



THE SAINSBURY LABORATORY

PBL AWARDED MAJOR US PATENT ON SHORT RNA

Plant Bioscience Limited (PBL) is pleased to announce that the United States Patent Office has allowed claims in its patent application [10/806,253](#) for detection of short RNA molecules to identify gene silencing in mammals and mammalian cells.

Silencing is a natural phenomenon that occurs in many different organisms from yeasts to plants to humans. It is a central mechanism for modulation of gene expression.

Interest in the detection and use of short RNA molecules (siRNA and miRNA) has seen a dramatic increase over the past few years. Researchers use detection methods to analyse miRNA expression patterns and monitor siRNA levels following induction of silencing, for example to determine whether gene therapy drugs are having their intended effect on the expression of target genes relevant to diseases, such as cancer.

The award of this patent ([7,704,688](#), issue date 27 April 2010) comes as further recognition by the United States Patent Office (USPTO) of the pioneering contributions of Professor Sir David Baulcombe and Dr Andrew Hamilton to the field of gene silencing in living organisms. The patent was initially filed in 1999, that is, after Andrew Fire and Craig Mello published on the use of dsRNA to induce silencing in nematodes in 1998, but before the publication in 2000 of Thomas Tuschl and colleagues' studies on short RNA molecules in *Drosophila*. In 2006, Fire and Mello received the Nobel Prize for their work on RNAi.

The first of PBL's patents to be granted by the USPTO for the work conducted by David Baulcombe and Andrew Hamilton was US Patent No. [6,753,139](#), which issued in 2004, for methods of detecting gene silencing in plants. Now, following substantial additional examination before the USPTO, claims directed to detection of silencing in mammals, through the detection of short RNA molecules, have also been allowed.

The patent claims derive from research carried out by Baulcombe and Hamilton 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 describes the authors' ground-breaking work in identifying short RNA molecules as the agents which both signal the occurrence of and induce gene silencing.

At least in part, that work has resulted in the Lasker Foundation awarding the 2008 Albert Lasker Basic Research Award jointly to Gary Ruvkun and Victor Ambrose (for their combined effort in identifying the first miRNA in nematodes), and David Baulcombe (whose work demonstrated that short RNA molecules have a broad applicability as markers and inducers of gene silencing in living organisms) "[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 currently has several further pending patent applications, based on further aspects of the work of Baulcombe and Hamilton, which are being examined by the USPTO, including for the use of short RNA molecules to cause gene silencing, for example, as therapeutic agents.

Professor Sir David Baulcombe says “We are delighted that the US Patent Office has confirmed that our contribution to the field of RNA silencing extends well beyond the work we did in plants as a model system. The topic of RNA silencing in mammals has exploded into a significant field of study involving siRNA and microRNA as key factors in genetic and epigenetic regulation.”

“The grant of the patent further underlines the contribution of our Science publication to understanding the mechanism of gene silencing in biology and we are very pleased that this has now been further recognised by the United States Patent Office”, adds Dr Andrew Hamilton.

“We are thrilled that the patent office has recognised the revolutionary findings from the research carried out at The Sainsbury Laboratory by David and Andrew”, Professor Sophien Kamoun, Head of The Sainsbury Laboratory says. “In addition we congratulate PBL and in particular we recognise their diligent effort and special expertise in prosecuting this patent successfully to grant.”

PBL (www.pbltechnology.com) 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. Those working in this field will be pleased to know that we intend to allow broad access to this invention through granting non-exclusive licenses for research use and other applications such as in diagnostics and in the development of therapeutics. We look forward to answering any licence inquiries in connection with the issuance of this patent. We congratulate Dr Hamilton and Professor Sir David Baulcombe for their work which has resulted in 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
miRNA MicroRNA
dsRNA double stranded RNA
RNAi RNA interference