

Knowledge Transfer Partnerships

KTP BENEFITS

Knowledge Transfer Partnerships are designed to benefit everyone involved

- 🔄 Businesses will acquire new knowledge and expertise
- 🔄 KTP Associates will gain business-based experience and personal and professional development opportunities
- 🔄 Universities, colleges or research organisations will bring their experience to enhance the business relevance of their research and teaching

Knowledge Transfer Partnerships

Accelerating business innovation; a Technology Strategy Board programme

<http://www.ktponline.org.uk>

COBRA MANUFACTURING PLC KTP GROWTH CULTURE

ABOUT THIS CASE STUDY

Cobra Bio-manufacturing plc is a contract manufacturer in the bio-pharmaceutical industry. Working with Academic Partner, Manchester Metropolitan University, this Knowledge Transfer Partnership (KTP) was set up to improve the plasmid DNA manufacturing process, including growth medium optimisation, increasing the knowledge of plasmid DNA synthesis and the initial development of a fed-batch strategy. The KTP also aimed to develop data acquisition and analysis tools.

ABOUT THE SPONSORS

The Technology Strategy Board is a business-led organisation established by the Government. Its mission is to accelerate research into, and development and exploitation of, technology and innovation for the benefit of UK business - building economic growth and quality of life.

The Biotechnology and Biological Sciences Research Council (BBSRC) is the UK's principal funding body of basic and strategic biological research.

FAST FACTS

- 🔄 Design of off gas analysers
- 🔄 Variety of fed-batch fermentation strategies
- 🔄 Development of a prototype controller for automated growth rate control
- 🔄 Associates offered jobs with host company
- 🔄 Ongoing collaborative relationship between all partners

The Company



“The scheme allowed Cobra to access a wealth of technical experience and knowledge... On completion the company benefited from two highly skilled employees, thanks to the specific technical and business training provided by the KTP.”

Julian Hanak, Director of Production, Cobra Bio-manufacturing plc

Cobra Bio-manufacturing plc provides innovative manufacturing solutions focusing on large-scale production of DNA, virus and protein, for the pharmaceutical and biotech industries.

ABOUT THE PROJECT

Robust fermentation technology is essential for a competitive edge in this industry. The KTP focused on developing and optimising microbial fermentation processes for the production of plasmid DNA.

The project improved the fermentation media used for the production of plasmid DNA, increased knowledge of plasmid DNA synthesis, optimised the fermentation batch production process and the development of the initial fermentation fed-batch process. This was automated with data acquisition, analytical tools, hardware and mathematical modelling.

BENEFITS

Animal free components were identified and tested to create a completely animal free fermentation media, helping to remove the risk of potential infectious animal agents and giving Cobra a competitive advantage.

The removal of numerous media components reduced costs, increased yields and saved time.

The automated feeding system improved reproducibility of the process, removed subjectivity and reduced labour costs. Increased yields allow Cobra to produce more plasmid DNA from smaller production vessels, reducing costs.

The off gas analysers designed for the project recorded more information than those available.

Advances were made in monitoring and data acquisition to improve control over

the culture environment. This increased understanding of microbiological population growth and facilitated improvements in the robustness, reproducibility and yield of the process.

RESULTS

- 🌀 Sales turnover increased by £150,000
- 🌀 Exports increased by £200,000
- 🌀 Annual profits to increase by £260,000 over three years
- 🌀 Gained two full time trained employees
- 🌀 Second KTP based on the positive results of this scheme

The Associates

Greg Robertson and Philip Bassett both worked with Cobra Bio-Manufacturing in this highly successful KTP scheme.

BENEFITS

Both Associates became fully competent in the use of the development and production scale fermenters (to GMP compliance), which allowed more independent working and faster development of the process. Both now supervise and advise other staff in the use of these vessels, thus continuing to develop their management skills.

RESULTS

Greg Robertson

- 🌀 Now Team leader for Keele fermentation group at Cobra Bio-manufacturing
- 🌀 Programme facilitator of third KTP Associate under a new scheme
- 🌀 Supervising two Masters projects
- 🌀 Training in Design Expert software
- 🌀 Use of factorial and response surface experimental designs
- 🌀 Gained NVQ level four in Management

Philip Bassett

- 🌀 Offered position as Scientist at Cobra Bio-manufacturing
- 🌀 Line manager and industrial supervisor of the third KTP Associate
- 🌀 Completed Masters degree and NVQ level four in Management
- 🌀 Training in Labview computer programming language
- 🌀 Training in statistical process control and use of multivariate analysis techniques*

The Academic Partner



Manchester
Metropolitan
University

“It was rewarding to see our ideas put into practice... Undergraduates benefited from academic staff being more aware of current industrial practice, as well as directly from Cobra staff delivering state-of-the-art seminars and case studies.”

Dr M. J. Dempsey, Biological Sciences,
Manchester Metropolitan University

Dr Mike Dempsey and Dr Malcolm Thomson of the Department of Engineering and Technology at Manchester Metropolitan University led the academic partners working with Cobra Bio-manufacturing.

BENEFITS

Links with Cobra have benefited the University in many ways. Company staff give regular lectures to Industrial Microbiology undergraduates, academics gained first hand experience of cutting edge biotechnology, and links between the departments of Biological Sciences, Engineering Technology and Chemistry and Materials have all been strengthened. The University will continue to benefit for many years to come.

RESULTS

- 🌀 Case studies provide basis for regular lectures
- 🌀 Final year projects
- 🌀 PhD student project
- 🌀 Results presented and published