



PBL NEWS



PBL News - Issue 14 - Sep 2008

PBL Awarded £2.1m for Development of Innovations

PBL is delighted to announce that it has been successful with a bid to the DIUS's Fourth Round of the Public Sector Research Exploitation Fund. The award of £1.57m will extend PBL's highly successful Technology Development Programme (TDP) and will also strengthen PBL's technology transfer interactions with Babraham Bioscience Technologies Limited (BBT), the commercialisation arm of The Babraham Institute. The bid was backed by the Biotechnology and Biological Sciences Research Council, who will contribute £525k to the programme, bringing the total funding to £2.1m. Three other BBSRC-backed bids were also successful.

For more information, please contact Dr Jan Chojecki (ajsc@pbltechnology.com).



Procarta Biosystems Receives £320,000 Funding

PBL is delighted to announce that Procarta Biosystems has received £320,000 investment from The Rainbow Seed Fund and the Icenii Seedcorn Fund.

Procarta Biosystems, established by PBL and John Innes Centre in 2007 to develop a technology designed to defeat antibiotic-resistant superbugs, has received this funding to further develop its DNA decoy technique, which aims to restore antibiotic efficacy against resistant superbugs, such as methicillin-resistant *Staphylococcus aureus* (MRSA) and vancomycin-resistant *Enterococcus* (VRE).

For more information, please contact Dr Jan Chojecki (ajsc@pbltechnology.com).



New Crop Data Generated by John Innes Centre Transformation Resource

PBL has funded, through its Technology Development Programme (TDP), several projects led by Dr Penny Sparrow at the John Innes Centre to generate crop data in Brassica with four of PBL's yield and stress traits. Most recently, Penny has completed work on the **eIF2alpha translation factor which originated from Professor Don Roth's laboratory at the University of Wyoming**. The results generated through this work show a significant increase in harvest index in transgenic Brassica containing a version of the eIF2alpha gene. The results demonstrate the potential benefit of increasing yield in crops with this gene.



Over the last two years Dr Sparrow and her team have provided to PBL an outstanding resource for proving the benefit of a number of genes from PBL's yield and stress portfolio. The projects, which include the recently licensed Flavodoxin gene (see Newsletter 13), have had clear benefit in communicating the strength of PBL's trait portfolio to the AgBiotech industry and have resulted in an increased commercial uptake of these technologies.

For more information, please contact Dr Lars von Borcke (lars@pbltechnology.com).

UNIVERSITY OF WYOMING



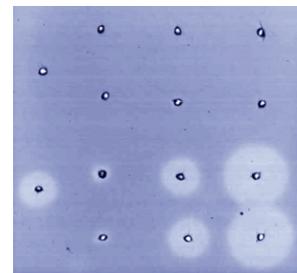
Viruses Offer Hope for New Weapon Against *C. difficile* Infection

Clostridium difficile-associated disease, or CDAD forms a major part of the spectrum of serious hospital-acquired infections, and is much in the news at present. Last year there were approximately 500,000 cases in the US alone, and globally an increasing proportion of infections are by a new virulent type of *C. diff* that can cause death in up to 30% of patients. Although most strains of *C. diff* are currently sensitive to antibiotics, there are high relapse rates (up to 25%). Antibiotics have the disadvantage of damaging the normal gut bacteria, which predisposes the patient to the condition in the first place. There is therefore a pressing need for improved therapies to combat this problem.

Like all organisms, bacteria have viruses that infect them. These viruses, called bacteriophage, produce a protein that can break the bacterial cell wall and burst the bacterium. These "endolysins" and the bacteriophage that make them have already been developed to control the contamination of dairy products by *Listeria* bacteria. A bacteriophage-derived endolysin has the potential to fulfil many of the desired characteristics of an ideal *C. diff* therapeutic.

Now a group from the Institute of Food Research, led by Prof Mike Gasson, has isolated a lysogenic (inactive) bacteriophage from *C. diff* and shown that its endolysin gene can be used to make an active protein that is capable of killing *C. diff*. The work has been submitted as a patent application by PBL, and Prof Gasson is working with PBL to develop the opportunity further.

For more information, please contact Dr Martin Stocks (martin@pbltechnology.com).



A lawn of bacteria (in this case *Listeria*) showing zones of clearing (bacterial lysis) where a solution containing an endolysin has been applied.



IP protection

Funds and manages patent filing and prosecution

Builds complementary technology packages

Markets technology to commercial users

Concludes and monitors technology licences

Manages and mentors the formation of new technology-based businesses

Innovation in life sciences

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A Novel Pro-drug for the Treatment of Melanoma

PBL is protecting and promoting a novel pro-drug developed by researchers at the University of Murcia in Spain that exhibits great potential for developing an effective therapeutic for malignant melanoma. In the course of experiments to improve the stability and bioavailability of green tea polyphenols for cancer therapy, the researchers synthesized a trimethoxy derivative of epicatechin-3-gallate, which unexpectedly showed very good anti-proliferative activity against melanoma.



For more information, please contact Dr Martin Stocks (martin@pbltechnology.com).

Progress on Medicago's Product Development

medicago Medicago Inc of Quebec, Canada, who have licensed a range of expression technologies from PBL including the cow pea mosaic virus (CPMV) high expression system developed by Dr George Lomonosoff and co-workers at the John Innes Centre, have made important progress towards the sale of Molecular Pharming products.

In January, Medicago reported that low doses of their H5N1 Avian Influenza vaccine provided 100% protection against lethal challenge of the virus in an animal preclinical study. The vaccine used is based on the Indonesian strain of the virus and it has now been demonstrated that 100% protection is achieved in animal models both against influenza strains from Turkey and Vietnam. The results are a significant breakthrough, demonstrating cross-protection against different strains of this lethal virus.



For more information, please contact Dr Lars von Borcke (lars@pbltechnology.com).

Enterprise Fellowship Awarded to JIC Researcher



Nick Montague of the John Innes Centre has been awarded a prestigious BBSRC/RSE Enterprise Fellowship to develop business skills and gain experience in the commercialisation of basic research. He will work alongside PBL to develop commercial applications of Cowpea Mosaic Virus, including its use as a protective coat for RNA control sequences in PCR-based diagnostics.

For more information, please contact Dr Martin Stocks (martin@pbltechnology.com).



European Knowledge Transfer for Humanitarian Purposes

PBL contributed to the recent workshop on the European Action on Global Life Sciences IP and Technology Access (EAGLES) held at the International Rice Research Institute in Los Banos, Philippines. Lars von Borcke participated in the EAGLES workshop on behalf of PBL, working with a group of public sector professionals from national technology providers in developed countries, as well as representatives from developing countries.

EAGLES was established to enhance and facilitate collaborations between European researchers and researchers in the developing world to fight hunger and disease. EAGLES has been launched by the European Federation of Biotechnology (EFB). The project is being supported by the European Commission and is a collaboration between EFB and scientific partners in Europe, China, India, Egypt, Ghana, South Africa and the Philippines.

As an output from the workshop, the working group has defined principles and mechanisms to transfer knowledge and research products for the benefit of the developing world for food security, agricultural productivity and environmental sustainability. These recommendations are going to be presented to the European Commission for consideration in order to facilitate and strengthen knowledge transfer from Europe to developing countries for humanitarian purposes.

New Scientific Publications on PBL Technologies

Rubi3 Promoter (patent pending)

NC STATE UNIVERSITY

Lu *et al.* (2008) Gene expression enhancement mediated by the 5' UTR intron of the rice *rubi3* gene varied remarkably among tissues in transgenic rice plants. *Molecular Genetics and Genomics* published online 5 March 2008 (DOI 10.1007/s00438-008-0333-6).

Samadder *et al.* (2008) Transcriptional and post-transcriptional enhancement of gene expression by the 5' UTR intron of rice *rubi3* gene in transgenic rice cells. *Molecular Genetics and Genomics* **279**(4), 429-439.

Suite of Triterpene Biosynthetic Enzymes (patent pending)



Mylona P *et al.* (2008) *sad3* and *sad4* are required for saponin biosynthesis and root development in oat. *Plant Cell* **20**(1), 201-12.

Qi X *et al.* (2006) A new function for the most ancient and conserved cytochrome P450 family - from primary sterol biosynthesis to plant defence. *Proc Natl Acad Sci, USA* **103**, 18848-53.

Da1 - Crop Yield Enhancement (patent pending)



Li Y, Zheng L, Corke F, Smith C, Bevan MW (2008). Control of final seed and organ size by the DA1 gene family in Arabidopsis thaliana. *Genes and Development*: **22** (10), 1331-6.

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