

## A novel multi-functional protease inhibitor with therapeutic potential

Researchers at the University of Dundee have designed and synthesised a novel, multifunctional protease inhibitor which effectively attenuates multiple endo/lysosomal proteases. Intended to overcome the problem of redundancy with this class of drugs, the new molecule represents a significant advance with far-reaching therapeutic potential.

### Background

Based on their importance in health and disease, the proteases of the endo-lysosomal pathway - particularly the cathepsins - have frequently been proposed as therapeutic targets. Effective pharmaceutical exploitation of the pathway has been prevented by the issue of redundancy - novel methods to overcome this challenge are required.

### The Opportunity

Researchers at the University of Dundee have designed a novel multifunctional endo/lysosomal protease inhibitor that inhibits all three families of the endosomal proteases. This pan-endosomal protease inhibitor (figure 1) represents a powerful tool in the modulation of endo/lysosomal function.

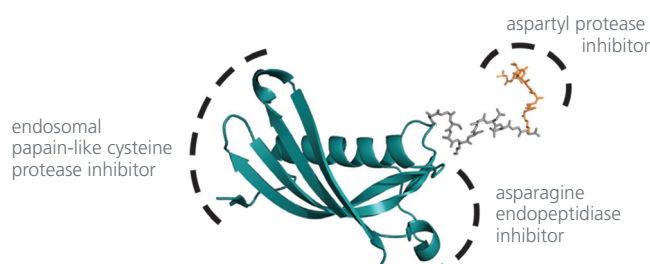


Figure 1: The novel inhibitor consists of the cysteine protease inhibitor, cystatin C (in blue), covalently linked to the potent aspartyl protease inhibitor, pepstatin (orange).

The conjugated cystatin-pepstatin-inhibitor (CPI) is highly water soluble and effectively attenuates all three families of endo-lysosomal proteases *in vitro* and *in vivo*, in cell based systems. The molecule is designed to be conjugated to targeting moieties to reduce toxicity associated with systemic protease inhibitors.

Therapeutic application of the CPI molecule to the area of vaccines has been explored with promising results – CPI can slow down antigen processing and may enhance vaccine performance. Work is ongoing in the area of tumor modulation where the endo/lysosomal proteases have been identified as

### IP Status

The technology is protected by a patent application, filed on 15<sup>th</sup> September 2011 as GB 1114017.5.

### Commercial Opportunity

The University is seeking a commercial partner for this technology and contact is welcomed from organisations interested in developing, licensing or exploiting this opportunity.



### Novel protease inhibitor:

- Multifunctional endo/lysosomal inhibitor
- Effectively attenuates all endosomal proteases
- Designed to incorporate targeting moieties
- Broad therapeutic potential

### For more information contact:

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