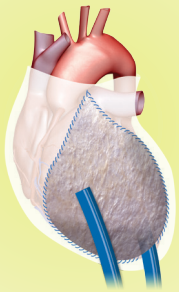
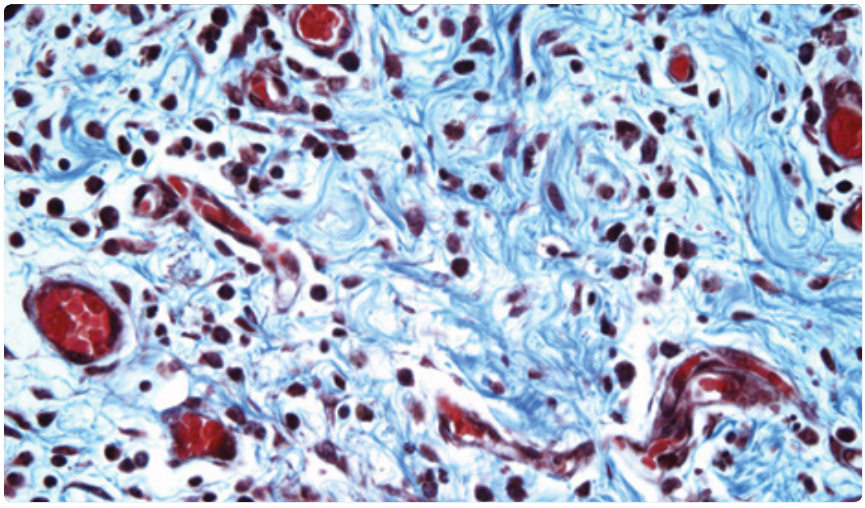


CASE STUDY

CorMatrix® ECM® for Pericardial Closure

Pediatric Histology

Reoperative Pediatric Surgery Facilitated by Implantation of CorMatrix® ECM® for Regeneration of a Neopericardium



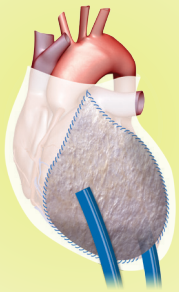
Samples of pericardium were excised nine months after surgical repair of the pericardium from open-heart surgery to correct a congenital cardiac defect. The pericardium had been repaired with an interposed patch of CorMatrix ECM for Pericardial Closure. The samples were fixed by immersion in 4% paraformaldehyde, embedded in paraffin and sectioned on a rotary microtome. Step-sections were stained with Verhoeff-Masson (VM) elastic-trichrome and hematoxylin-eosin (H&E). The CorMatrix section in the sample was seen in two pieces with a roughly sagittal plane of sectioning; voids from suture material were seen clearly and provided landmarks for orientation, along with tissue dye that had been applied during specimen dissection. The native pericardium was clearly seen as dense connective tissue bands that merged with the neopericardium of the CorMatrix graft. This neopericardium was observed to be highly vascularized with neochannels including small arteries and veins as well as microvasculature; the vessels were filled with erythrocytes as an artifact of immersion fixation. The tissue was of heterogeneous content that included bundles of fibrillar collagen interspersed with regions of reticular matrix, and the cell populations ranged from spindle-shaped fibroblastic cells to relatively undifferentiated cells with heterochromatic nuclei and abundant cytoplasm. Inflammatory infiltrates were present but limited in size and extent; one was focal and histiolymphocytic in character, and the remainder were more diffuse with mixed populations of macrophages and other granular leukocytes. No foreign-body giant cells were seen.

SUMMARY

Nine months after implantation CorMatrix ECM for Pericardial Closure had repopulated with cells to regenerate a histologically similar neopericardium. The influx of cells established an extensive vascular network with minimal inflammation. Animal data with the CorMatrix® ECM® indicate the migration of stem cells into the matrix as a mechanism for regeneration.[1]

1. Badylak, SF, Transplant Immunology 12 (2004) 367-377

CORMATRIX®
CHANGES EVERYTHING



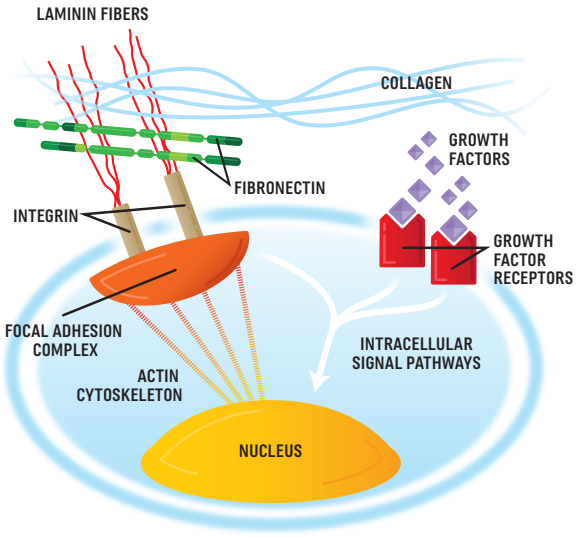
CorMatrix® ECM® for Pericardial Closure

What is CorMatrix?

CorMatrix develops and delivers innovative biomaterial devices that harness the body's innate ability to repair damaged cardiac and vascular tissues.

Extracellular matrix (ECM®) is the naturally occurring bioscaffold that surrounds cells in almost all tissues. ECM functions to regulate cell adhesion, differentiation, division, and migration.

EXTRACELLULAR MATRIX



Proliferation, Differentiation, Attachment, Migration

The cell is in constant communication with ECM through transmembrane receptors contained within the cell membrane. Through the specific cell attachments, ECM guides the gene expression and enables cell migration, proliferation, and differentiation.

CorMatrix acts as a scaffold into which the patient's own cells migrate and integrate — stimulating natural wound healing mechanisms which mature to form a strong, permanent tissue repair.

CorMatrix products are de-cellularized biologic scaffolds primarily composed of:

- **Structural proteins**
- **Adhesion glycoproteins**
- **Glycosaminoglycans (GAGs)**
- **Proteoglycans**
- **Matricellular proteins**

CorMatrix is produced in a manner that retains these natural ECM molecules including growth factors, proteins, and cytokines which are known to play important roles in host tissue repair and remodeling. CorMatrix devices enable surgeons to restore the native anatomy of cardiac and vascular tissues in need of repair, serving as a superior alternative to synthetic or cross-linked materials.

CORMATRIX®

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