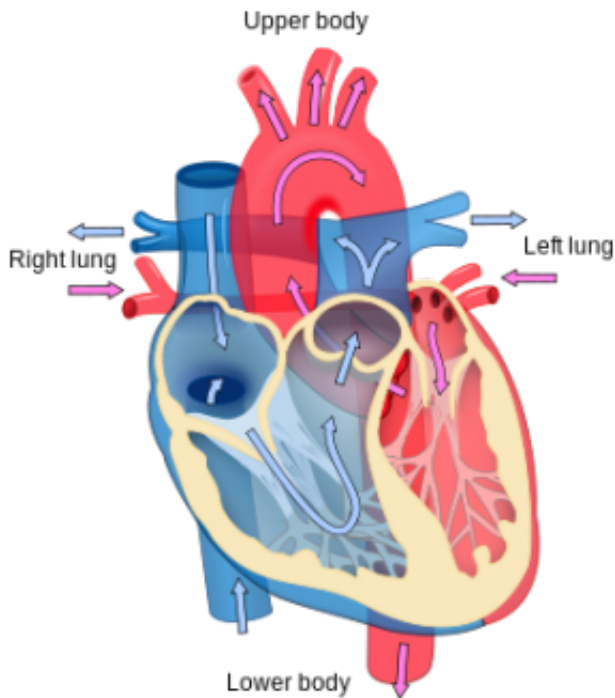


# Researchers find bitter taste receptors on human hearts

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Heart diagram. Credit: Wikipedia

A team of University of Queensland researchers is investigating the surprising discovery that smell and taste receptors normally found in the nose and mouth can also be present on the human heart.

The School of Biomedical Sciences team was able to observe the presence of the receptors as part of their ongoing research into the growth of human hearts during disease.

Research team leader and Head of the School Professor Walter Thomas said the team would investigate the phenomenon, which was originally discovered by former UQ PhD student Dr Simon Foster. Dr Foster's findings are published in the *Journal of the Federation of American Societies for Experimental Biology*.

"Dr Foster was able to show that around 12 [taste receptors](#), particularly those that respond to bitter compounds, were expressed in human hearts," Professor Thomas said.

"This is quite remarkable, as the human genome only has 25 of these [bitter taste receptors](#), and we wanted to find out why half of them were located in the heart.

"When we activated one of the taste receptors with a specific chemical that we all taste as bitter, the contractile function of the heart was almost completely inhibited.

"While the underlying physiology behind this phenomenon remains unclear, this is now a major area of ongoing investigation."

The research team's primary focus is on is how the heart grows normally as well as abnormally in disease.

"After hypertension or a heart attack, the heart frequently undergoes compensatory growth in order to maintain the circulation of blood around the body," Professor Thomas said.

"But a common end result of this compensatory growth is eventual heart failure, a major cause of death in Australia.

"During laboratory tests, we were looking at all the genes that are regulated in the heart in this growth phase.

"We found the rodent heart cells we were working with contained smell and taste receptors, which are normally considered to be only present in the nose and mouth."

Professor Thomas said the project progressed from animal studies to human investigations through collaborations with the Prince Charles Hospital in

Brisbane.

"Using heart tissue from humans undergoing [heart](#) surgery, such as valve replacement and coronary arterial bypass, we replicated the rodent laboratory experiments and found taste receptors were also present in the [human heart](#)," he said.

**More information:** "Bitter taste receptor agonists elicit G-protein-dependent negative inotropy in the murine heart." *FASEB J.* 2014 Oct;28(10):4497-508. [DOI: 10.1096/fj.14-256305](https://doi.org/10.1096/fj.14-256305)

Provided by University of Queensland

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