FOR IMMEDIATE RELEASE **17th January 2012**

PBL AWARDED PIONEERING US PATENT ON RNAi: US 8,097,710

Plant Bioscience Limited (PBL) is pleased to announce that the United States Patent and Trademark Office (USPTO) has issued out US Patent No. 8,097,710 with fundamental claims directed to methods of inducing gene silencing using short RNA molecules, or DNA constructs encoding short RNA molecules, in a wide range of organisms, including in plants and humans.

Silencing is a natural mechanism for down-regulating gene expression that is found in most complex organisms and it is the focus of tremendous activity in the life science industry. It has been widely exploited in research for gene discovery, and for characterisation of gene function. It holds great promise as a therapeutic tool, and currently "gene therapy" applications are being developed for ailments as diverse as cancer, viral diseases and obesity. The technology is also referred to as "RNAi", short for RNA interference.

The award of this new patent (8,097,710, issued 17th January 2012) comes as further recognition by the USPTO of the pioneering contributions of Professor Sir David Baulcombe and Dr Andrew Hamilton to the field of silencing. The original patent application based on this work was filed by PBL in 1999, following Baulcombe and Hamilton's ground-breaking research at The Sainsbury Laboratory in Norwich, UK and published in Science ("A Species of Small Antisense RNA in Posttranscriptional Gene Silencing in Plants", (1999), 286, pp. 950-952). This paper provided the first identification that short RNA molecules are the active agents of silencing, and the patent describes methods and compositions for use of such molecules for inducing silencing in living organisms.

The first of PBL's patents to be granted by the USPTO, based on Hamilton and Baulcombe's work, was US Patent No. 6,753,139, which issued in 2004, for methods of detecting gene silencing in plants. In April 2010, patent number 7,704,688 issued with claims directed to detection of gene silencing in mammals. Now, issuance of this most recent patent acknowledges the role of short RNA molecules as the common mediators of gene silencing in different species and organisms, and protects the use of short RNAs for the purpose of inducing the silencing of a target gene in a cell.

The importance of Silencing as a scientific discovery was underlined both by the award of a Nobel Prize in 2006 to Andrew Fire and Craig Mello, in recognition of their seminal publication in 1998 on the use of long dsRNA to induce silencing in nematodes, and the Lasker Foundation awarding the 2008 Albert Lasker Basic Research Award jointly to David Baulcombe (whose work demonstrated that short RNA molecules have a broad applicability as markers and inducers of gene silencing in living organisms), jointly with Gary Ruvkun and Victor Ambros (for their combined effort in identifying the first miRNA in nematodes). On issuing the award, the Lasker Foundation noted David Baulcombe's contributions thus: "*For discoveries that revealed an unanticipated world of tiny RNAs that regulate gene function in plants and animals*". In addition, in 2009, Professor Baulcombe was awarded a knighthood "*for services to Plant Science*".

"PBL would like to record our appreciation of the excellent guidance and support provided by Kate Murashige of Morrison & Foerster, San Diego, in the complex prosecution of this portfolio of patent applications to patent issuance", stated Gerard Bencen, PBL's Patent Manager, who has worked closely with Kate Murashige in the prosecution of this portfolio.

PBL's Managing Director, Dr Jan Chojecki, states "We are very pleased that our efforts in working with the US Patent Office have resulted in issuance of this patent. It is an excellent example of how innovations in a specialised field can, once recognised, have impact across many other areas of research, discovery and beneficial application. It is also a tribute to the quality of fundamental research carried out in public research laboratories in the United Kingdom. We look forward to answering any licence inquiries in connection with the issuance of this patent."

Please click here for a link to the Short RNA section on our website.

For licensing enquiries, please contact Dr Lars von Borcke (lars@pbltechnology.com). All other enquiries to info@pbltechnology.com.

About PBL
Plant Bioscience Limited (PBL) www.pbltechnology.com is a technology development and intellectual property management company owned in equal parts by The Sainsbury Laboratory www.tsl.ac.uk , the John Innes Centre www.jic.ac.uk and the Biotechnology and Biological Sciences Research Council www.bbsrc.ac.uk. PBL promotes the development and commercial uptake of academic research results for public use and benefit and is specialised in life sciences, and in particular plant, food and microbial science.

PBL is the owner of the patent rights created by this work of Andrew Hamilton and David Baulcombe.

About The Sainsbury Laboratory
The Sainsbury Laboratory (TSL) www.tsl.ac.uk is a world-leading research centre located in Norwich, UK, focusing on making fundamental discoveries about plants and how they interact with microbes. Professor Sir David Baulcombe is now Regius Professor of Botany and Royal Society Research Professor at The University of Cambridge. Dr Andrew Hamilton is now at The University of Glasgow, in the Division of Cancer Sciences and Molecular Pathology.

Glossary:

siRNA	short interfering RNA
SRM	short RNA molecule
miRNA	MicroRNA
dsRNA	double stranded RNA
RNAi	RNA interference

US 8,097,710 CLAIMS:

1. A method of silencing a gene in cells by post-transcriptional gene silencing (PTGS) which method comprises introducing into said cells a composition that contains short RNA molecules (SRMs),

   which SRMs are isolated short sense RNA molecules (SSRMs) and isolated short antisense RNA molecules (SARMs) at the same abundance;

   wherein said SARMs are complementary to a region of a target RNA transcribed from a gene which is silenced when said short RNA molecules are present in cells containing said gene and said SSRMs correspond to said target RNA; and

   wherein the SSRMs and SARMs consist of 20, 21, 22, 23 or 24 nucleotides,

   whereby said gene is silenced.

2. The method of claim 1, wherein the cells are contained in an organism and said introducing comprises administering said SRMs to the organism.

3. The method of claim 1, wherein the SRMs are synthetic.

4. The method of claim 1, wherein the SARMs have a structure complementary to a target mRNA transcribed from a gene endogenous to a plant, a mammal, an avian organism, a reptile, an insect, a protozoan, a nematode, or a virus.

5. A method of silencing a gene in cells of an organism by post-transcriptional gene silencing (PTGS) which method comprises introducing into said cells a composition that contains isolated short antisense RNA molecules (SARMs) and isolated short sense RNA molecules (SSRMs) corresponding to a target RNA transcribed from said gene, the nucleotide sequences of which consist of 20, 21, 22, 23 or 24 nucleotides and wherein said SARMs can base pair with said target RNA.

6. The method of claim 5, wherein said SARMs and SSRMs are present at the same abundance.

7. The method of claim 5, wherein the cells are contained in an organism and said introducing comprises administering said SSRMs and SARMs to the organism.

8. The method of claim 5, wherein the SSRMs and SARMs are synthetic.

9. The method of claim 5, wherein the SARMs have a sequence that can base pair to a target mRNA transcribed from a gene endogenous to a plant, a mammal, an avian organism, a reptile, an insect, a protozoan, and a nematode, or a virus.

10. A method of silencing a gene in cells by post-transcriptional gene silencing (PTGS) which method comprises introducing into said cells a composition that contains at least one vector that, when introduced into said cells, produces short RNA molecules (SRMs),

    which SRMs are short sense RNA molecules (SSRMs) and short antisense RNA molecules (SARMs);

    wherein said SARMs are complementary to a region of a target RNA transcribed from a gene which is silenced when said short RNA molecules are present in cells containing said gene and said SSRMs correspond to said target RNA; and

    wherein the SSRMs and SARMs consist of 20, 21, 22, 23 or 24 nucleotides,

    whereby said gene is silenced.

11. The method of claim 10, wherein the cells are contained in an organism and said introducing comprises administering said composition to the organism.

12. The method of claim 10, wherein the SARMs have a structure complementary to a target mRNA transcribed from a gene endogenous to a plant, a mammal, an avian organism, a reptile, an insect, a protozoan, a nematode, or a virus.

13. A method of silencing a gene in cells of an organism by post-transcriptional gene silencing (PTGS) which method comprises introducing into said cells a composition that contains at least one vector that, when introduced into said cells, produces short antisense RNA molecules (SARMs) and short sense RNA molecules (SSRMs) corresponding to a target RNA transcribed from said gene, the nucleotide sequences of which consist of 20, 21, 22, 23 or 24 nucleotides and wherein said SARMs can base pair with said target RNA.

14. The method of claim 13, wherein the cells are contained in an organism and said introducing comprises administering said composition to the organism.

15. The method of claim 13, wherein the SARMs have a sequence that can base pair to a target mRNA transcribed from a gene endogenous to a plant, a mammal, an avian organism, a reptile, an insect, a protozoan, a nematode, or a virus.