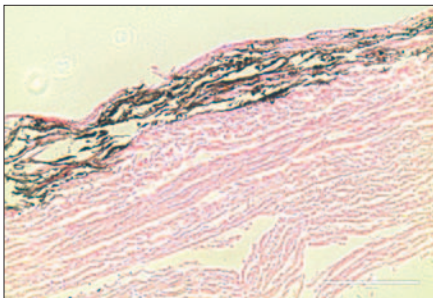
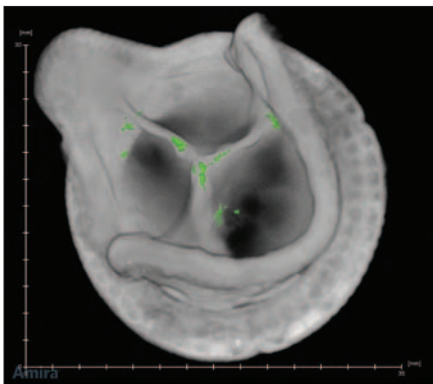


# FLOW-INDUCED CALCIFICATION SERVICE

*More cost effective and ethical method to assess calcification than animal models*



Von Kossa staining to detect calcific deposits (shown in black)



3D reconstruction of the calcified heart valve using  $\mu$ CT, the calcium. (Deposits are shown as colored regions. The relatively small degree of calcification demonstrates the effectiveness of anti-calcification treatment.)

ViVitro Labs Calcification testing is available for cardiovascular devices including prosthetic valves and conduits and other cardiovascular devices that contain tissue, or may be susceptible to calcification.

Bioprosthetic heart valves are superior to mechanical valves in hemodynamic performance and do not require lifetime anticoagulation therapy. However, they may succumb to premature tissue calcification, which is triggered by calcific aortic valve disease.

## Calcification Process

Immersing cardiovascular devices in a saturated calcification solution and exposing them to mechanical stresses associated with full opening and closing under normotensive backpressures creates leaflet calcification similar to that observed in vivo.

## Calcification Applications

This method can be useful for evaluating the calcification potential of a novel device when compared against a reference valve or determining the effectiveness of anti-calcification treatments when comparing treated and untreated valves. It can also be useful for identifying regions of the device which are more susceptible to calcification.

# Optional Testing Services

**Demonstrate effectiveness of anti-calcification treatment**



The degree of calcification can be quantified using  $\mu$ CT, Spectroscopy, or histology (*Von Kossa staining*) upon request.

The volume and location of calcium deposits can be determined with  $\mu$ CT. This test can give bulk distribution throughout the valve, or highlight calcium deposit through the thickness of the tissue depending on the resolution selected.

As a valve calcifies it also becomes increasingly stenotic. Increased gradients across the valve can be characterized by ViVitro with hydrodynamic testing before and after calcification.

## ViVitro Labs Advantages

With ViVitro Laboratory Services you gain the following advantages:

### **Time to Market**

We understand how critical your timelines are. We work to your schedule and deliver to our commitments. We design unique tests to meet specific developmental needs.

### **ISO 17025 Accredited by A2LA**

For studies used for regulatory approval this is a must. Our trained researchers, calibrated equipment, and internal audits meet ISO 17025 standards.

### **Free Set-Up Consultations**

All of our feasibility studies are developed via no-cost, no obligation, collaborative consultation.

### **Guaranteed Confidentiality**

We happily provide Non-Disclosure Agreements for all services, including initial consultation.

**Contact us for a free consultation**

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First in Cardiovascular Device Testing