Innovate UK

Results of Competition: IB Catalyst Feasibility Studies Round 4
Competition Code: 1505_FS_HVM_IBCAT4

Total available funding for this competition was £4.5M from Innovate UK, BBSRC, EPSRC & Innovation Norway

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
Ingenza Ltd Lucite International UK Ltd	Viable biotechnological production of industrial methacrylate polymers	£248,725	£154,158
Project description - provided by applicants			
A global challenge is to improve the way in which mankind improves the consumption and disposal ofcommodity plastics. Alternative strategies to permit production of chemically identical 'like-for-like'materials from sustainable biobased feedstocks as alternatives to existing petrochemical sources isrequired to help met the improve consumption and disposal of plastics. This application to Innovate UKis seeking to develop highly efficient routes to prepare polymethacrylates (i.e. Perspex) from non-fossilcarbon based feedstocks. The project partners will build bespoke bacteria using state of the art syntheticbiology methods to enable production of methacrylate intermediates. We shall recover and test theintermediates for their practical suitability in preparing and forming the plastics that Lucite sells to itsexisting customers.			

Note: you can see all Innovate UK-funded projects here
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Fiberight Ltd University of Southampton Novozymes UK Ltd	Reducing contamination risk and increasing yields in the production of platform sugars from UK MSW	£245,797	£197,016
Project description - provided by applicants			
Fiberight has created a circular economy solution to generate value-added products from municipalsolid waste (MSW). The process involves thermo-mechanically treating and washing the MSW to recovertwo main fractions: recyclables and biomass. The washing stage generates a washwater containingsoluble organic matter which can be a feed for high-rate anaerobic digesters to produce biogas, a sourceof renewable energy. The residual solid from washing is a 'clean' biomass rich in lignocellulosic fibre thatcan be converted into sugars via enzyme hydrolysis: these sugars form the building blocks for a widerange of products in a waste-based industrial biorefinery. The project will test novel methods includingthe use of specialised additives in the MSW washing stage to improve the quality of the washedcellulose fibre and increase its sugar yield, and a new low-cost agent for pH control, to reduce the risksof contamination from food waste and nutrients affecting the downstream sugar production stage.			

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Biocatalysts Ltd	Recombinant expression of animal and plant phospholipases	£149,340	£89,604
Project description - provided by applicants			
Enzymes are biological molecules that facilitate chemical reactions in living cells. Many products in thefine chemical, food, flavour & fragrance, pharmaceutical and biotherapeutic industries use enzymes intheir manufacturing processes. The majority (more than 75%) of enzymes currently used in industrialprocesses are hydrolytic in action. Among these, lipases and phospholipases are the enzymes that areused for lipid modifications. Phospholipases represent a versatile biocatalyst in various industrialapplications. This project is aimed at producing phospholipases in simple microbial production hostsusing recent technological advances in molecular biology in order to produce unique enzymes for theindustrial biocatalysis market.			

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Green Biologics Ltd	Methods of Microbial Control in the Clostridial ABE Fermentation Process (MiCON)	£212,964	£106,482
Project description - provided by applicants			
Green Biologics is an industrial biotech company, currently re-commercialising the clostridial ABEfermentation process for the production of n-butanol and acetone from renewable and sustainablefeedstocks. There are many challenges inherent in this commercialisation process, not just with thecomplexities of engineering and process design but also with ensuring the clostridial strains used exhibitrobust phenotypes such as resistance to phage infections and ability to out compete microbesindigenous to the plant environment. This project aims to use an innovative and environmentallyreponsible alternative approach to the'easy fix' solution of using antibiotics by instead taking advantageof bacteriocins: small peptides produced by a number of bacterial strains to destroy competingmicrobes in an environmental space.		

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Unilever UK Central Resources Ltd University of Exeter	Novel enzyme diversity for improved cleaning and hygiene	£224,945	£162,445
Project description - provided by applicants			
Bio-inspired products / processes will have a major impact on the global society in 21st Century. Theemployment of biocatalysts in industrial processes is expected to boost a sustainable production ofchemicals, materials and fuels from renewable resources.The scope of this proposal is to translate academic research into industrial applications by exploitingmethods, techniques and databases to allow the identifcation and application of novel biocatalysts inbiotechnological producst and processes.Among the large spectrum of applications, we will translate the findings and apply the novel enzymes tothe creation of new HPC products so that we can combat more efficiently and with better hygienehuman sebum (body soil) contaminated garments and thereby reduce the environmental and economiccosts of laundry.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
ZuvaSyntha Ltd University of Kent	Enzyme co-localisation and aggregation for enhanced metabolic activity for commodity chemicals.	£225,207	£187,394
Project description - provided by applicants			
Current approaches for enhancing bio-based commodity production are restricted to knownbiosynthetic pathways and limitations to metabolite toxicity. However, many key bio-commodities aremade via aldehyde-intermediates such as acetaldehyde, lactaldehyde and propanaldehyde and theirproduction is often limited because of the inherent toxicity of their chemical reactivity. Ways to reducethis toxicity would offer a significant advantage to the commercial production of these materials. Thisapplication outlines a major new strategy to reduce the toxicity of key metabolic intermediates such asacetaldehyde through the deployment of proteinaceous scaffolds. This approach will be coupled to anovel pathway that will be engineered in specific bacteria called acetogens that can live on gaseousexhaust fumes in order to produce a key chemical commodity called 1,3-butanediol.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
GlycoMar Ltd MicroA AS Mars Chocolate UK Ltd	Sugar replacement from microalgae	£814,791	£210,754
Project description - provided by applicants			
The project's goal is to provide a novel sugar replacement ingredient to the global food market. Theingredient is a specialist carbohydrate sustainably manufactured from a marine microalgae. The projectwill demonstrate new technology at industrial pilot scale to grow microalgae and purify the productfrom the microalgae cultures. The project brings together Glycomar Ltd (UK), an SME companyspecialising in the discovery and development of novel polysaccharide products, MicroA AS (Norway) anSME company specialising in technology for production of microalgae, and a market leading foodcompany. These partners bring together the right skills to develop a game changing sugar replacementproduct, which will improve the health profile of confectionery and other foods.			

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Participant organisation names	Project title	Proposed project costs	Proposed project grant
Isomerase Therapeutics Ltd John Innes Centre	Late feasibility of novel methods for improved polyketide drug development	£434,566	£331,790
Project description - provided by applicants			
Confirmation of scaleability of new tools for accessing novel natural products with use in human andanimal health and as agrochemicals.			

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