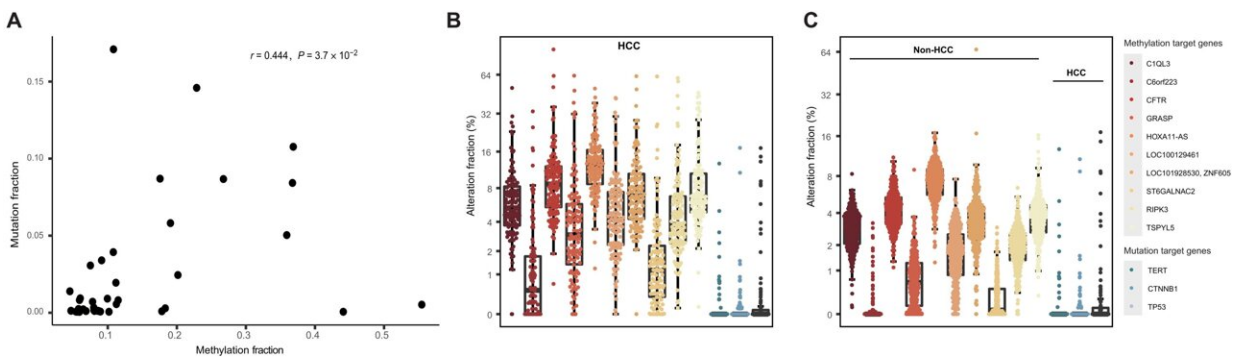


A new method for conducting a liquid biopsy for liver cancer

November 29 2022, by Bob Yirka



Comparison between mutation and methylation fractions in the same cfDNA sample. (A) The correlation between the AF based on mutation and methylation. (B) Comparison of the alteration fraction between methylation changes and mutations in HCC. (C) Comparison of the methylation fraction in the non-HCC group with the mutation fraction in the HCC group. Each dot indicates one HCC or non-HCC sample. The x axis indicates methylation- and mutation-targeted genes. Here, methylation fraction was converted from the linear relationship between the actual methylation fraction in the standard references, and the methylation amount detected by MCP technology refers to the methylation detection assay in fig. S3C. Credit: *Science Translational Medicine* (2022). DOI: 10.1126/scitranslmed.abp8704

A combined team of researchers from Peking Union Medical College and Fanshengzi Clinical Laboratory, has developed a new method for conducting liquid biopsies for liver cancer. Their paper is published in

the journal *Science Translational Medicine*.

Detecting [cancerous tumors](#) in patients involves degrees of pain or discomfort. Some tumors, such as those in the skin or breast, can be biopsied with minimal invasiveness. On the other hand, some cancers, such as of the lungs, bladder or liver, require much more [invasive procedures](#), and researchers have been looking for new ways to test for such cancers.

One approach involves taking liquid samples, such as blood, urine, semen or saliva, and testing them indirectly. Indirect testing involves looking for material in the liquid sample that is not part of a cell. Typically, such tests involve looking for material that has fallen away from a tumor that contains DNA. Tests of such material are called cell-free DNA cancer (cfDNA) tests. Unfortunately, most methods developed for conducting such tests have required large amounts of liquid, which can be cumbersome for both patients and lab technicians. In this new effort, the team in China has come up with a new approach.

The method, called mutation capsule plus (MCP), involves a process that detects epigenetic and mutational signatures (and also methylation markers) in a small liquid sample.

The researchers first tested MCP on [blood samples](#) from 60 patients who were known to have liver cancer and compared the results to a [control group](#). They then repeated the test with 58 patients. They found sensitivities of 90 and 94% respectively. They then conducted similar tests on patients with hepatitis B, which is known to greatly increase the risk of developing liver cancer, and were able to detect early onset [liver cancer](#) in 4 out of 5 cases in the group.

The researchers suggest more testing is needed, but are confident their new approach will prove to be a valuable new tool for use in detecting

tumors in hard-to-reach parts of the body.

More information: Pei Wang et al, Simultaneous analysis of mutations and methylations in circulating cell-free DNA for hepatocellular carcinoma detection, *Science Translational Medicine* (2022). [DOI: 10.1126/scitranslmed.abp8704](https://doi.org/10.1126/scitranslmed.abp8704)

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