



**MATRACELL™** Allograft Decellularization Technology

**Reduced Immune Response!  
Preserved Biomechanical Strength.**

## **Reduced Immune Response.<sup>1</sup> Preserved Biomechanical Strength.**

MATRACELL is a patented and validated process that renders allograft tissue acellular, without compromising the biomechanical or desired biochemical properties of an allograft bio-implant for its intended surgical application. The MATRACELL process involves three steps:

### **STEP ONE – Decellularization**

MATRACELL utilizes an anionic, non-denaturing detergent, N-Lauroyl sarcosinate, to remove donor cells from the allograft bio-implant. To remove the donor DNA, a recombinant endonuclease, Benzonase, is utilized to efficiently degrade the DNA.

### **STEP TWO – Rinsing**

Decellularization reagent residuals and donor cell remnants are removed from the allograft bio-implant. The process utilizes sterile medical-grade water that circulates through the allograft bio-implant and then a resin bed to remove the decellularization reagents and cell remnants from the water.

### **STEP THREE – Preservation**

The allograft bio-implant is preserved with LifeNet Health's proprietary technology that comprises USP glycerol and USP-grade water. The allograft bio-implant is then stored frozen at -80°C.

1. Ketchedian A, Krueger P, Lukoff H, Robinson E, Linthorst-Jones A, Crouch K, Wolfenbarger L Jr, Hopkins RA. Ovine panel reactive antibody assay of HLA responsiveness to allograft bioengineered vascular scaffolds. *J Thorac Cardiovasc Surg* 2005 Jan;129(1):115-66.  
2. Ketchedian A, Jones AL, Krueger P, Robinson E, Crouch K, Wolfenbarger L Jr, Hopkins R. Recellularization of decellularized allograft scaffolds in ovine great vessel reconstructions. *Ann Thorac Surg* 2005 Mar;79(3):888-96; discussion 896.

## The Future of Allograft Bio-implant Decellularization

The MATRACELL™ process has been rigorously characterized and investigated to understand the optimal conditions for decellularization. The resultant MATRACELL decellularized tissue has been thoroughly assessed via various methods. In comparison to other commercially available technologies, MATRACELL has distinct advantages including the following:

Key Comparators	MATRACELL Process	Other Commercially Available Decellularized Tissue
Short processing times reduce the opportunity for water-mediated lysis of the tissue's collagen and elastin scaffold	Yes, only two days	No, more than a week
Utilizes multiple disinfecting agents to provide for comprehensive tissue disinfection	Yes	No, utilizes only one
Does not utilize any animal-derived reagents	Yes	No, uses bovine-derived endonucleases which may introduce the risk of prion disease
Uses a validated DNA assessment method able to detect as little as one nanogram (ng/mL) of nucleic acid to ensure the tissue has been decellularized	Yes	No, uses spectrophotometry-limiting detection
Assesses and verifies every lot of donor tissue following decellularization to ensure DNA removed >99%	Yes	No
Endpoint microbial validation included common cardiovascular microorganisms not required by USP <71> (ensure ability to detect microorganisms if present)	Yes	Unknown

### Compelling Data

Allograft bio-implants decellularized with MATRACELL technology have been successfully assessed in a large animal model for biocompatibility and durability. The processing reagents and biomechanical strength are thoroughly evaluated and the MATRACELL process is validated to remove >99% of the donor DNA. The endpoint microbiological testing is validated in accordance with USP <71> and the endpoint DNA testing is validated in accordance with ICH Harmonized Tripartite Guidelines Q2 (R1), "Validation of Analytical Procedures: Text and Methodology."

## **Why Choose MATRACELL™ Decellularized Allograft Bio-implants?**

The safety and quality of your allograft bio-implants are critical to you and your patients. As a leading regenerative medicine company, LifeNet Health has developed MATRACELL to ensure these needs are met with every bio-implant we provide. MATRACELL renders allograft bio-implants acellular without compromising the biomechanical properties for their intended surgical applications and reduces immune response factors such as calcification for cardiac tissues.<sup>2</sup>

### **The LifeNet Health Advantage**

We are proud to be the industry leader in first-to-market allograft technology. To meet the changing needs of our customers, research and development continues to be a top priority. MATRACELL is one of 42 patents issued to LifeNet Health to date for innovative products and processes.

When you choose LifeNet Health, you are assured of 24-hour access to our team of experienced allograft technology professionals. We also offer our customers:

- A bio-implant locator network
- Educational programs
- Convenient customer services that include free shipping and a flexible return policy

Please contact your LifeNet Health representative for more information about our comprehensive offering of allograft products and services or call 800-847-7831.



**ALLOWASH XG® Tissue Sterilization**

Renders allograft bio-implants sterile without compromising their biomechanical or biochemical properties.

**PRESERVON® Allograft Bio-implant Preservation**

Allows allograft bio-implants to be stored fully hydrated at ambient temperature.

**MATRACELL™ Allograft Decellularization**

Safely removes donor cells and DNA without sacrificing the biomechanical strength of the allograft bio-implant.

**PAD® Allograft Demineralization**

Precisely manages demineralization to optimize osteoinductivity.

LifeNet Health, a non-profit global leader in regenerative medicine, is the world's largest provider of bio-implants and organs for transplantation whose mission is saving lives and restoring health by advancing the field of tissue engineering. Please contact your LifeNet Health representative for more information about our comprehensive offering of allograft products and services.



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