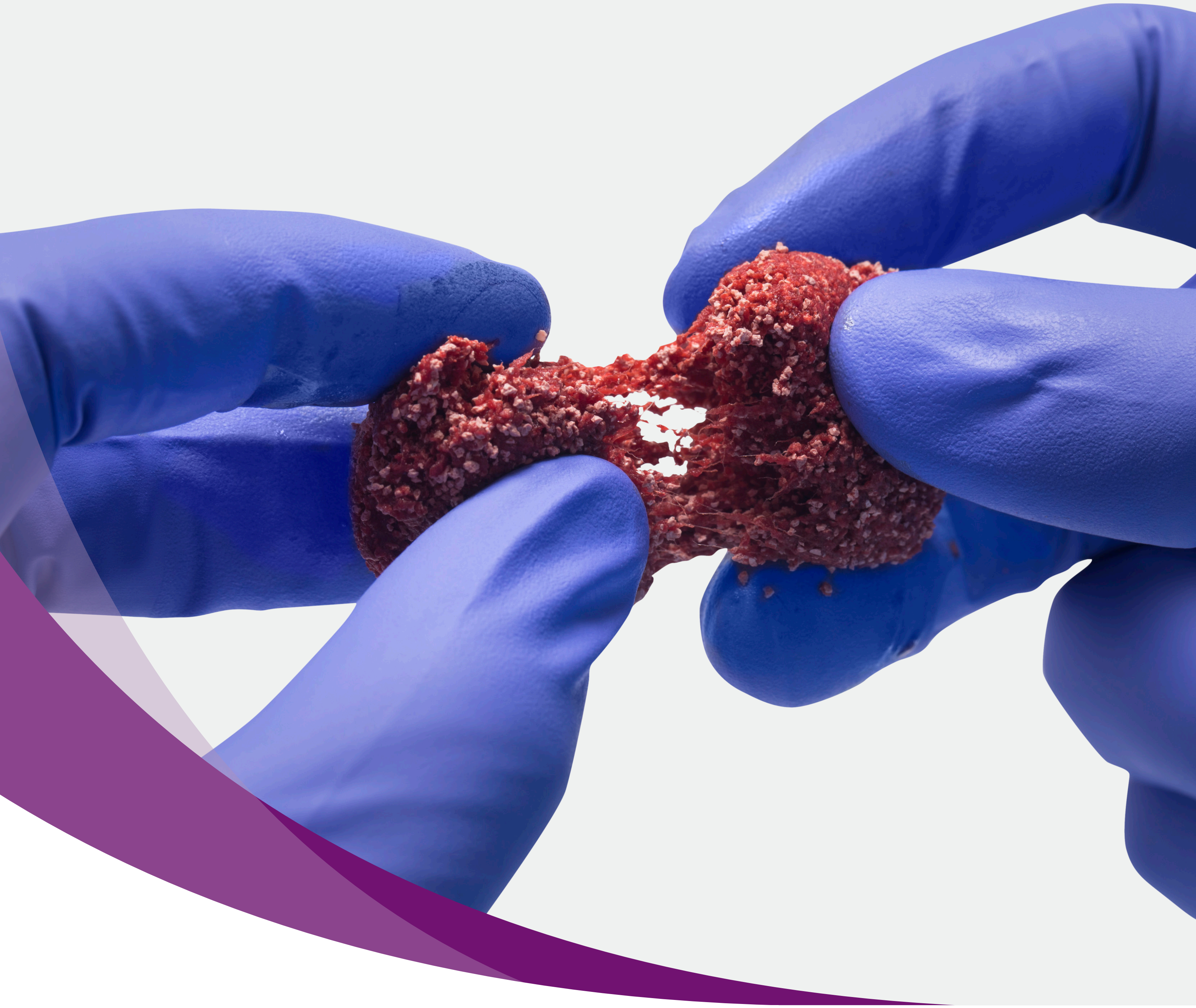


AttraX® Portfolio

Surface Drives Performance

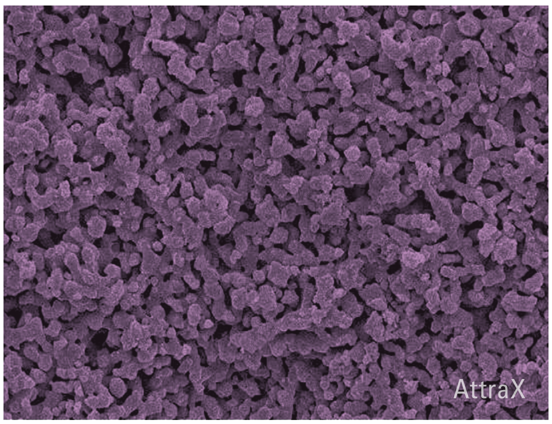
NuVasive

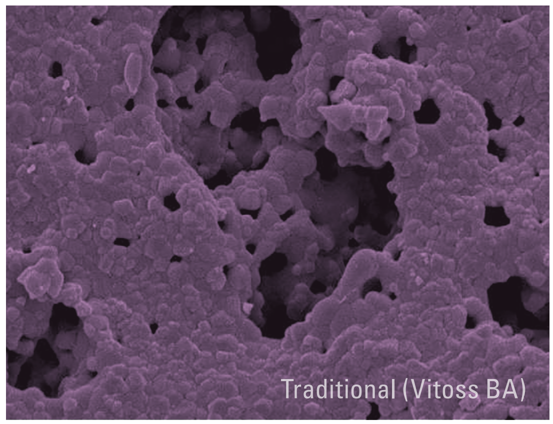
Advanced Biomaterial

Microarchitecture Drives Bone Formation

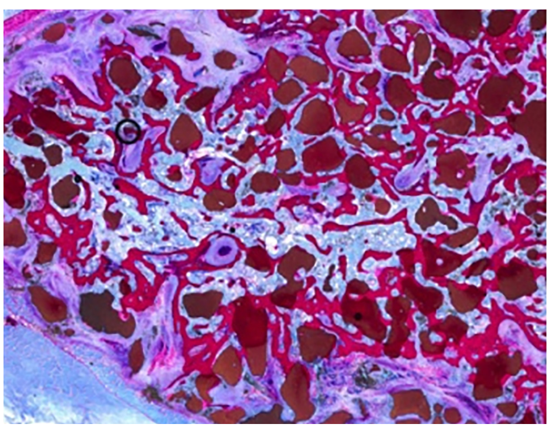
Traditional calcium phosphate materials generally do not give rise to bone formation when implanted in an intramuscular pouch, unless osteoinductive or osteogenic factors are added. Due to its optimized microarchitecture, AttraX® has a unique ability to consistently form bone in intramuscular defects without adding osteogenic cells or proteins.[1]

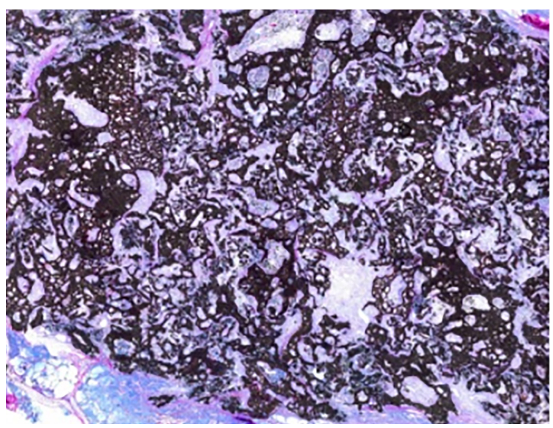
2,500x Magnification





Intramuscular Bone Formation at 12 weeks in Canine Model[2]


AttraX


Traditional Synthetic (Vitoss BA)

Synthetic graft

New bone

Muscle

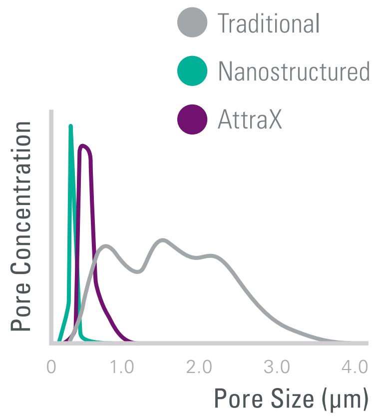
IMPLANT	ATTRAX	VITOSS BA
Incidence	8/8	0/8
% Bone	12.5 ± 9.2	0

Optimized Microarchitecture

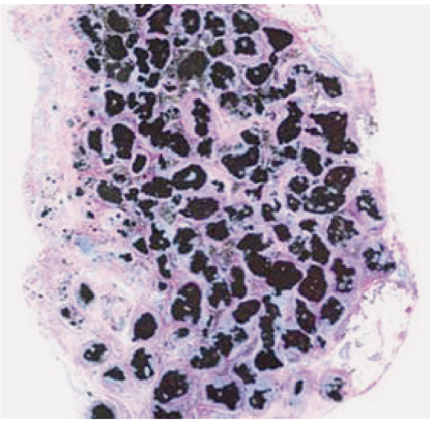
Deliberately Engineered. Intelligently Designed.

The AttraX® ceramic surface has unique microstructure and microporosity that are optimized for bone formation. The unique microarchitecture of AttraX drives the differentiation of mesenchymal stem cells (MSCs) into bone-forming osteoblasts without added growth factors.[3]

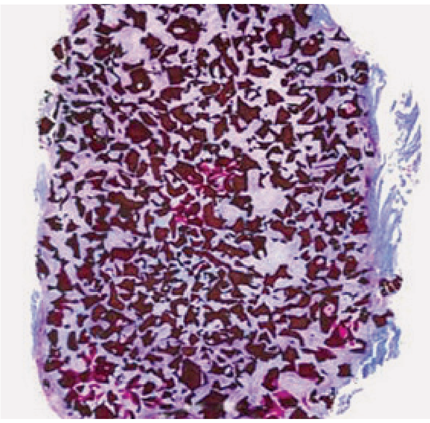
The optimized microarchitecture of AttraX is engineered using tightly controlled parameters for a defined micropore size distribution within 0.3 to 1.1 microns. Traditional calcium phosphate materials falling outside of this specification do not possess the unique ability of AttraX to form bone consistently in intramuscular defects.



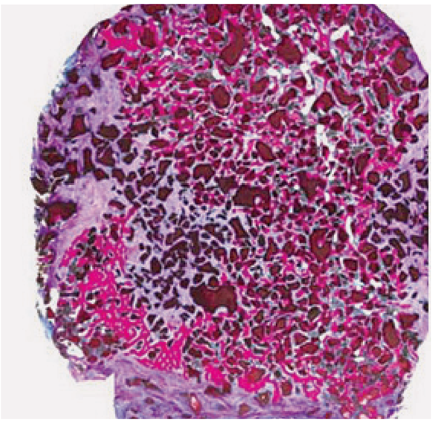
Bone Formation in Canine Intramuscular Defect[4]



Traditional
0%



Nanostructured
3%



AttraX
22%

Tightly Controlled Microporosity

A proprietary manufacturing process produces more consistent pore size distribution and higher sub-micron pore volume compared to traditional synthetic grafts.

Microscale Surface Features

Ceramic surface structures are engineered to a finely tuned size specification (0.3 – 1.1 μm), demonstrated to initiate greater bone formation.[4]

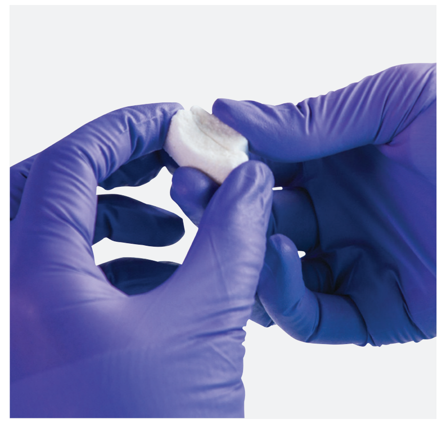
High-Performance Handling

AttraX® is available in a variety of procedurally appropriate sizes and shapes. Best-in-class carriers provide for moldable and cohesive handling, even after mixing with autograft bone.

AttraX Putty

Alkylene Oxide Copolymer (AOC) Carrier

- Selected for its ability to be molded into a variety of shapes for intraoperative flexibility
- Eliminated from the body within 48 hours
- Doesn't interfere with bone healing process



Cylinder

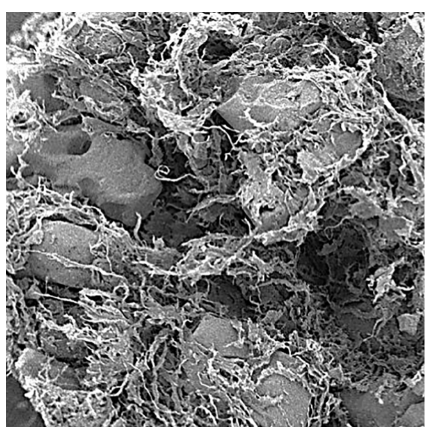
Strip

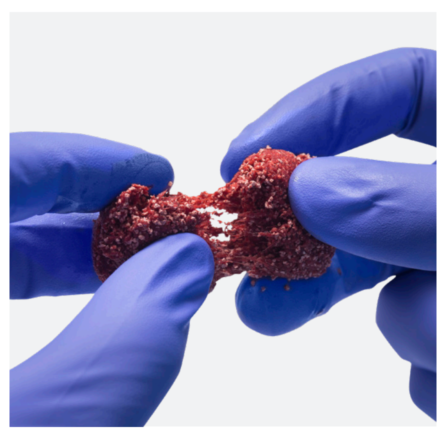
Block

AttraX Scaffold

Entangled Collagen Matrix

- Absorbs biological fluids, e.g. bone marrow aspirate
- Provides compression resistance
- Does not mask optimized ceramic surface





Strips

Blocks

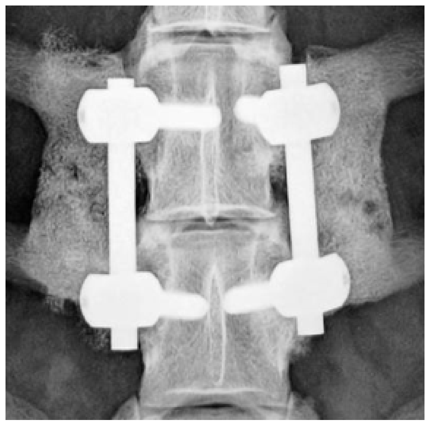
Morsels

Fusion Performance

Fusion Equivalent to Autograft

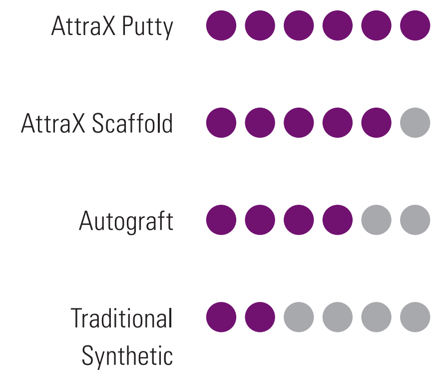
In a large animal instrumented posterolateral fusion (PLF) model, AttraX® fusion rates were equivalent to or better than autograft, and faster than traditional synthetic.[5-7,*]

Representative radiographic images at 12 weeks in sheep PLF[5]



AttraX Scaffold

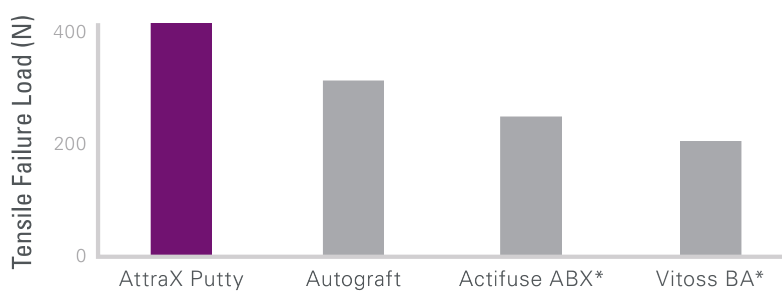
Radiographic fusion rate over 12 weeks[6]



Each dot representative of one study animal.

Fusion Superior to Traditional Synthetic Ceramic Grafts

Spinal segments fused with AttraX had greater biomechanical strength than segments treated with with ACTIFUSE ABX or Vitoss BA in a rabbit PLF model.[8]



Statistically lower than AttraX Putty (P<0.05).

**Data from intramuscular and spine preclinical models may not be representative of clinical outcomes.*

Catalog

ATTRAX® PUTTY				
PRODUCT #	**QUANTITY**	**DIMENSIONS**	**SHAPE**	**TOTAL VOLUME**
5015001	1	8 x 20mm	Cylinder	1cc
5015002	2	8 x 20mm	Cylinder	2cc
5015005	2	50 x 12.5 x 4mm	Strip	5cc
5015006	2	25 x 9 x 13.5mm	Block	6cc
5015010	2	50 x 12.5 x 8mm	Strip	10cc

ATTRAX SCAFFOLD				
PRODUCT #	**QUANTITY**	**DIMENSIONS**	**SHAPE**	**TOTAL VOLUME**
5015101	2	50 x 25 x 6mm	Strip	15cc
5015102	2	100 x 25 x 6mm	Strip	30cc
5015103	1	20 x 10 x 10mm	Block	2cc
5015104	1	50 x 12 x 10mm	Block	6cc
5015106	1	55 x 15 x 12mm	Block	10cc
5015110	–	2-6mm	Morsels	10cc
5015120	–	2-6mm	Morsels	20cc
5015130	–	2-6mm	Morsels	30cc

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1. Barbieri D, Yuan H, Ismailoglu AS, et al. Comparison of two moldable calcium phosphate-based bone graft materials in a noninstrumented canine interspinous implantation model. *Tissue Eng Part A* 2017;23(23-24):1310-20.
2. Yuan H, Luo X, Barbieri D, et al. Superiority of nanostructured calcium phosphate bone graft substitutes for bone regeneration. 9th World Biomaterials Congress 2012. Chengdu, China.
3. Polini A, Pisignano D, Parodi M, et al. Osteoinduction of human mesenchymal stem cells by bioactive composite scaffolds without supplemental osteogenic growth factors. PLoS ONE 2011;6(10):1-8.
4. Duan R, Barbieri D, Luo X, et al. Variation of the bone forming ability with the physicochemical properties of calcium phosphate bone substitutes. *Biomater Sci* 2018;6:136-45.
5. Vizesi F, Cunningham B, Hu N, et al. Nanostructured TCP in the sheep posterolateral fusion model. 9th World Biomaterials Congress 2012. Chengdu, China.
6. Ismailoglu AS, Vizesi F, Cunningham B, et al. Fibrillar collagen/ TCP scaffold in the sheep posterolateral fusion model. Society for Biomaterials Annual Meeting 2012. New Orleans, LA, USA.
7. Fredericks DC, Smucker JD, Peterson EB, et al. Novel TCP compares favorably to autograft in posterolateral fusion: evaluation in rabbit and sheep models. International Society for the Advancement of Spine Surgery 2013 Annual Conference. Vancouver, BC, Canada.
8. Walsh WR, Degroot F, Bertollo N, et al. Nanostructured TCP in rabbit posterolateral fusion compared to commercial osteobiologics. American Academy of Orthopaedic Surgeons 2011 Annual Meeting. San Diego, CA, USA.

To order, please contact your NuVasive® Sales Consultant or Customer Service Representative today at:

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