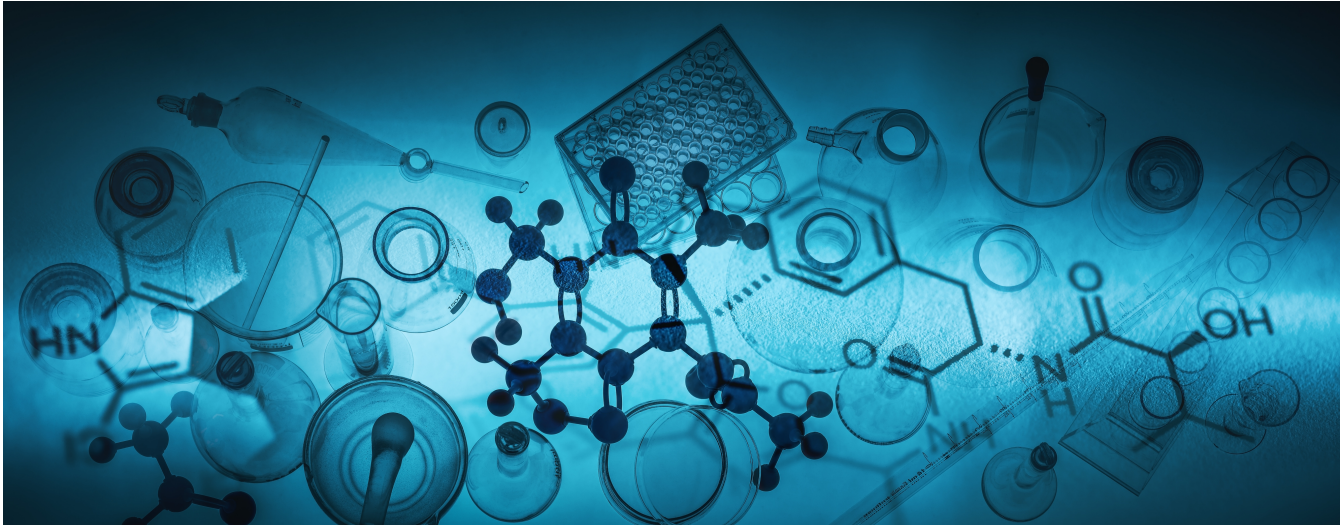


THE MONTHLY DOSE

Official Newsletter of The Mueller Health Foundation



WHAT'S NEW AT THE MUELLER HEALTH FOUNDATION:

We at The Mueller Health Foundation successfully completed the testing phase of our TBConnect blockchain portal.

Our TBConnect application is the first-of-its-kind online portal that uses blockchain technology to safely facilitate information sharing and networking. In short, TBConnect has as its main goal the creation of a global network of scientists, non-profits, research institutions, hospitals and government health entities to better share, access, and analyze data and information related to tuberculosis.

We are very grateful to our partners at REACH, a non-profit organization that tackles tuberculosis across India, for providing us with helpful feedback and for being the first users and testers of the TBConnect blockchain application.

We are very excited to be able to roll out our TBConnect blockchain application more widely and to make it available to interested users over the next few months!

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 Jackie's story. Like many people, Jackie, a TB survivor, thought TB was a thing of the past. Having experienced the challenges of TB diagnosis and treatment, we would like to share her story to raise awareness about TB:

Jackie had a cough that became so bad she had to stop what she was doing. After about a month of thinking it was a lingering cold, or possibly the flu, she decided to see a doctor. She visited an urgent care clinic and was diagnosed with pneumonia. Jackie's aunt, a physician, has always been her first or second medical opinion in any health matter. When Jackie told her aunt about the tests at urgent care and the pneumonia diagnosis, her aunt encouraged Jackie to visit a lung specialist right away. When she was unable to quickly get an appointment to see a specialist, Jackie went to the emergency room. After several misdiagnoses and many medical tests, eventually Jackie was diagnosed with tuberculosis. Jackie began her treatment for TB disease in the hospital for a couple of weeks. She continued her treatment at home and received additional support from the public health department. Jackie appreciated the personal support from the health department staff during her TB treatment. Someone was available almost every day to talk by phone or text to answer any questions Jackie had. "It was very helpful just to know I could rely on her and her information and she just, honestly, she just sounded like she knew what she was talking about and she sounded more experienced and it just, it helped me just feel more at ease," Jackie recalls. Now that Jackie successfully completed her treatment, she wants to encourage others "not to be afraid to speak up and let their healthcare providers know what it is they need or what it is they don't understand." To read her full story please follow the link to the Center for Disease Control and Prevention's website here: <https://www.cdc.gov/tb/topic/basics/Jackiestory.htm>

For more news, please also take a look at our top 3 picks for October 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 OCTOBER

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 **October**:

1. New Saliva Testing Method Could Make Tuberculosis Diagnosis Easier

In a recent study, researchers at Yale University examined the accuracy of a next-generation molecular testing cartridge called GeneXpert MTB/RIF Ultra (Xpert Ultra), made by the Sunnyvale, California-based company Cepheid to better understand its accuracy in detecting tuberculosis bacteria in saliva samples, as opposed to the commonly used sputum sample. The research team recruited clinic patients who were already known to have tuberculosis. Per routine, each participant first coughed up a sputum sample, with which the researchers confirmed infection by both culturing it and cartridge testing. Then, each participant provided saliva, which the team loaded into another Xpert Ultra cartridge. The results were encouraging: Among 78 people with culture-confirmed TB, the cartridges picked up 70 cases using saliva, which works out to 90% sensitivity. Among people living with HIV, the test did less well, picking up just under three-fourths of known tuberculosis cases. The study was intentionally small to get an idea of whether the method works and additional research is needed in the future. Additionally, the researchers have not yet tried testing children's saliva, nor that of people with non-productive cough - both groups that could benefit from saliva testing. To learn more about the research, you can access the full article at: <https://ysph.yale.edu/news-article/new-testing-method-could-make-tuberculosis-diagnosis-easier/>

2. New Tuberculosis Vaccine Research in Australia Focuses on Adjuvants and Antigens

The Centenary Institute and University of Sydney as well as several international research teams were awarded \$19 million to develop and bring a vaccine to the point of human trials. The only current vaccine, known as the Bacille Calmette-Guérin (BCG) vaccine, is more than 100 years old and its effectiveness had waned. The research team at the Centenary Institute will take a systematic approach to creating a new vaccine by picking apart the host immune response. Two components will be of particular interest: antigens and adjuvants. Antigens are proteins from the TB bacteria, while adjuvants are a common component of vaccines that can stimulate the immune response of humans. The research will be conducted over the next five years and the research team is hopeful given that the understanding of adjuvants has greatly expanded in the past 15 years, which would help maximize the chance of generating a long-term immune response. To learn more, you can read the news article here: <https://www.abc.net.au/news/2022-10-04/new-tuberculosis-vaccine-possible-in-five-years-time/101496484>

3. New Discovery of Evybactin, a DNA Gyrase Inhibitor, Helps to Selectively Kill Mycobacterium Tuberculosis

Researchers at the Institute for Biomedical Sciences at Shinshu University used a method called differential screening, through which they discovered a novel antimicrobial called evybactin, which is a DNA gyrase inhibitor that they proved targeted *M. tuberculosis* only. They found that evybactin was transported inside the target bacteria across the cell membrane by BAcA, a carrier of hydrophobic compounds, and then it binds to a specific site of DNA gyrase. This finding is significant not only because of the direct benefit of the discovery that evybactin can be used to treat tuberculosis without causing antibiotic resistance but also because of the implications of the method used to discover evybactin, as the method could potentially be used to discover even more antibiotics. You can learn more and access the full paper here: <https://www.nature.com/articles/s41589-022-01102-7>

DID YOU KNOW?

The disease tuberculosis (TB) has been known by many different names throughout history. Below are a few examples of the most common names associated with the disease:

- **Phthisis:** The ancient Greeks described TB and called it phthisis or consumption. Around 460 BCE Hippocrates identified phthisis as the most widespread disease of his age. Phthisis is a Greek word which means to waste away, decline, decay, atrophy or literally wasting of the body.
- **Scrofula and King's Evil:** In the Middle Ages there was evidence of tuberculosis of the cervical lymph nodes of the neck. As a result TB was sometimes referred to as scrofula. In the year 496 there was the start of the initiation of the royal touch for scrofula. This was started by Clovis of France. TB was called the "King's Evil" and it was widely believed that the kings of England and France could cure scrofula simply by touching affected people.
- **The Captain of all these Men of Death:** This was the name given by John Bunyan to tuberculosis. He was a British clergyman and prolific writer in the 1600s.
- **The White Plague:** Tuberculosis became epidemic in Europe in the 17th, 18th, & 19th centuries. As the disease swept across Europe, it was called the White Plague of Europe. This probably referred to the pallor associated with people with TB.
- **Consumption:** This was the common lay term for TB in the early nineteenth century. It was probably the most common killer of American colonial adults at this time.
- **Tuberculosis:** In 1839 J.L. Schonlein suggested that the word "tuberculosis" be used as a generic term for all the manifestations of phthisis, since the tubercle was the anatomical basis of the disease.

Information Source:
<https://tbfacts.org/tb-names/>