CDB SEMINAR

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15:30~16:30 A7F Conference Room

Genetic regulation of renal progenitor cells

Summary

The kidney is made up of approximately one million functional units, the nephrons. The nephrons are repetitively generated in embryonic kidneys and can regenerate after injury in adults. However, the cellular and molecular regulatory mechanisms for nephron formation are largely unknown.

My talk will focus on our recent identification of a nephron progenitor population during kidney organogenesis. Using genetic cell fate tracing in the mouse, we found that a subset of mesenchymal tissues in the developing kidney, the cap mesenchyme, is a multipotent self-renewing progenitor pool whose descendants form the nephron. I will also talk about cellular mechanisms for nephron regeneration after injury in adult kidneys. Finally, I will discuss about the genetic regulation for nephron progenitor cells. Our observations suggest that two transcription factors, Six2 and Pax2, maintain the nephron progenitor population, but in distinct mechanisms; while Six2 represses precocious differentiation of nephron progenitor cells into mature nephrons, Pax2 inhibits trans-differentiation of nephron progenitors into interstitial cells.

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