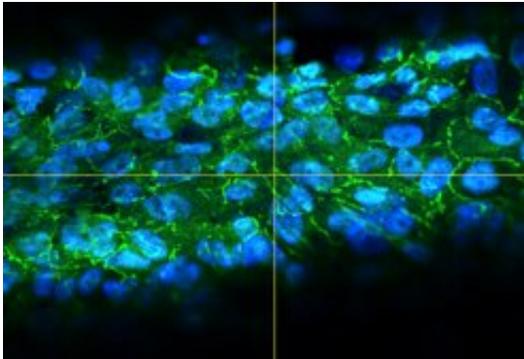


# New opportunities for treating kidney failure

July 22 2019

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Credit: Utrecht University Faculty of Science

Our kidneys can sense when we need them to work a bit harder. As the intestines begin to produce more waste products, the kidneys start to work harder to excrete them. Researchers at, among others, Utrecht University and Universitair Ziekenhuis Leuven published an article on the process in *PNAS* on July, 22. Insight into this mechanism could lead to new treatments for kidney failure.

Kidneys filter [waste products](#) from the blood, and they can increase their filtering activity when necessary. But until now, scientists had not known exactly how this mechanism worked. The research group led by Roos Masereeuw has now shown that certain [kidney](#) cells have receptors that can observe higher concentrations of waste products. The group then identified how this observation stimulates the production of a transport protein, which results in increased excretion of the waste substances.

## New treatments for kidney failure

According to Prof. Masereeuw, insight into this mechanism could lead to new treatments for [kidney failure](#). This is because the mechanism plays a vital role in stimulating the excretion of waste; a process that is inhibited by kidney failure. "By jump-starting that mechanism, we think that we might be able to treat early-stage kidney failure," Masereeuw explains. "We're going to continue to study how we can initiate that process ourselves."

## Made possible by artificial kidney tubules

One of the steps towards identifying this mechanism involved using artificial kidney vesicles, which Masereeuw had previously developed together with other researchers. This allowed the group to study which receptors and [signal molecules](#) at the [cellular level](#) are involved in observing the waste products and regulating the transport proteins that facilitate excretion in urine.

**More information:** Jitske Jansen et al. Remote sensing and signaling in kidney proximal tubules stimulates gut microbiome-derived organic anion secretion. *PNAS* (2019).

[www.pnas.org/cgi/doi/10.1073/pnas.1821809116](http://www.pnas.org/cgi/doi/10.1073/pnas.1821809116)

Provided by Utrecht University Faculty of Science

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