

 PROSTATE CANCER

‘Stem-like’ prostate basal cells

Basal cells in the prostate gland are intrinsically enriched in gene sets that are usually associated with stem cells, neurogenesis and ribosomal RNA biogenesis, according to a new paper published in *Nature Communications*.

“Defining the cells-of-origin for cancer is of great value for patient tumour stratification and delivering personalized treatment,” say the authors. The prostate gland contains basal and luminal cells, both of which have been demonstrated to be cells-of-origin for prostate cancer in mouse studies. The authors say it has been a matter of debate as to whether or not the human prostate contains adult stem cells and whether they are located within basal or luminal cell compartments.

Zhang *et al.* performed a genome-wide transcriptome analysis of human benign prostatic basal and luminal cells using deep RNA sequencing. They found that basal and luminal cells expressed genes differently and that some basal cells acted as self-renewing adult stem cells and expressed a large number of genes normally involved in neurogenesis. The researchers also found that basal cells expressed high levels of Pol-I-associated ribosomal RNA (rRNA) biogenesis genes, which are regulated in part by the MYC transcriptional programme. As MYC is commonly overexpressed in prostate cancer and increased transcription of rRNA genes by Pol I occurs frequently in human cancer, Pol I and MYC might be useful targets for prostate cancer therapy. Zhang *et al.* found that the basal cell gene expression profile was enriched in advanced, anaplastic, castration-resistant and metastatic prostate cancers, and might therefore be a useful biomarker for aggressive prostate cancer.

“Overall, by detailed transcriptome analysis of unperturbed human benign prostatic basal and luminal cells, we uncover many intrinsic molecular and functional differences in the two cell types that are linked to their distinct biological properties,” conclude the authors. They say that further research into these differences will improve our understanding of the aetiology of prostate cancer and help develop novel therapies against it.

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