

PliaFX[®] Prime

Optimized Handling. Uncompromised Performance.



TECHNICAL OVERVIEW

100% Bone. Moldable Demineralized Fibers.

PliaFX Prime contains interconnected, optimally demineralized bone fibers which provide the osteoconductive and osteoinductive properties necessary to support bone formation. The interlocking fibers allow the graft to become moldable upon rehydration without the use of a carrier. PliaFX Prime conforms to the surgical site and remains both intact and in place.



LifeNet Health[®]
Saving Lives. Restoring Health. Giving Hope.

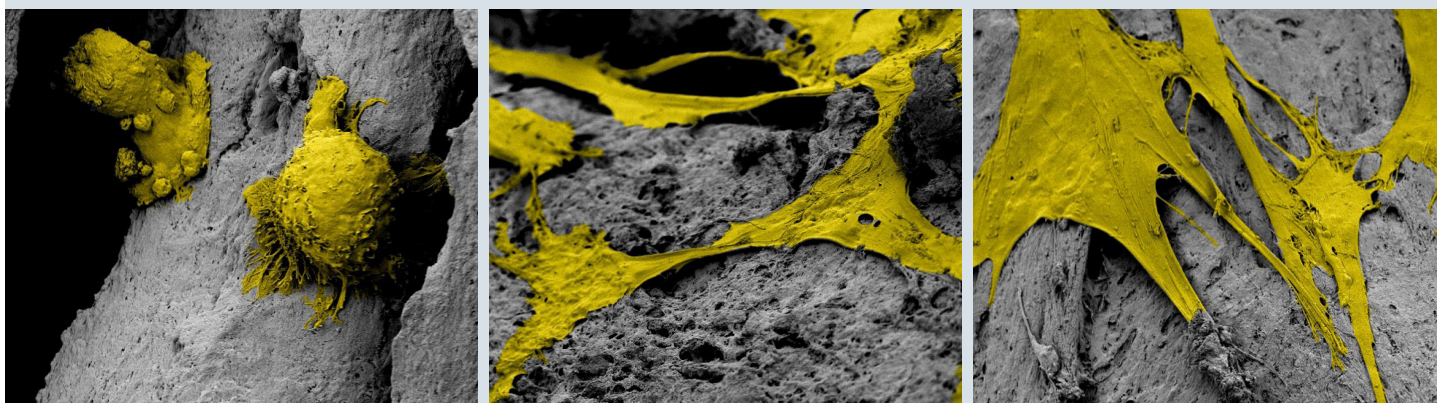
Introduction

Demineralized bone matrices (DBMs) are used in a wide variety of clinical applications for bone repair. An ideal DBM provides both osteoconductive and osteoinductive properties while offering versatile handling. Many commercial DBMs utilize an inert carrier to improve handling, and the proportion of demineralized bone content in the graft varies widely by manufacturer. These carriers do not have a biological function, and they can dilute the osteoinductive potential of the graft.¹ In addition, carriers can negatively affect the release of growth factors² and functionality of native cells.³ PliaFX Prime contains 100% bone and provides optimized handling without compromising the osteoconductive and osteoinductive properties necessary for bone formation.

Osteoconductivity

An osteoconductive bone graft provides a scaffold for new bone growth. An important aspect of osteoconductive grafts is optimal surface characteristics for supporting cellular activity.⁴⁻⁶ The long, rough cortical fibers of PliaFX Prime provide many contact points for cellular attachment, and the interconnected fibers allow the cells to spread out and make cell-to-cell connections.³

PliaFX Prime encourages cellular attachment, migration and infiltration



Attachment was evident at 30 minutes, with the BM-MSCs presenting a spherical morphology.

On Day 1, the BM-MSCs migrated and transformed to a flattened morphology **indicative of cellular health**. The cells also began secreting extracellular matrix (ECM), which provides a scaffold for **cell growth and attachment**.

On Day 7, the BM-MSCs infiltrated between fibers and demonstrated **cell-to-cell interactions** which allow cells to communicate with each other and are critical to the development and function of tissues.

Figure 1. Representative Scanning Electron Microscope (SEM) images illustrating the morphology of cells attached to PliaFX Prime. Bone Marrow Mesenchymal Stem Cells (BM-MSCs) were seeded on PliaFX Prime in culture plates. SEM imaging was used to qualitatively evaluate the attachment and morphology of the cells in culture.

PliaFX Prime supports cellular viability and proliferation

Cellular activity of the BM-MSCs steadily increased over the 7-day investigation, with a significant increase ($*p < 0.05$) in activity between Days 4 and 7 compared to Day 1, indicating cellular viability and proliferation.⁷

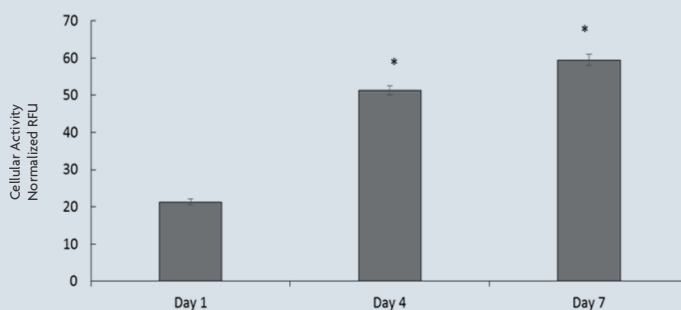


Figure 2. Proliferation of BM-MSCs attached to PliaFX Prime over 7 days. alamarBlue® was used to quantitatively measure the metabolic activity of cells in culture. Relative fluorescence units (RFUs) were normalized to a fibers-only control. BM-MSCs seeded on PliaFX Prime were measured over the course of 7 days.

Osteoinductivity

An osteoinductive bone graft has the ability to induce bone growth. It has the potential to provide the chemical signaling requirements for bone formation. Bone morphogenetic proteins (BMPs) are naturally occurring growth factors that are trapped within bone matrix. BMPs, as well as other proteins, have been found to contribute to the process of bone healing and regeneration.⁸ PliaFX Prime is optimally demineralized using LifeNet Health's proprietary PAD[®] technology to expose BMPs, which can recruit host cells to the implant site and stimulate bone-forming activity.⁹⁻¹³

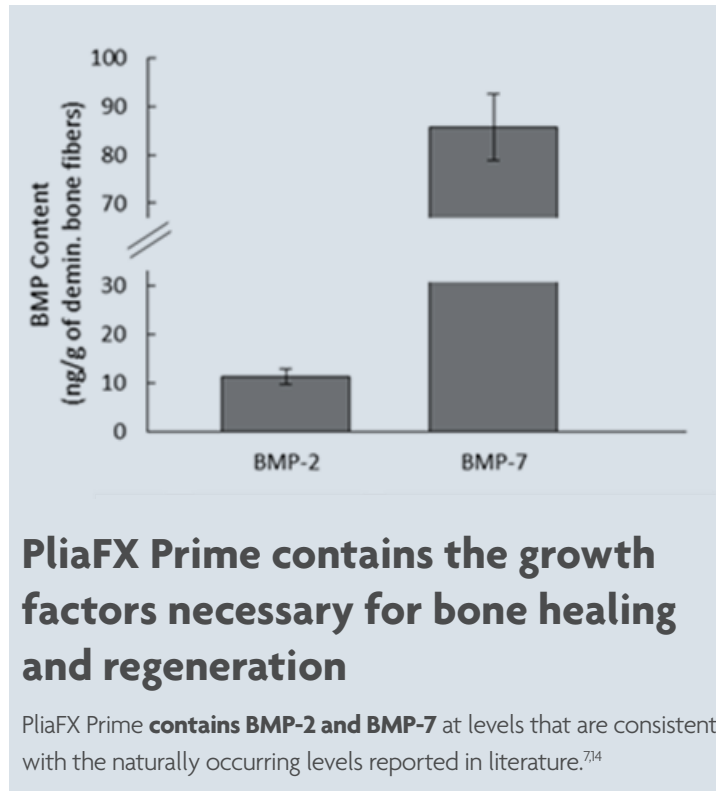


Figure 3. BMP-2 and BMP-7 content in PliaFX Prime measured by enzyme-linked immunosorbent assay (ELISA).

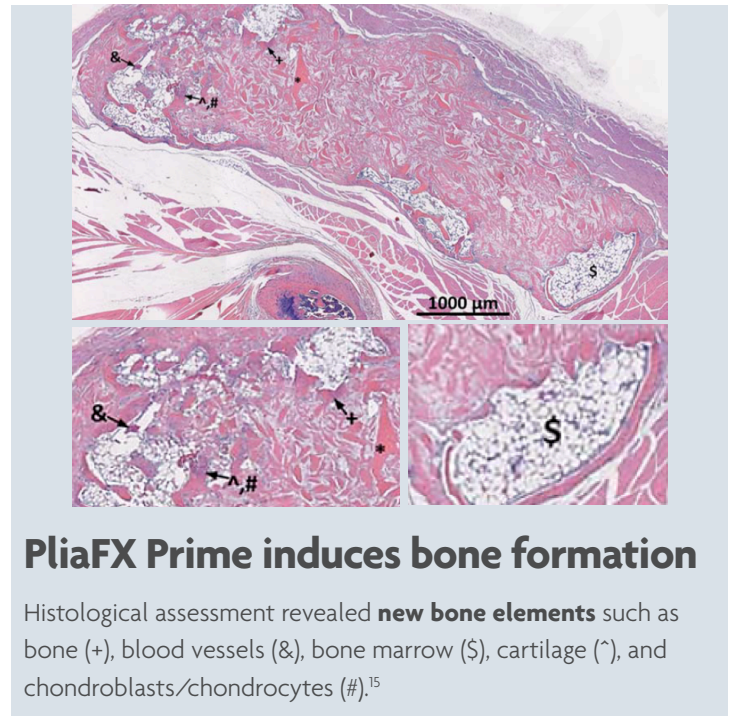


Figure 4. H&E staining of explants from athymic nude mouse implant with PliaFX Prime. The athymic mouse model was used to test the ability to stimulate bone formation in a non-bony environment.⁸ PliaFX Prime was implanted into the muscle of athymic mice, and the implants were recovered after 5 weeks.

Safety

PliaFX Prime is sterilized using LifeNet Health's proprietary Allowash XG[®] technology, providing a sterility assurance level (SAL) of 10^{-6} . Since 1995, more than 6 million implants processed using Allowash[®] technology have been distributed by LifeNet Health without any reports of disease transmission. LifeNet Health's guidelines for donor suitability meet FDA requirements and AATB standards and in some cases exceed industry standards. LifeNet Health accepts only 2 percent of total donors screened for clinical donation. The combination of aseptic recovery techniques, stringent donor screening, and Allowash XG technology help to assure that only safe, effective tissue is approved for transplantation.

Conclusion

PliaFX Prime is an advanced, demineralized bone graft that offers optimized handling with uncompromised performance.

- **100% Bone:** No dilution of the osteoinductive component
- **Osteoconductivity:** Encourages cellular attachment, migration and infiltration, and supports cellular viability and proliferation
- **Osteoinductivity:** Contains bone growth factors and induces bone formation in vivo
- **Safety:** Provides a sterility assurance level of 10^{-6}

When choosing a bone graft, handling and performance are critical to ensuring a successful outcome. With PliaFX Prime, there is no compromise. The graft has been engineered to become malleable without the use of a carrier. Being 100 percent bone means 100 percent of the graft is providing the scaffold and signals necessary for the natural bone remodeling process.

PliaFX Prime

Order Code	Volume	Shelf Life
BL-1800-00	0.5 cc	4 years
BL-1800-01	1.0 cc	4 years
BL-1800-02	2.5 cc	5 years
BL-1800-05	5.0 cc	5 years
BL-1800-10	10.0 cc	5 years

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