

Liquid Biopsy for the early detection of cancer: applications in screening and minimal residual disease.

Early detection of cancer in the screening and minimal residual disease settings has the potential to significantly reduce cancer deaths. Our goal is to be able to detect cancer earlier than current modalities. Previously, in-proof-of-principle studies we determined the feasibility of liquid biopsy in detecting cancers in blood and other bodily fluids. We have been able to detect minimal residual disease with exquisite specificity after surgery in patients with stage II colon cancer earlier than recurrence detected by imaging. Recently, we developed Cancer SEEK, a multi-analyte blood test that can detect eight common cancer types through assessment of levels of circulating proteins and mutations in cell-free DNA. In a study involving 1,005 individuals with resectable non-metastatic cancers of the colon, breast, lung, ovary, pancreas, esophagus, liver or stomach, and 812 healthy controls Cancer SEEK tests were positive in a median of 70% of the eight cancer types with specificity greater than 99%. The sensitivities ranged from 69 to 98% for the detection of five cancer types (ovary, pancreas, esophagus, liver and stomach) for which there are no screening tests available for average-risk individuals. Our vision is to develop routine, non-invasive tests for the detection of cancer.