

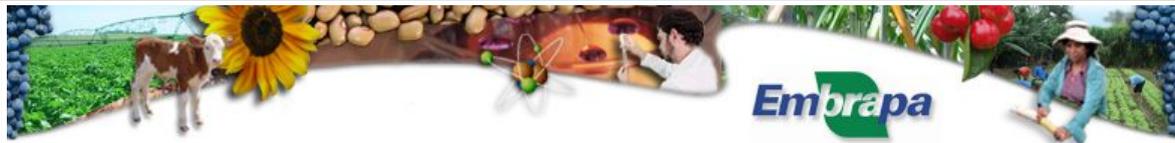


PBL NEWS



PBL News - Issue 15 - June 2009

PBL Forms Technology Development and Commercialisation Partnership with Embrapa



The Brazilian Agricultural Research Corporation, Embrapa, and PBL have signed a cooperation agreement under which they will work together to develop new technologies for Brazilian agricultural markets and to promote and market new innovations emerging from Embrapa's large research network.

The Agreement gives Embrapa the right to access a group of patented technologies from PBL's portfolio, which Embrapa will then develop to create new commercial products for Brazilian agriculture. PBL will also add selected Embrapa innovations to its portfolio and market these to the global industrial sectors, on behalf of Embrapa. Dr Amauri Buso, the manager of the Planning and Business Management department of the Embrapa Technology Transfer, says "This bilateral agreement will increase the chances of commercialisation and protection of our technologies in the global market". Besides that, according to Dr Buso this partnership "will help identifying and evaluating better commercialisation opportunities and defining more promising strategies for Embrapa products".

Dr Jan Chojcecki, PBL's Managing Director says "Embrapa has a very impressive applied research capability covering most aspects of agricultural science, and so is an excellent partner to take forward fundamental, often fairly untested, innovations emerging from our source partners in UK and elsewhere around the world. Moreover, Brazil has agricultural conditions ranging from temperate to tropical, and provides direct access to a vibrant agribusiness economy in which to test new products and product concepts."

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

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Markets technology to commercial users

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PBL Grants Licence to Becker Underwood for Novel Seed Treatment Technology from Lancaster University

PBL has signed an exclusive commercial licence with Becker Underwood, a company focused on developing and commercialising seed treatment technology and biocontrol technologies. The seed treatment technology was developed by Lancaster University with funding from the Horticultural Development Board and NERC (the Natural Environment Research Council), under NERC's Follow-On Fund. The Lancaster researchers Drs Jason Moore, Michael Roberts, Nigel Paul and Jane Taylor with their collaborator Patricia Croft of Stockbridge Technology Centre, discovered that the application of the natural plant chemical as a seed treatment results in long lasting protection of many crops against a wide range of herbivorous pests. Treated seeds can be stored and sown later.



Field tests by Becker Underwood in a number of important agricultural crops have now clearly demonstrated reductions in pest damage and consequent increased crop yields. The agreement with PBL will enable Becker Underwood to incorporate the seed treatment in their product range and to work with other partners to apply the technology as widely as possible.

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

PBL Tech ID 07.430

Industrial Uses of Bacterial Sex Machinery Revealed by Follow-on Fund Project



IFR researchers Regis Stentz and Claire Shearman have completed a BBSRC Follow-on Fund project to develop the CsiA gene for a range of potential industrial uses. The IFR team have found that when overexpressed, CsiA results in increased cell susceptibility to detergent-induced lysis. Also expressing CsiA at low levels results in a "leaky" phenotype in which cytoplasmic proteins leech out into the growth medium - with potential uses in protein production systems. Both these features have immediate and potentially valuable industrial applications, in areas as diverse as accelerated ripening in cheese, large-scale industrial protein manufacture and possibly even therapeutic delivery of bioactive molecules to the human or animal GI tract. The work has been protected by a patent filing and is being commercialised through PBL.

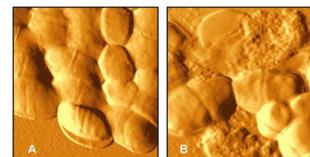


Figure 1: Expression of the CsiA protein (B) results in obvious damage to the cell wall when compared with the control (A)

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

PBL Tech ID 07.435

Medicago Receives 2009 Genesis Innovation Award

Medicago Inc (www.medicago.com) has recently received the 2009 Genesis Innovation Award for its outstanding contribution to the growth in Quebec's biotech, health technology and life sciences industries. Medicago is focussed on producing vaccines in plant based systems and is a licensee of PBL's plant expression system based on the cow pea mosaic virus developed by Drs Frank Sainsbury and George Lomonosoff at the John Innes Centre.



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

Innovation in life sciences

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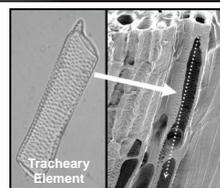


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Plant Stem Cells and Lignin-free Cellulose Production



Drs Edouard Pesquet and Clive Lloyd at the John Innes Centre have made a significant scientific breakthrough by discovering a way to make stable, totipotent plant cells to actively divide in liquid culture. Moreover, these cells can be grown triggered to form xylem tracheary elements (which are the basis of wood) in culture. For the first time, this enables the efficient production of SECONDARY cellulose without the lignin that would otherwise interfere with processing this high cellulose product. This opens up an economically feasible way to make lignin-free cellulose, for a wide range of biomaterials applications, without the environmental penalties associated with lignin removal. The technology has been patented and is being marketed by PBL.



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

PBL Tech ID 07.430

Olivier Voinnet awarded 2009 EMBO Gold Medal

Olivier Voinnet from the CNRS Institute of Plant Molecular Biology in Strasbourg, France, has been awarded the 2009 EMBO Gold Medal (see <http://www.embo.org/news/embo-gold-medal09.html> for further details). Olivier previously worked with David Baulcombe at the Sainsbury Laboratory in Norwich, UK. He is an inventor on PBL's suppressor of gene silencing intellectual property (PBL Tech ID 99.194), which is widely licensed to the plant biotech industry and is an important tool for enhancing the over-expression of proteins in plants. In addition PBL is now handling two new technologies from Olivier Voinnet and Lionel Navarro, involving manipulating the plant gene silencing pathway to confer resistance to a wide variety of pathogens. Details of these two new technologies will be released soon.



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

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IFR's Model Gut in the Media

The Dynamic Gastric Model (DGM or "model gut") is a functioning model of the human stomach which can accurately replicate gastric digestive processes. The DGM has recently enjoyed a starring role on TV, appearing in the BBC2 program "Professor Regan's Diet Clinic", where Dr Richard Faulks from the DGM team demonstrated how the model gut can be used to compare nutrient release from fresh and processed foods.



Also in the news, Dr Martin Wickham, the DGM team leader was shortlisted in the final six for the BBSRC Innovator of the Year, a prestigious award celebrating the best commercially directed science from the BBSRC fold. Martin and the DGM have since been showcased in articles by the Daily Mail, and an upcoming news item for the BBC online service.

The DGM is attracting wide industrial interest, including the food and pharmaceutical sectors, and its commercial development is managed by PBL. The DGM is available for contract research work via the joint PBL / IFR "Model Gut" business unit.

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

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PBL Patent News

EP Patent 1364036 issued 10 September 2008: PBL Tech ID 07.431 from VIB Ghent.

Trehalose phosphate synthase gene, a plant endogenous gene for use as a non-toxic selectable marker in plant transformation

EP Patent 1442127 granted 9 October 2008: PBL Tech ID 01.266 from University Nacional de Rosario and CONICET, Argentina.

Cyanobacterial flavodoxin for enhanced stress resistance and increased crop yield

PCT application published as WO2008/142364 27 November 2008: PBL Tech ID 00.244 from John Innes Centre.

Rhd6/Rsl genes for improved root structure, enhanced water and nutrient uptake properties, better crop performance and yield

US patent 7,517,850 issued 14 April 2009: PBL Tech ID 06.405 from Dr Carl Holt.

Calcium Nanoparticles for Medical, Food, Cosmetic and Biomedical applications

PCT application published as WO2009/047525 on 16 April 2009: PBL Tech ID 07.436 from John Innes Centre.

Da1 Transcription Factor for increased seed and biomass yield

PCT application published as WO/2009/060165 on 14 May 2009: PBL Tech IDs 03.329 & 07.417 from Rothamsted Research.

Cis-jasmone and synergist provides an effective natural insect control mechanism

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New Scientific Publications on PBL Technologies

CPMV-HT Protein Expression System: PBL Tech IDs 05.386, 07.439 from John Innes Centre Sainsbury F and Lomonosoff GP (2008). Extremely High-Level and Rapid Transient Protein Production in Plants without the Use of Viral Replication. *Plant Physiology*, 148: 1212-1218.



Fusarium Resistance: PBL Tech ID 08.461 from John Innes Centre Chen X, Steed A, Travella S, Keller B, Nicholson P (2009). Fusarium graminearum exploits ethylene signalling to colonize dicotyledonous and monocotyledonous plants. *New Phytologist*, 182 (4): 975-983.



CsIA Bacterial Release Technology: PBL Tech ID 07.435 from Institute of Food Research Stentz R, Wegmann U, Parker M, Bongaerts R, Lesaint L, Gasson M, Shearman C (2009). CsIA is a bacterial cell wall synthesis inhibitor contributing to DNA translocation through the cell envelope. *Molecular Microbiology* 72 (3): 779-794.



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