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In the Literature

Mycobacterium tuberculosis and *Homo sapiens:* Microbiological and Anthropological Coevolution

Wirth T, Hildebrand F, Allix‐Bécguec, et al. Origin, spread and demography of the *Mycobacterium tuberculosis* complex. PLoS Pathogens 2008; 4:e1000160.

M. tuberculosis is an enormously successful pathogen that is currently estimated to infect one‐third of the world's human population. The evolutionary history of *M. tuberculosis* has been difficult to decipher, in part because the organism has remained essentially clonal, with limited useful genetic markers. Wirth and colleagues have addressed this problem by focusing on mycobacterial interspersed repetitive units, which comprise variable numbers of tandem repeat sequences that, in terms of diversity and rates of mutation, resemble human microsatellites. They applied this approach to a library of 355 isolates representative of worldwide lineages of the organism.

Their findings are consistent with previous data indicating that a clone of *M. tuberculosis* likely emerged from a pool of bacilli collectively called *"Mycobacterium prototuberculosis"* 40,000 years ago, coinciding with the time of the dispersal of human populations from the Horn of Africa, with subsequent comigration of pathogen and host. Twenty thousand to 30,000 years ago, the 2 main lineages—both of which remain extant—emerged from the common mycobacterial ancestor. One of these 2 lineages (clade 1) remained an exclusively human pathogen that was further dispersed by waves of human migration. The second lineage (clade 2), although initially arising in humans, is the probable source of animal tuberculosis, a conclusion consistent with recent suggestions that humans infected their livestock rather than the reverse, as had previously been proposed. Although *Mycobacterium africanum*, a human pathogen, is a member of clade 2, it is speculated that its primary reservoir is animal. The movement of this second mycobacterial lineage into animals likely occurred at the time of displacement of small human groups of nomadic hunter‐gatherers by farmers with domesticated livestock in the Fertile Crescent 13,000 years ago. A marked expansion of all populations of *M. tuberculosis* began 180 years ago, coinciding with a rapid expansion of human populations, industrialization, urbanization, and intercontinental travel. The history of *M. tuberculosis* and the history of *H. sapiens* are inextricably entwined, and the descriptive narrative of this journey is a fascinating one.