

Innovate UK

Results of Competition: IB Catalyst 2 stage awards Round 4

Competition Code: 1505_CRD2_HVM_IBCAT4

Total available funding for this competition was £4.5M from Innovate UK

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
SmithKline Beecham Ltd University of Strathclyde	Enhancing the yield of industrial Actinomycece fermentations	£1,550,193	£1,122,193
Project description - provided by applicants			
<p>Clavulanic acid (CA) is a beta-lactamase inhibitor able to potentiate the antibacterial activity of penicillins against otherwise resistant bacteria. It is the product of complex biological factories found naturally in <i>Streptomyces clavuligerus</i>, and is currently made industrially via fermentation using a strain that has been through successive rounds of natural selection. Fermentation conditions and media are carefully controlled and optimised to ensure maximum cell growth and CA production. A key condition is pH, which despite being controlled to ensure maximum cell productivity is conversely a major influence on degradation kinetics of the unstable CA molecule once produced. The proposed work aims to combine recent biological advances with industrial technologies to develop a strain and fermentation process designed to optimise yield while significantly reducing degradation. This project will provide a benchmark against which to judge the success of such an approach in an industrial environment.</p>			

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Lonza Biologics PLC University of Kent	Translation of Step-changing Bioprocesses and Expression System Technologies for Next Generation Protein Biologics Production in CHO Cells	£1,675,281	£1,209,967
Project description - provided by applicants			
Chinese hamster ovary (CHO) cells are the main production host for >US\$145billion/yr of proteinbiologics used as medicines for a range of diseases. The CHO platform is mature when considering production of monoclonal antibodies, but new format non-native molecules such as fusion proteins,antibody fragments and other exotic molecules remain difficult to express (DTE) in this, or any otherhost. This project builds upon proof of concept work demonstrating that engineering the CHO chassis,together with growth media manipulation, increases both the yield and quality of a number of DTEproteins that are in development for application to unmet clinical needs and diseases with no currenttreatments. The project will advance the technology readiness level of our preliminary findings beyondproof-of-concept to deliver the commercialization of new CHO cell systems for DTE proteins andassociated bioprocesses ready for industrial application to produce these important new medicines.			

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Biome Technologies PLC University of York University of Liverpool	Enzymic polymerisation, characterisation and market evaluation of a set of novel bioplastic co-polymers derived from renewable resources	£875,752	£740,450
Project description - provided by applicants			
The environmental and social concerns surrounding the use of fossil fuels and food crops make lignocellulose a challenging but compelling target source of high value chemicals. Previous and ongoing IB Catalyst studies undertaken by Biome, the Centre for Process Innovation and the Universities of Leeds, Liverpool and Warwick have demonstrated the feasibility of a bioprocess from lignocellulose to polyester pre-cursors. This project will seek to use industrial biotechnology (namely catalysis using enzymes) to convert these precursors into a suite of highly functional polyesters and understand their properties and lifecycle benefits. It will be undertaken by a consortium of Biome Technologies Ltd, the Universities of Liverpool and York. The project has the potential to advance the UK's knowledge and commercial position in the field of advanced bio-based materials.			

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Pall Europe Ltd Centre for Process Innovation Ltd Allergan Biologics Ltd Fujifilm Diosynth Biotechnologies UK Ltd Medimmune Ltd GlaxoSmithKline PLC	UK Continuous, Integrated Biologics Manufacturing Project	£2,163,869	£1,437,419
Project description - provided by applicants			
<p>As biopharma moves to the business mainstream, the industry will increasingly need to find new ways to maintain competitiveness by ensuring affordability, quality, and delivery performance. Continuous processes have been proposed as a solution as they are scalable, offer higher productivity with reduced running times and materials usage, and require smaller footprint and less capital intense facilities. The project brings together five leading biopharmaceutical companies with UK Operations, process technology suppliers and a Catapult centre to develop an automated continuous biologics purification unit for more efficient manufacture of a wide range of biologic drugs. The new unit will consist of integrated, multiple operations running concurrently.</p>			

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