# BioTester Series

**Precision Benchtop Biaxial Mechanical Testing**


**Purpose-Built for Planar Biaxial Testing of Soft Materials**

**Image-Based Strain Measurement for Better Mechanical Insights**

**Mimic Physiological Conditions with Hydrated Workflows**

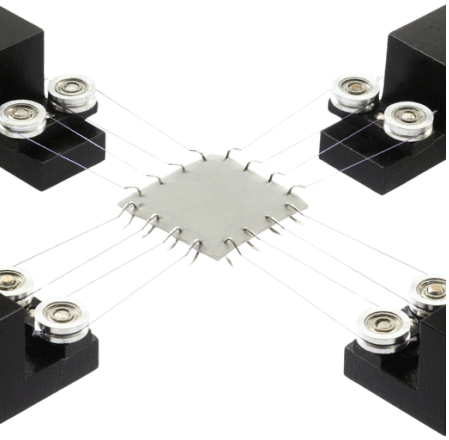
**Tissue Biomechanics | Hydrogels | Biomaterials Testing**
**Mechanobiology | Tissue Engineering**

*Capture high-quality mechanical data, run post-test analysis, and generate publication-ready figures all on one platform*

CellScale
biomaterials testing

# Choose Your BioTester Model

Select your configuration based on specimen size,
expected force range, and the testing workflows you need

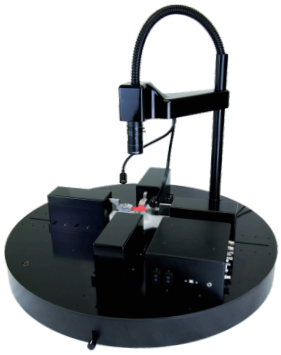


## BioTester 3000

Compact, upgradeable, entry-point platform for biaxial testing of soft tissues and biomaterials

## BioTester 5000

Full-featured system with integrated imaging and heated media bath for physiologically relevant testing



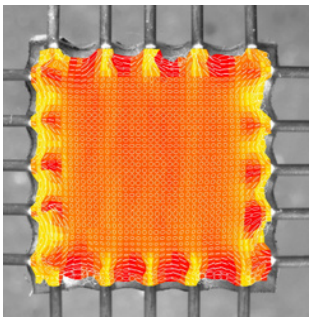
## BioTester 6000

Higher-force model for larger and stronger specimens, and more advanced applications

| Specification | | 3000 | 5000 | 6000 |
|---|---|---|---|---|
| **Dimensions** | **(cm)** | 46 x 46 x 13 | 60 x 60 x 80 | 86 x 86 x 80 |
| **Weight** | **(kg)** | 6 | 18 | 23 |
| **Force Capacity** | **(N)** | 10 (23 optional) | 23 | 200 |
| **Load Cell Range** | **(N)** | 0.5 - 10 (23 optional) | 0.5 - 23 | 0.5 - 200 |
| **Max Grip Separation** | **(mm)** | 50 | 80 | 300 (90mm stroke) |
| **Max Velocity** | **(mm/s)** | 20 | 20 | 20 |
| **Max Data Rate** | **(Hz)** | 10 (100 optional) | 100 | 100 |
| **Media Bath** | | Optional | Standard | Standard |
| **Imaging (& Max Rate)** | **(Hz)** | Optional (5 or 15) | Standard (15) | Standard (15) |
| **Test Control Modes** | | Displacement (Force optional) | Force & Displacement | Force & Displacement |

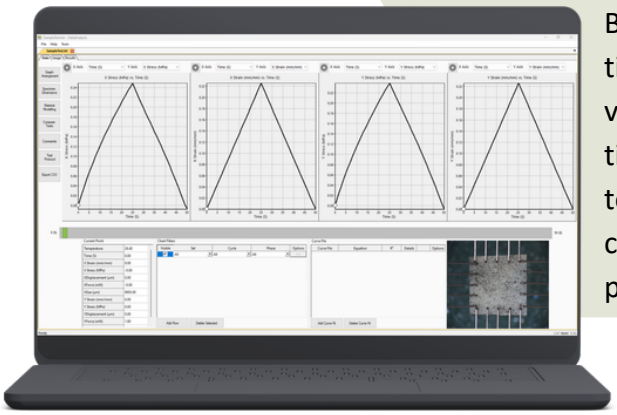
# Configure Your Workflow

- Force Sensing:
  Select low-force or high-force load cells matched to expected loads, specimen stiffness, and test sensitivity requirements
- Specimen Mounting:
  Configure with BioRakes, clamps, or balanced pulley mounting to suit delicate tissues, biomaterials, and engineered constructs
- Environmental Control:
  Test in hydrated and temperature-controlled conditions (up to 40°C) with an integrated media bath for biologically relevant workflows
- Digital Image Correlation:
  Combine force and displacement data with image-based strain measurement, strain mapping, and optical deformation tracking
- Integrated Software:
  Set up test methods, control and monitor outputs in real time, calculate mechanical metrics, generate plots, and export publication-ready figures from one platform

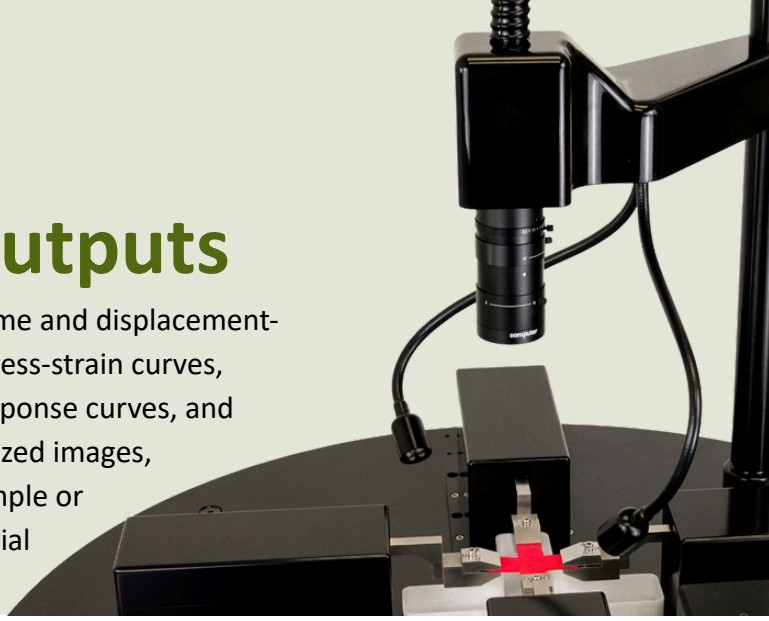


Biaxial strain image tracking using DIC

# Typical Outputs



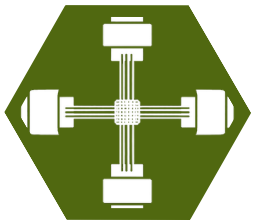
Biaxial force-time and displacement-time traces, stress-strain curves, viscoelastic response curves, and time-synchronized images, to calculate simple or complex material properties.



# Mechanical Tests

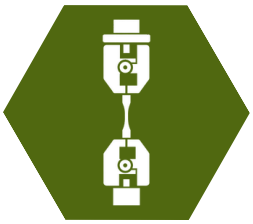
Use the BioTester for biaxial tensile, hydrated, and imaging-based workflows for soft tissues and biomaterials

**Biaxial**



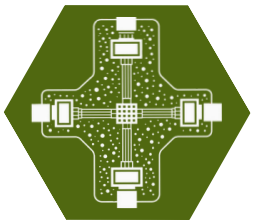
planar biaxial loading, anisotropy, equibiaxial and non-equibiaxial response

**Tensile**



soft tissue strips, membranes, thin biomaterials, engineered constructs

**Hydrated**



soft tissues, hydrogels, decellularized matrices to mimic physiological conditions

**Viscoelastic**

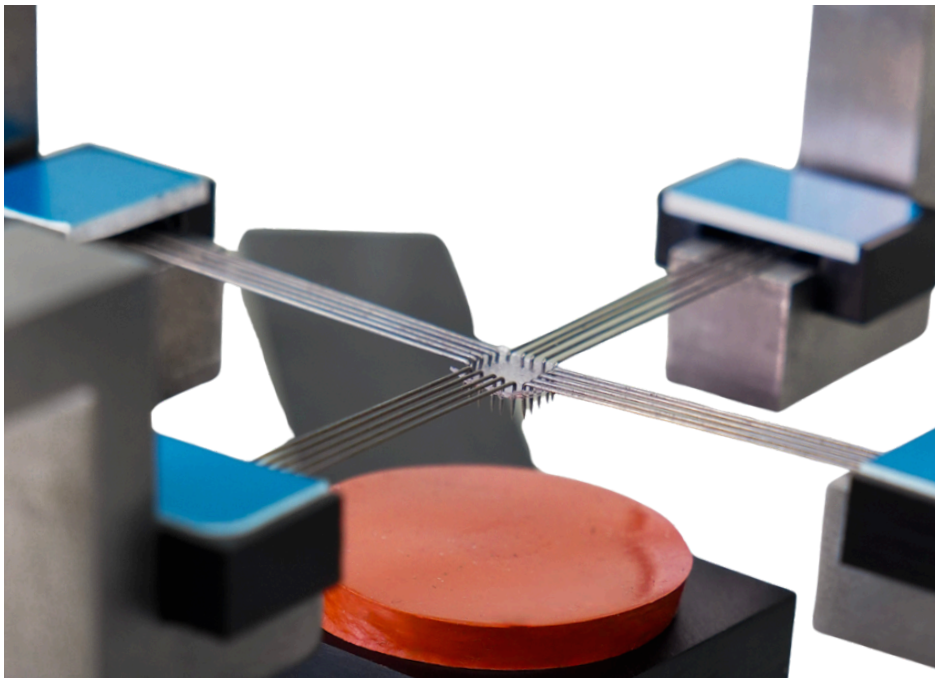
preconditioning, creep, stress relaxation, hysteresis, time-dependent response

**Digital Image Correlation**

optical strain tracking, strain mapping, local deformation measurement

# BioRakes

CellScale's patented multi-point specimen mounting system for fast, repeatable attachment of soft materials. BioRakes help reduce setup variability and improve consistency in biaxial testing workflows where slippage, tearing, or uneven mounting can affect results. Clamps and pulley mounting also available.




# BioTester Applications

### Soft Tissues, Natural & Engineered Biomaterials

Measure anisotropy, nonlinear response, and local strain behaviour in:

- heart valves
- skin
- tendons
- ligaments
- ocular tissues
- myocardium
- engineered soft tissue constructs

### Membranes, Scaffolds, Hydrogels

Characterize stiffness, viscoelastic response, and deformation behaviour in:

- electrospun materials
- stiff hydrogels
- soft biomaterials
- thin films
- other compliant research samples

### Remodeling, Matrices, Comparative Studies

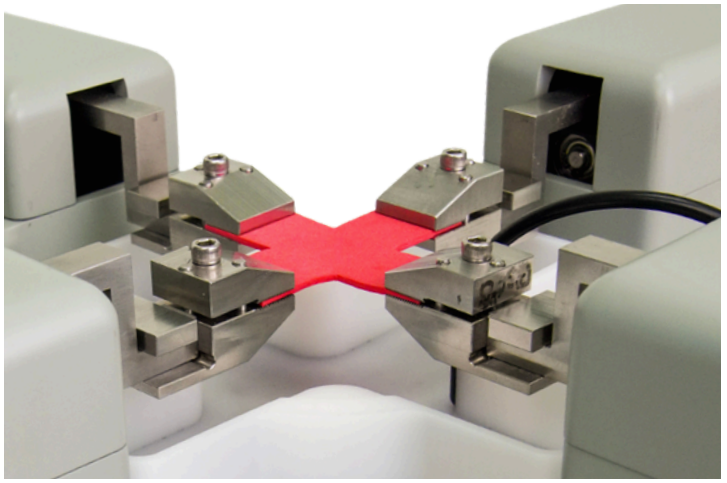
Compare how structure, treatment, processing, or disease state changes mechanical response in:

- native tissues
- engineered matrices
- regenerative materials
- soft material systems

## Common Sample Types

Heart Valves | Hydrogels | Ocular Tissues | Skin | Scaffolds | Membranes

and aortic tissue, stents, vascular tissues, intervertebral disc tissues, cartilage, cornea and sclera, pleural tissues, gastrointestinal tissues, decellularized matrices, electrospun materials, nanofiber mats, soft polymers, elastomers, engineered tissues, thin films, and many more!



## Book A Demo!

Talk with our team about specimen handling, mounting options, and the right BioTester configuration for your research workflow

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