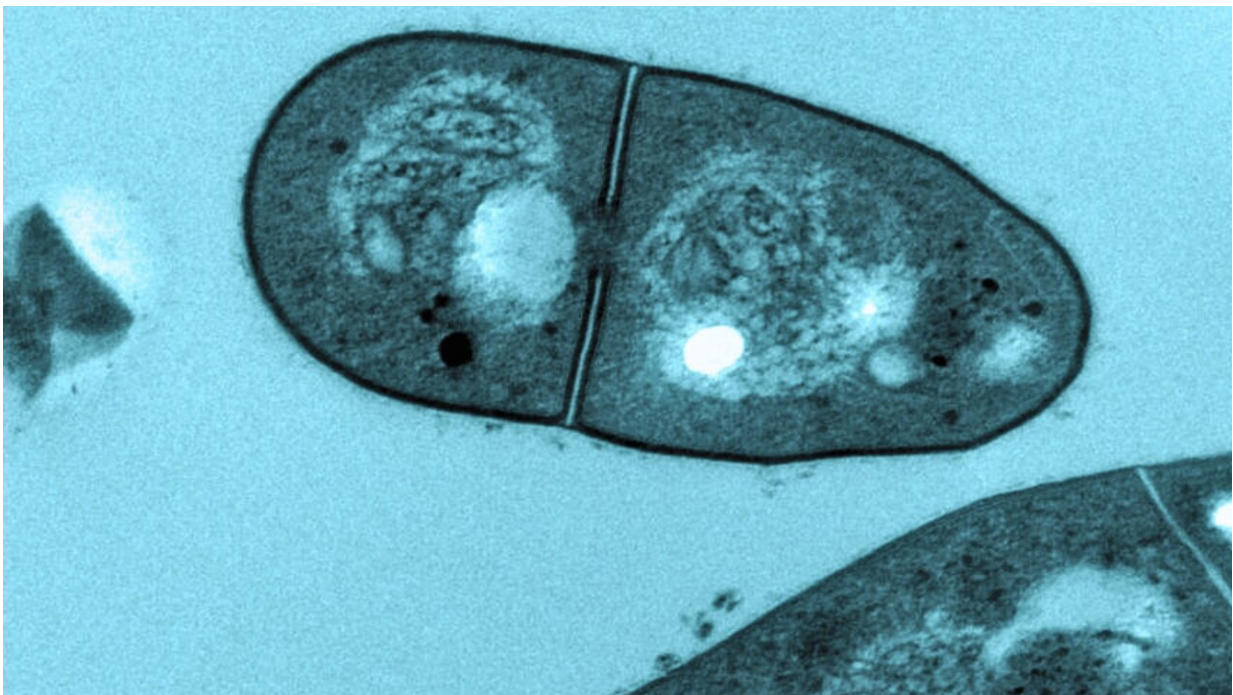


# Tuberculosis under the sea: A marine sponge microbe provides insights into the bacterium's evolution

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*Mycobacterium spongiae* under the microscope. Credit: Pidot and team at the Doherty Institute

The surprising discovery of a bacterium in a marine sponge from the Great Barrier Reef with striking similarity to *Mycobacterium tuberculosis*, the pathogen responsible for tuberculosis (TB), could

unlock and inform future TB research and treatment strategies. TB remains one of the world's deadliest infectious diseases, yet the origins of *M. tuberculosis* are still not fully understood.

In a new study [published](#) in *PLOS Pathogens*, research led by the Peter Doherty Institute for Infection and Immunity (Doherty Institute) details the newly identified bacterium, *Mycobacterium spongiae*, found in a marine sponge collected near Cooktown, Queensland.

Often referred to as "[chemical factories](#)," marine sponges are a valuable source of bioactive compounds with potent anticancer, antibacterial, antiviral and anti-inflammatory properties. While studying a sponge specimen for its chemical-producing bacteria, researchers at the University of Queensland found a bacterium that puzzled them.

The sample was sent to the Doherty Institute, where the team conducted extensive analyses of the genes, proteins and lipids of *M. spongiae*. They discovered that it shares 80% of its [genetic material](#) with *M. tuberculosis*, including some key genes associated with the bacteria's ability to cause disease. However, the researchers found that, unlike *M. tuberculosis*, *M. spongiae* does not cause disease in mice, making it non-virulent.

The University of Melbourne's Dr. Sacha Pidot, a Laboratory Head at the Doherty Institute and co-lead author of the paper, said it was an exciting and important find.

"We were astounded to discover that this bacterium is a very close relative of *M. tuberculosis*," said Dr. Pidot. "This finding provides new insights into the evolution of *M. tuberculosis*, suggesting that these pathogens may have originated from marine mycobacteria."

The University of Melbourne's Professor Tim Stinear, a Laboratory

Head at the Doherty Institute and co-lead author of the paper, said that this new knowledge is an important building block for future research.

"While there is more work to be done in this space, this discovery is a valuable piece in the puzzle of understanding how TB came to be such a serious disease," said Professor Stinear. "Our findings could help find weak links in *M. tuberculosis* to inform the development of new strategies such as vaccines to prevent and combat tuberculosis."

**More information:** Marine sponge microbe provides insights into evolution and virulence of the Tubercle bacillus, *PLoS Pathogens* (2024).  
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