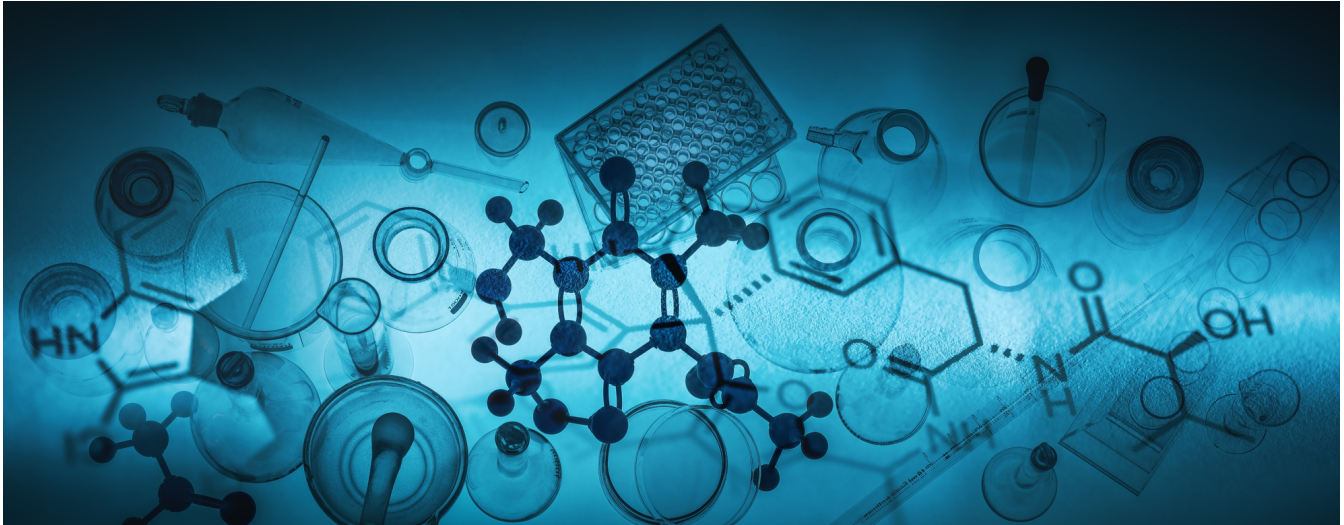


THE MONTHLY DOSE

Official Newsletter of The Mueller Health Foundation



WHAT'S NEW AT THE MUELLER HEALTH FOUNDATION:

We at The Mueller Health want to wish everyone a **Happy Thanksgiving** filled with laughter, joy, and good health!

We have also expanded our social media content to include more stories of TB survivors, inspirational quotes, fun facts, interesting data, and cute posts about our TB sniffing HeroRat Carolina. Stay up to date by following us on Instagram and Twitter!



@muellerhealthfoundation



@MuellerHealth

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. The Center for Disease Control and Prevention (CDC) has put together a wonderful collection of stories and this month we would like to highlight Tenzin's story. Tenzin was a college student in the US when he was diagnosed with multi-drug resistant TB (MDR-TB); here is his journey:

During his last year of college, Tenzin began experiencing chest pains, a sore throat, and coughing. At first, he thought it was either a bad cold or pneumonia. It got to the point that it was painful for him to even walk or laugh. After several months of experiencing these symptoms and numerous misdiagnoses, he learned that he had tuberculosis (TB). Shortly after he was diagnosed with TB disease, Tenzin was informed that he had multi-drug resistant TB, a type of TB that was resistant to the typical drugs used to treat the disease. Because he had multi-drug resistant TB, Tenzin had to take special medications to treat his TB. Unfortunately, these medicines can cause more severe side effects. Additionally, treatment for multi-drug resistant TB is complicated and takes a long time to complete. Tenzin's treatment lasted for over 2 years. However, with the help of his local and state TB programs, Tenzin began the long and challenging treatment process and successfully completed the treatment. Now that his TB experiences are behind him, Tenzin shares his story to help raise awareness about TB and he hopes to address the stigma associated with the disease. He also wants to encourage health care providers to "Think TB" when they see patients with symptoms like Tenzin's, so that patients can be diagnosed sooner and start treatment right away. Tenzin also shares some advice from his TB journey: "I would like people to know that TB still exists and is in the U.S. I think, you know, there's a lot of misdiagnosis or delayed diagnosis when it comes to TB and that sort of happened in my case. And that's something that could definitely be changed with better education and people just thinking about TB." To read his full story please follow the link to the Center for Disease Control and Prevention's website here: <https://www.cdc.gov/tb/topic/basics/tenzinstory.htm>

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

MHF TOP PICKS FOR NOVEMBER

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

1. Antibiotics Boosted with New Targeted Delivery System

In his latest research, Hung-Jen Wu, associate professor in the Artie McFerrin Department of Chemical Engineering at Texas A&M University, is working to defeat bacteria that have become resistant to multiple types of antibiotics. To facilitate the targeted delivery, Wu has engineered molecular ligand structures on the outside of antibiotic particles that bind with the weak ligand pairs on the bacteria cell membrane. When an antibiotic particle encounters a bacteria cell, the abundance of weak ligand pairs causes the antibiotic particle to adhere to the cell in multiple locations, creating a more stable connection. This allows for more effective absorption of the antibiotic by the bacteria cell. This quick absorption of the antibiotic leads to a more effective destruction of the pathogen. Wu's research has focused on two types of bacteria, the bacterium that causes Tuberculosis, *Mycobacterium tuberculosis*, and one of the leading bacterial pathogens which has displayed antibiotic resistance, *Pseudomonas aeruginosa*. In the future, he hopes to apply his method to additional types of bacteria to help slow the spread of other infectious diseases. To learn more about the research, you can access the full paper at: <https://onlinelibrary.wiley.com/doi/10.1002/adtp.202100193>

2. Seeing Concentrations of Toxins with the Naked Eye: New Test Detects Compounds for Disease Diagnostics

Researchers from the Harvard John A. Paulson School of Engineering and Applied Sciences (SEAS) have developed a fast and cost-effective method to test liquids for a ubiquitous family of chemical compounds known as amphiphiles, which are used to detect diseases such as early-stage tuberculosis and cancer as well as to detect toxins in drugs, food, medical devices and water supplies. The new test uses rolling droplets on microstructured surfaces to detect amphiphiles at ultralow concentrations. The current gold standard for testing for endotoxins, a common type of amphiphiles, is very expensive and the new test and technique developed by the researchers may provide a more affordable alternative in the future. To learn more, you can read the paper here: <https://www.pnas.org/doi/10.1073/pnas.2211042119>

3. Scientists Further Understanding of Tuberculosis Transmission in Victoria

Scientists at the Mycobacterium Reference Laboratory (MRL) at the Victorian Infectious Disease Reference Laboratory (VIDRL) and Microbiological Diagnostic Unit Public Health Laboratory (MDU PHL) at the Institute worked in conjunction with the Victorian Tuberculosis Program to explore the genetic codes of *Mycobacterium tuberculosis* (Mtb) in Victoria over a four-year period and found that most tuberculosis cases were acquired outside the household. The research found that transmission among young adults in social settings was common, but the results also indicated that approximately 41% of local Mycobacterium tuberculosis transmission occurred between individuals with no identified connections. Understanding the relative importance of household versus extra-household transmission emphasizes the need for broad contact tracing investigations, and the possible benefit of directing prevention efforts to certain demographic groups. The research team plans to establish and evaluate national consensus standards for how the insights gained from whole genome sequencing data can best inform and guide programmatic responses in the future. You can learn more and access the full paper here: [https://www.thelancet.com/journals/lanwpc/article/PIIS2666-6065\(22\)00171-7/fulltext](https://www.thelancet.com/journals/lanwpc/article/PIIS2666-6065(22)00171-7/fulltext)

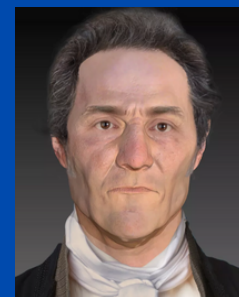
DID YOU KNOW?

In the late 18th century, a man was buried in Griswold, Connecticut, with his femur bones arranged in a criss-cross manner — a placement indicating that locals thought he was a vampire. However, little else was known about him.

Archaeologists originally unearthed the supposed vampire's remains in 1990. In 2019, forensic scientists from a Virginia-based DNA technology company named Parabon NanoLabs, and the Armed Forces DNA Identification Laboratory (AFDIL), a branch of the U.S. Armed Forces Medical Examiner System based in Delaware, extracted his DNA and ran it through an online genealogical database. Through their analysis, they were able to determine that the person, whom they nicknamed JB55, was actually a man named John Barber, a poor farmer who likely died of tuberculosis at the age of 55. The nickname JB55 was based on the epitaph spelled out on his coffin in brass tacks, denoting his initials and age at death.

Based on the positioning of the legs and skull in the grave, researchers suspect that at some point the body was disinterred and reburied, a practice often associated with the belief that someone was a vampire. Historically, some people once wrongfully believed that those who died of tuberculosis were actually vampires.

The researchers went one step further to shed more light on the identity of John Barber. Using 3D facial reconstruction software, a forensic artist determined that he likely had fair skin, brown or hazel eyes, brown or black hair and some freckles. Here is what John Barber may have looked like:



Information Source:
<https://www.livescience.com/vampire-burial-dna-connecticut>