

Press release
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Common hormone could provide the answer to treating atrial fibrillation

Researchers from University of Montreal, Oxford University, Baylor College of Medicine and the University of Melbourne make potential game-changing discovery on calcitonin

MONTREAL, November 4th, 2020 – New research published today in *Nature*¹ shows that calcitonin, a well-recognized thyroid hormone that helps regulate bone mass and collagen production, is also produced by cells in the heart. This discovery could hold the key to developing new treatments for people with atrial fibrillation (AF), a common and quite problematic heart rhythm disorder.

Levels of calcitonin in the body decrease with age, the main risk factor for developing AF, which is the most common heart rhythm disorder and is associated with significant morbidity and mortality, particularly the risk of stroke. Scarring (called “fibrosis”) of the atria, the upper chambers of the heart, is caused by the accumulation of collagen (a protein found in skin and connective tissues); this fibrosis both predisposes people to AF and makes AF harder to treat.

This study, titled ‘**Paracrine signalling by cardiac calcitonin controls atrial fibrogenesis and arrhythmia**’, found that the atrial muscle cells produce approximately 16 times more calcitonin than reference cells from the thyroid gland which, up until now, was thought to be by far the most important source of calcitonin in the body. It also shows that calcitonin receptors are present in specialized atrial cells (fibroblasts) that are responsible for producing collagen and that calcitonin acts to keep their collagen production in check. In AF patients, something goes wrong to impair the protective actions of calcitonin, increasing the risk of atrial fibrosis.

“This discovery could provide important advances for patients with AF. With a better understanding of calcitonin and its role in regulating fibrosis in the heart, we can now explore how to best restore the actions of this hormone in the heart, aiming to develop new treatments for AF patients”, said Dr. Stanley Nattel, senior co-author of the study, cardiologist at the Montreal Heart Institute and professor at the University of Montreal.

Atrial fibrillation in Canada

Around 200,000 Canadians are affected by AF. To date, treatment has focused on restoring a normal heart rhythm, controlling the rate at which the heart beats and prescribing blood thinners to reduce the risk of stroke with no treatment option available to address the scarring of the atria seen in people with the condition. This research could be a key to identifying new and much needed treatment options to address this.

This research is the result of an international collaboration between the University of Montreal, Oxford University in the UK, Baylor College of Medicine in Houston, Texas, and the University of Melbourne. The research is funded by the British Heart Foundation, the Canadian Institutes of

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About the Montreal Heart Institute

Founded in 1954, the Montreal Heart Institute constantly aims for the highest standards of excellence in the cardiovascular field through its leadership in clinical and basic research, ultra-specialized care, professional training and prevention. It houses the largest research center in Canada, the largest cardiovascular prevention center in the country, and the largest cardiovascular genetics center in Canada. The Institute is affiliated with the University of Montreal and has more than 2,000 employees, including 245 doctors and more than 85 researchers.

Reference:

1. Moreira L, Takawale A, Hulsurkar M, et al 2020, 'Paracrine signalling by cardiac calcitonin controls atrial fibrogenesis and arrhythmia', Nature, <https://www.nature.com/articles/s41586-020-2890-8>.

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