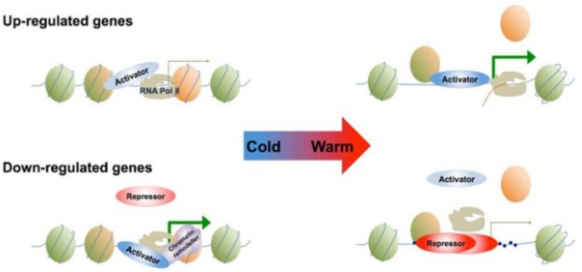
PBL NEWS

PBL News - Issue 16 - Feb 2010

Understanding the thermosensory response breakthrough for crop improvement

Phil Wigge and Vinod Kumar of the John Innes Centre have made a breakthrough in understanding how plants control their reponse to temperature via the inclusion in the nucleosome of the variant histone H2A.Z. This opens the way to modify how plants respond to temperature, leading to many different applications in crop improvement ranging from improved crop establishment, control of bolting and flowering, to stress avoidance and optimised grain-filling. The work is published in Cell in January 2010 (Cell 140 (1):136-147, with a video on YouTube, and has already caught the attention of the national and international media (FT). The technology is patented by PBL and is currently exclusively available for evaluation by members of PBL's "TEC Club" technology scheme.



John Innes Centre

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

Tech ID: Tech 09.496

PBL grants licence to JR Simplot for the development of Late Blight Resistant Potatoes

PBL and J R Simplot Company recently signed a commercial licence agreement for genetic discoveries linked to the development of late blight resistant potatoes. The late blight resistant genes were isolated at the Sainsbury Laboratory by Jonathan Jones and co-workers in collaboration with Wageningen University. Late blight is a devastating disease for potato growers causing annual crop losses of several billion dollars. These new late blight resistance genes now offer a real possibility to develop potato lines with long lasting resistance to the late blight fungus.

The J R Simplot Company, a privately held agribusiness firm headquartered in Boise, Idaho, responsibly brings earth's resources to life with an integrated portfolio that includes phosphate mining, fertilizer manufacturing, farming, ranching and cattle production, food processing, food brands and other enterprises related to agriculture. Simplot's major operations are in the US, Canada, Mexico, Australia, New Zealand and China, with products marketed in more than 40 countries worldwide. For more information visit www.simplot.com.

To licence these late-blight resistance genes, please contact Dr Lars von Borcke (lars@pbltechnology.com).

THE SAINSBURY LABORATORY

Tech ID: Tech 07.425 / 07.426

Simplot

Chameleon wins patent opposition

Chameleon BioSurfaces Ltd

Chameleon Biosurfaces Limited, formed by JIC and PBL in 2003 to develop smart coatings technology developed at JIC, has announced that the opposition in Europe against its granted patent claims has been resolved in Chameleon's favour, leaving Chameleon with enforceable claims in Europe. In addition, in a long-standing opposition lodged by Chameleon against one of its competitor's granted claims in Europe, which had the potential for creating freedom to operate issues for Chameleon, the competitor's claims have been annulled in Europe, leaving Chameleon with a clear path for commercialisation of its core technologies. Chameleon is commercialising the use of its polymers in medical device and 'smart materials' applications, and carries out feasibility projects with companies wishing to improve their products using its technology.

For more information please go to www.chameleonbio.com or email Ian MacKenzie (mackenzie@chameleonbio.com).

Sarum Biosciences and PBL sign licence agreement for *Clostridium difficile* bacteriophage lysin technology developed by IFR

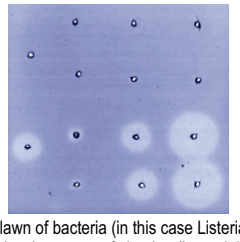
Sarum Biosciences Limited ("Sarum") and PBL have entered into an exclusive worldwide licence agreement which enables Sarum to develop and exploit therapeutic and diagnostic applications of a bacteriophage endolysin protein, developed at the Institute of Food Research, for the treatment and detection of *Clostridium difficile*, a serious healthcare concern both within the UK and the rest of the world.

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

SARUM BIOSCIENCES NATURAL SOLUTIONS

ifr Institute of Food Research

Tech ID: Tech 07.434



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

IP protection

Funds and manages patent filing and

Builds complementary technology packages

Markets technology to commercial users

Concludes and monitors technology licences

Manages and mentors the formation of new technology-based businesses

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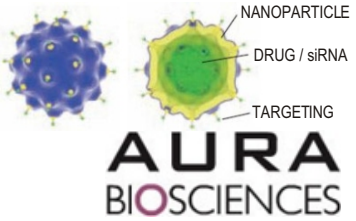
Aura Biosciences recognised by World Economic Forum

The World Economic Forum has named Aura Biosciences as a 2010 Technology Pioneer. Aura's NanoSmart™ drug delivery technology was recognized for its long-term potential impact on business and society. It contains nano-particle technology developed by Dr George Lomonossoff at John Innes Centre and licensed by PBL to Aura.



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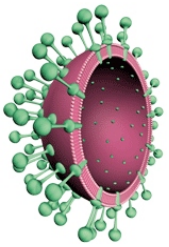
For more information, please contact Dr Martin Stocks (martin@pbltechnology.com).

Tech ID: 08.458

PBL / JIC technology instrumental in flu vaccine production

Since our last newsletter there has been the announcement of Medicago's outstanding achievement in producing the H1 VLP antigen in only 14 days. This involved the use, among other technologies, of the plant virus-based expression system invented by JIC researchers and which is licensed by PBL to Medicago.

The CPMV-HT (Cowpea Mosaic Virus-HyperTranslatable) expression system was developed by Prof George Lomonossoff and Dr Frank Sainsbury at the John Innes Centre, UK using specific elements of comoviruses. It achieves extremely high levels of heterologous protein expression within a few days without the need for virus replication. It also has the benefit of not producing infectious viral particles and thus achieves complete bio-containment while speeding up the whole process of protein production. PBL is granting licenses to this technology on an application- and product-specific basis.



Medicago's VLP is a non-infectious and a more efficient way of presenting antigens to the immune system

John Innes Centre

For more information on CPMV-HT please click here or contact Dr Lars von Borcke (lars@pbltechnology.com).

Tech ID: 07.439

medicago

£13.1m investment for Novacta, and Novacta Therapeutics is formed

Also since our last newsletter, Novacta Biosystems Limited, which was founded by PBL and the John Innes Centre in 2001, has secured a £13.1m financing from Celtic Pharma and existing investors. "We are delighted for Novacta" said PBL Managing Director, Dr Jan Chojecki, "it will really accelerate the development of Novacta's strong portfolio including its exciting and advanced C difficile programme". Novacta has now been divided into two separate divisions, Novacta Therapeutics focussing on developing the company's anti-infective drug pipeline, and Novacta Biosystems which offers fee-for-service activities in the area of single step metabolite synthesis, biocatalysis and pathway engineering of bacteria and yeast.

For more information, please go to www.novactabio.com.

NOVACTA BIOSYSTEMS NOVACTA THERAPEUTICS

New scientific publications on PBL technologies

Modification of Plant Temperature Sensing: PBL Tech ID 09.496 from John Innes Centre
Kumar and Wigge (2010). H2A.Z-Containing Nucleosomes Mediate the Thermosensory Response in *Arabidopsis*. Cell; 140 (1): 136-147.

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Stress Resistant Plants: PBL Tech ID 01.266 from Universidad Nacional de Rosario and CONICET, Argentina
Zurbriggen MD, Carrillo N, Tognetti VB, Melzer M, Peisker M, Hause B and Hajirezaei M-R (2009). Chloroplast-generated reactive oxygen species play a major role in localized cell death during the non-host interaction between tobacco and *Xanthomonas campestris* pv. *vesicatoria*. Plant J; 60 (6); 962 - 973.

CONICET ibr INSTITUTO DE BIOLOGIA MOLECULAR Y CELULAR DE ROSARIO

PsEND1 Anther-specific Promoter: PBL Tech ID 09.479 from IBMCP at Universidad Politécnica de Valencia, Spain
García-Sogo B, Pineda B, Castelblanque L, Antón T, Medina M, Roque E, Torresi C, Beltrán J-P, Moreno V and Cañas LA (2010). Efficient transformation of Kalanchoe blossfeldiana and production of male-sterile plants by engineered anther ablation. *Plant Cell Reports* 29(1): 61-77.

IBMCP

Heterosis & Trait Prediction: PBL Tech ID 05.381 from John Innes Centre
Stokes D, Fraser F, Morgan C, O'Neill C M, Dreos R, MagusinA, Szalma S and Bancroft I. An association transcriptomics approach to the prediction of hybrid performance. *Molecular Breeding*, published online 13 Jan 2010.

John Innes Centre

Grants of PBL patents in Japan, Europe and Australia

High Glucosinolate Broccoli **(WO/1999/052345)** claims granted in Japan **JP2008-200048**. This technology is exclusively licensed to Seminis Vegetable Seeds. PBL Tech ID: 95.059.

Topo-isomerase Assay **(WO/2006/051303)** granted in Europe on 06/01/2010 **EP1812592A1**. PBL Tech ID: 04.353.

Calcium Phosphate Nanoclusters **(WO/2001/044106)** granted in Australia **AU2005225114**. PBL Tech ID: 06.405.

Enhanced Transgene Expression by Co-Expression with a Suppressor of Post-Transcriptional Gene Silencing (PTGS) **(WO/2001/038512)** granted in Europe **EP1232274**. PBL Tech ID: 99.194.

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Innovation in life sciences

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