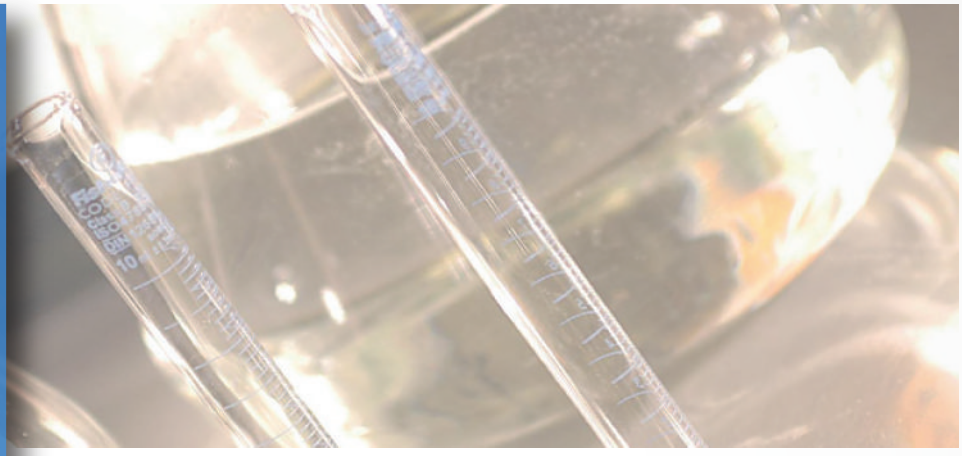
Developing the Next Generation of Biocatalysts for Industrial Chemical Synthesis



PROJECT DETAILS

Funding Programme:
7th Framework Programme (FP7)
Sub-Programme:
KBBE
Funding Scheme:
Large-scale integrating project
Project Reference:
266025;
UE-11-BIONEXGEN-266025
Project Duration:
36 Months (from 2011-02-01 to 2014-01-31)
Total Project Value:
€ 10.639.428
EU Grant-Aid:
€ 7.774.883
Funding to UniOvi:
€ 408.000

Website:
http://bionexgen-fp7.eu./

PROJECT DESCRIPTION

BIONEXGEN will develop the next generation of biocatalysts to be used for eco-efficient manufacturing processes in the chemical industry. A collaboration by industrial and academic partners have identified the key technology fields of amine synthesis, polymers from renewable resources, glycoscience and wider oxidase application as four key areas where the next generation of biocatalysts that will lead to improvements in both economic and environmental performance of the chemical manufacturing industries. This project will enable industry to use renewable resources with reduced greenhouse gas production as compared to their fossil counterparts and deliver biotechnological routes with reduced energy consumption and less toxic wastes compared to conventional chemical processes.

Routes to specialised, high-value chemicals (e.g. chiral chemical compounds) normally require long chemical synthetic routes involving complex reaction steps with toxic side products and waste streams and this project will allow these methods to be replaced by clean biocatalysis routes. To broaden the range of fine and speciality chemicals and intermediates produced by biotechnological routes, research will address: (I) design and optimisation of enzymes to be used in synthetic chemistry, (II) the selection/development of modified microorganisms which are resistant to heat, pressure or low pH when used in the production of chemical entities and allow (III) the integration of biotechnological steps into conventional chemical processes.

The project will develop and integrate with chemical steps the biotechnological manufacturing routes for the synthesis of fine and speciality chemicals especially amines, oligosaccharides and renewable polymer intermediates which are better in terms of eco-efficiency, economic potential, complexity and /or specificity of the synthetic pathways than those currently employed.

Dissemination strategy will enhance the impact of this work through three separate initiatives. Economic viability and eco-efficiency will be evaluated and assessed on a quantitative basis and these results will be published in the scientific literature.
Green chemistry initiatives in the BIONEXGEN project and the FP7 contributions will be presented to the wider public on a project website and through material displays at the museum in Manchester and the Big Saturday event in Manchester Science Week. An overall end of project meeting in Brussels will invite a range of political decision makers and industry leaders to attend and will ensure maximum impact.
The project was devised with a strong involvement of industrial partners, in particular SMEs and is strength of this project and will contribute significantly to ensure application of the technology.
This combination of technical will lead to the development of new green chemical manufacturing technology platforms that will be tested for specific targets in the European chemical manufacturing industries and use these as case studies for dissemination on a broad front.

PROJECT PARTNERS

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