

Created: Atlas of kidney genome

A comprehensive genome-based atlas, created by researchers, would help shed light on healthy and abnormal kidney development and disease. The atlas shows how the entire genome is regulated to produce thousands of specific genes that are mixed and re-mixed to form genetic teams.

It is the joint outcome of the work by Cincinnati Children's Hospital Medical Centre, Institute for Molecular Bioscience (IMB) University of Queensland (Australia) and Harvard University researchers.

The teams jointly directed formation of 15 embryonic sections in developing kidney - from the earliest phases when stem cells are told how to differentiate into specific kidney cells, to the development of nephrons, the kidney's primary functioning unit.

Given that about one in every 500 births results in a kidney development abnormality, the study is a beginning for providing new insight into genes and genetic programmes that are critical to determining how kidney stem cells develop into structures in the adult kidney.

'Researchers can refer to the atlas to see the gene expression patterns in a normal developing kidney,' said Melissa Little, a professor who led the Australian team.

'It will provide a basis of comparison for scientists studying abnormal kidney development, so they can see where gene interactions have gone awry to produce the abnormality.'

Researchers created the atlas by analysing mouse embryonic kidneys aged 15.5 days, according to a University of Queensland release.

One of the more unexpected discoveries was the observation of new domains of gene expression that marked clusters of cells not previously known to be distinct.

The data has been released as an open-access resource for researchers around the world as part of the GenitoUrinary Development Molecular Anatomy Project.

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