

Scientists create the most complete atlas of the human fetal kidney to date

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Scientists have examined the gene expression patterns of single cells from 5 human fetal kidneys to create the most complete atlas of the fetal kidney to date. The research will be presented at [ASN Kidney Week](#)

[2023](#) November 1–5.

The atlas, which was based on a total of 65,348 cells, demonstrates the trajectories of cell states starting from a progenitor population to mature [cell types](#). By examining properties within this map, investigators identified the transitions between different cell states and defined properties during [fetal development](#) that are characteristic of common and rare human genetic diseases.

"We were able to identify cellular transitions and the genes that appear to push toward these [transitions](#), making a map of developmental states and showing that tubular cells are derived from a separate population than podocytes, as has been shown to be the case in mice. We found some paths that had been hypothesized in humans but not clearly shown involving parietal epithelial cells, proximal tubule cells, and podocytes," said first author Jonathan Levinsohn, MD, Ph.D., of Children's Hospital of Philadelphia.

"Also, by examining [genes](#) involved in rare cases of kidney malformations, we identified cell states that appear to be more likely affected. We also examined heritability of adult kidney traits and found evidence that particular fetal cell states may subtly contribute to kidney health later in life."

More information: Study: A Single-Cell Atlas of Human Fetal Kidneys Identifies Cell States Associated with Rare and Common Human Disease

Provided by American Society of Nephrology

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