

from the [University of Leeds](#), UK

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## **Breakthrough for Treatment of Fatal Heart Condition**

**Researchers at the University of Leeds have found a mechanism to prevent a potentially fatal heart condition that can strike without warning.**

**Dr Lezanne Ooi, a postdoctoral researcher in the Faculty of Biological Sciences, has found that the progression of cardiac hypertrophy can be halted by increasing one of the body's naturally occurring proteins. "This is a significant discovery because whilst the symptoms can be managed, the cause of heart hypertrophy cannot yet be treated. This research provides a first step in the search for a possible treatment." says Dr Ooi.**

**Cardiac hypertrophy is a relatively common condition often caused by high blood pressure, or can be the result of a genetic predisposition, resulting in an abnormal thickening of the heart muscle. It is known to affect 1 in 500 people in the UK and US and can lead to heart failure, arrhythmias and sudden death. The condition varies in its manifestation, with some people suffering severe symptoms – such as breathlessness, fatigue and chest pain - and others being entirely asymptomatic. In those not displaying any symptoms, death can be its first presentation, therefore the scale of the problem is not fully known. It is also the most common cause of sudden cardiac death in athletes, as hypertrophic hearts are unable to cope with intense physical activity.**

**Dr Ooi's study is the first to identify the mechanism behind specific changes in protein levels that impact upon cardiac cell size. Levels of two proteins, known as ANP and BNP, are naturally higher in foetal hearts and the hearts of babies and children, but should drop as an individual matures. However, in adults with cardiac hypertrophy these levels increase to become abnormally high .**

**Dr Ooi has found that an increase in a third protein in the body, known as REST, can halt the rise of the proteins causing cardiac hypertrophy, which, for the first time, offers an approach to treating the cause of heart hypertrophy rather than its symptoms.**

**"The challenge is now to find a therapy that controls the source of the problem on an ongoing basis. If a way can now be found to translate this research into a therapeutic application, our findings will have an enormous impact on individuals suffering from the condition", says Dr Ooi.**

**Dr Ooi's work on cardiac hypertrophy has recently been recognised at the Experimental Biology conference in Washington DC in May. She was presented with the postdoctoral award from the American Association of Anatomists for her work, which was funded by the British Heart Foundation.**

For further information contact:

Clare Elsley, campuspr. Tel: 0113 258 9880 Mob: 07767 685168

Email: [clare@campuspr.co.uk](mailto:clare@campuspr.co.uk)

Simon Jenkins, University of Leeds Press Office. Tel: 0113 343 5764

Email: [s.jenkins@leeds.ac.uk](mailto:s.jenkins@leeds.ac.uk)

## NOTES TO EDITORS

1. Cardiac hypertrophy, also known as Hypertrophic Cardiomyopathy, is an inherited heart muscle condition and sufferers may experience breathlessness, fatigue and chest pain. There is no cure for the condition at present, although drug and surgical treatments are used to manage the condition in some cases.

2. Atrial natriuretic peptides (ANP) reduce water and sodium levels and reduce blood pressure. Brain natriuretic peptides (BNP) are used as markers to analyse heart function. Both are seen at high levels in the foetal heart and lower as the individual matures.

3. Repressor Element 1-silencing transcription factor (REST) is a repressor protein that regulates gene expression (the conversion of a gene's DNA sequence into a functional protein).

4. Dr Lezanne Ooi is a post-doctoral researcher working in the laboratory of Dr Ian Wood in the Institute of Membrane & Systems Biology at the University of Leeds.

Her work on cardiac hypertrophy forms part of a paper published on 5 June by Molecular and Cellular Biology, entitled *The repressor element 1-silencing transcription factor regulates cardiac specific gene expression using multiple chromatin modifying complexes*.

Dr Ooi's main research interests are in gene expression and the regulation of gene expression in the vasculature and nervous systems.

5. The University of Leeds' Faculty of Biological Sciences is one of the largest in the UK, with nearly 150 academic staff and over 400 postdoctoral fellows and postgraduate students. The Faculty's current active research grant portfolio is around £60M and funders include charities, Research Councils, the European Union and industry. The Faculty has an outstanding research record and all major units of assessment were awarded Grade 5 in the last government (HEFCE) Research Assessment Exercise. [www.fbs.leeds.ac.uk](http://www.fbs.leeds.ac.uk)