



**medtech**<sup>®</sup>  
ACCELERATOR  
A Health Enterprise East Joint Venture

Mr Andrew Hindmarsh  
Cambridge University Hospitals  
NHS Foundation Trust and Cranfield University  
Award Amount: **£100,000**  
Award Duration: **6 months**

**NHS**  
Cambridge  
University Hospitals  
NHS Foundation Trust



## SMART HERNIA MESH

### Background

Abdominal wall and groin hernias are a common surgical problem. Over 100,000 hernia repairs are performed in the UK, and an estimated 20 million hernia repairs performed worldwide, per annum. The 'gold standard' treatment is a tension free mesh repair. Meshed hernia repairs are complicated by post-operative chronic pain in 54% of patients, with 6% of patients reporting severe pain which affects their employment and activities of daily living. The estimated annualised cost of this complication ranges between \$9000-\$40,000 per patient. Chronic pain can occur due to the mechanical fixation methods used to secure the mesh during surgery including sutures and permanent/absorbable tacks.

### Technology

A novel, heat activated, adhesive polymerisation system ('glue') that could be used for meshed groin hernia and abdominal wall repairs. The adhesive polymerisation system can be bonded to a hernia mesh and will undergo a phase change from solid to liquid when stimulated by heat. On liquefying, the adhesive component becomes active allowing polymerisation and mesh fixation to the tissues. This easy-to-use solution will allow better manoeuvring and positioning and bond strength without recourse to additional fixation methods currently required in TAPP repair. Preliminary work on the novel formulation of the polymerisation system has been carried out in vitro at Cranfield University and is awaiting further clinical refinement for the hernia mesh application.

### MTA support

Funding from the MTA award is being used to further develop the adhesion polymer formulation and refine the adhesion system. Further work includes integrating the formulation onto the hernia mesh followed by testing and validation of this new smart mesh functionality. Funding will also be used to secure the IP position of this emerging venture as it establishes its commercial potential. The award is expected to run until mid- 2019.

### Future work

Following the MTA award, follow on funding will be sought for cadaveric and animal model testing of the smart mesh for regulatory approval. Potential partners/collaborators are being actively explored to determine other medical applications for the novel adhesive formulation.

### A Joint Venture Partnership

