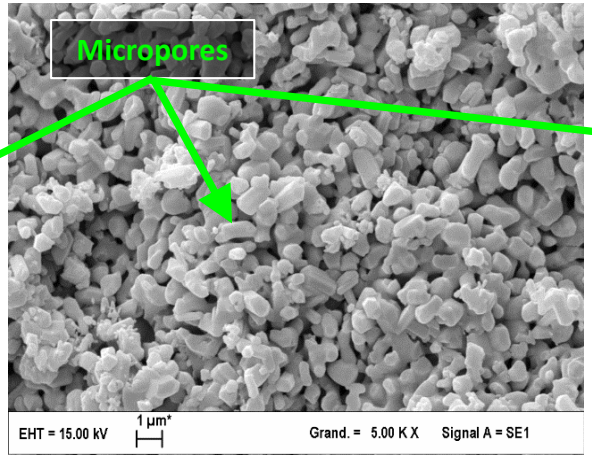
- Particle size range:
  - 0.5 – 1.0mm (50%)
  - 1.0 – 2.0mm (50%)
- Irregularly shaped to fully pack void space
- Multidirectional, interconnected porous structure
- Mimics human cancellous bone

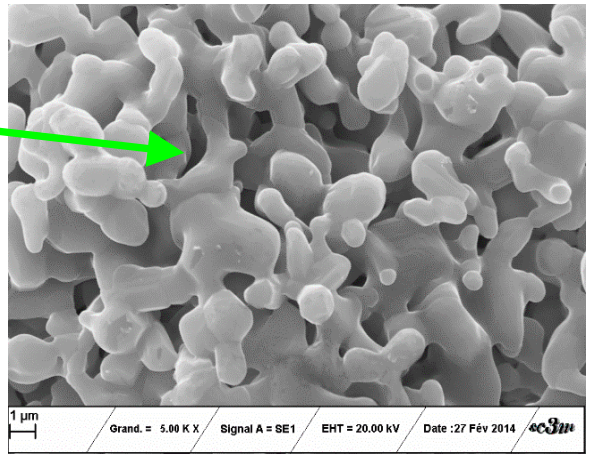
MEDLINEUNITE® Orthobiologics

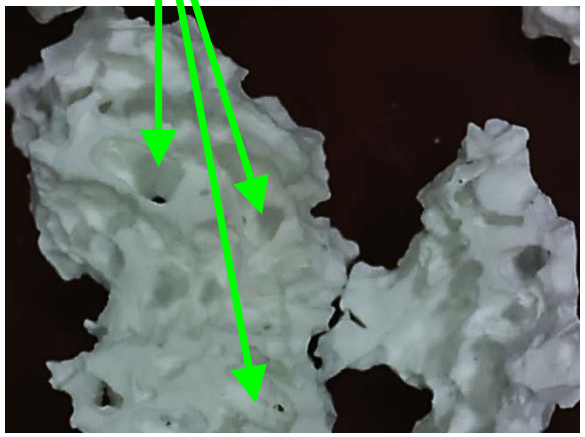
Granule Macro- and Microporosity

SEM images of β-TCP/HA Granules









- 50 – 55% macroporous (300 – 600µm)
- Macropores correspond to the size of trabecular bone to support osteoconduction.
- 20 – 30% microporous (<10µm)
- Micropores allows for diffusion of biological fluids and increased surface area for exchange of calcium and phosphate ions (important to healing process).

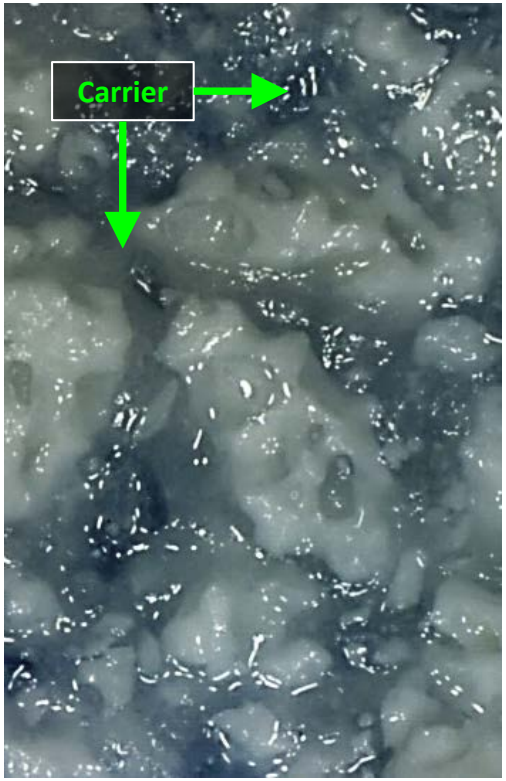
1. Vaccaro AR. The Role of the Osteoconductive Scaffold in Synthetic Bone Graft. *Orthopedics* 2002; 25(5):571-78.
2. Hing KA, Wilson LF, Revell PA, Buckland T. Comparative performance of three bone graft substitutes. *Spine J* 2007; 7(4):475-90.

MEDLINEUNITE® Orthobiologics

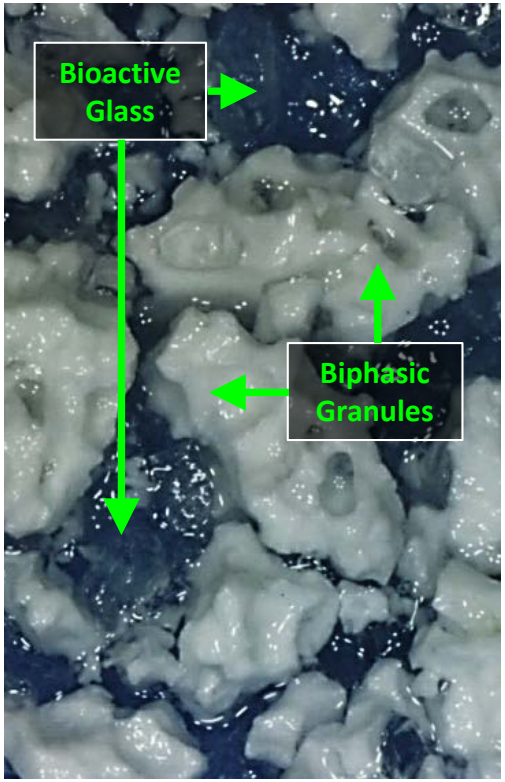
Alkylene Oxide Polymer (AOP) Carrier

- Provides excellent handling, resorbs quickly to expose β-TCP/HA and bioactive glass

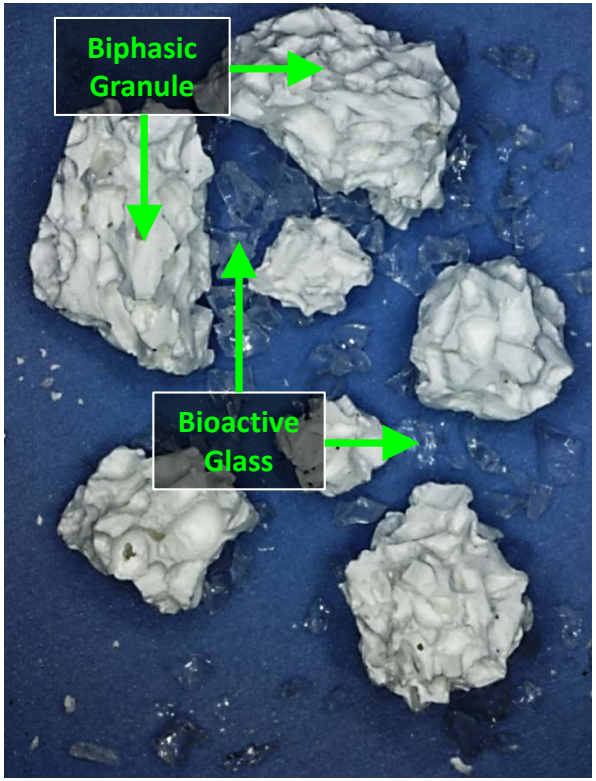
Bioimplant in Simulated Body Fluid (SBF)



Carrier Dissolution After 30 Minutes



Biphasic Granules and Bioactive Glass (No Carrier)



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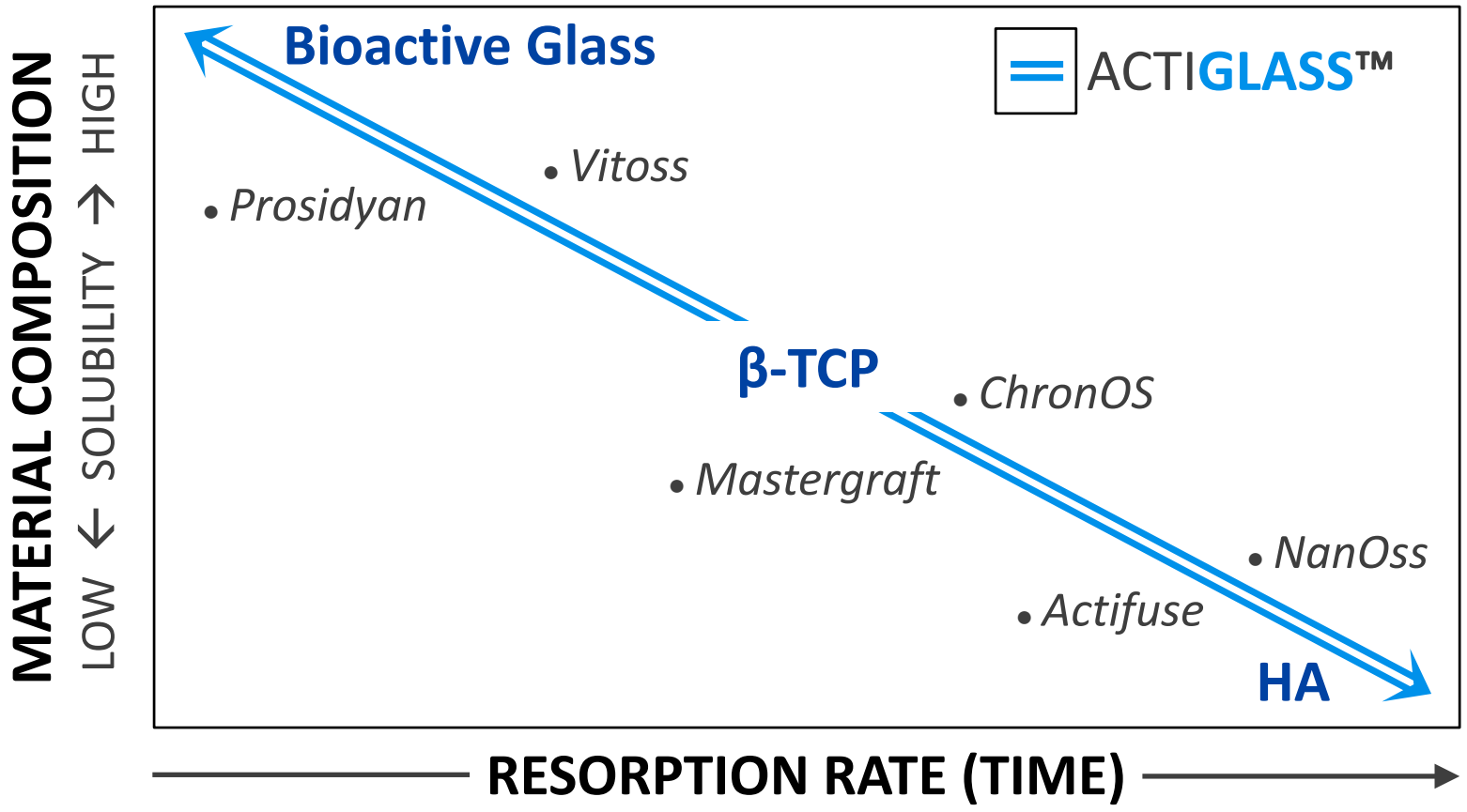
Optimized Resorption Profile



MEDLINEUNITE® Orthobiologics

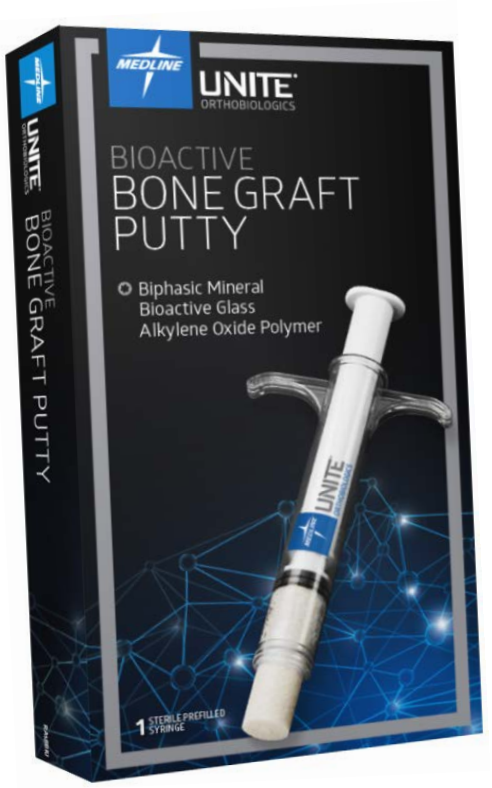
Market Comparison

Only ACTI**GLASS**™ contains all three ideal synthetic bone graft components

Brand Name	Bioglass	β-Tricalcium Phosphate	Hydroxyapatite	Carrier
ACTIGLASS™ BIOACTIVE BONE GRAFT	**20%**	**32%**	**48%**	**Alkylene Oxide Polymer**
Stryker **Vitoss**	10%	70%	**None**	20% Bovine Collagen
DePuy Synthes **Fibergraft**	100%	**None**	**None**	Matrix - Collagen Putty - Polymer
DePuy Synthes **ChronOS**	**None**	100%	**None**	Sodium Hyaluronate
Medtronic **Mastergraft**	**None**	85%	15%	Bovine Collagen
Baxter **Actifuse**	**None**	**None**	0.8% Silicate Substituted Calcium Phosphate	Alkylene Oxide Copolymer
RTI Surgical **NanOss**	**None**	**None**	Nanostructured	Porcine Collagen

MEDLINE**UNITE**® Orthobiologics

ACTI**GLASS**™ Key Takeaways



- Patented Formulation of Proven Biomaterials
- Unparalleled Handling
- Surgery-Ready Convenience

MEDLINEUNITE® Orthobiologics

ACTISTIM™
DEMINERALIZED
FIBER PUTTY

ACTIVATE YOUR FUSION.

MEDLINE**UNITE**® Orthobiologics

ACTI**STIM**™ Demineralized Fiber Putty

- 100% allograft putty + demineralized cortical fibers
- Improved moldability, irrigation resistance, wicking
- Increased surface area to promote cellular attachment
- Carrier-free for immediate start to bone healing process
- Surgery-ready – no thawing, mixing, or re-hydration

MEDLINE**UNITE**® Orthobiologics

ACTI**STIM**™ Demineralized Fiber Putty Key Advantages

Greater Osteoconductive Scaffold

Demineralized cortical fibers within ACTI**STIM**™ provide a more than **18x larger surface/volume ratio** compared to crushed cancellous bone chips for improved cellular attachment and proliferation.

Allograft Scaffold Density (Surface/Volume Ratio)	**1-4mm Chips**	**.125-1mm Particulate**	ACTI**STIM**™ **Fibers**
Packing Density	0.7	0.7	**0.95**
Volume (ml)	0.00418879	0.000092941	**0.0015**
Number in 1cc	167.1126902	7531.65987	**633.3333**
Individual surface area (mm^2)	12.56637061	0.99225319	**62.15**
Total surface area	2100	7473.313533	**39361.67**
S/V (mm^2/mm^3) for 1cc	2.1	7.473313533	**39.36167**

Greater Osteoinductive Potential

In vivo testing of demineralized cortical fibers within ACTI**STIM**™ demonstrated a **4-fold enhanced OI score** compared to demineralized cortical particulate.

MEDLINEUNITE® Orthobiologics

Product Comparison

Product Name	Fiber-Based	Allograft %	Synthetic Carrier or Filler
ACTI**STIM™**	**Yes**	**100%**	**Carrier-Free Formulation**
Arthrex StimuBlast	No	36%	Polypropylene / Polyethylene Oxide
Wright AlloMatrix	No	40%	Calcium Sulfate
Synthes/MTF DBX	No	31%	Sodium Hyaluronate
Medtronic Grafton	No	17%	Glycerol
SeaSpine Evo3	No	Unknown	Poloxamer / Reverse Phase Medium
Biomet StaGraft	No	40%	Lecithin / Phosphatidylcholine
AlloSource AlloFuse	No	36%	Poloxamer / Reverse Phase Medium
LifeNet Optium	No	Unknown	Glycerol
RTI BioSet	No	24%	Unknown

MEDLINEUNITE® Orthobiologics

Additional Options

Crunch
- DBM Putty mixed with corticocancellous chips to fill larger defects/voids.
- Ideal for larger applications including hindfoot/ankle.
- 1cc, 2.5cc, 5cc, 10cc

Gel Paste
- Extrudable and injectable DBM for confined spaces or smaller applications.
- Ideal for smaller applications including forefoot/midfoot.
- 1cc, 2.5cc, 5cc, 10cc

Crushed Cancellous
- Available in 1-4mm or 4-10mm granule sizes.
- Ideal for backfilling osteodefects, osteotomies, and fusion sites.
- 10cc, 15cc, 30cc

MEDLINEUNITE® Orthobiologics

Advanced Tissue Processing & Graft Safety

1 Aseptic tissue debridement and cleaning to remove blood, lipids, and marrow

2 Decontamination from bacteria and other pathogens using antimicrobial reagents

3 Forced permeation of cleansing solutions followed by high-pressure air compression purging or centrifugation

4 Multiple sterile water and/or saline rinsing stages to remove reagents and other excess substances

5 Ultrasonication and other methods used to remove residual reagents and moisture

6 Controlled temperature cycles to preserve tissue integrity and Osteoinductive potential

ADVANCED ORTHOBIOLOGICS SUMMARY.

MEDLINE UNITE® ORTHOBIOLOGICS

ACTIVI™
FIBER VIABLE BONE MATRIX

Unique processing technology protects healthy cell population and viability by slowing cell death

Greater osteogenic potential and cell proliferation capability vs. traditionally processed cellular bone allografts

Greater osteoinductive potential and BMP-2/BMP-7 levels vs. traditional demineralized bone

3D Interwoven Fiber Scaffold offers greater osteoconductive surface area vs. traditional crushed cancellous bone

Improved handling, wicking and mixing vs. traditional cellular allografts

ACTIGLASS™
SYNTHETIC BIOACTIVE PUTTY

Optimized combination and ratio of biomaterials to support bone healing at all stages

Bioglass facilitates a rapid biological response and stimulates the formation of an osteoconductive apatite layer

Optimized granule structure and porosity mimics human cancellous bone

Controlled resorption profile with biphasic granules (β-TCP and HA components)

Highly moldable and waxy consistency in a rapidly resorbing Alkylene Oxide Polymer carrier

ACTISTIM™
DEMINERALIZED FIBER PUTTY

100% human allograft putty pre-mixed with demineralized cortical fibers

3D Interwoven Fiber Scaffold offers greater osteoconductive surface area vs. traditional crushed cancellous bone

Improved handling, wicking and mixing vs. traditional putties

Carrier-free formulation allows for immediate start to the bone healing process

Terminally sterilized with gamma irradiation to Sterility Assurance Level of 10^{-6}

Item No.	Size	Item No.	Size	Item No.	Size
MVBG0010	ACTIVI™, Extra Small, 1cc			MDBM1010	ACTISTIM™, Extra Small, 1cc
MVBG0020	ACTIVI™, Small, 2cc	MSBG0375	ACTIGLASS™, Small, 3.75g	MDBM1025	ACTISTIM™, Small, 2.5cc
MVBG0050	ACTIVI™, Medium, 5cc	MSBG0750	ACTIGLASS™, Medium, 7.5g	MDBM1050	ACTISTIM™, Medium, 5cc
MVBG0100	ACTIVI™, Large, 10cc	MSBG1500	ACTIGLASS™, Large, 15g	MDBM1100	ACTISTIM™, Large, 10cc

ACTIVATE YOUR FUSION.

MEDLINEUNITE® Orthobiologics

Key Competitors by Segment

ACTIVI™
FIBER VIABLE BONE MATRIX

- WRIGHT AUGMENT rhPDGF-BB
- DePuy Synthes ViviGen
- ORTHOFIX TRINITY ELITE
- stryker BIO4
- ZIMMER BIOMET CELLENTRA / PRIMAGEN
- NUVASIVE OsteoCel
- Arthrex ArthroCell

ACTIGLASS™
SYNTHETIC BIOACTIVE BONE GRAFT

- stryker VITOSS
- Medtronic MASTERGRAFT
- DePuy Synthes chronOs
- Baxter Actifuse

ACTISTIM™
DEMINERALIZED FIBER PUTTY

- Medtronic GRAFTON
- DePuy Synthes DBX
- WRIGHT ALLOMATRIX
- SeaSpine Evo3
- Arthrex STIMUBLAST

Questions?

Thank You!