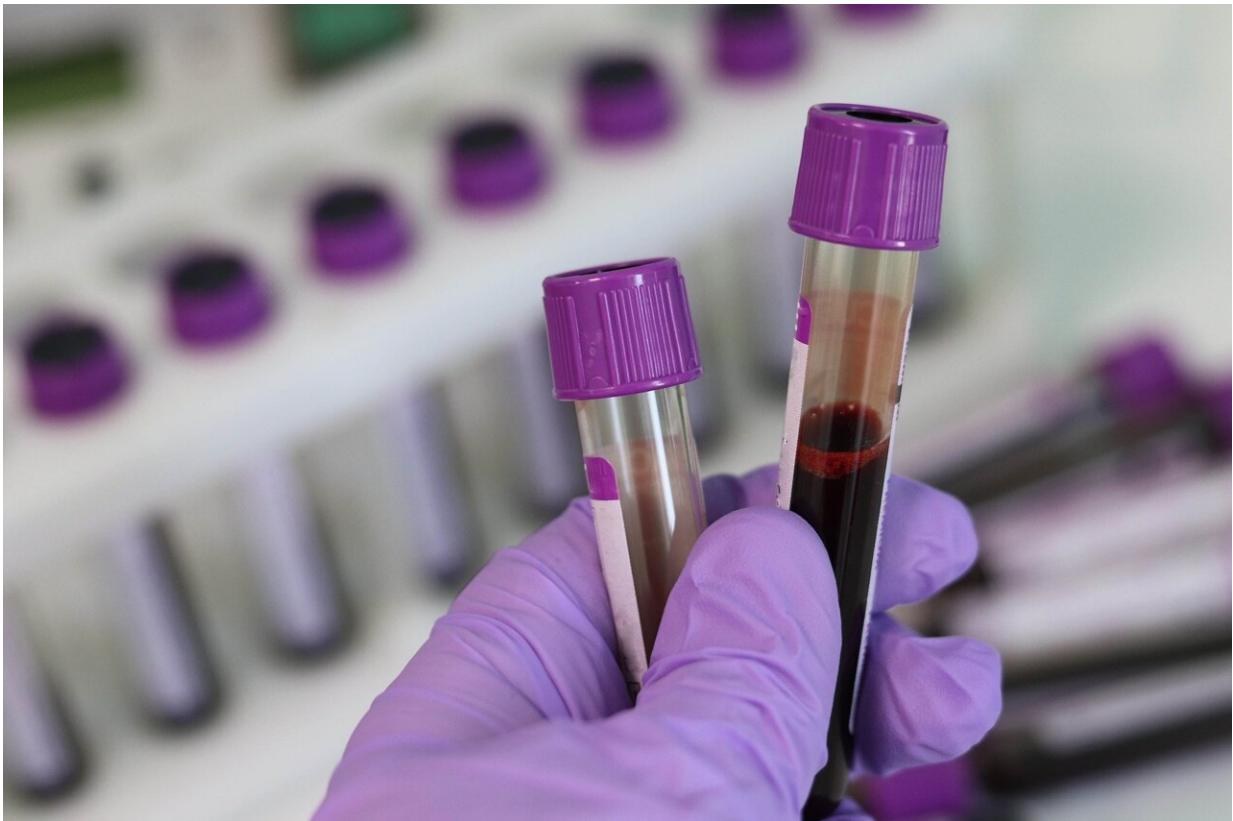


# Scientists invent single rapid test for both HIV and TB

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Researchers at Tulane have developed a new and rapid test that can detect both HIV and tuberculosis at the same time with just a small amount of blood.

In a paper [published](#) in *Clinical Chemistry*, researchers led by Tony Hu, Weatherhead Presidential Chair in Biotechnology Innovation and director of the Center for Cellular and Molecular Diagnostics at Tulane University School of Medicine, describe the new blood-based test that can not only detect the two diseases but also measure their viral and bacterial loads in patients.

HIV and tuberculosis, also called TB, are common coinfections, meaning they often occur together. One of the symptoms of HIV is a suppressed immune system, which makes patients more likely to contract infections like TB. In fact, the HIV-infected population is at the highest risk of contracting TB.

"For HIV patients, their [immune system](#) is very weak, and once they are infected, they can't confront the bacteria very well, so that's why there is this urgent need to bring a blood-based TB tests to them," Hu said. "For the TB-infected patients, they worry, 'Why did I get TB? Is it because I have HIV?' So, this is a multiplex detection to cover both pathogens."

Typically, TB tests are done by bacterial culture of sputum, which takes a long time and can be impractical when patients are in urgent need of treatment. Sputum, a mixture of saliva and mucus, is also a product of immune response and thus not an option for patients who have HIV, because of their suppressed immune systems. This blood-based test avoids the need for sputum and allows patients with HIV to be tested for TB. It also only requires 200 microliters of blood, which is only a few drops.

By combining these tests, "you can save costs and save time," Hu said.

The test targets HIV and TB antigens in the blood and uses mass spectrometry to detect the viral and bacterial loads. One of the important aspects of this test is that it allows doctors to track the levels of both HIV

and TB in a patient as they undergo treatment, meaning they can intervene quickly if a certain treatment isn't working.

"You cannot treat them simultaneously. You have to pick one to treat first: HIV or TB," Hu said. "If you treat HIV first, you may boost the TB bacterial load."

This condition, where treating one disease causes a resurgence in the other, is called immune reconstitution inflammatory syndrome, or IRIS. The speed of this test means that doctors can catch this earlier and change a patient's treatment plan for better patient outcomes.

Although there is not a large population of TB [patients](#) in the United States, tests like this one are urgently needed in developing countries where TB affects more people and where it can be difficult to get tests to the people who need them. Hu hopes that this [pilot study](#) will be able to move to [clinical trials](#) soon to get the tests FDA approved.

**More information:** Lin Li et al, Sensitive Blood-Based Detection of HIV-1 and Mycobacterium tuberculosis Peptides for Disease Diagnosis by Immuno-Affinity Liquid Chromatography–Tandem Mass Spectrometry: A Method Development and Proof-of-Concept Study, *Clinical Chemistry* (2023). [DOI: 10.1093/clinchem/hvad173](https://doi.org/10.1093/clinchem/hvad173)

Provided by Tulane University

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