Long non-coding RNAs (lncRNAs) are the longest class of ncRNAs (>200 nt) recently characterized as key players in several cancer-associated processes such as tumorigenesis and drug resistance. Emerging data indicate that lncRNAs affect the progression of prostate cancer (PCA) and promote the formation of its aggressive and incurable forms, such as castration-resistant PCA (CRPC).

In the present study, we show that lncRNA H19 is highly upregulated in the context of PCA tumorigenesis and that HORAS5 promotes CRPC drug resistance. Both lncRNAs are also associated with clinical features, showing their translational potential as therapeutic targets for PCAs and CRPC patients.

### Results

1. **LncRNA H19 is highly upregulated in tumorigenic PCa cells**

2. **HORAS5 promotes drug resistance in CRPC cells via reduced caspase activity**

3. **HORAS5-BCL2A1: mechanism of action**

4. **Clinical evidence on H19 and HORAS5 and gene therapy using lncRNA-ASOs**

### Conclusions

1. H19 is upregulated in PCa in vivo tumorigenic cells and is co-expressed with PCA associated genes in patients.
2. HORAS5 overexpression increases CRPC drug resistance (IC50). HORAS5 silencing favours cabazitaxel-induced CRPC cell death.
3. HORAS5 inhibits cell death by upregulating the anti-apoptotic protein BCL2A1.
4. H19 and lncRNA are associated with PCA clinical features (tumor grade and drug treatment, respectively) and patient poor prognosis. LncRNA-targeting antisense gene therapy works in PCa cells and is a promising novel therapeutic approach in cancer.

### References


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### Conflict of interest

The authors declare no conflict of interest.