



12 March 2015

Companies Announcement Office
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Molecular Discovery Systems Ltd – HLS5 Tumour Suppressor Gene

Please find attached an update from BPH Energy Ltd (**ASX: BPH**) investee company Molecular Discovery Systems Ltd in relation to HLS5 and its role as a cancer suppressor gene.

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'D Ambrosini', is shown within a faint rectangular border.

Deborah Ambrosini
Company Secretary



12 March 2015

BPH Energy Limited
14 View Street
North Perth, WA 6006

HLS5 Tumour Suppressor Gene

Molecular Discovery Systems Ltd (“**MDS**”) is pleased to confirm the publication of two peer reviewed scientific papers that further support HLS5’s (also referred to as TRIM 35) role as a tumour suppressor gene.

The publications — a collaboration between Fudan University Shanghai Cancer Centre and other Chinese Institutes, including Shanghai Cancer Institute, Liver Cancer Institute, Second Military Medical University and Qi Dong Liver Cancer Institute — focuses on identifying the role of HLS5 in liver cancer, the third leading cause of cancer related deaths worldwide.

As liver cancer is often diagnosed at advanced stages, where therapeutic options are limited, the identification of new genes that drive liver cancer will not only provide insight into the early stages of liver cancer but also facilitate in the identification of new drugs.

The first article establishes the means by which HLS5 suppresses the proliferation of cancer cells in liver cancer. The paper concludes that HLS5 and PKM2 expression levels are a critical mechanism in the development of human cancers, a point investigated further in the second publication.

The group demonstrates that HLS5 binds a key enzyme involved in the production of energy for cancer cells (Pyruvate Kinase isoform M2 (PKM2)). Subsequent experiments determine that HLS5 binds PKM2 to form a complex which decreases the level of activated PKM2. The formation of this HLS5/PKM2 complex ultimately limits the cancer cell’s means of energy production and its ability to proliferate.

In the second publication the expression levels of HLS5 and PKM2 are assessed for its potential use as a prognostic marker for hepatocellular carcinoma (HCC) - liver cancer.

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The study analysed the liver samples of 688 patients who had HCC and had a section of their liver removed.

The study found that patients who had HCC and were positive for PKM2 expression and negative for HLS5 had shorter overall survival and time to recurrence.

Taken together, the findings of both papers further support the research by MDS and the Henry Perkins Institute for Medical Research on this tumour suppressor gene.

MDS has an extensive patent portfolio for HLS5 which encapsulates the gene as a potential cancer therapeutic target. The patent family entitled 'Tumour Suppressor Factor' has been granted in the United States and Australia, and under examination within Europe.

The two papers can be accessed at:

1. TRIM35 Interacts with pyruvate kinase isoform M2 to suppress the Warburg effect and tumorigenicity in hepatocellular carcinoma

<http://www.nature.com/onc/journal/vaop/ncurrent/full/onc2014325a.html>

2. Co-expression of PKM2 and TRIM35 predicts survival and recurrence in hepatocellular carcinoma

[http://www.impactjournals.com/oncotarget/index.php?journal=oncotarget&page=article&op=view&path\[\]=2991](http://www.impactjournals.com/oncotarget/index.php?journal=oncotarget&page=article&op=view&path[]=2991)

Yours sincerely,

David Breeze
Chairman

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