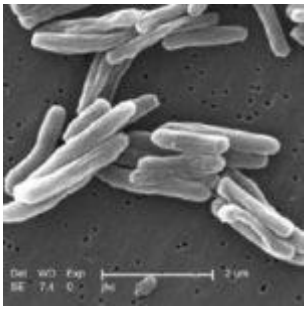
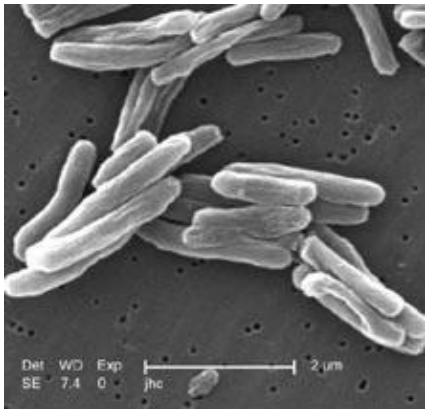
T cell activation as a potential surrogate marker for TB treatment efficacy.





EM of Mycobacterium tuberculosis (Janice Carr, Wikimedia Commons)

Tuberculosis (TB) caused by *Mycobacterium tuberculosis* (MTB) is one of the leading causes of death worldwide. One of the major obstacles in the fight against TB is the lack of rapid and accurate diagnostic tools for TB detection, especially for a clear differentiation between activeTB (aTB) disease and latent MTB infection (LTBI). Flow cytometric analysis of phenotypic markers on peripheral blood T cells specific for MTB, has shown promising results in accurately differentiating aTB and LTBI, as well as for treatment monitoring (Adekambi *et al.,* 2015, Portevin *et al.,* 2014, Schuetz *et al.,* 2011, Streitz *et al.,* 2007).

To this end, Ahmed *et al.,* assessed changes in phenotypic markers on MTB-specific CD4+ T cells in peripheral blood mononuclear cells (PBMC) of subjects with active TB from the start to the end of treatment and compared them to PBMC of subjects with latent TB infection. PBMCs were stimulated over night with MTB antigens, stained for IFNg as a maker for antigen-stimulation as well as for T cell markers, and analysed by flow cytometry. Expression of the T cell activation and phenotypic makers CD38, HLA-DR, KI67, and CD27 on MTB-specific T cells was significantly different in aTB vs. LBTI patients. Frequencies of MTB-specific cells expressing CD38, HLA-DR and Ki67 also decreased over treatment duration and CD38 and HLA-DR expression even mirrored an individual's response to treatment, measured by time to stable sputum culture conversion. CD27 on the other hand remained fairly constant over treatment duration.

These results show that a peripheral blood based assay analysing a combination of T cell activation and phenotypic makers on MTB-specific CD4 T cells can clearly differentiate between aTB, treated TB and LTBI.

Journal Article: Ahmed et al., 2018. **Phenotypic Changes on Mycobacterium Tuberculosis-Specific CD4T Cells as Surrogate Markers for Tuberculosis Treatment Efficacy.** Frontiers in Immunology

Article by Kathrin Held