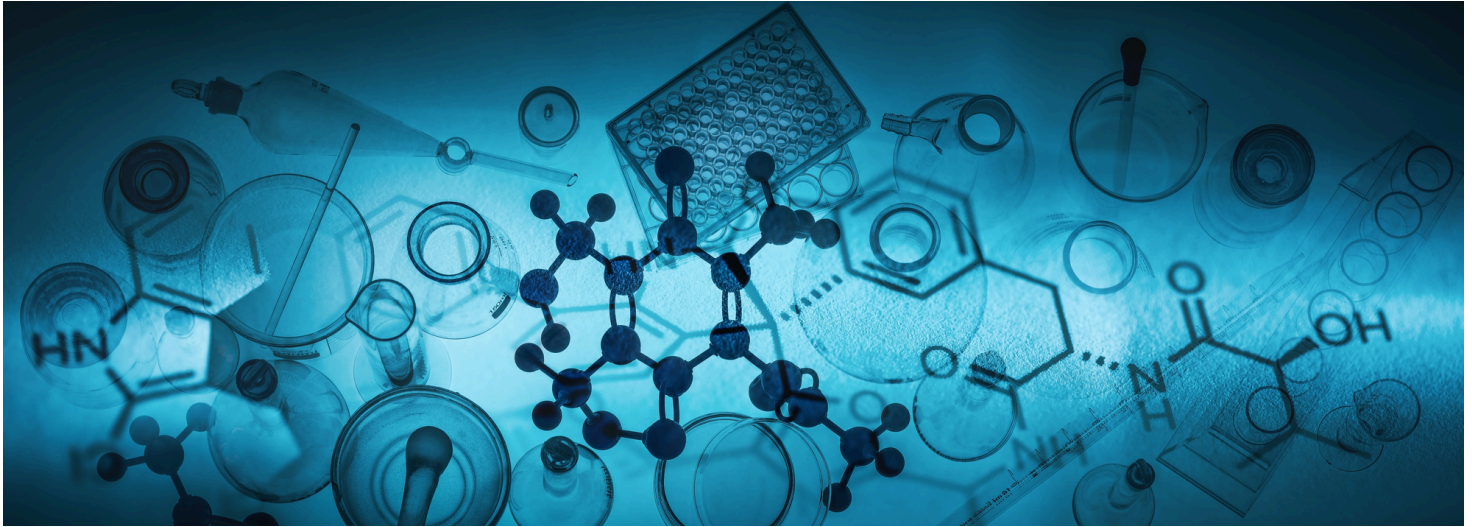


THE MONTHLY DOSE

Official Newsletter of The Mueller Health Foundation



WHAT'S NEW AT THE MUELLER HEALTH FOUNDATION:

We at The Mueller Health Foundation are thrilled to continue co-leading the Education Group as part of the TB-Free NYC Coalition.

Our next major initiative will focus on creating a myth-busting document to address common misconceptions about tuberculosis and provide clear, factual explanations to educate the general population in NYC.

Recognizing the impact of the changing political landscape, we are also developing a NYC-centric resource list to connect those affected by TB with essential services.

These efforts aim to promote awareness, reduce stigma, and ensure patients receive the support they need for better health outcomes.

Stay tuned for more updates!

LATEST NEWS: SHOWCASING STORIES OF TB SURVIVORS

We at The Mueller Health Foundation continue to be deeply committed to sharing personal stories and giving a voice to TB patients, TB survivors, TB practitioners, and all the friends and family members of the people who have been affected by the disease. We are also proud to continue our support of our new HeroRat Tamasha who has been trained by APOPO, a charity focused on training rats to detect TB in sputum samples across Africa. APOPO has put together a wonderful collection of success stories from TB survivors, and this month we would like to highlight Nilham's story, a 5-year-old girl living in Tanzania:

Nilham lives under her mother's care, though her father resides separately in Dar es Salaam. Despite their separation, he continues to provide for her. Nilham has been cared for daily by her aunt, Salama, who has raised her since she was two years old. They live in a home built by Nilham's grandmother, which provides stability and support. While Nilham's mother frequently travels for work, her aunt also cares for Nilham's cousin, creating a small but close-knit household of three. Both children attend school, with Nilham currently in nursery, and her aunt is dedicated to their care and education despite not having a formal job herself. During a recent holiday with her father, Nilham returned home coughing, which raised concern when it was revealed that her father was also unwell. Following her mother's advice, Nilham and her cousin were taken to the hospital for TB testing. The diagnosis confirmed that Nilham had tuberculosis, thanks to the innovative work of APOPO and their HeroRATs, which help detect the disease in children, where a diagnosis is often challenging. Treatment began immediately, and Nilham initially struggled with weakness and persistent symptoms. However, her health improved significantly over time, with weight gain and reduced coughing. Weekly trips to collect her medication, involving costly and time-consuming travel, were necessary until they began receiving monthly supplies. Challenges remain, particularly with ensuring Nilham takes her medication, but her aunt remains steadfast. Despite the hardships, their growing bond and the children's progress bring hope and fulfillment to their lives. To read her full story, please follow the link here: <https://apopo.org/what-we-do/detecting-tuberculosis/success-stories/nilham/>

For more news, please also take a look at our top 3 picks for **January** in this newsletter, where we highlight novel research findings and news about the prevention and treatment of tuberculosis around the world.

MHF TOP PICKS FOR JANUARY

Every month, we at the Mueller Health Foundation like to showcase interesting news and updates in the field of tuberculosis (TB). Below are our top 3 picks for **January**:

1. Study Finds that Tuberculosis Strains Resistant to New Drugs are Being Transmitted between Patients

A study by the Swiss Tropical and Public Health Institute (Swiss TPH) has revealed the alarming spread of tuberculosis (TB) strains resistant to the World Health Organization's (WHO) newly recommended BPaL(M) treatment regimen for multidrug-resistant TB (MDR-TB). By analyzing nearly 90,000 TB genomes globally, researchers identified 514 strains resistant to both older treatments and the BPaL regimen. These highly drug-resistant strains were found in 27 countries across four continents, with 28% directly transmitted from one patient to another. The emergence and transmission of resistance to the BPaL regimen, which WHO endorsed in 2022 for its improved safety and efficacy, underscore the urgent need for enhanced surveillance, infection control, and intensified global efforts to combat antimicrobial resistance in TB. To learn more, you can access the research study at: <https://www.nejm.org/doi/full/10.1056/NEJMc2404644>

2. Study Shows that More than 80% of Patients with Tuberculosis Do Not Have a Persistent Cough

A study led by Amsterdam UMC and the Amsterdam Institute for Global Health and Development, analyzing data from over 600,000 individuals in Africa and Asia, found that more than 80% of tuberculosis patients do not exhibit a persistent cough, traditionally considered a key symptom of the disease. Specifically, 82.8% lacked a persistent cough, and 62.5% had no cough at all. Additionally, over a quarter of those with TB were asymptomatic, with these traits more common in women. Notably, a quarter of patients without a cough had high bacterial loads in their sputum, indicating they were likely highly infectious. These findings suggest that reliance on persistent cough as a primary diagnostic criterion may delay TB diagnosis and treatment, potentially facilitating further transmission. The study advocates for rethinking TB identification strategies, emphasizing the need for enhanced screening methods, such as X-ray examinations and the development of new, inexpensive, and user-friendly diagnostic tests, to effectively detect and manage TB cases. To learn more, you can read about the study here: [https://www.thelancet.com/journals/laninf/article/PIIS1473-3099\(24\)00011-2/abstract](https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(24)00011-2/abstract)

3. System to Auto-detect New Variants Will Inform Better Response to Future Infectious Disease Outbreaks

Researchers at the University of Cambridge have developed a novel method to rapidly identify emerging, highly transmissible variants of pathogens, including *Mycobacterium tuberculosis*, the bacterium responsible for tuberculosis. This approach utilizes genetic sequencing data from infected individuals to monitor pathogen evolution in real time, enabling the swift detection of variants that may evade vaccines or exhibit antibiotic resistance. By constructing 'family trees' of pathogens, the system automatically identifies new variants based on genetic changes and their transmission dynamics within human populations. This method enhances surveillance capabilities, particularly in resource-limited settings, facilitating prompt and effective responses to TB outbreaks and aiding in the development of targeted vaccines and treatments. You can read the full article here: <https://www.nature.com/articles/s41586-024-08309-9>

DID YOU KNOW?

In a remarkable discovery in 2024, researchers uncovered evidence of tuberculosis in Neanderthal remains found in the Subalyuk Cave in northern Hungary, marking the earliest known cases of the disease in prehistoric humans.

The skeletal remains of a female adult and a child, dating back approximately 33,000 to 38,000 years, exhibited bony lesions indicative of TB infection. This discovery suggests that Neanderthals were susceptible to TB, providing insights into the health challenges they faced and raising questions about the role of infectious diseases in their extinction.

This finding not only sheds light on the health challenges faced by Neanderthals but also suggests that TB predates modern human evolution and was likely a common affliction among hominins. Genetic analysis supports the idea that the bacterium *Mycobacterium tuberculosis* evolved alongside humans and their relatives, demonstrating the deep and complex history of this deadly disease.

The finding emphasizes the significance of studying ancient diseases to understand their evolution, spread, and persistence. TB remains one of the leading causes of death worldwide, and understanding its ancient origins provides valuable context for tackling the disease today. This discovery underscores the enduring relationship between humans and their pathogens, offering critical insights into the co-evolution of health and disease.



Information Source:

<https://www.livescience.com/archaeology/1st-known-tuberculosis-cases-in-neanderthals-revealed-in-prehistoric-bone-analysis#>

Image credit: Photo by Michal Fludra/NurPhoto via Getty Images