

Results of competition: Photonics for health - Feasibility studies

Total funding available for this competition was £1.5m, provided by the Technology Strategy Board.

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
Applied Materials Technology Ltd (lead) TWI Ltd; PA Consulting Group; GSPK Design Ltd; Norfolk and Norwich University Hospital	The safe portable phototherapy treatment for hyperbilirubinemia in babies	£699,524	£500,965
Project description (provided by applicants)			
Project 228135 develops a portable phototherapy device for the mobile treatment of skin conditions.			

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JRI Orthopaedics Limited (lead) Glass Technology Services Ltd (GTS) M Squared Lasers Ltd University of Leeds University of St Andrews	FASTIC – Femtosecond-pulsed-laser Augment/bioglass Sintering Technique for Implant Customisation	£690,188	£493,456
Project description (provided by applicants)			
<p>This project brings together a consortium of complementary academic and commercial organisations, including: specialists in ultra-fast lasers, materials and orthopaedic implants. The aim is to develop new technology to allow surgeons to customise joint replacements at the time of surgery on the rare occasions when there is significant bone loss either from a failed implant that needs to be revised or from bone cancer. The technology will involve handheld lasers and new orthopaedic biomaterials tuned to be laser melted without raising the temperature of the surrounding bone. The technology developed during this project has the potential to transform treatment of these complex cases and has application in other fields requiring rapid manufacturing without raising temperatures.</p>			

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Lightpoint Medical Ltd (lead) Guy's and St Thomas' Hospital, King's College	Clinical trial of an intra-operative molecular imaging camera for breast cancer surgery	£731,888	£526,083
Project description (provided by applicants)			
<p>Nearly one in four breast cancer patients in the UK will see their cancer return after surgery. The consequences include repeat operations, delayed adjuvant treatment, increased likelihood of distant recurrence, poorer cosmetic outcomes, emotional distress, and enormous financial cost to the NHS. Breast cancer recurs after surgery primarily due to incomplete excision of the tumour or inadequate clearance of the surgical margins. Surgeons are unable to completely remove the cancerous tissue because the only means they have to detect cancer during surgery are visual and tactile assessment. Consequently, there is a tremendous medical need for improved tools to detect cancer during surgery.</p> <p>Lightpoint Medical is developing a molecular imaging camera to analyse surgical specimens in real time during surgery. The technology is based on Cerenkov Luminescence Imaging (CLI), a ground-breaking imaging modality that can perform optical imaging of Positron Emission Tomography (PET) imaging agents. In this project we will undertake a pilot clinical trial of the CLI molecular imaging camera on breast cancer surgical specimens. The study will be conducted with our partners at Guy's and St Thomas' Hospital and King's College, and will assess the camera's diagnostic performance compared to gold-standard pathology. The results will be used to plan the pivotal clinical trial, and design the next phase of the device.</p>			

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Wideblue Ltd (lead) Gas Sensing Solutions Limited Cambridge Respiratory Innovations Ltd	Solid State Optical Respiration Rate Capnometer (SOSORC)	£747,831	£448,698
Project description (provided by applicants)			
<p>Respiration rate and exhaled carbon dioxide (CO₂) concentrations are known to be key measures in the evaluation of patient health trends in both routine healthcare and emergency healthcare. However routine and reliable measurement of respiration rate is notoriously difficult to do. It is prone to false readings and outside influences and is therefore not considered reliable. Previous attempts have included the use of motion sensors, flow measurements or use expensive IR lasers and are prone to ergonomics concerns with product costs too high for widespread adoption and routine use. This project aims to develop a low-cost respiration rate monitor and capnometer, based on patented non-dispersive fast response infrared sensor, sensing exhaled carbon dioxide. The project will trial demonstrators in various clinical settings. This project aims to use unique patented low-cost solid state mid-infrared light emitting diode/ photodiode detector combination and an optical waveguide to measure rates of exhaled CO₂.</p> <p>The project involves a consortium of Wideblue Ltd, Gas Sensing Solutions Ltd and Cambridge Respiratory Innovations Ltd.</p>			