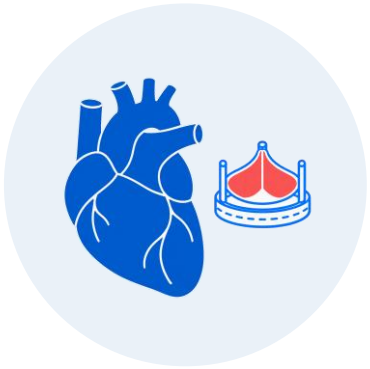

CARDIOVASCULAR BIOMATERIALS

Surface treatment for reducing xenoantigens in cardiac biomaterials

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What we are looking for

Industrial partners interested in licensing and/or co-developing the technology for product-specific applications.

What it is needed for?

Animal-derived tissues are widely used to manufacture bioprosthetic heart valves and cardiovascular patches. However, residual xenoantigens can trigger immune reactions and may affect the long-term performance of these devices.

Current approaches present several limitations: chemical fixation can mask rather than remove antigens, while decellularization does not completely eliminate xenoantigens bound to the extracellular matrix.

The invention provides a proprietary surface-treatment process that significantly reduces α-Gal in porcine and bovine cardiac tissues while preserving the structure and chemical composition of the extracellular matrix. The treatment has been successfully applied to native and decellularized cardiac tissues, as well as to material from a commercially available bioprosthetic heart valve.

Advantages

- Significant reduction of residual α-Gal
- Preservation of extracellular-matrix integrity
- Support for endothelial-cell adhesion and proliferation
- Applicable to native and decellularized cardiac tissues
- Potential integration into bioprosthetic manufacturing processes

Applications

- Bioprosthetic heart valves
- Porcine and bovine pericardial patches
- Decellularized cardiac biomaterials
- Treatment of animal-derived cardiac tissue for bioprosthetic applications

TRL scale

Health and biomedical