PBD 055

Tuberculosis uses 'Trojan Horse' strategy to evade detection, phage-diagnostic reveals

New paper in The Lancet Microbe shows Actiphage® detects metabolically active* M. tuberculosis *in blood

Actiphage TB, a cutting-edge phage-based diagnostic, has revealed evidence that *Mycobacterium tuberculosis* can be detected in circulation during early infection, supporting the 'Trojan horse' theory of escape from the lung to evade detection. The research performed by NIHR Leicester Biomedical Research Centre and reported in The Lancet Microbe, highlighted Actiphage's ability to detect metabolically active *M. tuberculosis* within white blood cells. Furthermore, this was shown to associate with features of progressive infection, offering a potential solution to the urgent need for improved TB diagnostics.

The study, involving 20 household contacts, demonstrated that a positive baseline Actiphage test is associated with features of incipient tuberculosis requiring treatment (p=0·018). This finding underscores the diagnostic's effectiveness in identifying early stages of TB.

Furthermore, Actiphage showed a significant association between *M. tuberculosis* DNA in the blood and progressive infection, providing crucial insights into disease trajectory.

While IGRAs (IFN-γ release assays) have high sensitivity for TB infection, Actiphage provides a pathogen-directed blood biomarker that enhances specificity in evaluating infection risk.

A notable strength of Actiphage is its specific detection of metabolically active *M. tuberculosis*, surpassing culture-based approaches. This breakthrough diagnostic offers hope for better targeted intervention to prevent disease and limit onward transmission that are key components of WHO's global strategy for eradicating TB.

Lead author Dr Pranabashis Haldar comments: "Using Actiphage, we found a significant association between Mtb DNA in the blood and progressive infection. This was consistent with the trajectory of inflammatory changes observed with PET-CT, visible before any abnormalities were detected at clinical screening."

– Ends –

Read the paper in The Lancet Microbe: PET-CT-guided characterisation of progressive, preclinical tuberculosis infection and its association with low-level circulating Mycobacterium tuberculosis DNA in household contacts in Leicester, UK: a prospective cohort study. Jee Whang Kim el al
https://doi.org/10.1016/S2666-5247(23)00289-6

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About PBD Biotech (www.pbdbio.com)

PBD Biotech Limited specialises in the use of novel bacteriophage-based technology. The company has developed proprietary, patented technology that can be used to detect the presence of mycobacteria that cause tuberculosis in humans and animals in a blood sample.

This includes human TB – *Mycobacterium tuberculosis* (Mtb) – where the technology has application as a screening tool and for test of cure.