TECHNOLOGY SUMMARY

Angiotensin II Type 2 (AT2) Receptor Agonist / Antagonist

Endogenous agonist of the AT2 receptor and a deduced antagonist for medical use and for the development of selective non-peptidic small molecules.

THE TECHNOLOGY

UCC researchers have identified the endogenous agonist (EA) of the angiotensin II type 2 receptor, a G protein-coupled receptor encoded by the AGTR2 gene and found to be very beneficial in, amongst others, cardiovascular and neurodegenerative diseases.

Various peptide agonists of the AT2 receptor have been disclosed in the literature (e.g. octapeptides based on the angiotensin II peptide), and there is significant evidence that the AT2 receptor has extremely high therapeutic potential (both activated and antagonised). However, until the discovery of EA, which can activate G proteins via the AT2 receptor (Figure 1), effective drug development programmes for the identification of urgently needed small molecules targeting the AT2 receptor have been prevented.

Beside the clinical use of EA for the treatment of various diseases (including ARDS, spinal cord injury, stroke or diabetic retinopathy), it is envisioned that EA be used to model and develop potent oral compounds for stimulating the AT2 receptor in cardiovascular and neurodegenerative diseases. Based on information of a first potent peptidic antagonist the UCC researchers already deduced from the agonist structure, a potential non-peptidic small molecule AT2 receptor blocker can be identified with *in silico* approaches for the treatment of various forms of pain.

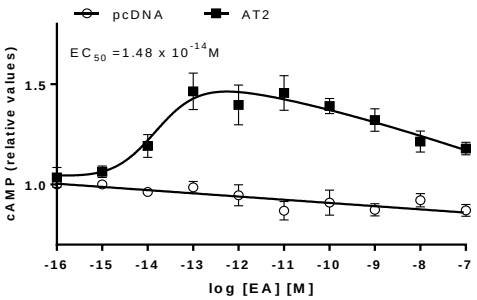

Fig. 1. Receptor specificity of EA. *The newly discovered endogenous AT2 receptor agonist, EA, dose-dependently stimulates an increase in intracellular cAMP in HEK293 cells transfected with AT2, but has no effect in pcDNA-control vector-transfected cells.*

A patent application was recently filed by UCC to seek protection of the EA peptide (medical use) and modified agonistic and antagonistic peptides (composition of matter) for use in the treatment of AT2 receptor related diseases.

ABOUT UNIVERSITY COLLEGE CORK

UCC is an internationally competitive, research-led University that plays a key role in the development of Ireland's knowledge-based economy. UCC is an award-winning institution with a history of independent thinking stretching back over 170 years and is proud to be ranked in the top 2% of universities in the world.

FIELDS OF APPLICATION

- **Cardiovascular diseases** (e.g. coronary artery disease, stroke, heart failure, cardiomyopathy, congenital heart disease, venous thrombosis)
- **Neurodegenerative diseases** (e.g. Alzheimer's disease, Parkinson disease, spinal cord injury, peripheral neuropathy)
- **Pain** (e.g. chronic pain, neuropathic pain, nociceptive pain, psychogenic pain, visceral pain)

OPPORTUNITIES

- **Licensing**
- **Partnering in spin-off activities**
- **Research Collaboration**

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