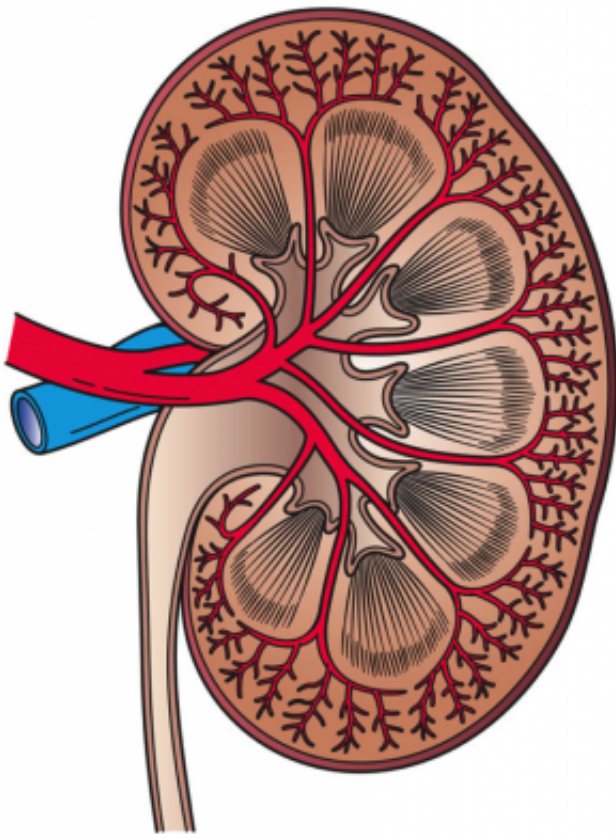


# "Atypical" virus discovered to be driver of certain kidney diseases

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This image shows a cross section of a kidney. Credit: Holly Fischer/Wikipedia

An international research team led by Wolfgang Weninger has discovered a previously unknown virus that acts as a "driver" for certain kidney diseases (interstitial nephropathy). This "atypical" virus, which the scientists named "MKPV" (for Mouse Kidney Parvovirus), belongs

to the family of parvoviruses. The results of the study have now been published in the leading international journal *Cell*.

Background to the discovery: "Over the last few years, a spontaneous [kidney disease](#) occurred in laboratory mice at our institute. Specifically, immunodeficient animals, that is to say animals with an inborn immune system disorder, were dying suddenly and prematurely from the condition. We were able to pinpoint the disease as a problem of the renal tubules," explains Weninger. And this so-called interstitial tubulopathy is triggered by MKPV. "MKPV-induced [nephropathy](#) closely resembles a similar form of viral tubulopathy, which can occur in patients following a [kidney](#) transplant," explains the MedUni Vienna immunology expert.

The researchers therefore have at hand a new model for studying viral kidney diseases, [renal fibrosis](#) and [chronic renal failure](#). In contrast to previously used models, which are primarily based on surgical interventions or the administration of toxic substances, MKPV infection is a natural model, very similar to the chronic course of renal failure in humans. This model can now be used to test new drugs to combat renal fibrosis and tubulopathies. It will also be possible to discover new biomarkers for these diseases and develop them for clinical application.

Says Weninger: "Going forward, we will now be working on the question as to whether similar viruses also lead to kidney infections or [kidney failure](#) in humans, especially in immunosuppressed patients following a [kidney transplant](#)." The MKPV virus could also be used for the purposes of gene therapy, in order to repair genes in renal tubules. This is because MKPV infects very specific cells in the kidneys (renal tubules) but no other cells in the body. One could therefore use a non-infectious variant of the virus to deliver or replace genes in kidney cells.

## About nephropathy

Nephropathy is a blanket medical term for various inflammatory and non-inflammatory kidney diseases. The commonest form is diabetic nephropathy. This is a condition whereby the kidneys can be damaged as a result of long-term diabetes. If blood glucose is poorly controlled over a period of many years, it ends up damaging the small blood vessels in the kidneys. However, nephropathy can also occur in connection with other diseases, such as high blood-pressure, or be caused by certain drugs or infections.

**More information:** Ben Roediger et al. An Atypical Parvovirus Drives Chronic Tubulointerstitial Nephropathy and Kidney Fibrosis, *Cell* (2018). [DOI: 10.1016/j.cell.2018.08.013](https://doi.org/10.1016/j.cell.2018.08.013)

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