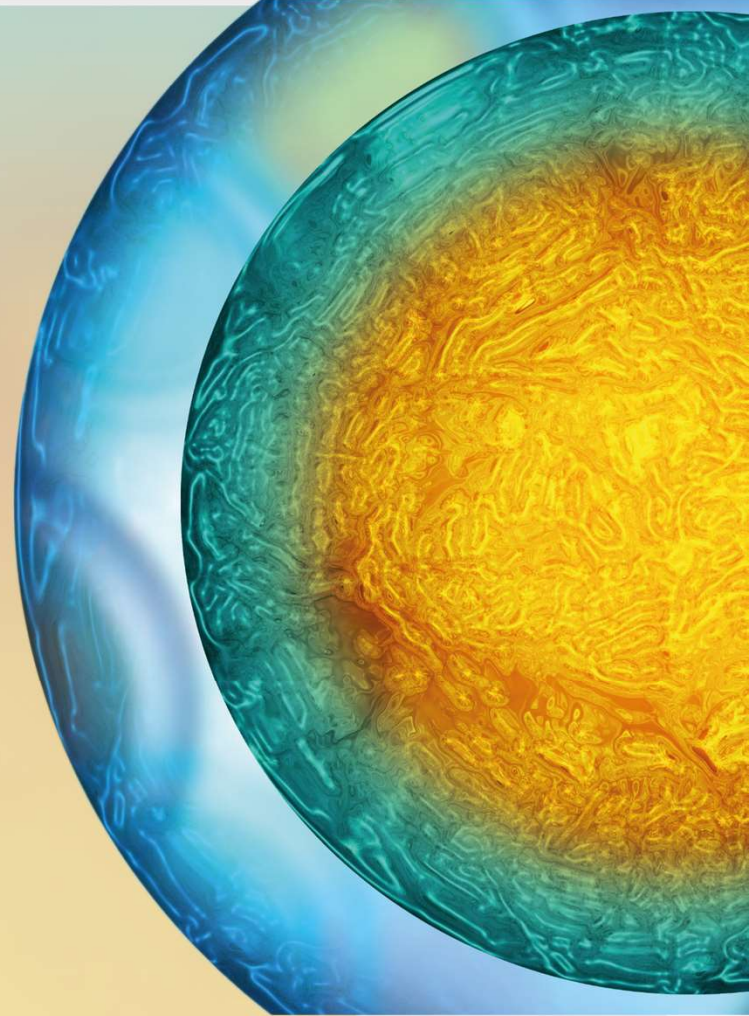


OPTICS11 LIFE

LIFE SCIENCE INSTRUMENTS

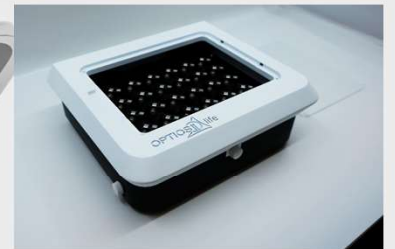
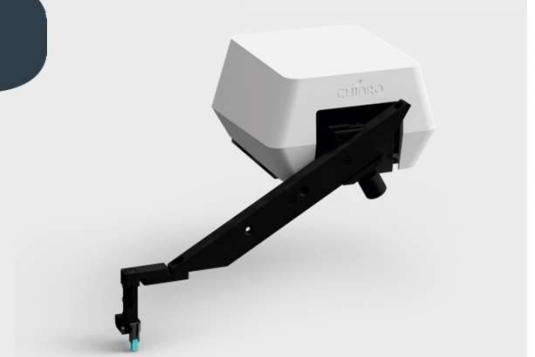
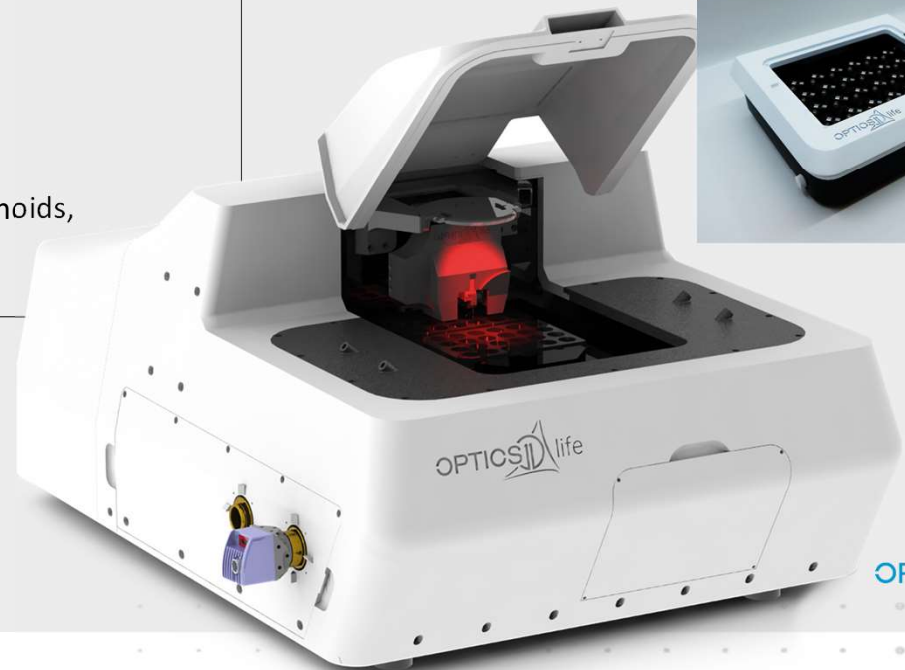
QUANTIFY MECHANICS IN BIOLOGY

Kevin Bielawski
06 Jul 2023



OVERVIEW – OPTICS11 LIFE

- > Amsterdam, Boston
- > Founded in 2011 – now two companies – Optics11 and Optics11 Life
- > Spinout from Vrije Universiteit Amsterdam
- > 120+ Customers, 200+ Publications
- > Nanoindenters – Piuma, Chiar, Pavone
- > Contractility – Cuore
- > Soft materials in liquid – cells, biomaterials, tissues, organoids, spheroids

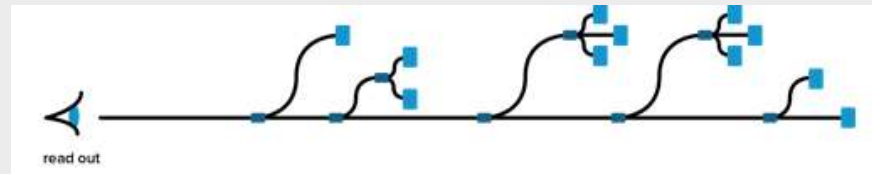
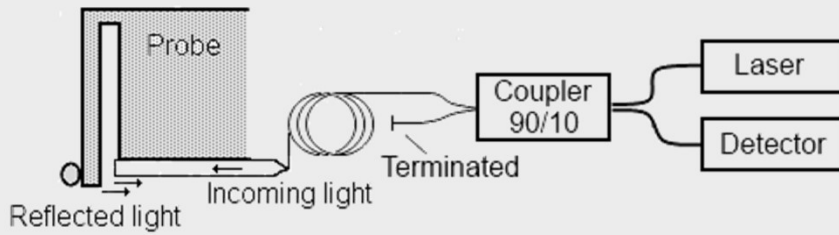


OPTICS11 LIFE INTERROGATORS

OP1550



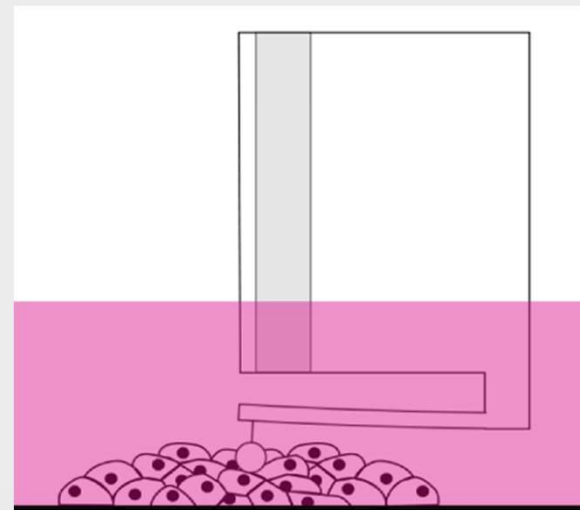
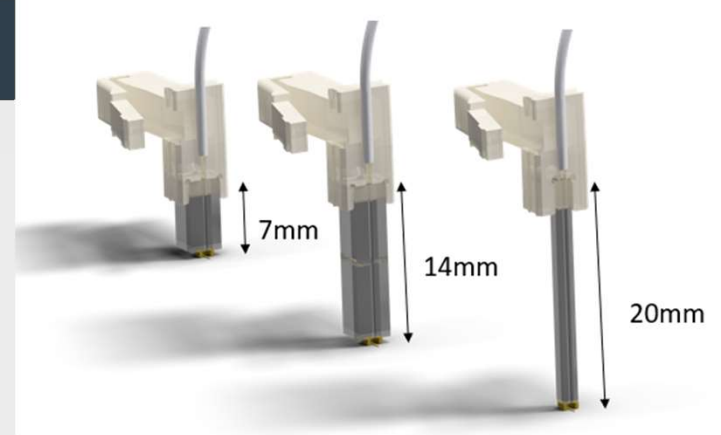
DeltaSens



OPTICS11 LIFE PROBES

A unique fiber optic probe

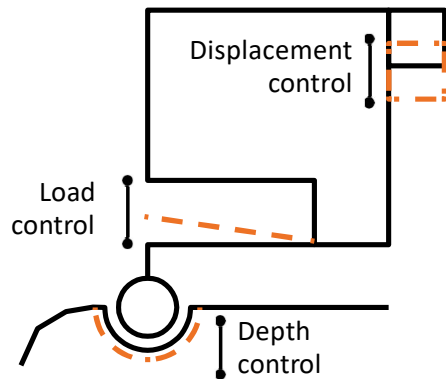
- > Optical Interferometry – FP cavities
- > Silicon Cantilever, Glass Sphere
- > Any medium or in Air
- > Pre-calibrated, reusable



NANOINDENTATION

1 OPERATE

Combine any mode of operation.



2 INDENT

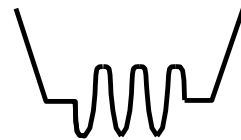
INDENT

With any indentation profile.

Quasi-static profile



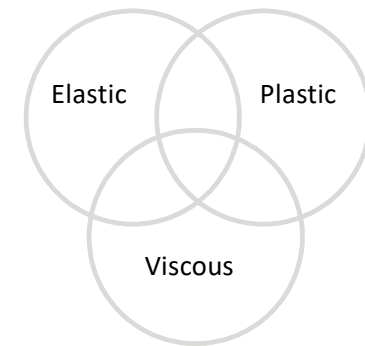
Dynamic oscillatory profile



3 MEASURE

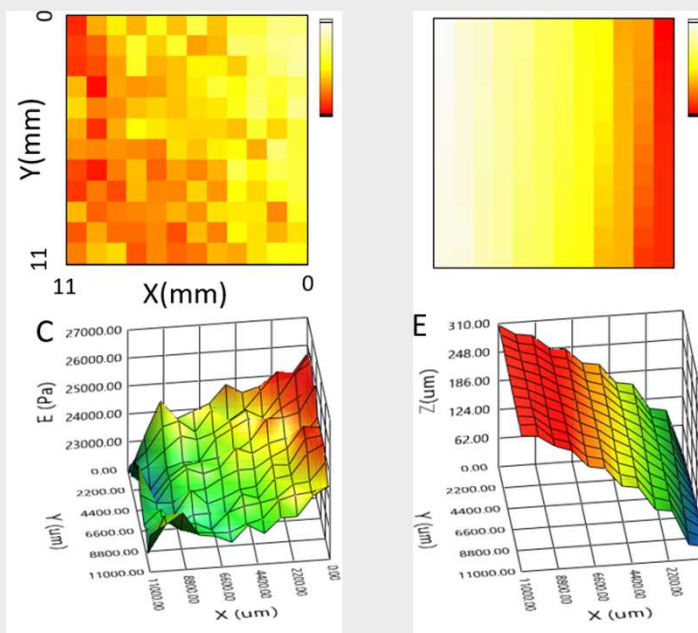
MEASURE

Measure the mechanical properties.

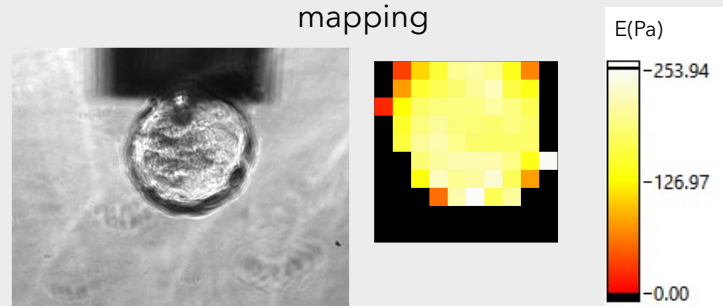


MAPPING CAPABILITIES

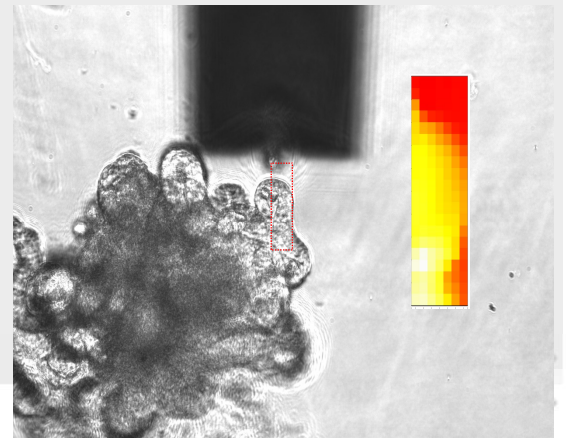
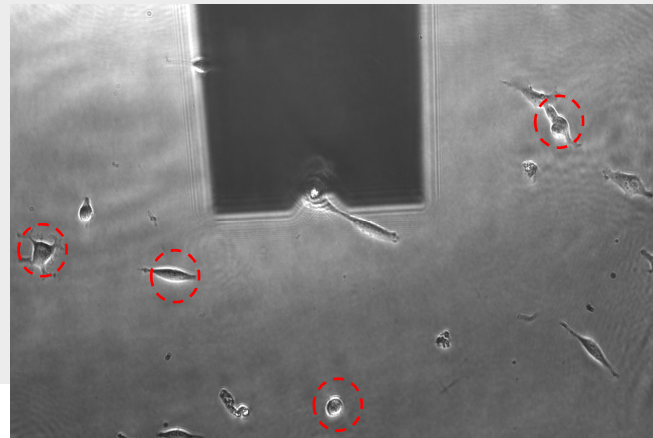
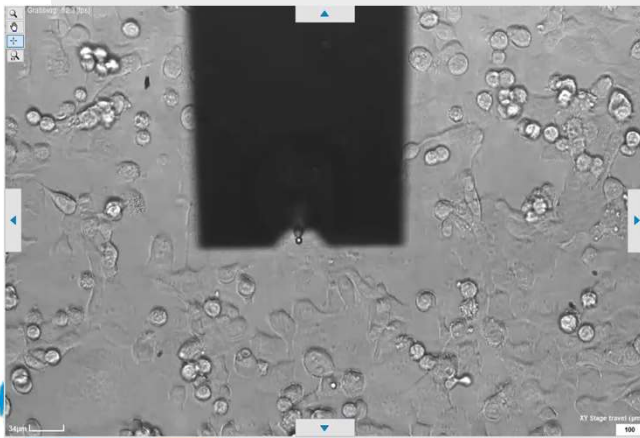
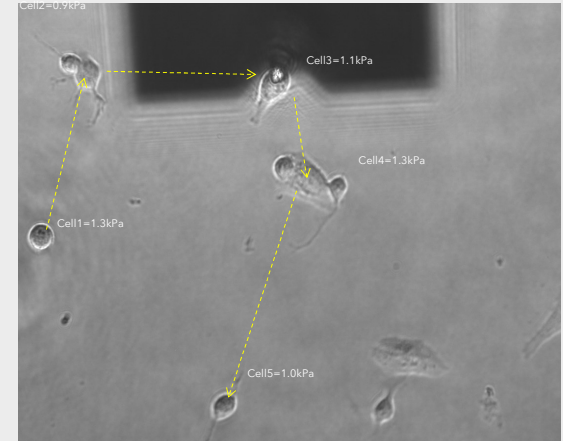
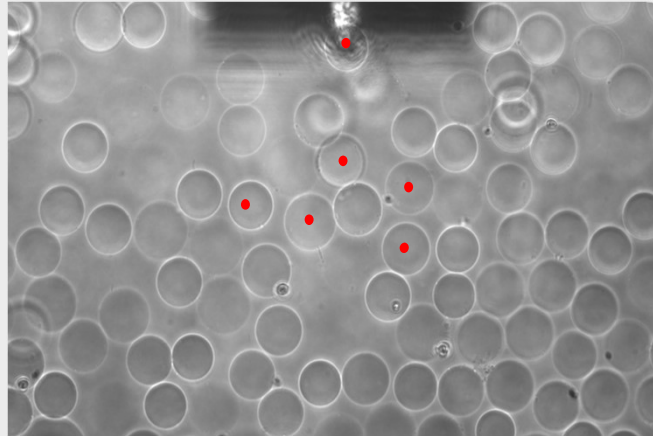
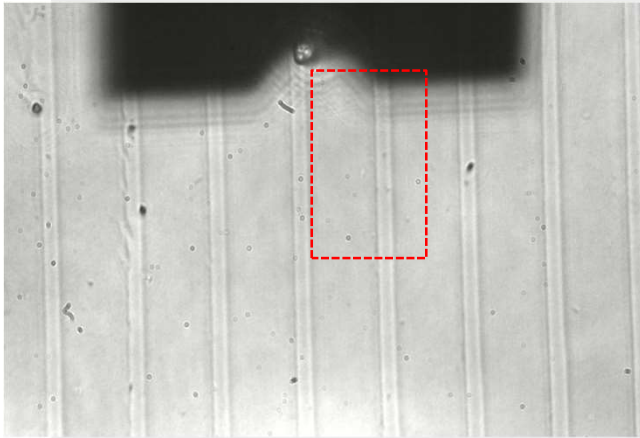
Mapping Topography and Stiffness



Organoid mapping



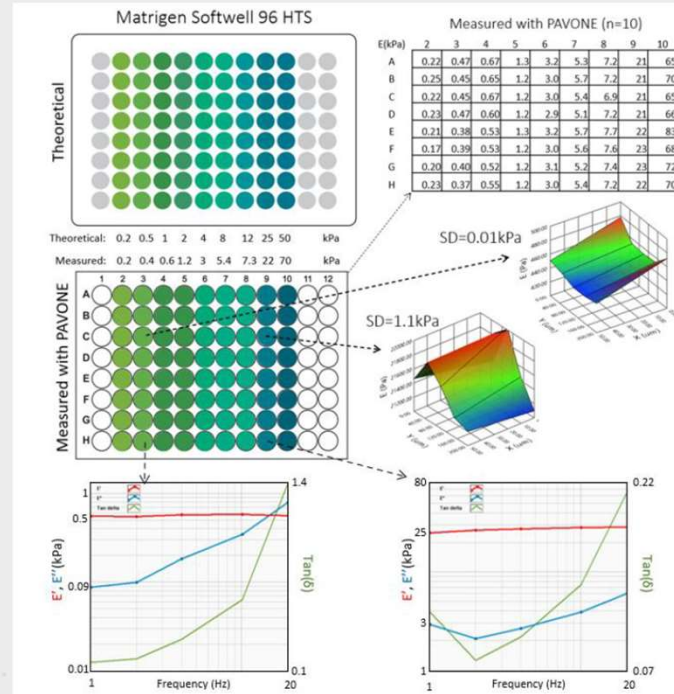
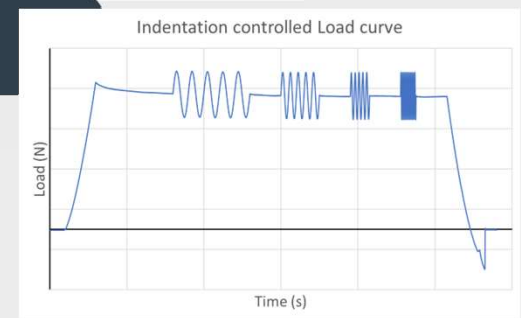
PAVONE – SELECT POINTS OF INTEREST



DYNAMIC MEASUREMENTS

MAP MECHANICAL PROPERTIES

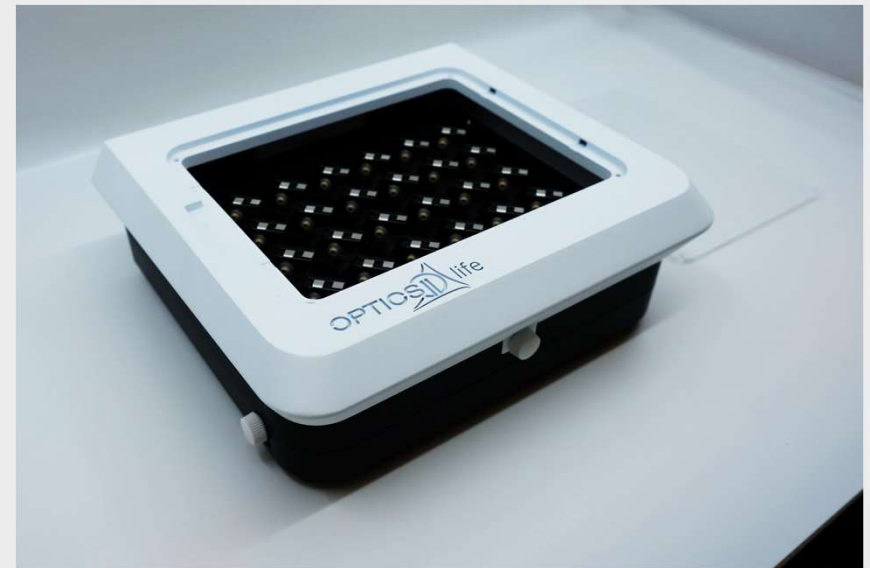
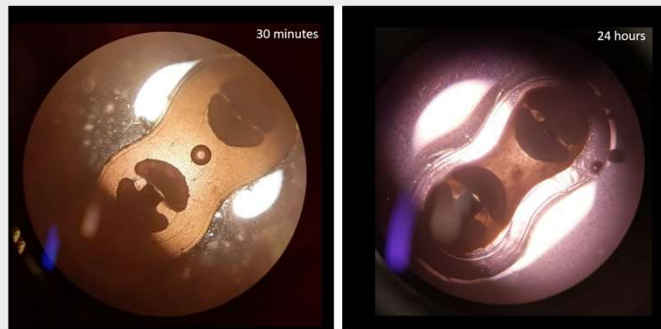
- > 96 well plate compatibility (Pavone)
- > Young's modulus (loading + unloading)
- > Storage & Loss Modulus
- > Stress Relaxation
- > Creep
- > Adhesion



CUORE – CONTRACTILITY ASSAY

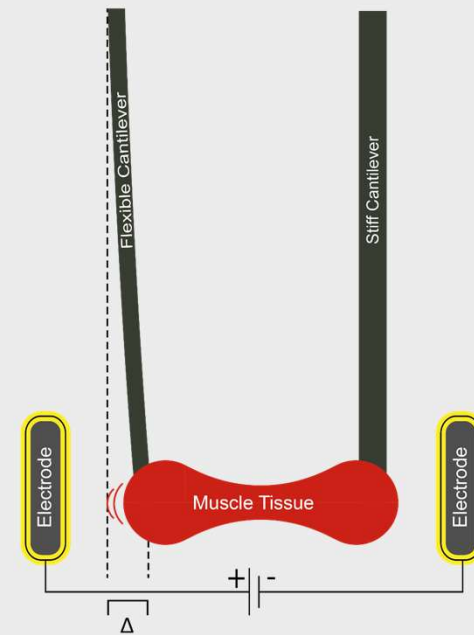
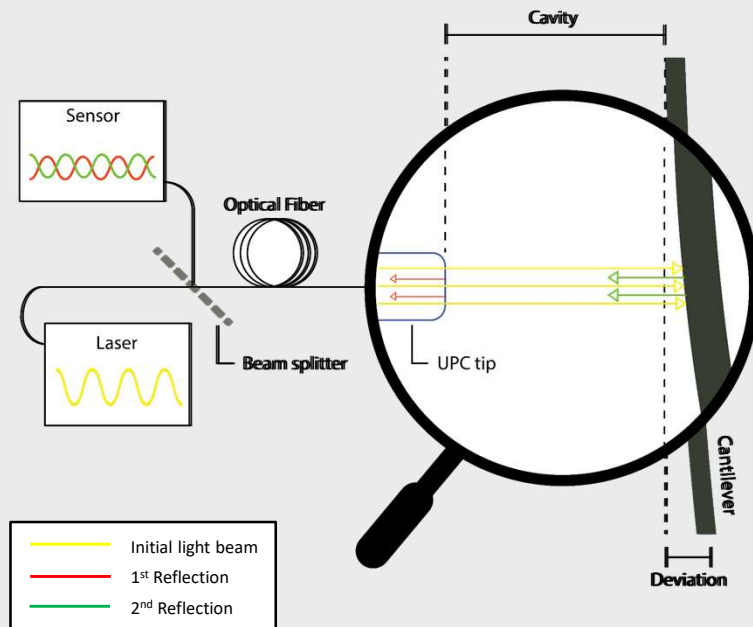
3D multi-channel muscle force assay

- > 3D engineered cardiac or skeletal muscle bundles
- > Mature & measure multiple tissues in parallel
- > Monitor real-time inside incubator
- > Read-out 24 tissues
- > Pacing up to 96 tissues in parallel

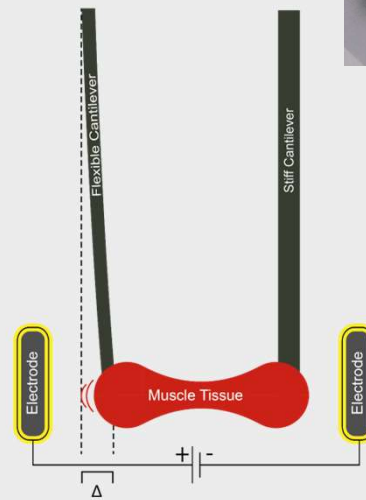
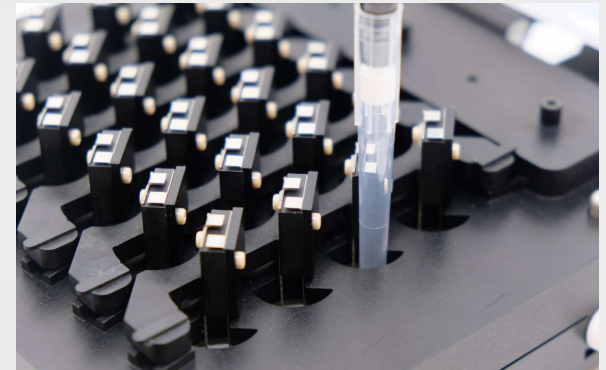
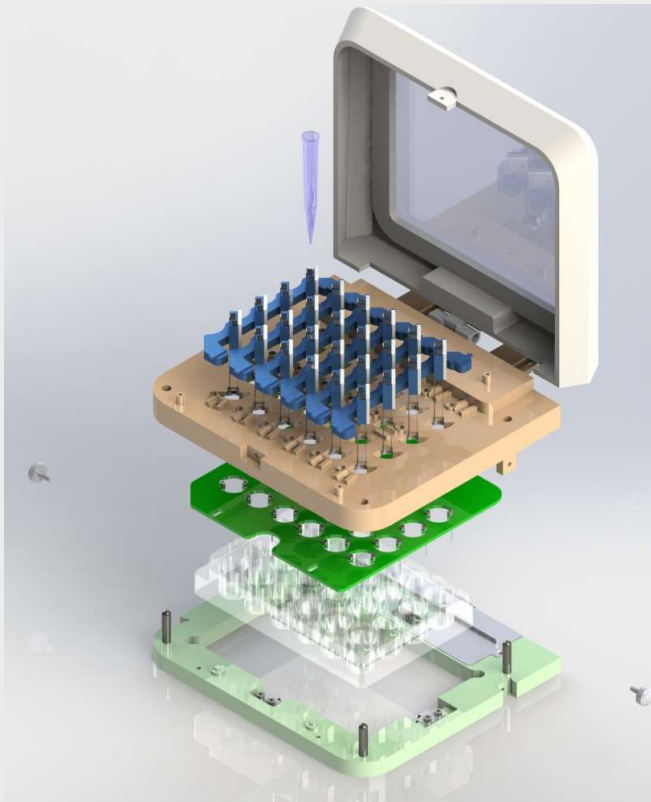


CUORE – CONTRACTILITY ASSAY

FIBER-OPTICAL READ-OUT



CUORE – CONTRACTILITY ASSAY



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