

## Are Cattle a Surrogate Model for Pathogenic Mycobacterial Latent Infection?

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## DESCRIPTION

Tuberculosis (TB) in humans is often produced as a consequence models that resemble human infection in some respects. of infection with Mycobacterium tuberculosis, followed in number Latency is the product of interaction between host and suggested an increase in the number cases of human TB caused by form in cattle. M. bovis, where probably inadequate disease control measures in In bovines, most studies have focused on active disease and related animals bovis from animals to human hosts.

hosts develop an active TB. Disease manifestation is reached often within a year after infection, or later in life. In most immunecompetent infected people, the chronic form of TB will remain CONCLUSION latent and will not progress.

able to promote an active phase of disease.

DosR regulon (48 genes induced by stresses such as hypoxia,

nitric oxide, and during granuloma formation) plays a role in inducing a chronic infection and persistence in animal laboratory

of cases by Mycobacterium bovis, that also causes bovine TB. M. mycobacteria, and is defined as the persistence of a tuberculous tuberculosis is predominantly a human pathogen causing active lesion with viable mycobacteria in a host without symptoms and has TB in approximately eight million people every year, and on the been demonstrated because of reactivation of apparently healthy other hand, M. bovis has the ability to infect a broader host range people and/or reactivity towards mycobacterial antigens. Cavitation including domestic and wild animals. M. bovis can cause is thought to be the condition that causes bacteria to go into the pathology in cattle and humans as well, yet rarely transmits metabolically and morphologically distinct dormant state. It is between immuno-competent human hosts. Some reports have relevant to note that caseous tubercles that lead to cavitation do

and humans, a rise in the incidence of immune responses, and only a few studies have suggested an immunosuppressive diseases, and the close physical contact existence of latent TB. Human latent TB infection (LTBI) was first between humans and animals facilitate the transmission of M. described because a tuberculin skin test (TST) positive was observed in clinically healthy people. Nowadays, interferon-gamma release TB pathology as a consequence of TB infection induces assays (IGRA) using mycobacterial specific antigens are considered a comparable immune responses to those seen in humans. complementary test to TST by international guidelines, and even Heterogeneity in granuloma type is commonly found during TST and IGRA tests have allowed to suggest that LTBI due to M. human and bovine TB, and lesions are predominantly localized to bovis could be present even in cattle. Even so, we propose that the respiratory tract and associated lymphatic tissue, making a LTBI could be defined as the existence of a positive TST or IGRA chronic disease that may take years to develop. Ten to thirty test in cattle without visible lesions, a concept that will surely evolve percent of the humans who are naturally exposed to M. as more biomarkers become available. In fact, cases of LTBI tuberculosis get infected, where 10-40% of immuno-competent produced by M. bovis have been observed indirectly in healthy humans with overt active TB after anti-inflammatory treatment.

In recent years, research has been made aiming to define the Veterinary scientists regularly perform research addressing bovine molecular basis that might, at least partially, explain how virulent TB directly in the target species, and research addressing human TB mycobacteria are able to remain in a persistent or latent infection is performed using mice, guinea pigs, rabbits, and monkeys as in its human host and how these bacteria could resuscitate and be models. Unfortunately, bovine TB is not generally regarded as a model for human TB. In guinea pigs and in sensitive and resistant A number of studies have suggested that in M. tuberculosis the mouse models, there is less inter individual variation and all animals succumb from infection with M. tuberculosis.

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