

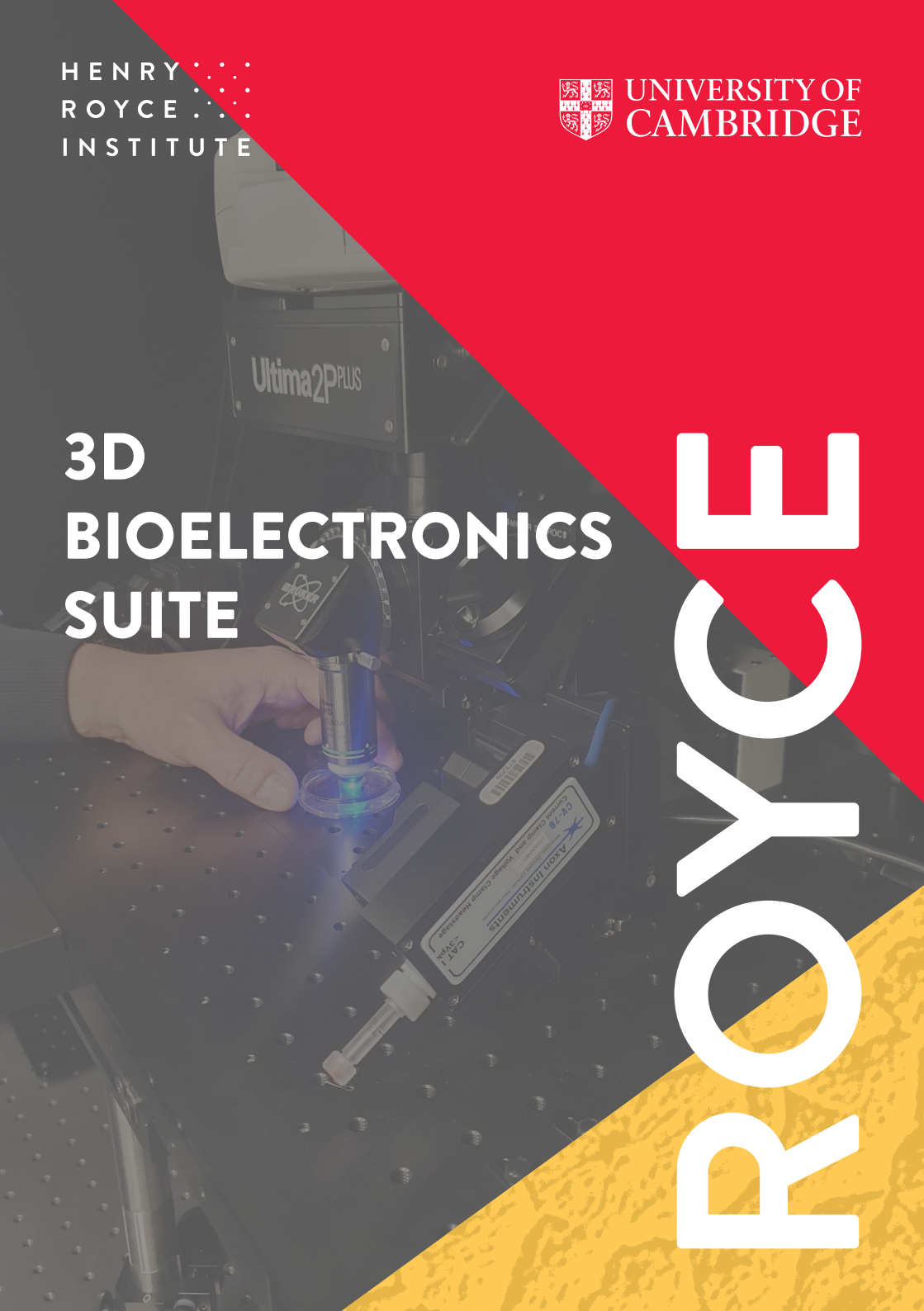
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UNIVERSITY OF
CAMBRIDGE

3D
BIOELECTRONICS
SUITE

ROYCE



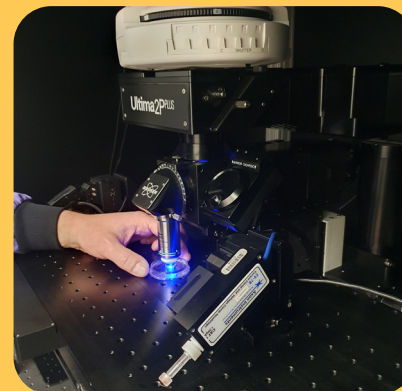
The Royce 3D Bioelectronics Suite is available on open access to all UK-based academic and commercial researchers. It has been designed to advance biomaterial research with six main categories of equipment, and is housed in the Centre for Medical Materials, within the Department of Materials Science and Metallurgy, at the University of Cambridge.



ICE-TEMPLATING EQUIPMENT

to fabricate porous 3D materials from aqueous suspensions

The VirTis AdVantage Pro freeze dryer freezes and lyophilises solutions and suspensions to produce 3D scaffold materials. Freeze drying lacks the harsh conditions of other 3D material fabrications techniques, so retains the biological activity of the precursor molecules.



SIMULTANEOUS OPTICAL AND ELECTRICAL MEASUREMENT OF CELLS AND MATERIALS

A 2-Photon microscope can take fluorescent images up to 800µm deep into a material while conducting simultaneous electrophysiology measurements. Coupled with this equipment it can be used for fast electrophysiology protocols and simultaneous optical imaging.

CELL CULTURE EQUIPMENT

for growth and maintenance of cells in 3D culture

A full cell culture facility for the routine culture of mammalian cells and preparation, culture, and analysis of cell-loaded scaffolds and bioelectronic devices. The cell lab can be used for cell analysis such as continuous bulk electrophysiological measurement of live cells-loaded experimental devices, colorimetric assays or preparation of samples for immunofluorescence microscopy.



APPARATUS TO SECTION 3D SAMPLES

The Leica VT1000S is a vibrating blade microvibratome designed to cut soft materials into thin sections. The blade frequency can be altered between 0 and 100Hz. There is fine control over the blade advance speed between 0.025 to 2.5mm/s. Maximum sample dimensions are 33 x 40 x 15mm.



ELECTRICAL ACQUISITION EQUIPMENT

The Royce 3D Bioelectronics Facility houses a Metrohm PGSTAT302N potentiostat with FRA32M Module and an Intan RHD USB interface board including RHD 64-channel head-stage with accelerometer.



EQUIPMENT TO TRANSPORT LIVE CELLS

The Cell Box Ground 2.0 is a portable cell culture incubator that is suitable for overland transportation of live cell systems for up to two days. The temperature and CO₂ concentration are constantly logged via the inbuilt data tracking software.



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