You are not a cat, but a cat could someday help treat your chronic kidney disease

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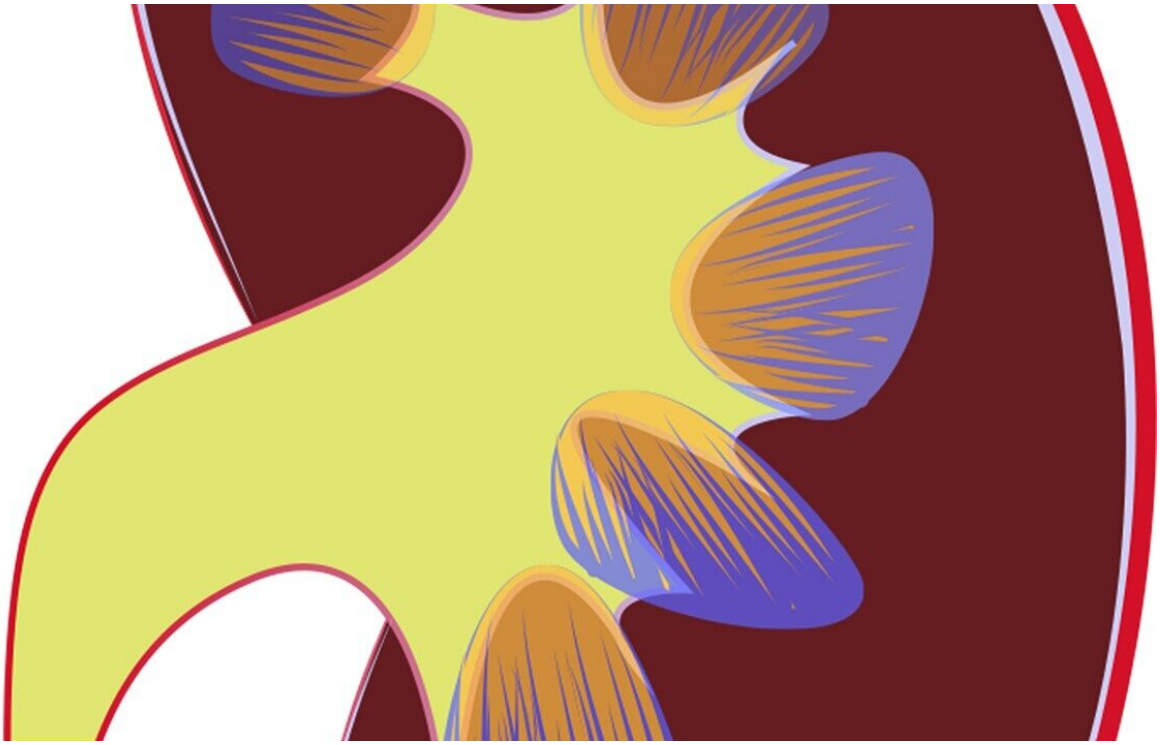

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The Wake Forest Institute for Regenerative Medicine is investigating how cats with chronic kidney disease could someday help inform treatment for humans.

In humans, treatment for chronic kidney disease—a condition in which

the kidneys are damaged and cannot filter blood as well as they should—focuses on slowing the progression of the organ damage. The condition can progress to end-stage kidney failure, which is fatal without dialysis or a kidney transplant. An estimated 37 million people in the US suffer from chronic kidney disease, according to the Centers for Disease Control.

The American Veterinary Medical Association estimates there are about 58 million cats in the United States. Chronic kidney disease affects 30-50% of cats age 15 years or older. The fibrosis or scarring that occurs as a result of the disease is a common final pathway for kidney disease in both animals and people. For cats, end-stage kidney disease has no effective cure.

In a new study published online by *Frontiers in Veterinary Science* in the Veterinary Regenerative Medicine platform, the WFIRM research team set out to test the effects of a cell-derived molecular therapy to treat kidney fibrosis in cats. Regenerative therapies using stem cells and vascular fractions have been tested, but the collection of cells or cell fractions is expensive, time consuming, and requires advanced cell processing capabilities not available in most veterinary general practices.

Alternatively, "The use of cell-based molecules to treat kidney fibrosis may be a promising approach," said lead author Julie Bennington, DVM, a WFIRM research fellow and Ph.D. candidate. "Current treatments include pharmaceutical therapies and dietary management to slow disease progression and increase longevity, and alternatives are needed."

In this study, authors used a cell-signaling chemokine—CXCL12—that is produced by cells and stimulates tissue regeneration. Recombinant human CXCL12 is commercially available, inexpensive, and has been shown to reduce fibrosis in rodent models of chronic kidney disease.

The goal of this study was to test the safety, feasibility, and efficacy of ultrasound-guided intra-renal CXCL12 injection in cats with chronic kidney fibrosis, first in a preclinical cat model, and, then in a pilot study in cats that may have early kidney disease.

"Results of these studies together show that intra-renal injection of CXCL12 may be a potential new therapy to treat early kidney disease in cats with a capability for widespread use," said co-author Koudy Williams, DVM, also of WFIRM. "Further clinical evaluations are needed."

Piedmont Animal Health, the company that funded the research, is preparing to set up a clinical pilot study in the US, and Bennington will serve as a consultant.

WFIRM Director Anthony Atala, MD, said this research is a good example of "how a condition like chronic kidney disease, common to both dogs and cats, can be studied and potentially applied to the disease in humans."

More information: Julie Bennington et al, Chemokine Therapy in Cats With Experimental Renal Fibrosis and in a Kidney Disease Pilot Study, *Frontiers in Veterinary Science* (2021). DOI: 10.3389/fvets.2021.646087

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