



**UNSW**  
SYDNEY



## Bioinspired Multifunctional Materials for Cell and Tissue Assembly

**Expertise in cell engineering and the design of multifunctional soft materials - including hydrogels, coatings, dynamic stimuli-responsive materials, and 3D patterning approaches - as well as precise control of microenvironment parameters, is used to create and maintain reproducible culture conditions to facilitate new avenues for cell manufacture.**

### Competitive advantage

- Novel synthetic materials with user-defined dynamics enable spatiotemporal control over cell assembly and activity
- Expertise in the precise control of chemistry and mechanics in vitro to homogenise cell state for the tuning of a desired population
- Skills at controlling and directing cell state in the laboratory facilitate 3D assembly into functional tissue-mimetic architectures

### Impact

- Coatings and materials for reproducible manufacture of clinically useful cells from donor banks or patients
- Model systems comprised of 2D/3D spheroids and organoids for development and disease modelling, and for drug development

### Successful outcomes

- Engineering melanoma heterogeneity in a microtumour array for testing combination therapies
- Multicellular heterotypic models of tissue microenvironments with 3D printed vasculature

### Capabilities and facilities

- GeneTech-approved PC2 laboratory with lithographic, ink jet and direct-write printing
- Wet chemistry and molecular biology laboratories

### Our partners

- Mayo Clinic
- Cynata Therapeutics

### More Information

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