ATREON ORTHOPEDICS

ELECTROSPUN SYNTHETIC SCAFFOLD PLATFORM OVERVIEW

AUTOBIOLOGIC™ SCAFFOLDS: POWERING THE HEALING RESPONSE

ATREON ORTHOPEDICS

INTRODUCTION

ENGINEERING THE HEALING MICROENVIRONMENT: THE ATREON AUTOBIOLOGIC™ PLATFORM

Autobiologic™ (noun): Atreon's synthetic scaffold approach to tissue repair that leverages the patient's own biology to optimize the microenvironment by capturing and supporting healing factors to address the fundamental drivers of tissue repair.

THE PROBLEM

BIOLOGIC LIMITATIONS IN HEALING

Despite advances in surgical technique and fixation, soft tissue repair continues to face persistent biologic challenges:

- Poor biologic environment at the repair site
- Prolonged inflammation and incomplete healing
- Scar-mediated repair instead of native tissue regeneration

THE SOLUTION

ELECTROSPUN SCAFFOLDS DESIGNED TO ORCHESTRATE THE OPTIMAL ENVIRONMENT FOR TISSUE REPAIR AND REMODELING

Electrospun Nanofiber Matrix Technology

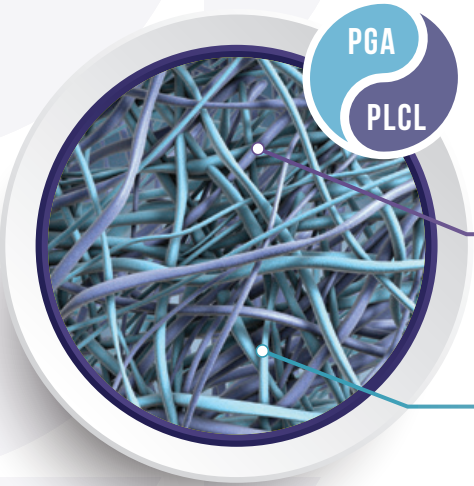
Mimics native extracellular matrix (ECM), providing a highly porous scaffold for cell attachment, migration, and proliferation.

Biologic Wicking

Absorbs and retains autologous blood, cells, and growth factors delivering biology directly to the repair site (~500% absorption).

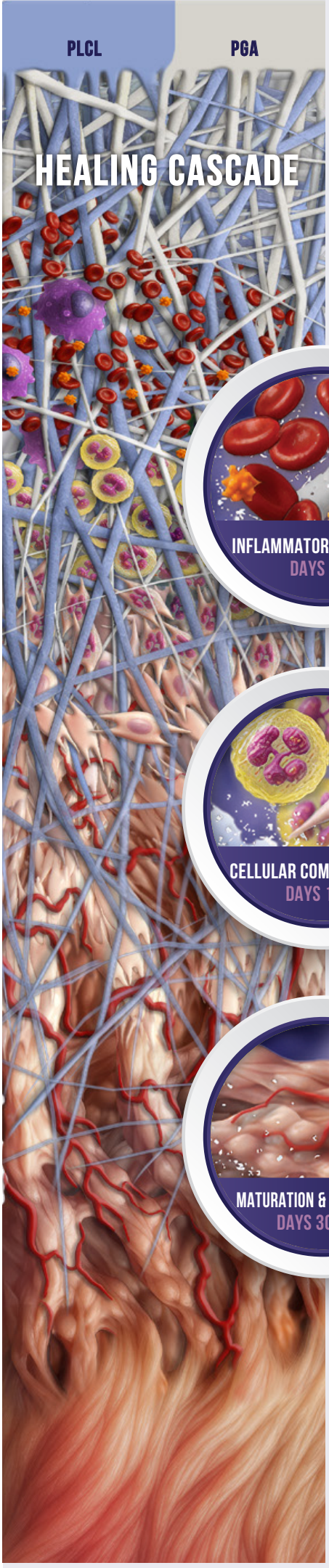
Biocompatible Synthetic Polymers (PGA + PLCL)

Engineered material provides a controlled biphasic degradation and high quality manufactured product without variability associated with tissue processing.



- **PGA: Polyglycolic acid**
  Resorbs quickly, opening porosity allowing for cellular communication & infiltration

- **PLCL: Poly(lactide-co-caprolactone)**
  Resorbs over time, providing structure for the cells to proliferate



A BIPHASIC MECHANISM OF ACTION SUPPORTING THE HEALING CASCADE

Atreon's scaffolds are designed to actively participate in the healing cascade through both **physical structure** and **chemical signaling**.

WICKS AND HOLDS BIOLOGIC FACTORS

- Kickstarts cellular activity and recruitment
- Stimulates a low pH microenvironment and contributes to wound homeostasis

CELLULAR COMMUNICATION

- PGA resorption via degradant-driven release, facilitating increased porosity
- Promotes cellular infiltration and communication
- Balances inflammatory response

MATURATION & REMODELING

- PLCL resorption via degradant-driven release, providing structure for cellular proliferation
- Collagen deposition provides structural support for tissue organization
- Drives angiogenesis and collagen formation, enabling transition to native tissue

BIOACTIVE DEGRADANTS

Glycolic Acid[6, 7, 14]

- Modulates inflammation
- Promotes fibroblast proliferation & collagen expression

Lactic Acid[1, 13, 14]

- Stimulates VEGF expression & enhances cellular migration
- Promotes angiogenesis & ECM deposition

Caproic Acid[7, 19]

- Addresses microbial contaminants
- Modulates inflammation

COMPREHENSIVE PRODUCT PORTFOLIO

A unified synthetic scaffold platform leveraging the same proven polymers and precise manufacturing process designed to address healing challenges across multiple indications. Product-specific resorption profiles are engineered to align with the biologic timelines of tissue healing and remodeling for each intended application.

BioCharge® Autobiologic Matrix

Reinforcement of suture-tendon interface where poor quality tissue is a concern

RESORPTION: ~4-6 MONTHS
THICKNESS: 1.7MM

ROTIUM® Bioresorbable Wick

Interpositional, tendon-bone (enthesis) healing

RESORPTION: ~3-4 MONTHS
THICKNESS: 0.85MM

ROTIUM® LO PRO Bioresorbable Wick

Tendon wrapping and capsular closure with low profile design

RESORPTION: ~2-3 MONTHS
THICKNESS: 0.45MM

PHOENIX® Wound Matrix®

Full-to partial-thickness wounds, including exposed bone and tendon

RESORPTION: ~10-14 DAYS
THICKNESS: 0.20MM

UPPER EXTREMITY | SPORTS MEDICINE | FOOT AND ANKLE | JOINT REPLACEMENT | ORTHO TRAUMA | RECONSTRUCTIVE PLASITICS | WOUND RECONSTRUCTION

KEY ADVANTAGES

- **Designed for Ease of Use:** Simple deployment and efficient technique that integrates seamlessly into existing surgical workflows
- **Cost-Effective:** No need for additional fixation or instrumentation
- **Biocompatible & Safe:** 100% synthetic, engineered composition eliminates variability
- **Robust Handling Characteristics:** Accommodates positioning, suturing, and trimming as needed
- **Simple Storage:** No added complexity of tissue storage or handling

Arthroscopic image demonstrating biologic wicking at the repair site with ROTIUM® Bioresorbable Wick

BIOCHARGE® AUTOBIOLOGIC MATRIX

Integrated onlay reinforcement of suture-tendon interface for rotator cuff repairs

- Addresses suture cut-through risk in cases of compromised bursal-sided tendon tissue
- Designed for maximum efficiency with an integrated, single-step delivery system
- Clinical application examples: *Rotator Cuff Repair, Subscapularis Repair*

ROTIUM® BIORESORBABLE WICK

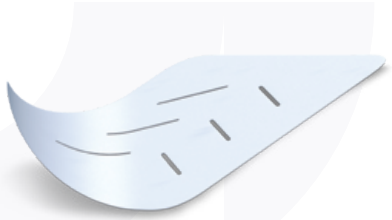
Tendon-bone healing in the rotator cuff and other interpositional applications

- Drives early native tissue integration, leading to a reduction in retear rate, demonstrated by clinical outcomes
- No ancillary instrumentation or additional fixation needed
- Clinical application examples: *Rotator Cuff, Achilles (Haglund's), Glute Med, Extensor Mechanism Tendons, Kidner*

ROTIUM® LO PRO BIORESORBABLE WICK

Tendon wrapping, onlay, and capsular closure for all tendon repair needs

- Retain and concentrate native biologic factors to optimize soft tissue healing
- A low profile, flexible construct minimizing bulk for constrained anatomical spaces
- Clinical application examples: *Achilles (mid-substance), Foot & Ankle (e.g. peroneal), Capsular Closure, Biceps or Triceps Tendons, Hand Flexor Tendons, Hamstring*



PHOENIX WOUND MATRIX®

Full-to-partial thickness wounds including complex & traumatic defects

- Reduces pH levels to pro-healing state, supports formation of healthy granulation tissue, and facilitates wound homeostasis
- Easily conforms to various wound types with fenestrations that allow for management of exudate
- Clinical application examples: *Surgical Wounds (Donor Sites/Grafts, Wound Dehiscence), Revision Arthroplasty, Limb Salvage, Necrotizing Fasciitis, Trauma Surgery*

CLINICAL & SCIENTIFIC EVIDENCE

BACKED BY 17+ YEARS OF TISSUE ENGINEERING RESEARCH AND DEVELOPMENT, ATREON'S TECHNOLOGY IS SUPPORTED BY COMPELLING EVIDENCE

- Validated outcomes across healing, strength, and biology
- Demonstrated benefit in both acute and chronic injury models
- Zero reported adverse events (internal data)

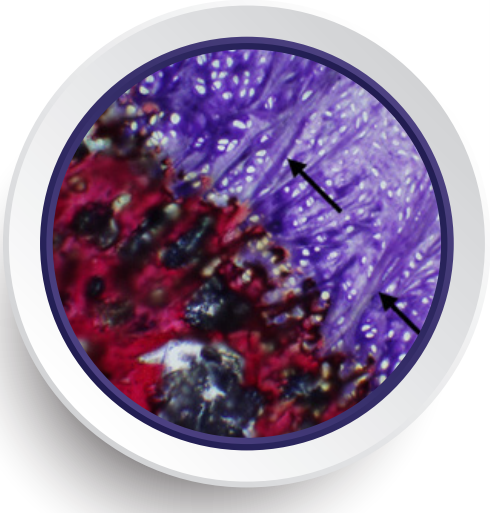
JSES ASES

Awarded Best Basic Science Paper in 2023 by JSES and ASES

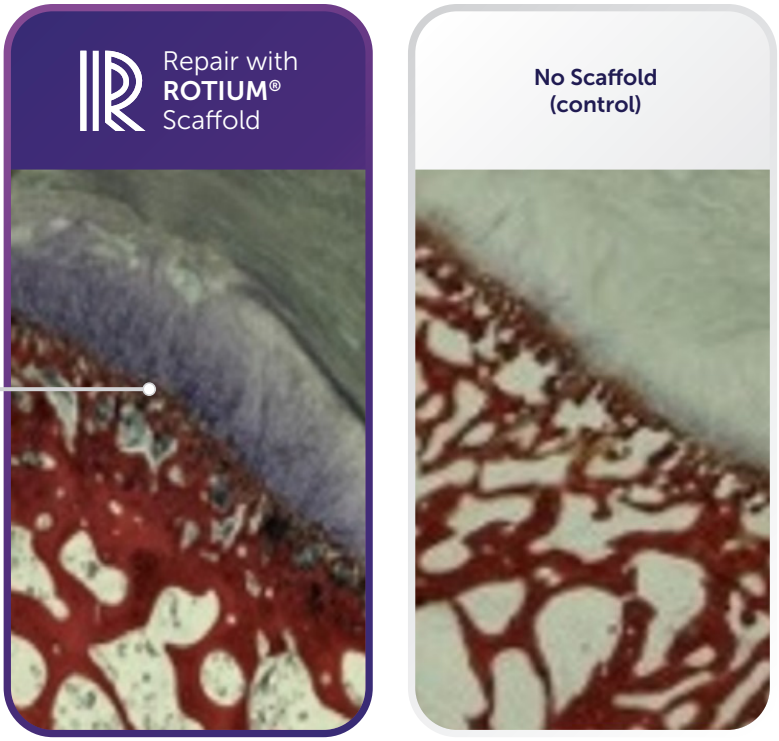
PROVEN RESULTS AT THE TENDON-BONE INTERFACE[10]

In-vivo study demonstrated:

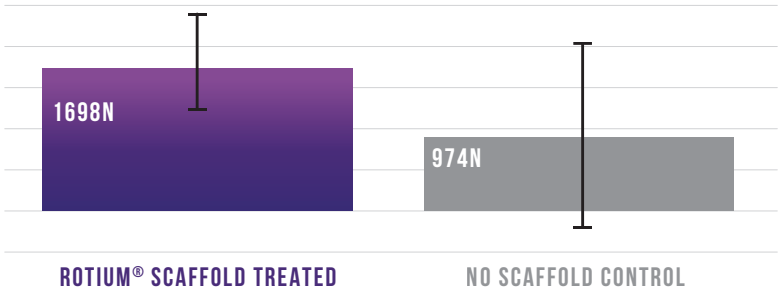
- Clear evidence of remodeling and structural integrity at the enthesis
- ~75% increased repair strength
- More consistent repair performance compared to control



Development of Sharpey's-like fibers at the tendon-bone interface with ROTIUM at 12 weeks, magnification x10



MEDIAN ULTIMATE BREAKING STRENGTH (N) AT 12 WEEKS **74%** INCREASE



PRODUCT PORTFOLIO

PART #	DESCRIPTION
FG-0007	ROTIUM® Bioresorbable Wick 2 x 2 cm
FG-0043	ROTIUM® Bioresorbable Wick 4 x 3 cm
FG-0525	ROTIUM® Lo Pro Bioresorbable Wick 5 x 2.5 cm
FG-0630	ROTIUM® Lo Pro Bioresorbable Wick 6 x 3 cm
FG-0725	ROTIUM® Lo Pro Bioresorbable Wick 7 x 2.5 cm
BC-2012	BioCharge® Autobiologic Matrix 2 x 1.2 cm

PART #	DESCRIPTION
FG-0051	PHOENIX Wound Matrix® 20 x 10 cm
FG-0052	PHOENIX Wound Matrix® 10 x 10 cm
FG-0053	PHOENIX Wound Matrix® 5 x 5 cm
FG-0054	PHOENIX Wound Matrix® 4 x 3 cm
FG-0055	PHOENIX Wound Matrix® 2.5 x 2.5 cm
FG-0056	PHOENIX Wound Matrix® 1.6 cm disc
FG-0057	PHOENIX Wound Matrix® 7 x 7 cm

No special storage requirements. Recommended storage in original packaging, preferably in a cool and dry place.

ROTIUM is indicated for the management and protection of tendon injuries in which there has been no substantial loss of tendon tissue.

BioCharge is intended to be used in conjunction with suture anchors for the reattachment of tendon to bone in rotator cuff repairs.

PHOENIX is intended for use in the management of wounds. Wound types include: Partial and full-thickness wounds, pressure ulcers, venous ulcers, diabetic ulcers, chronic vascular ulcers, tunneled/undermined wounds, surgical wounds (donor sites/grafts, post-Moh's surgery, post laser surgery, podiatric, wound dehiscence), trauma wounds (abrasions, lacerations, second degree burns, skin tears) and draining wounds.

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Scientific compendium available by request

ATREON ORTHOPEDICS

ABOUT ATREON ORTHOPEDICS, INC

Atreon Orthopedics is a Dublin, Ohio-based medical technology company advancing a new category of synthetic healing solutions. Manufactured in the USA, our portfolio of Autobiologic™ matrices is engineered to optimize the biologic microenvironment, promote native tissue remodeling, and support more reliable healing outcomes. Built on electrospun scaffold technology, Atreon provides a consistent, fully synthetic alternative to tissue-derived products across orthopedic and wound care applications.

ATREON ORTHOPEDICS

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AOI-00401 Rev A
June 2026