



Technology Transfer Opportunity

A Platform Technology - Assessing the Action of Molecular Targeted Drug Treatments

OPPORTUNITY:

A platform technology assessing the action of molecular targeted drug treatments.

a) Translational/personalised medicines

Use of an *ex vivo* human colonic tumour model to assess response to molecular targeted therapies.

b) Drug repositioning

New treatment avenues for existing targeted cancer drugs.

Description of Technology

Researchers at the Centre for Colorectal Disease, St Vincent's University Hospital and UCD have developed a tumour explant model which can examine the response of different molecular targeted drugs *ex vivo*. In comparison to mice studies, the use of this method can allow the action of the drug to be determined in approximately 2 weeks. This system lends itself to examine the action of molecular targeted therapies *ex vivo*.

The 3D explant tissue model presented here has many advantages, both in pre-clinical drug development and in individual patient treatments. It encompasses the importance of the tumour microenvironment and the role of the peritumoral stroma in angiogenic and metastatic pathways.

Value Proposition

A major driving force in pharmacogenetics research has been the promise of individualised drug therapy to maximise drug efficacy and minimise drug toxicity. The biggest challenge to overcome is the translation of pharmacogenomics from the research bench to the bedside. The platform and method presented here moves closer to overcoming this clinical challenge.

Potential benefits:

- a) Pre-clinical model for drug testing
- b) Model capable of assessing levels of secreted proteins altered by treatments
- c) Testing of drugs not yet in clinical trials
- d) Testing of drugs not yet used to treat colorectal cancer patients.

It is widely accepted that targeted molecular targeted therapies have many advantages including increased survival rates. However, currently, only 50% of patients respond to targeted therapies such as Avastin and Erbitux and the economic costs are extremely high. Importantly, there is no good model or marker(s) to stratify responders and non responders.

It is well known that the innovative anti-angiogenesis drug; Avastin in combination with other drugs significantly increases survival rates in patients suffering from metastatic colorectal cancer. However, as Avastin's mechanism may be relevant in a number of malignant tumours, clinical trials are on-going to assess the benefit of Avastin in other cancers, including non-small cell lung cancer, pancreatic cancer, renal cell carcinoma and others. Equally, in late 2006, NIH directors were encouraged about the repositioning of anti-VEGF colon cancer drug Lucentis, from for use in the age-related macular degeneration landscape.

The technical platform presented here can quickly assess existing, phased and pre-clinical drugs for efficacy in other cancer areas. This platform has the capacity to assess drugs both in isolation or combination.

Market

The potential for Avastin's horizontal expansion across tumour types will generate blockbuster sales for the pharmaceutical industry. The increasing market penetration and line extensions are expected to break all boundaries with sales figures estimated to be \$3,783m by 2015. This platform technology and method will open avenues for other similar drugs that can share in the success of or become the new Avastin. The multi-billion pharmaceutical industry are viewed as our primary market.

Inventors

Dr Jacintha O'Sullivan, Dr Hugh Mulcahy and Professor Diarmuid O'Donoghue, Centre for Colorectal Disease, St Vincent's Hospital, Dublin and University College Dublin.

Opportunity Sought

Available for collaborative research with the pharmaceutical industry.

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