Latent infection of Homo sapiens with Mycobacterium tuberculosis

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**Introduction**

Reactome is open-source, open access, manually curated and peer-reviewed pathway database. Pathway annotations are authored by expert biologists, in collaboration with Reactome editorial staff and cross-referenced to many bioinformatics databases. A system of evidence tracking ensures that all assertions are backed up by the primary literature. Reactome is used by clinicians, geneticists, genomics researchers, and molecular biologists to interpret the results of high-throughput experimental studies, by bioinformaticians seeking to develop novel algorithms for mining knowledge from genomic studies, and by systems biologists building predictive models of normal and disease variant pathways.

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**Literature references**


Reactome database release: 68

This document contains 2 pathways (see Table of Contents)
Latent infection of Homo sapiens with Mycobacterium tuberculosis

Stable identifier: R-HSA-1222352

Diseases: tuberculosis

Infection by *Mycobacterium tuberculosis* (*Mtb*) is soon countered by the host's immune system, the organism is however almost never eradicated; ten per cent of infections will develop into "open tuberculosis", while the other ninety per cent become "latent", a state that can persist for decades until loss of immune control. A third of the world's population is estimated to harbour latent tuberculosis. Latent infection involves the bacterium being internalized by macrophages and other phagocytes where it stops and counters the innate immune answer (Russell 2011, Russell et al. 2010). When a status-quo is reached, *Mtb* enters a non-replicating persistent state (Barry et al. 2009, Boshoff & Barry 2005). Another characteristic of *Mtb* infection is a delayed adaptive immune response for several weeks after infection. This delay is due to prolonged residence of the bacteria in lung phagocytes before dendritic cells can acquire them (Srivastava et al. 2014).

**Literature references**


## Editions

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Response of Mtb to phagocytosis

**Location:** Latent infection of Homo sapiens with Mycobacterium tuberculosis

**Stable identifier:** R-HSA-1222499

**Diseases:** tuberculosis

*Mtb* encounters a vastly changed environment, soon after it gets internalized by macrophages. The compartment it resides in, the phagosome, is acidified and devoid of important metal ions. It is flooded with reactive oxygen and nitrogen species. And steps will be soon taken by the macrophage to "mature" the phagosome with all kinds of lysosomal digestive enzymes. However, unlike most other bacteria species *Mtb* has evolved solutions to each of these threats and, after making sure these are installed, it soon will enter a dormant state (de Chastellier, 2009; Flannagan et al, 2009). A combination of the host defense and the response of the infecting bacillus (active and passive) ensure suppression of bacterial metabolic activity and replication, resulting in a non-replicating state (Russell 2011, Russell et al. 2010).

**Literature references**


**Editions**

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