Method to create kidney organoids from patient cells provides insights on kidney disease

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A new method to create kidney organoids from patient cells may provide insights into how kidney diseases arise and how they should be treated. The research will be presented at ASN Kidney Week 2016 November 15¬-20 at McCormick Place in Chicago, IL.

Previously, Ryuji Morizane, MD, PhD (Brigham and Women's Hospital) and his colleagues developed a method to coax human pluripotent stem cells (hPSCs) to mature into cells that go on to form the functional units of the kidney. In their latest work, they show how their method can be used to study human kidney diseases. For example, by using hPSCs derived from patients with autosomal recessive polycystic kidney disease (ARPKD) to generate kidney organoids that possessed tubules with large cysts like those seen in patients with the disease.

"Establishment of a novel platform to model ARPKD using human kidney organoids will facilitate studies on mechanisms of cyst formation and contribute to the development of chemical screening systems to find potential therapeutic agents for polycystic kidney disease," said Dr. Morizane. "Also, our organoid system enables in vitro studies of kidney pathophysiology, nephrotoxicity assays, and disease modeling, and ultimately will lead to development of bioengineered kidneys for regenerative medicine."

More information: Study: "Kidney organoids derived from human

pluripotent stem cells contain multiple kidney compartments and model polycystic kidney disease" (Abstract 2139)

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