OSSEOGEN™
CELLULAR BONE MATRIX

WHERE CELLS
AND SIGNAL
CONNECT

isto BIOLOGICS™

PRESERVING MORE OF WHAT MATTERS.

VIABLE CELLS. MEANINGFUL SIGNAL.

The average Cellular Bone Matrix (CBM) pairs viable cells with a demineralized bone matrix (DBM) scaffold to support bone healing. In most CBMs, the DBM component serves as the sole source of osteoinductive signaling, while the viable cells provide the biological potential for new bone formation within a ready-to-use graft.

OsseoGEN was designed to strengthen the biological environment those cells encounter. Through advanced full-tissue processing, **OsseoGEN preserves osteoinductive growth factors** rather than relying solely on inherent DBM components, helping guide responsive cells toward bone formation while maintaining the foundational CBM structure surgeons already trust.

CELLS: READY TO RESPOND

OsseoGEN contains a diverse population of viable bone-forming cells with no significant immunogenic blood cells, minimizing unnecessary immune or inflammatory responses. OsseoGEN is comprised of Mesenchymal Stem Cells (MSCs) along with a larger population of osteoblast lineage cells, including osteoblast progenitors, pre-osteoblasts, mature osteoblasts.[1] This range of cells enables a coordinated response to BMP-2 signaling. BMP-2 promotes osteogenic activity in MSCs,[2] supports differentiation of osteoblast progenitors,[3] enhances matrix production in pre-osteoblasts,[4] and supports the roles of mature osteoblasts in vascular signaling and bone remodeling.[5] Together, these responsive cells and osteoinductive signaling work in tandem to support the natural process of bone formation.

- Unlike other products on the market that quantify all cells, OsseoGEN testing focuses solely on viable cells that are available to participate in healing.
- All tested lots contained greater than 115,000* viable cells per cc, with an average viable cell count of **~205,000/cc.**[1]
- **CELL VIABILITY MAINTAINED** for up to 5 hours post-thaw.[1]

*post cryopreservation and thaw**

SCAFFOLD: **WHERE IT MATTERS MOST**

A blended matrix of cancellous bone and demineralized cortical fibers provides both biological and handling advantages.

CONDUCTIVE STRUCTURE
supports cell attachment and tissue growth[6]

DBM FIBERS
actively participate in new bone formation[6]

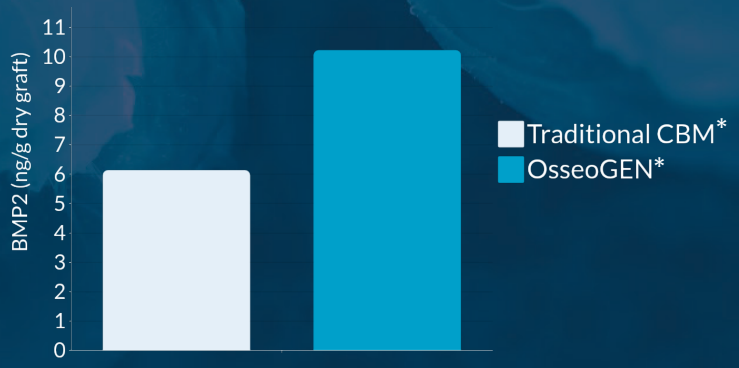
MOLDABLE, COHESIVE CONSISTENCY
helps maintain shape and integrity at the surgical site

SIMPLE **PREPARATION**

1. With up to a **5-hour** post-thaw cell viability window and a ready-to-use syringe, OsseoGEN is ready when you are.
2. Thaws in **~10 minutes** at room temperature with no need to rinse or decant.
3. **DMSO-free** cryoprotectant protects the integrity of the cells.

SIGNAL: **MEANINGFUL DIRECTION**

Viable cells require biological instruction to become bone-forming cells. In traditional CBMs, DBM serves as the primary, and often only, source of osteoinductive signaling. OsseoGEN elevates this approach by preserving osteoinductive growth factors that contribute meaningful biological signal. This approach retains key signaling proteins, including **BMP-2**, a critical signaling protein for bone formation, **at levels 1.7x higher** than traditionally processed DBM fibers commonly used as the only osteoinductive component in CBMs.[1]



This enhanced preservation of BMP-2 strengthens the biological signal delivered to viable cells, contributing to a more osteoinductive graft profile. Compared to traditionally processed DBM fibers, OsseoGEN demonstrates **6.1x greater osteoinductivity.**[1]

Together, preserved signal and responsive cells create a biologic environment designed to support new bone formation.

Method for Alkaline Phosphatase (ALP) index measuring ALP activity as a marker of osteoinduction and bone formation[7]

** Osteoinductive component of each technology was evaluated*

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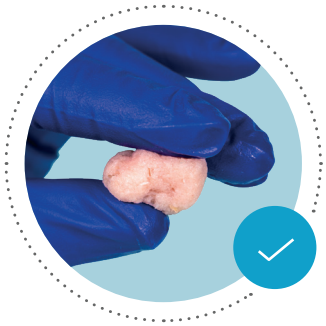

TISSUE **SAFETY**

OsseoGEN is processed with a focus on tissue safety and consistency, supporting confidence from thaw to implantation and beyond. Every lot is recovered and processed using aseptic technique and final product is tested for sterility using USP <71>.

Donor eligibility is determined through a comprehensive screening process that includes medical and social history review, physical assessment, and laboratory testing for relevant communicable diseases. Evaluation and final eligibility determination are conducted in accordance with FDA requirements (21 CFR Part 1271) and applicable AATB standards.

PRODUCT **SIZES AND CODES**

1 cc	5 cc	10 cc
20100010	20100050	20100100

For more information or to schedule an OsseoGEN case, call customer service at **888.705.ISTO**

References: **1.** Data on File, Isto Biologics **2.**Li Y, et al. BMP-2 promotes osteogenic differentiation of mesenchymal stem cells through enhancing mitochondrial activity. Molecular Medicine Reports. 2022. **3.** Hyzy SL, et al. BMP2 induces osteoblast apoptosis in a maturation state- and noggin-dependent manner. Journal of Cellular Biochemistry. 2012;113(10):3236-3245. **4.** Ingwersen LC, et al. Long-term stimulation of human pre-osteoblasts with BMP-2 affects osteogenic and adipogenic differentiation pathways. International Journal of Molecular Sciences. 2022;23(6):3077. **5.** Deckers MML, et al. Bone morphogenetic proteins stimulate angiogenesis through osteoblast-derived vascular endothelial growth factor A. Endocrinology. 2002;143(4):1545-1553. **6.** Martin, GJ Jr. et.al. (1999) New formulations of demineralized bone matrix as a more effective graft alternative in experimental posterolateral lumbar spine arthrodesis. Spine. 24(7):637-645 **7.** Han, B., Tang, B., & Nimni, M. E. (2003). Quantitative and sensitive in vitro assay for osteoinductive activity of demineralized bone matrix. Journal of Orthopaedic Research, 21(4), 648-654.

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