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Improving Urine-Based Bladder Cancer Monitoring by Filtering Field-Effect Mutations

Stanford researchers have developed recursive phylon nomination, enumeration and recovery X (RePhyNERX), a method for identifying and removing potential field-effect mutations from mutation lists used in urine-based cancer monitoring.

Molecular residual disease (MRD) assays rely on tumor-specific mutations or reporters to detect cancer in samples. In bladder cancer, mutations associated with a field effect can appear in a reporter list even though they are not suitable indicators of the tumor being monitored. Retaining these mutations can produce false-positive MRD results and complicate interpretation of serial urine tests.

RePhyNERX uses a tumor sample together with either adjacent normal tissue or a post-treatment urine sample to identify potential field-effect mutations and exclude them from the reporter list. By refining the mutations used for monitoring, the method is intended to reduce false-positive results and improve the reliability of urine-based MRD assessment.

Applications

- Urine-based MRD monitoring in bladder cancer
- Tumor-informed cancer monitoring assays

Advantages

- Identifies potential field-effect mutations that could be mistaken for tumor-specific reporters
- Aims to reduce false-positive urine-based MRD results

- Can use adjacent normal tissue or post-treatment urine alongside a tumor sample

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