



PBL NEWS



PBL News - Issue 21 - Nov 2011

PBL and Farmacule Enter Gene Expression Technology Licence

PBL and Farmacule have signed a commercial licence agreement for PBL's Suppressors of gene silencing technology. Farmacule Bioindustries PTY Ltd is based in Queensland, Australia and is part of the Leaf Energy group (www.leafenergy.com.au). This is the latest in a long line of companies using this seminal technology under licence from PBL. The technology, for enhancing gene expression by reducing or avoiding gene-silencing, was invented by Professor Sir David Baulcombe, Professor Olivier Voinnet and Dr Andrew Hamilton at The Sainsbury Laboratory in Norwich ([Voinnet et al 2003](#)). Farmacule will be using the technology together with its proprietary INPACT (In-Plant Activation Technology) system to produce Vitronectin in plants. Vitronectin is an extra cellular matrix protein primarily used in tissue culture and it will be Leaf Energy's first "molecular farming" product.

For more information, please contact Dr Lars von Borcke (lars@pbltechnology.com)
PBL Tech ID: 99.194



The p19 suppressor of gene silencing is able to boost protein expression as in this example



IP protection

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PBL Patent News

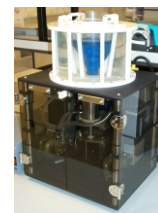
2011 has so far been a busy year for PBL's patent department with several patents becoming granted, in various parts of the world. PBL currently has nearly seventy active patent families and over 100 granted patents from these.

Commensal Bacteria Drug Delivery: Patent no US 7,988,961 granted on 2 August 2011 by US Patent and Trade Mark Office. Developed by Simon Carding at Leeds University.

Contact: Dr Martin Stocks (martin@pbltechnology.com) PBL Tech ID: 09.490

The Dynamic Gastric Model IFR's "Model Gut": Our US patent application has been allowed with broad claims by the US Patent and Trade Mark Office.

Contact: Dr Martin Stocks (martin@pbltechnology.com) PBL Tech ID: 02.301



Performance Enhancing Seed Treatment technology: We have secured allowance of claims in the United States Patent Office. This technology, from the University of Lancaster, is exclusively licensed to Becker Underwood - see [PBL News Issue 15, June 2009](#) - and the technology is already incorporated into commercial products launched in 2010 and in increasing agricultural usage.

Contact: Dr Lars von Borcke (lars@pbltechnology.com) PBL Tech ID: 07.430



Flavodoxin gene from cyanobacteria improvements to crop stress tolerance and yield:

A patent is to be issued shortly by the Canadian Patent Office. From Prof Nestor Carillo and colleagues at the Conicet Institute of Molecular and Cellular Biology of the University of Rosario, Argentina. This technology, described in various scientific publications (eg [Trends in Biotechnology, Volume 26, Issue 10, 531-53](#)), is already licensed for crop improvement (see [PBL News Issue 13, May 2008](#)).

Contact: Dr Jan Chojecki (ajsc@pbltechnology.com) PBL Tech ID: 01.266

Nfr1/5 - Nodulation factor Receptor Genes: Patent no US 7,915,485 issued on 29 March 2011 by US Patent and Trade Mark Office. Patent no EP1641921 granted on 20 October 2010 by the European Patent Office. This is part of a suite of technology from the laboratory of Prof Jens Stougaard at the University of Aarhus and managed by PBL. PBL has funded the introduction of these genes into transgenic wheat, which has been ably carried out by Caroline Sparks at Rothamsted Research. Evaluations of this technology are ongoing. The technology has potential to confer some ability to form functional associations with nitrogen-fixing bacteria in crop plants that do not normally form nodules (see [Madsen et al \(2010\) Nature Communications 1, Article No 10 The molecular network governing nodule organogenesis and infection in the model legume Lotus japonicus](#)).

Contact: Dr Jan Chojecki (ajsc@pbltechnology.com) PBL Tech ID: 04.363

Innovation in life sciences

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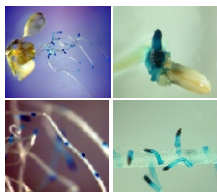


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PBL Patent News continued



Root-specific Promoters: Patent no US 7,982,096 issued on 19 July 2011 by US Patent and Trade Mark Office. These promoters from Anne Osbourn (JIC/TSL Various companies are testing these promoters for commercial uses.

Contact: Dr Lars von Borcke (lars@pbltechnology.com) **PBL Tech ID: 06.414**

Rice Ubiquitin Promoter rubi3: Patent no US 8,022,271 issued on 20 September 2011 by US Patent and Trade Mark Office. Rubi3 was developed by Prof Ron Qu and colleagues at North Carolina State University. PBL has granted commercial licences to this technology to various companies and it is under evaluation by others.

Contact: Dr Lars von Borcke (lars@pbltechnology.com) **PBL Tech ID: 04.345**

Suppressors of Gene Silencing Technology: Patent no 149388 granted in Israel on 1 February 2011. Developed by Professor Sir David Baulcombe, Professor Olivier Voinnet and Dr Andrew Hamilton at The Sainsbury Laboratory.

Contact: Dr Lars von Borcke (lars@pbltechnology.com) **PBL Tech ID: 99.194**

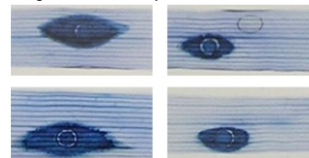
Microbial Proteins for Broad Spectrum Pathogen Resistance: Patent no 248625 granted in India on 28 July 2011. Developed by Vitaly Dzhavakhiya and colleagues at the All Russian Research Institute of Phytopathology.

Contact: Dr Lars von Borcke (lars@pbltechnology.com) **PBL Tech ID: 10.505**

Fusarium Resistance and Mycotoxin Reduction: Patent publication no US 2011/0190379 dated 4 August 2011. Developed by Paul Nicholson at the John Innes Centre. Various companies are evaluating this technology.

Contact: Dr Lars von Borcke (lars@pbltechnology.com) **PBL Tech ID: 08.461**

F. graminearum response in wheat leaves



Bobwhite (WT) 37A (*Ein2* silenced)

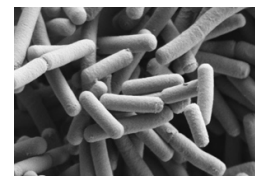


FT Mutants: Increased Seed Yield by Increasing Flower Number: Patent publication no WO/2011/107808 dated 9 September 2011. Developed by Yiguo Hong and colleagues at the University of Warwick.

Contact: Dr Jan Chojecki (lars@pbltechnology.com) **PBL Tech ID: 10.497**

Poultry Probiotic: Patent publication no WO/2011/045113 dated 16 June 2011. Developed by Mike Gasson and Arjan Narbad at the Institute of Food Research.

Contact: Dr Martin Stocks (martin@pbltechnology.com) **PBL Tech ID: 05.369**



L. johnsonii bacteria in culture

Scientific Publication

Now Published in The Plant Journal: HaHb1

HaHb1 an HD-Zip Trf gene from sunflower that confers tolerance to a range of different abiotic stresses, even when transferred into other plant species such as soybean - has now been published in The Plant Journal. This was technology discovered and developed through the research of Dra Raquel Chan, Julieta Cabello and Agustín Arce at the CONICET Institute of Agrobiotechnology at the Universidad Nacional del Litoral, Argentina, and is managed by PBL. Commercial rights have already been granted for certain crop species, with others remaining available to license.

Ref: The Plant Journal (2011). **The homologous HD-Zip I transcription factors HaHB1 and AtHB13 confer cold tolerance via the induction of pathogenesis-related and glucanase proteins.** Julieta V Cabello, Agustín L Arce, Raquel L Chan. Article first published online: 14 OCT 2011. DOI: 10.1111/j.1365-313X.2011.04778.

Contact: Dr Jan Chojecki (ajsc@pbltechnology.com) **PBL Tech ID: 08.465**



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