Technology Strategy Board
Driving Innovation

Results of competition: Technology-inspired innovation - May 2014 - Biosciences

Total available funding for this competition was £500k from 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
Oncascan Limited (lead) University of Bradford	Feasibility study on new test for Prostate Cancer	£139,719	£114,855

Project description - provided by applicants

Oncascan Limited is developing a unique type of blood test for cancer which, used in conjunction with existing methods of screening and diagnosis, could greatly improve their overall performance. Specifically this improved performance would lead to far fewer unnecessary invasive follow up procedures. This proposal to run the test in a clinic will assess how well it might perform.

Adopting the new test could result in widespread multiple benefits:

- for patients (reduced stress, risk or discomfort arising from interventions);
- for clinicians (greater speed and accuracy of diagnosis); and
- for health service providers (substantial cost savings).

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Prokarium Limited (lead) Biopharma Technology Limited	Breaking the cold chain for oral recombinant vaccines	£202,806	£112,500

Project description - provided by applicants

New vaccines are made from proteins that have to be injected using a needle. The process of making these proteins is very expensive and different for each vaccine. They cannot be put into tablets because they would be digested in the gut, and they need to be refrigerated and transported around developing countries via a distribution network called the cold chain.

This project aims to create a way of making vaccines which is cheaper, requires only one manufacturing process regardless of the type of vaccine, and allows the vaccine to be swallowed as a capsule. These capsules will be designed to be stable without refrigeration for the few critical weeks needed for distribution between cities and remote villages, thus breaking the final link of the cold chain and allowing people to vaccinate themselves.

We use a safe strain of Salmonella in the capsule, which produces the required vaccine inside the human body. The technology may revolutionise the way all protein vaccines are delivered and the first proof will be in the form of a vaccine against typhoid and bacterial diarrhoea, which cause hundreds of thousands of deaths annually.

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Tecrea Limited (lead) Cobra Biologics Ltd	Scalable AAV Production using Novel Hollow Fibre Bioreactors	£149,721	£112,291
Project description - provided by applicants			
The project aims to develop a scalable bio-process for recombinant virus production. Adeno Associated Virus (AAV) is a safe and effective gene therapy vector and growing demand for therapy development cannot be met by current methods. Conventional technologies used for safe AAV production are inefficient and often highly toxic to the process. These problems limit scale-up opportunities. To develop an efficient and scalable bioprocess we will: FIRST, optimise viral production using a novel cell delivery reagent, and SECOND develop a novel method for AAV production using a so call “hollow fibre” bioreactors. The new system aims to achieve bulk GMP production of AAV at low cost.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Xanthella Ltd (lead) University of Strathclyde	Photodynamic control of contaminating micro-organisms in photobioreactors	£126,251	£102,046

Project description - provided by applicants

Algae hold great promise as the source of a wide range of industrial feedstocks ranging from plastics and biofuels to nutraceuticals, pigments and pharmaceuticals. Production costs, however, remain a barrier to algae reaching their potential as industrial feedstocks. One problem is contamination of algal cultures by other micro-organisms which outcompete the algae or are pathogenic. Disinfection controls are often expensive, impractical at scale or ineffective.

This project takes the innovative approach of investigating the possibility of photodynamic control of contaminant micro-organisms. The use of light to control unwanted micro-organisms is not new but developments in LED and photonic technologies mean that new approaches can be made to the design of photobioreactors that will make them better at dealing with contaminating micro-organisms while being cheaper to build and operate.

Success in the project will give Xanthella considerable competitive advantage in the design of photobioreactors or research and industrial production of algae leading to increased sales and exports.