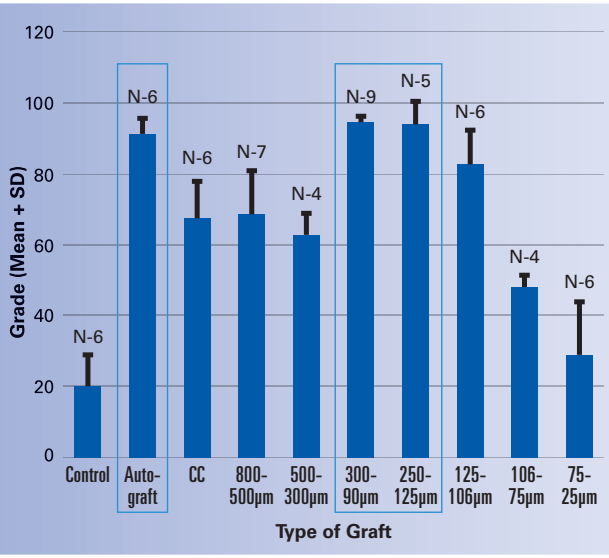
HARNESSING NATURE AND TECHNOLOGY

VIA® VIABLE BONE MATRICES

VIA® PROVIDES THE THREE KEY ELEMENTS IDEAL FOR BONE FORMATION

- An **osteoconductive** three-dimensional scaffold with cortical and cancellous components.
- A demineralized bone scaffold with **osteoinductive** potential.[1]
- Viable spine-derived cells to **support osteogenesis**.



PARTICLE SIZE MAKES A DIFFERENCE

The VIA Viable Bone Matrices provide an osteoconductive bone scaffold composed of demineralized cortical and mineralized cortical and cancellous bone. The optimized microparticulate bone scaffold size range of **100-300 µm** has been shown to induce simultaneous activity of osteoclasts and osteoblasts, supporting rapid bone formation in bone defects.[2]

Figure 1: *100-300 µm optimized particle size for bone regeneration has been shown to support direct ossification, with results comparable to autograft.[2]*

VIA COAT™ A DIFFERENTIATED TECHNOLOGY

Proper preservation of cellular allografts requires strict adherence to recovery and processing protocols. In the VIA Viable Bone Matrices, viable spine-derived cells are collected from the vertebral body region of the donor and preserved with the use of a next-generation **DMSO-free cryoprotectant**, VIA Coat, which uses an extracellular protective coating on the cell to prevent crack propagation and membrane lysis[1] *(Figure 2)*. Industry standard DMSO penetrates the cell and prevents crystal formation from within *(Figure 4)*. At room temperature, DMSO-based cryoprotectants raise concerns about cytotoxicity and negative effects on cell differentiation.[3,4,5]

VIVEX's patented and proprietary VIA Coat cryoprotectant is a differentiated technology that is applied to a number of products in our portfolio. VIA Coat is a protective coating utilized to preserve our allografts. The VIA Coat technology provides our products with distinct advantages over DMSO-based cryoprotectant technology that is used in competitive products. Since VIA Coat is DMSO-free, it does not require the multiple rinsing and decanting steps of DMSO-based cryoprotectants, which helps support the regenerative potential of the patient.

VIA Coat provides a surgical procedure advantage over other cryoprotectants containing DMSO. Allografts treated with VIA Coat experience minimal cell loss and retain, on average, over 80% cell viability after thaw[2] *(Figure 3)*. VIA Coat also allows for usage up to four hours after thawing and VIA Coat allografts can be stored for up to three years at or below -65°C.

VIACOAT™

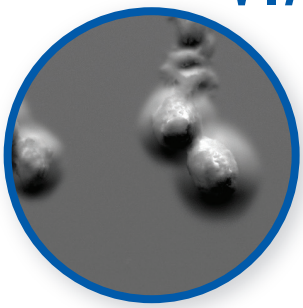


Figure 2:
Cells protected with VIA Coat to prevent crystalline damage (frozen)

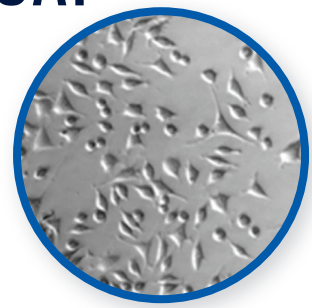


Figure 3:
Viable cells are preserved with the use of VIA Coat (frozen)

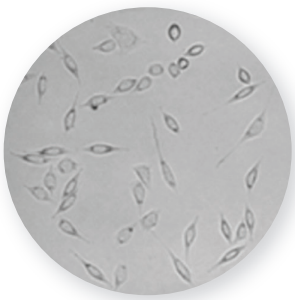


Figure 4:
2.5% DMSO-compromised cells showing reduced viability (thawed)

A VIABLE STRUCTURAL ALLOGRAFT

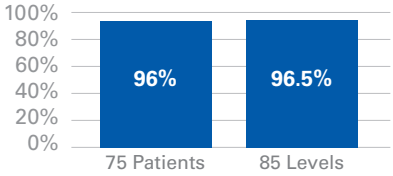
The cell component of the VIA Viable Bone Matrices is collected from the vertebral body region of the donor. Strict donor criteria and quality control processes including flow cytometry help verify safety and a viable cell population for osteogenic supplementation as a viable structural allograft.

OPERATING ROOM EASE OF USE

- No rinsing or decanting steps required
- Average cell viability consistently exceeds 80% post-thaw[1]
- Minimum of 150,000 viable cells per cc of allograft[1]
- Four-hour working window for implantation after thaw without loss of cell viability

A GROWING BODY OF EVIDENCE

MIS-TLIF study demonstrated 96% fusion at 12 months.[6]



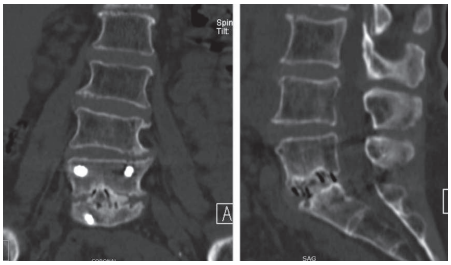


Figure 5: *A 54-year-old woman underwent treatment for radiculopathy secondary to disc herniation. Bridging bone is apparent at the L5-S1 intervertebral level.*

IT ALL ADDS UP TO:

- **An allogeneic, osteoconductive scaffold with osteoinductive potential.**[1]
- **A viable cell population to support osteogenic processes.**
- **A proprietary DMSO-free cryoprotectant that allows for consistent delivery of viable allograft to the patient.**
- **Multiple bone scaffolding options to meet a wide variety of surgeon preferences and procedures.**

VIA® GRAFT

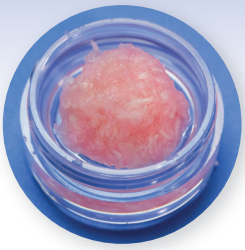
For tight, defect packing

VIA® GRAFT MOLDABLE

For moldable paste applications

VIA® FORM MOLDABLE

Robust, fibrous moldability



THREE BONE SCAFFOLDING OPTIONS TO MEET A WIDE VARIETY OF SURGEON PREFERENCES

VIA GRAFT

SIZE	CODE
1.0cc	VCAX-010000
2.5cc	VCAX-025000
5.0cc	VCAX-050000
10cc	VCAX-100000

VIA GRAFT Moldable

SIZE	CODE
2.5cc	VCAMX-025000
5.0cc	VCAMX-050000
10cc	VCAMX-100000

VIA FORM Moldable

SIZE	CODE
2.5cc	VCAFMX-025000
5.0cc	VCAFMX-050000
10cc	VCAFMX-100000

1. Data on file at Vivex Biologics, Inc.
2. Malinin, T.I., et. al., Particulate bone allograft incorporation in regeneration of osseous defects; importance of particle sizes. The Open Orthopeadics Journal, 2007. 1:19-24.
3. Best, Benjamin. P. Cryprotectant Toxicity: Facts, Issues, and Questions. Rejevenation Research, 2015. Vol. 18, No. 5.
4. Renzi, S., et al., Mesenchymal stromal cell cryopreservation. Biopreservation and Biobanking, 2012. 10(3): p. 276-281.
5. Asghar, W., et al., Preserving human cells for regenerative, reproductive, and transfusion medicine. Biotechnology Journal, 2014. 9: p. 895-903.
6. Tally, William C, et al., Transforaminal Lumbar Interbody Fusion with Viable Allograft: 75 Consecutive Cases at 12-Month Follow-Up. International Journal of Spine Surgery, 2018. Vol. 12, No. 1 pp 76-84.

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