

# Discovery paves way for advances in treating cardiovascular disease

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A University of Otago researcher has made an innovative discovery

which paves the way for advances in treating cardiovascular disease including high blood pressure.

Dr. Martin Fronius from the Department of Physiology led the research which identified a new mechanism for the regulation of blood pressure.

Specifically, he identified a new mechanism that contributes to "flow-mediated dilation", which is the dilation of an artery when blood flow increases in that artery.

"Our research identified a new mechanism that contributes to flow-mediated dilation, revealing how force sensation occurs at the [molecular level](#) in cells," Dr. Fronius explains.

The ability of cells to sense mechanical cues is important for touch and pain sensation, related to hearing but also important for blood pressure regulation, Dr. Fronius explains.

"Our understanding of how cells in our body sense mechanical cues related to blood flow and pressure is scarce.

"By studying a mechanosensitive ion channel we identified that force sensation involved a physical connection of the channel to parts outside of the cells, such as [connective tissue](#), via molecules that act as tethers."

The study revealed that this tether-based mechanism is involved in blood pressure regulation.

Dr. Fronius says such a mechanism has been proposed for 25 years, but has never previously been shown.

"This provides new targets (new venues) for [drug discovery](#) to improve treatment of [cardiovascular disease](#) and [high blood pressure](#)."

Dr. Fronius collaborated with colleagues from the University of Otago together with researchers from Germany and Spain in the research which has recently been published in *PNAS*, the official journal of the United States National Academy of Sciences.

**More information:** Fenja Knoepp et al. Shear force sensing of epithelial Na<sup>+</sup>channel (ENaC) relies on N-glycosylated asparagines in the palm and knuckle domains of  $\alpha$ ENaC, *Proceedings of the National Academy of Sciences* (2019). [DOI: 10.1073/pnas.1911243117](https://doi.org/10.1073/pnas.1911243117)

Provided by University of Otago

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