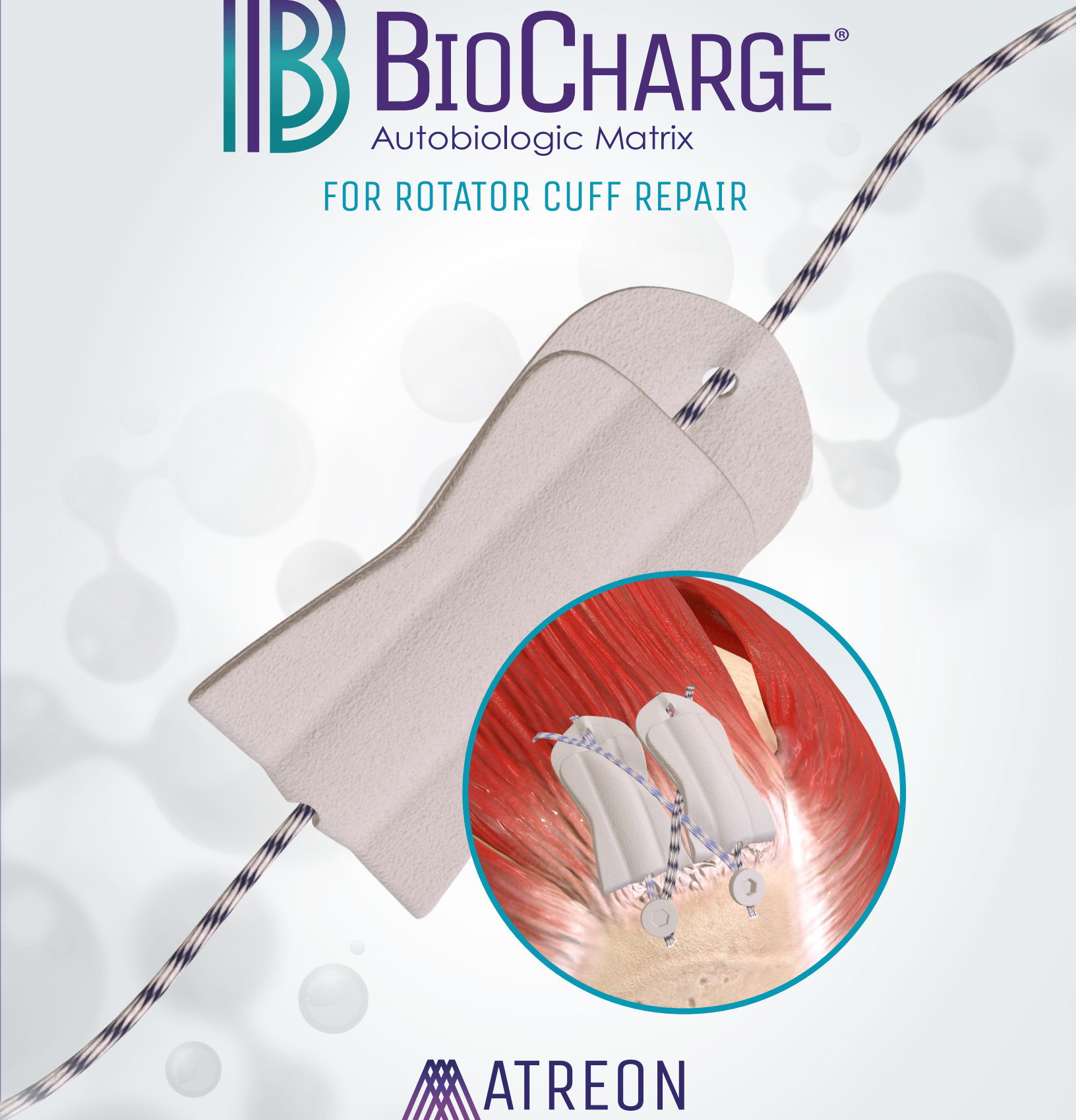


IB BIOCHARGE[®]

Autobiologic Matrix

FOR ROTATOR CUFF REPAIR



 **ATREON**
ORTHOPEDICS

WHERE INNOVATION MEETS HEALING[™]



BioCharge® is a bioresorbable autobiologic matrix designed to address the healing environment on the bursal side of the rotator cuff, while improving tissue quality and deterring suture cut-through. With an **integrated delivery system**, there is no secondary fixation, reducing implantation time and eliminating the risk of further tendon damage.

A SOLUTION TO A WEAK LINK IN ROTATOR CUFF HEALING

▶ The tendon-suture interface's poor healing is a key concern in rotator cuff repair (RCR) failure, as sutures can tear through weakened tendon tissue under high stress.¹

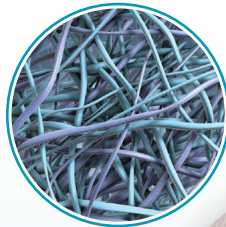


Average Rotator Cuff Retear Rate in Literature²

SEAMLESS INTEGRATION SUPERCHARGED HEALING

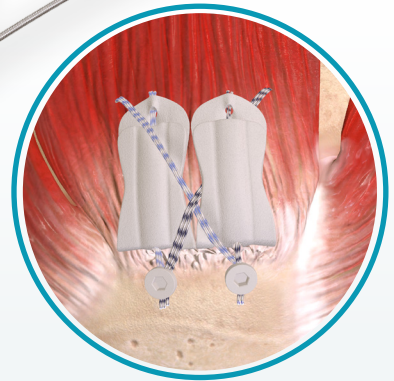
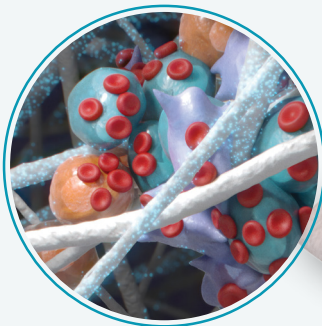
Synthetic & Bioresorbable

PGA & PLCL Microfiber Matrix
Fully Resorbed in 4-6 months³
**Poly Glycolic Acid and Poly Lactide co-Caprolactone*



Wicks and Holds Biology

Kickstarts the Healing Process



Focused Medialized Coverage

Reinforce Suture-Tendon Interface

Integrated Suture Tunnel

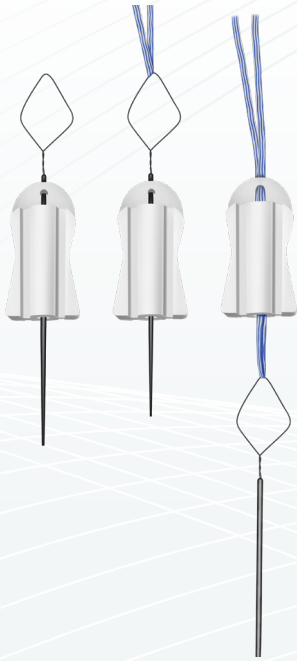
Fast Deployment & Fixation-Free Implant Pre-Loaded with Snare

Specifications

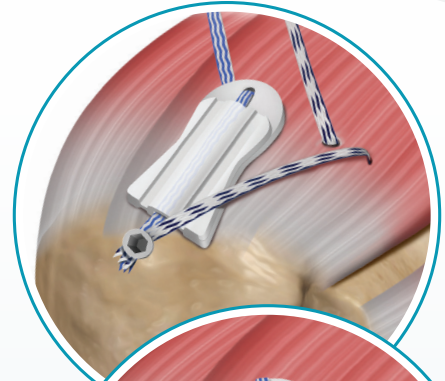
- Size: 20mm x 12mm
- Thickness: 1.7mm
- Porosity: 85%

EFFICIENT TECHNIQUE STEPS

1 Load one suture from a medial row anchor into the snare and pull it through the BioCharge suture tunnel



2 Slide BioCharge along the suture, down the cannula, and position on cuff. Retrieve desired sutures and deploy the 1st lateral row anchor



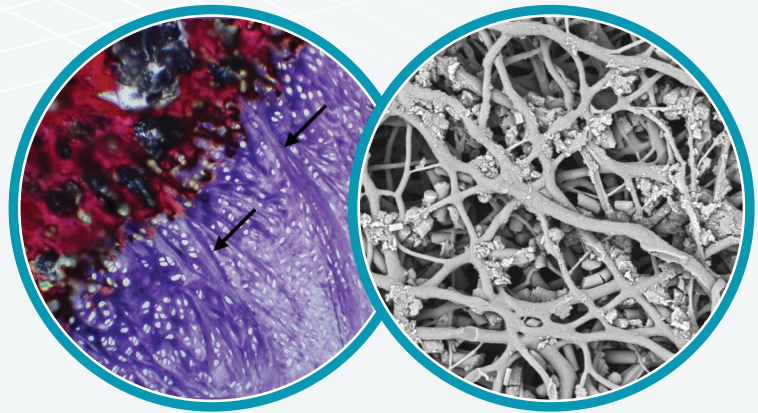
3 Select from the remaining sutures to load through the next BioCharge implant. Repeat step 2 to deploy the 2nd lateral row anchor & finalize repair



DATA DRIVEN TECHNOLOGY

» **LEFT:** Sheep CSU Study (JSES, 2022), Winner of the 2023 Neviaser Award for Basic Science by ASES & JSES : The scaffold's gradual degradation supports augmented healing by allowing new tissue to replace it as healing progresses.⁴

» **RIGHT:** **Autobiologic** action of scaffold showing proliferation of human tenocytes into ROTIUM® nanofiber scaffold after 4 weeks.⁵



MIMICS NATIVE ECM
Promotes Healing Through Cellular Proliferation and Integration

CONFIDENCE IN SYNTHETICS

BioCharge supercharges healing at the suture-tendon interface by promoting cellular interactions to drive healing. Degradative polymer contributions:

Glycolic Acid ^{6,7,9}

- Anti-Inflammatory properties
- Increases fibroblast proliferation & production of collagen & HA

Lactic Acid ^{8,10,11}

- Modulates inflammation & accelerates cellular migration
- Promotes ECM deposition & reparative angiogenesis

Caproic Acid ⁷

- Anti-microbial properties
- Anti-inflammatory properties

SIMPLIFIED IMPLANTATION



EFFICIENT

Snared suture loading through integrated tunnel



SMART ECONOMICS

No additional fixation or disposables



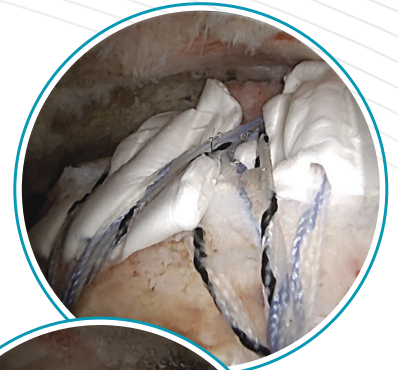
ADAPTABLE

For tears of any size and anchor-agnostic*



SAFE & BIOCOMPATIBLE

No human or animal sourced materials



PRODUCT INFORMATION

BioCharge is intended to be used in conjunction with suture anchors for the reattachment of tendon to bone in rotator cuff repairs (Reference: FDA 510k Clearance K241912)

▶ BioCharge® Autobiologic Matrix Implant

2cm x 1.2 cm, 1.7mm thickness

Arthroscopic Images

Courtesy of Dr. Kevin Cronin

CONTACT YOUR ATREON REPRESENTATIVE FOR MORE INFORMATION

www.atreonortho.com/Contact-Us/

| PART NUMBER | DESCRIPTION | QTY | UNIT OF MEASURE |
|-------------|------------------------------------------------------------------|-----|-----------------|
| BC-2012 | BIOCHARGE® Autobiologic Matrix Implant Single Pack (2cm x 1.2cm) | 1 | Each |
| FG-0007 | ROTIUM® Bioresorbable Wick Implant (2cm x 2cm) | 1 | Each |
| FG-0043 | ROTIUM® Bioresorbable Wick Implant (4cm x 3cm) | 1 | Each |



Legal Manufacturer: Nanofiber Solutions

Distributed by: Atreon Orthopedics 5164 Blazer Pkwy. Dublin, OH 43017 USA

614-429-1471 | www.atreonortho.com

- Owens BD, Algeri J, Liang V, DeFroda S. Rotator cuff tendon tissue cut-through comparison between 2 high-tensile strength sutures. J Shoulder Elbow Surg. 2019 Oct;28(10):1897-1902. doi: 10.1016/j.jse.2019.02.028. Epub 2019 May 10. PMID: 31085035.
- Plachel F, Jo OI, Rüttershoff K, Andronic O, Ernstbrunner L. A Systematic Review of Long-term Clinical and Radiological Outcomes of Arthroscopic and Open/Mini-open Rotator Cuff Repairs. The American Journal of Sports Medicine. 2023;51(7):1904-1913. doi:10.1177/03635465211073332
- Beleckas, C. M., Minetos, P., & Badman, B. L. (2023). Short-term radiographic and clinical outcomes of arthroscopic rotator cuff repair with and without augmentation with an interpositional nanofiber scaffold. Journal of Orthopaedic Experience & Innovation. <https://doi.org/10.60118/001c.84269>
- Romeo, A., Easley, J., Regan, D., Hackett, E., Johnson, J., Johnson, J., Puttlitz, C., & McGilvray, K. (2022). Rotator cuff repair using a bioresorbable nanofiber interposition scaffold: A biomechanical and histologic analysis in sheep. Journal of Shoulder and Elbow Surgery, 31(2), 402–412. <https://doi.org/10.1016/j.jse.2021.07.018>
- Mazzocca A. Data on file. University of Connecticut; 2016
- Green, B.A., R.J. Yu, and E.J. Van Scott, Clinical and cosmeceutical uses of hydroxyacids. Clin Dermatol, 2009. 27(5): p. 495-501.
- Huang, C.B., et al., Short- and medium-chain fatty acids exhibit antimicrobial activity for oral microorganisms. Arch Oral Biol, 2011. 56(7): p. 650-4.
- Sun, S., et al., Lactic Acid: No Longer an Inert and End-Product of Glycolysis. Physiology (Bethesda), 2017. 32(6): p. 453-463.
- Tang, S.C. and J.H. Yang, Dual Effects of Alpha-Hydroxy Acids on the Skin. Molecules, 2018. 23(4).
- Zhang, D., et al., (2020). Endothelial Lactate Controls Muscle Regeneration from Ischemia by Inducing M2-like Macrophage Polarization. Cell Metab. 31. 1136-1153 e7

† All claims supported by data on file.

* Please refer to the IFU for a complete list of compatible anchors.

§ References available upon request

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View U.S. patent information at <https://nanofibersolutions.com/technology/>

AW-0043 rev. A, February 2025