

Mini-magnet test makes things sticky for TB

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TUBERCULOSIS can now be diagnosed in just 30 minutes, using magnetic nanoparticles which identify *Mycobacterium tuberculosis* in sputum, even at very low concentrations.

TB is normally diagnosed by first spotting the bacteria in sputum under a microscope, and then sending the suspect samples away for confirmation. This involves growing larger colonies of the bacteria, which can take up to two weeks, delaying treatment and risking continued spread of the disease.

The new test, developed by [Ralph Weissleder](#) of Harvard Medical School, gives the answer in half an hour. Doctors can simply add the sputum to a solution containing nanoparticles with an iron core encased in iron oxide. Each nanoparticle is loaded with antibodies that encourage any TB-causing bacteria in the sputum to bind to it (*Angewandte Chemie*, DOI: [10.1002/anie.200901791](#)).

The solution is fed through a lab-on-a-chip which blocks and concentrates the nanoparticles that have bacteria attached to them but lets the other nanoparticles through. Then a small magnetic scanner encircling the chip registers the presence of bacteria-laden nanoparticles.



TB-causing bacteria are now quicker to spot (Image: CDC/Phanie/Rex Features)

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