

MEDIA RELEASE

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Australian-led study uncovers brand new virus underpinning kidney disease

A multi-disciplinary group of scientists from the Centenary Institute in Sydney, in collaboration with researchers at the Memorial Sloan Kettering Cancer Center in New York, have serendipitously discovered a brand-new virus strain, which could change the way chronic and childhood kidney diseases are approached and treated. Chronic kidney disease is a significant public health burden, affecting up to 18 per cent of adults globally.

The study, published in the highly-prestigious scientific journal *Cell*, began after researchers at the Centenary Institute noticed some immune-compromised laboratory mice were dying in middle-age, much earlier than their expected lifespan. Further investigation revealed the mice were succumbing to kidney failure.

Using leading-edge DNA sequencing technologies, the scientists were able to pinpoint the cause as an entirely new parvovirus. Parvoviruses are extremely small viruses that are generally benign, except in immune-compromised individuals.

At this stage, it's unclear where this particular virus originates. However, lead author and Head of Centenary's Skin Imaging and Inflammation Laboratory, Dr Ben Roediger, points to sporadic reports of this disease at the University of Texas MD Anderson Cancer Center, Johns Hopkins University and the Weizmann Institute of Science in Israel.

"This virus is very widespread and has been affecting laboratory mice for 40 years or more, and we have good reason to suspect that both wild and laboratory mice unwittingly harbour it in their colonies. It has only been the advent of new DNA sequencing technologies that we have been able to find it," says Dr Roediger.

The discovery of this new strain of parvovirus has several important implications for human health.

"This breakthrough provides new insight into virally-driven kidney disease, which is a major problem in kidney transplant patients. Furthermore, the virus itself appears to be highly specific to the kidney, which means we can potentially exploit its surface ("capsid") protein to develop gene therapies for inherited childhood kidney disease," says Dr Roediger.

Dr Roediger is currently looking at ways he can translate these findings into clinical practice to improve outcomes for patients with chronic kidney disease.

'An atypical parvovirus drives chronic tubulointerstitial nephropathy and kidney fibrosis' has been published in the highly-prestigious scientific journal *Cell*.

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