

Webinar

Novel urethral cell types and an unexpected epithelial plasticity in prostate disease

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Hyperplastic growth of the prostate, a secretory organ that sits around the urethra, affects the vast majority of aging men and is a leading cause of urinary problems. I will describe how single cell RNA-sequencing and histological studies led to the identification of two novel cell types, club and hillock, which are enriched in the urethra and the region of the prostate where hyperplastic growth occurs. Unlike secretory prostate cells, these novel urethral cell types do not depend on male hormones for survival. Using spatial transcriptomics, we found that secretory prostate cells in men treated with hormone reducing drugs to shrink the prostate undergo an unexpected transition to a club cell-like state. This transition is characterised by a reduction in prostate gland size and morphology as well as an increase in NF-KB signalling. This epithelial plasticity, which appears to be a survival strategy and a protective mechanism in the face of reduced dihydrotestosterone and increased inflammation, could be a key factor in treatment resistance.

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