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Researchers design a paper based test for Tuberculosis

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A diagnostic test is being designed that can be read with a smartphone.



Conventional methods such as sputum smear microscopy, chest X-rays and molecular-based tests require equipment, electricity and specialized personnel that are not always available in remote or developing areas.

So a group of scientists from National Taiwan University are set to come up with a more practical diagnostic test that can be read with a smartphone, a technology that is increasingly available in emerging economies.

The researchers combined gold nanoparticles with fluorescent single-stranded DNA sequences that bind to the genetic material of *Mycobacterium tuberculosis* or *Mtb*, the bacteria that cause TB.

These nanoparticles were then incorporated into a paper-based device. Adding even a minute amount of lab-derived, double-stranded DNA from Mtb changed the color of the test spots within an hour. A smartphone camera was used to analyze the color change to determine the bacterial concentration.

The researchers also tested a tissue sample from an infected patient to further demonstrate that the device could be used in the field.