Author's response to reviews

Title: Lineage relationship of prostate cancer cell types based on gene expression

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BMC Genomics Editorial Team

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Dear Editors:

Enclosed for your consideration is the original research article, entitled “Lineage relationship of prostate cancer cell types based on gene expression.”

The inevitable progression of prostate cancers treated by androgen deprivation therapy to castration resistance has led many to hypothesize that the stem cell is the major cell of origin for this cancer. This theory posits that mutated androgen-independent stem cells drive tumorigenesis and suggest that these cell types are therefore critical therapeutic targets. As stem cells are long-lived, they present plausible targets for the accumulation of cancer-initiating mutations. However, prostate cancer is most phenotypically similar to luminal epithelial cells, and is characterized by a loss of the basal epithelium, where stem cells are thought to reside. Initially, prostate tumors are sensitive to androgens and only later do they progress to androgen-independence.

In this article we report, using comparative transcriptome analyses, that prostate cancer cell types can be categorized based on their gene expression profiles into either a luminal-like or a more stem cell-like group. For a wide spectrum of disease phenotypes, we included prostate cancer cell lines, tumor xenografts and cancer cells isolated from primary tumors and compared them to cell populations isolated from normal prostate tissues, including a putative prostate progenitor cell population. The non-luminal-like, more stem-like prostate cancer cells were those derived from more aggressive tumors and more advanced disease. None were basal-like in overall gene expression.

Our results provide valuable insight into the lineage relationship between the various cell types of the prostate. These characteristics provide a basis for tumor heterogeneity and for patient stratification with regard to treatments and clinical outcomes.

The authors have no competing interests.

Sincerely yours,

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