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# Could patients' own kidney cells cure kidney disease?

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Approximately 60 million people across the globe have chronic kidney disease, and many will need dialysis or a transplant. Breakthrough research published in the *Journal of the American Society Nephrology* (JASN) indicates that patients' own kidney cells can be gathered and reprogrammed. Reprogramming patients' kidney cells could mean that in the future, fewer patients with kidney disease would require complicated, expensive procedures that affect their quality of life.

In the first study, Sharon Ricardo, PhD (Monash University, in Clayton, Australia) and her colleagues took cells from an individual's kidney and coaxed them to become progenitor cells, allowing the immature cells to form any type in the kidney. Specifically, they inserted several key reprogramming genes into the renal cells that made them capable of forming other cells.

In a second study, Miguel Esteban, MD, PhD (Chinese Academy of Sciences, in Guangzhou, China) and his colleagues found that kidney cells collected from a patient's urine can also be reprogrammed in this way. Using cells from urine allows a technology easy to implement in a clinic setting. Even better, the urine cells could be frozen and later thawed before they were manipulated.

If researchers can expand the reprogrammed cells—called induced pluripotent stem cells (iPSCs)—and return them to the patient, these IPSCs may restore the health and vitality of the kidneys. In addition to providing a potentially curative therapy for patients, the breakthroughs

might also help investigators to study the causes of kidney disease and to screen new drugs that could be used to treat them.

In an accompanying editorial, Ian Rogers, PhD (Mount Sinai Hospital, in Toronto, Ontario, Canada) noted that "together, these two articles demonstrate the feasibility of using kidney cells as a source of iPSCs, and efficient production of adult iPSCs from urine means that cells can be collected at any time."

Just as exciting, the ease of collection and high frequency of reprogramming described in these articles may help improve future therapies in many other areas of medicine.

**More information:** doi 10.1681/ASN.2010101022

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