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Study illuminates tiny RNA's role in heart disease, obesity

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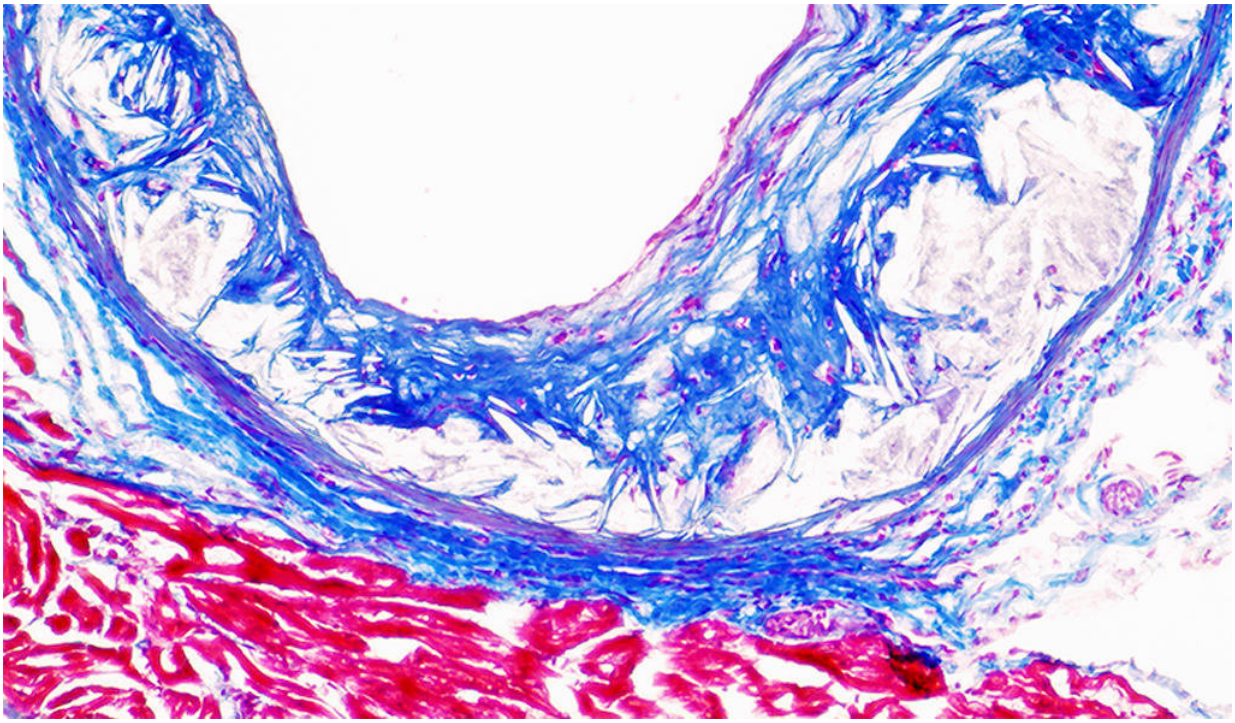

Atherosclerotic plaque in the aorta of a mouse model that is attenuated after deletion of miR-33 in macrophage cells. Credit: Yale University

A tiny RNA molecule plays a big role in the development of two diseases affecting billions of people worldwide: heart disease and obesity. Yale researchers have found that by disrupting this microRNA in key tissues, they can reduce plaque buildup in arteries while avoiding

unintended effects.

Prior animal studies have shown that drugs designed to inhibit the RNA molecule, known as miR-33, successfully reduced the atherosclerotic plaques that cause most common forms of heart disease. But those drug therapies also triggered changes that could promote metabolic dysfunction.

To shed more light on the function of miR-33, a team led by Carlos Fernandez-Hernando, an associate professor in Yale's Department of Comparative Medicine, studied mouse models lacking the molecule. They found that miR-33 contributed to obesity by regulating feeding behavior, causing the mice to eat more. The increased food intake led to insulin resistance and obesity, the researchers said.

The take-home message of the study: Specific targeting of miR-33 in plaques is a promising new strategy for treating cardiovascular disease without promoting obesity, said lead author Nathan Price.

The research is published in *Cell Reports*.

More information: Nathan L. Price et al. Genetic Dissection of the Impact of miR-33a and miR-33b during the Progression of Atherosclerosis, *Cell Reports* (2017). DOI: 10.1016/j.celrep.2017.10.023

Nathan L. Price et al. Genetic Ablation of miR-33 Increases Food Intake, Enhances Adipose Tissue Expansion, and Promotes Obesity and Insulin Resistance, *Cell Reports* (2018). DOI: 10.1016/j.celrep.2018.01.074