

EELES Ros EOI 2021 - ICR

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Project title: Genomic analysis and correlation with clinical trial data in prostate cancer

Project Summary:

Our Oncogenetics Team at The Institute of Cancer Research leads internationally on genetic studies in prostate cancer development and disease behaviour and we have 500 publications.

The aim of this proposal is to correlate germline and somatic genetic mutations with prostate cancer clinical trial data of screening and treatment. This will inform precision medicine in the prostate cancer early detection and treatment pathway and builds on our previous work, much of it funded by CRUK.

There is evidence for genetic predisposition to prostate cancer. Our team has found over 75% of the currently known genetic variants which increase prostate cancer risk. These are composed of both common (present in >5% of individuals) and rare variants. The former can be used to risk stratify populations and the latter are often associated with aggressive disease.

The common variants modify the disease risk associated with rare variants and overall risks from both types of variation can be a > 50% risk of prostate cancer lifetime. We have also amassed an international collection of whole genome sequences with associated transcriptome and methylome data from 2000 prostate tumours – the pan prostate cancer group (PPCG:panprostate.org). We have formed a prostate cancer trial network to collaborate with established trials in prostate cancer screening and treatment which will enable genetic mutation spectra identified from our common and rare variant discovery work to be examined in clinical trial datasets.

~~This project proposes to~~ (i) stratify populations and identify men at higher genetic risk of prostate cancer

(ii) correlate results from (i) with trial outcome data from targeted screening and treatment trials.

Examples of our publications in gene discovery and application to clinical trial data are shown in the references.

Strategic areas

- Increasing the precision of cancer treatments (including systemic therapies, radiotherapy and surgery)
- Decreasing the overall burden of cancer (including early detection approaches)
- Data-driven healthcare

Supervisory Team:

Prof R Eeles (ICR)

Dr Z Kote-Jarai (ICR)

Clinical Specialities

Clinical Oncology or Medical Oncology

References

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