

# NOVABONE

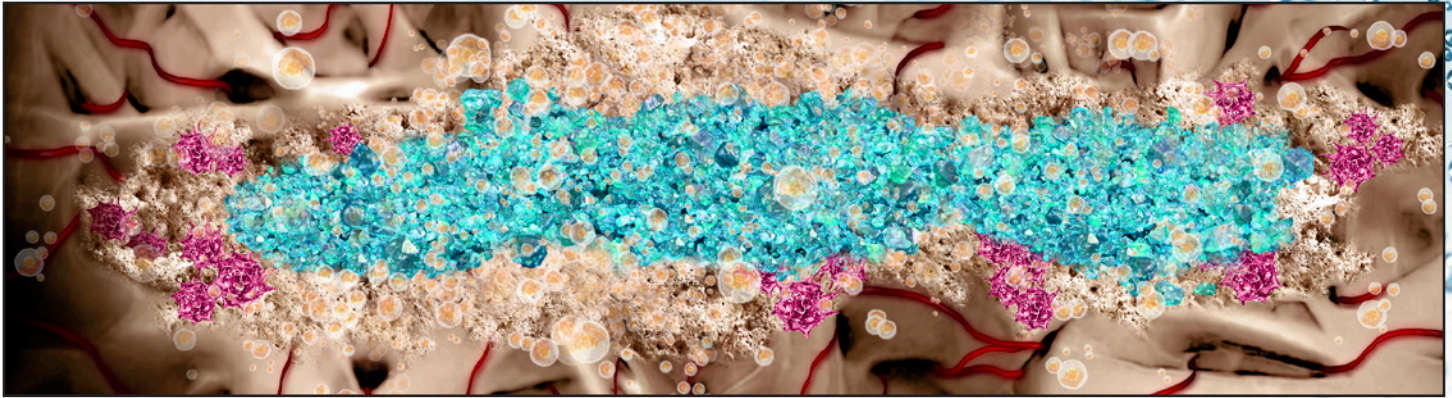
Proven Clinical Efficacy

**NOVABONE IRM™**  
(Irrigation Resistant Matrix)



The **IRM™ series** of NovaBone grafting material has been designed to optimize osteogenesis while providing exceptional handling properties, including irrigation resistance. No other bioactive bone graft offers osteogenic stimulation, angiogenic potential and proven clinical equivalence to autograft.

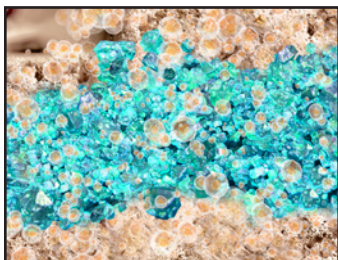
# Characteristics of NovaBone IRM™



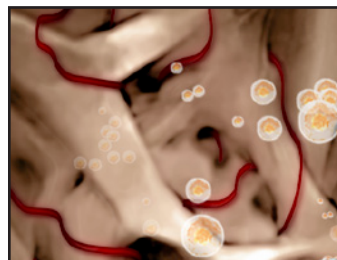
- **Equivalence To Autograft** – NovaBone has equivalent outcomes as bone autograft in clinical spinal fusion applications (1)
- **Signal, Recruit, and Control Cellular Activity** – NovaBone signals and recruits osteoprogenitor cells while controlling the cell cycle to favor proliferation and differentiation of cells that generate bone (2), (3), (4)
- **Angiogenic** – Sodium hyaluronate is shown to promote vascularization and attract osteogenic precursor cells (5),(6)
- **Irrigation resistant** – Excellent cohesion and handling properties (7)



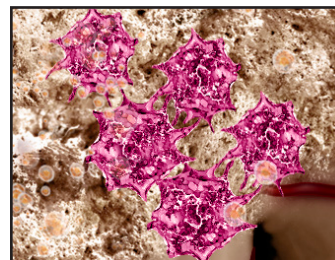
## Ionic Dissolution & Osteostimulation



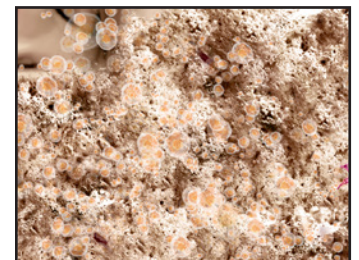
## Signaling of Angiogenesis



## Proliferation & Differentiation



## Bone Regeneration



**The IRM™ series** of NovaBone grafting material has been designed to optimize osteogenesis while providing exceptional handling properties, including irrigation resistance. No other bioactive bone graft offers osteogenic stimulation, angiogenic potential and proven clinical equivalence to autograft.



## NovaBone - IRM

NP0601	1cc, IRM
NP0602	2.5cc, IRM
NP0605	5cc, IRM
NP0610	10cc, IRM

## NovaBone - IRM, MacroPor-Si+

NP2501	Small, IRM, MacroPor
NP2502	Merdium, IRM, MacroPor
NP2505	Large, IRM, MacroPor
NP2510	X-Large, IRM, MacroPor
NP2515	2X-Large, IRM, MacroPor

## NovaBone MIS Delivery

NP6600	MIS Handle
NP6650	MIS 5cc Cartridge, IRM

1. Ilharborde B, Morel E, Fitoussi F, et al., "Bioactive Glass as a Bone Substitute for Spinal Fusion in Adolescent Idiopathic Scoliosis— A Comparative Study with Iliac Crest Autograft." J Pediatr Orthop, 2008; 28(3):347-351.
2. Hench LL, Gaisser DM, "The Genetic Basis for Osteogenesis Stimulation by Controlled Release of Ionic Dissolution Products." In Transactions, 54th Annual Meeting of the Orthopedic Research Society, San Francisco, CA, March 2-5, 2008:1697.
3. Loty C, Sautier JM, Tan MT, et al., "Bioactive Glass Stimulates In Vitro Osteoblast Differentiation and Creates a Favorable Template for Bone Tissue Formation." J Bone Min Res, 2001; 16(2):231-239.
4. Xynos ID, Edgar AJ, Buttery LDK, Hench LL, Polak JM, "Ionic products of bioactive glass dissolution increase proliferation of human osteoblasts and induce insulin-like growth factor II mRNA expression and protein synthesis." Biochem. Biophys. Res. Commun. 2000; 276: 461–465.
5. Sasaki T, Watanabe C, "Stimulation of osteoinduction in bone wound healing by high-molecular weight hyaluronic acid." Bone 1995; 16: 9–15.
6. West DC, Hampson IN, Arnold F, Kumar S, "Angiogenesis induced by degradation products of hyaluronic acid." Science 1985; 14:1324–1326.
7. Data on file

# NOVABONE

13510 US Highway 441 • Alachua, FL 32615  
386-462-7660

www.novabone.com  
OD8455