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Urine biomarkers for prostate cancer detection

When prostate cancer (PCa) is detected early, the five-year survival rate is estimated almost at 100 percent, which underscores the importance of early screening and diagnosis. For the past several decades, this has been aided by the applications of prostate specific antigen (PSA) as a serum biomarker, digital rectal examination (DRE), and transrectal ultrasound (TRUS) as live imaging of the prostate. Urine biomarkers are also attractive because they can offer simple, non-invasive detection of PCa and allow repeated sampling as well as broader population access to potential screening. However, their reliability is questionable because the test results are often subject to changes by patient diet, behavior, ways of urine collection, and storage. There has been remarkable progress in recent years on the identification of urine biomarkers for PCa detection. Notably, new tests using PCA3 noncoding mRNA and TMPRSS2:ERG gene fusion are being validated as potential urine PCa biomarkers. Additional urine biomarkers under investigation include PCADM-1, sarcosine, engrailed, d-catenin, minichromosome maintenance 5 protein, AGR2, and prostate specific membrane antigen, among many others. The Omics approaches as well as epigenetic signatures have also be employed to discover and develop novel biomarkers. In order to achieve the goal of screening, development of point-of-care technologies (POCT) in association of viable biomarkers is highly demanded. An ideal urine biomarker should fulfill important criteria such as its ability to distinguish between normal and cancer patients, scientific support of its functional relevance to PCa progression, and its ease of interpretation by clinicians. It is likely that a single biomarker by itself may not be able to fulfill all of the criteria. Therefore, a combination of multiple biomarkers with existing tools would provide the best possibility of reliable PCa detection.

Biography

Qun Lu was graduated from Emory University School of Medicine in Atlanta, Georgia, where he obtained his PhD degree in cell biology. He then completed Postdoctoral Fellowships in Medicine at Harvard Medical School and Brigham and Women's Hospital in Boston, Massachusetts. As a pioneer in the functions of catenins of delta family in prostate cancer, he had more than 150 publications and has proposed dual roles of oncogenes and tumor suppressors in cancer progression. He is a tenured Professor at The Brody School of Medicine at East Carolina University and the founding director of the Wooten Laboratory as well as a full member of Leo Jenkins Cancer Center and UNC Lineberger Comprehensive Cancer Center in North Carolina.

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