



## ASX/Media Release

### **Benitec Technology used by University of Queensland Scientists to Develop a Treatment for Cervical Cancer**

29 March 2011, Melbourne, Australia: Benitec Limited (ASX:BLT) today welcomed the publication of research by scientists at the University of Queensland who demonstrated the value of Benitec's gene silencing platform technology to provide effective human therapeutics for cancer. Their results were published this month in the prestigious international scientific journal *Cancer Gene Therapy*\*

The researchers, who are not associated with Benitec, used Benitec's DNA directed RNA interference (ddRNAi) technology in their cervix cancer research.

Dr Peter French, CEO of Benitec said, "It is very pleasing to see further evidence being independently produced of the power of Benitec's ddRNAi technology to provide new therapies for the treatment and potential cure of serious human diseases such as cancer. Benitec looks forward to partnering our technology with major pharmaceutical companies to facilitate bringing ddRNAi-based therapeutics to the market for the benefit of patients suffering from a range of disease conditions."

The research scientists demonstrated that cervical cancer cells in culture are rapidly killed when treated with ddRNAi in the form of two short hairpin RNAs linked together in the one delivery vehicle. This compares to earlier studies where single short hairpin RNAs were used with less effect and emphasises the potential commercial value of continued development in ddRNAi.

Benitec's own ddRNAi-based R&D programs in the areas of chronic cancer-associated pain, hepatitis B and drug-resistant lung cancer are aimed at demonstrating the efficacy and safety of the technology which is capable of silencing any gene(s) associated with a serious life threatening human disease or medical condition.

Benitec is licensing its ddRNAi platform technology for specific applications to biopharmaceutical companies, including US-based Tacere Therapeutics, Inc., who have exclusively licensed Benitec's technology for development of a ddRNAi-based molecule for treating hepatitis C viral infections, with successful pre-clinical results.

\*Reference:

[W Gu, E Payne, S Sun, M Burgess, NAJ McMillan. Inhibition of cervical cancer cell growth in vitro and in vivo with dual shRNAs. \*Cancer Gene Therapy\* \(2011\) 18, 219-227](#)

## **Scientific Summary**

The University of Queensland researchers demonstrated that a multi-shRNA strategy targeting human papillomavirus (HPV) E6/E7 oncogenes provides a more effective approach for developing a ddRNAi therapy for cervix cancer and possibly other cancers than a single shRNA approach. The multi-shRNA approach allows additive or even synergistic effects to induce rapid cell death before resistance has a chance to occur. The researchers' data proves that dual shRNA constructs can effectively silence key target genes in cancer cells. This use of the technology has the added benefit of targeting multiple genes or pathways vital to cancer cell viability. The multi-target strategy also allows the technology to simultaneously target isoforms of a cancer-associated gene and using one vector to carry multiple copies of shRNA targeting different sites of the key gene.

This strategy overcame two previously identified limitations of RNA interference-based approaches in targeting cervix cancer cells – development of resistance to RNAi induced by synthetic siRNA and short term expression of single shRNAs using lentivirus delivery.

As noted in the paper, these constructs can be easily modified to add another one or two shRNAs to form a triple or quadruple shRNA molecule. This (triple) approach is being used by Benitec's licensee Tacere Therapeutics Inc., for development of a hepatitis C therapeutic

### **For Further Information**

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#### **About Benitec** [www.benitec.com](http://www.benitec.com)

Benitec Limited is developing novel treatments for chronic and life-threatening conditions based on a transformational technology, DNA-directed RNA interference (ddRNAi) - sometimes called expressed RNAi. The technology's potential to address unmet medical needs and, potentially, to cure disease results from the demonstrated ability to permanently silence genes which cause the condition.

Benitec now either owns or exclusively licences from CSIRO more than 40 granted or allowed patents in the field of RNA interference for human therapeutic applications. Patents have been granted in key territories such as the USA, the UK, Japan, Europe, Canada and Australia. In addition, Benitec has almost 50 patent applications pending for which it is the owner or exclusive licensee from CSIRO, and has further intellectual property under development as a result of its pipeline development program.