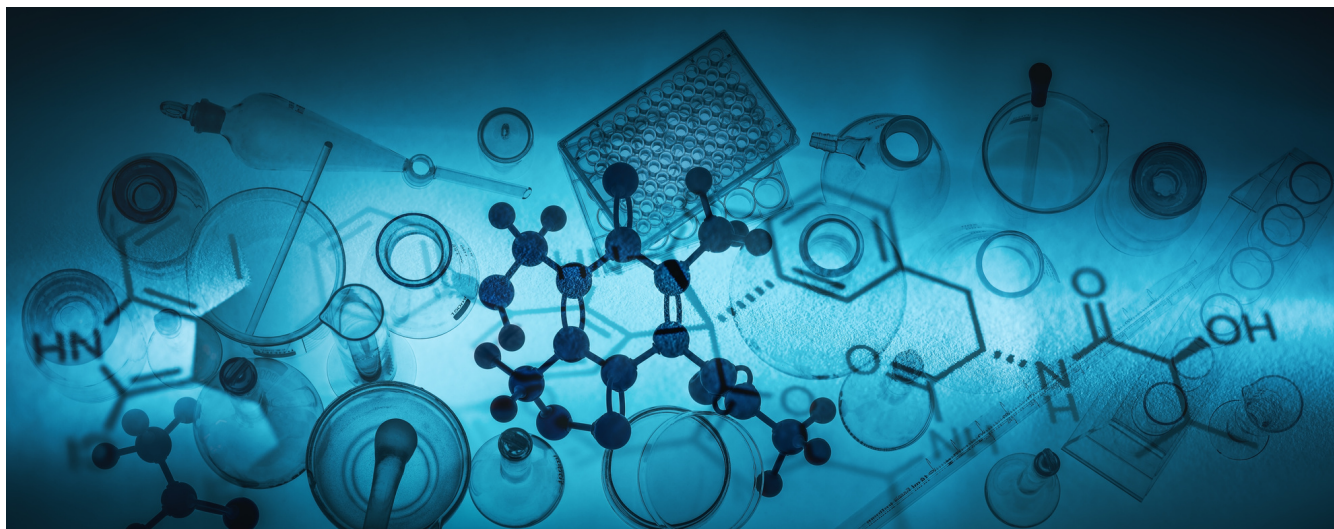


THE MONTHLY DOSE

Official Newsletter of The Mueller Health Foundation



WHAT'S NEW AT THE MUELLER HEALTH FOUNDATION:

The Mueller Health Foundation is excited to attend the **TB Innovation Summit** on September 19th in advance of the upcoming UN High Level Meeting on Tuberculosis on September 22nd at the United Nations Headquarters in New York.

We look forward to supporting the TB innovation ecosystem! If you would like to attend the TB Innovation Summit as well, you can register here:

<https://form.jotform.com/232252822839863>

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. TB Alert, a charity focused on TB in the United Kingdom, has put together a wonderful collection of stories and this month we would like to highlight Laura's story:

Laura, a seemingly healthy 29 year old living in London, experienced a cough that would not quite go away. She was seen by a total of six doctors over nine months and each one dismissed the cough as a minor irritant. Finally after visiting an asthma clinic due to the worsening cough, she was referred for a chest x-ray. After checking the x-ray, she was immediately referred to the on-site TB clinic, where further tests showed she had TB. A strict regime of nine pills a day began, alongside blood tests to check her cell count and liver function. The next three weeks were easily the most stressful time of Laura's life. She was still infectious and did not want to risk infecting anyone else, so she stayed quarantined at home without a job. She says: "I wasn't sure what I was more worried about – being homeless, being unemployed, having TB or the potential side effects of the treatment." The TB team was immensely reassuring and gave her clear information from the outset. Laura was shocked to find that TB is still one of the biggest killers worldwide and that diagnoses of new cases in London has been increasing steadily in recent years. After three weeks of medication, her consultant told her that she was responding well to treatment. She was no longer infectious. While she thought about TB every day and felt nauseous after her medication and had joint pains in the first few months, it did not impede her as much as she had anticipated. The coughing stopped after two months. Months later, another chest x-ray showed that her lung had partly healed, although she still has some scarring that may never fully disappear. Laura wants to share her advice with others affected by TB: "I'd advise anyone who finds out they have TB – remember there is a cure, you just need to be patient, follow medical advice, take the medication daily and know that it doesn't have to ruin your life." To read her full story please follow the link here: <https://www.thetruthabouttb.org/tb-stories/laura/>

For more news, please also take a look at our top 3 picks for **September** 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 SEPTEMBER

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 September:

1. Nutritional Support for Adult Patients with Microbiologically Confirmed Pulmonary Tuberculosis: Outcomes in a Programmatic Cohort Nested within the RATIONS Trial in Jharkhand, India

In a recent study published in *The Lancet Global Health* journal, researchers evaluated the impact of nutritional support in Indian adults with microbiologically confirmed pulmonary tuberculosis. The study aimed to assess the impact of micro- and macronutrient supplementation on tuberculosis treatment success, outcomes, and mortality in the study cohort. The study results showed that undernutrition was a serious, potentially lethal, and widely prevalent comorbidity among Indian pulmonary tuberculosis patients. While the study reported that baseline body weight was a tuberculosis mortality risk factor, they also noted that weight gain with nutritional support during the initial two months was related to a considerably lowered mortality risk during treatment. To learn more, you can access the full article at: [https://www.thelancet.com/journals/langlo/article/PIIS2214-109X\(23\)00324-8/fulltext?rss=yes](https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(23)00324-8/fulltext?rss=yes)

2. How Advocates Pushed Big Pharma to Cut Tuberculosis Drug Prices

Millions of people are about to gain access to a lifesaving medicine for drug-resistant tuberculosis. A few weeks ago, after years of both quiet and noisy pressure, pharmaceutical giant Johnson & Johnson opened the door to inexpensive generic versions of its patented TB drug bedaquiline in 44 low- and middle-income countries. The new generic medications would cost just \$8 per month, compared to up to \$45 per month. This is a significant accomplishment to make TB drugs more affordable. However the fight for increased affordability does not stop there. Some experts say the next frontier for TB advocacy will be more effectively diagnosing the disease. Nearly four million TB cases go undetected every year. Many people with TB are also initially misdiagnosed, in part because some low-income countries lack gold-standard screening tools, such as chest x-rays. U.S.-based corporations such as Cepheid hold a monopoly over TB DNA diagnostic tests such as GeneXpert MTB/RIF and MTB/RIF Ultra, which are priced at \$9.98 per test cartridge. There is now mounting pressure on these companies to reduce the price to \$5. To learn more, you can read the article here: <https://www.scientificamerican.com/article/how-advocates-pushed-big-pharma-to-cut-tuberculosis-drug-prices/>

3. CDC Details Multidrug-Resistant TB Outbreak in Kansas

An outbreak of multidrug-resistant tuberculosis developed in Kansas in November 2021. The outbreak involved 13 people across four households in Kansas City and spanned 1 year. While a majority of the seven adults identified were born outside the U.S. in a country that had experienced a multidrug-resistant TB outbreak with the same genotype in 2007-2009, most of the six children were U.S.-born. Nine additional people in the four affected households were diagnosed with latent infections, and one child in a neighboring state with an epidemiologic connection to the Kansas outbreak was also identified in July 2022. The CDC's National TB Molecular Surveillance Center performed whole-genome sequencing on isolates from nine of those with culture-confirmed active TB. The whole-genome SNP analysis genetically tied the isolates to outbreaks that had occurred in the Federated States of Micronesia during 2007-2009 and Guam during 2009-2016. Some of the adults in the outbreak lived in those regions during those times. You can learn more and access the full paper here: <https://www.medpagetoday.com/infectiousdisease/tuberculosis/106166>

DID YOU KNOW?

A common theory is that the bacteria that causes TB seems to have first begun infecting humans in Africa some thousands or tens of thousands of years ago. From there, tuberculosis somehow made its way to seals, who took it across the ocean. On the west coast of South America, the seals were hunted by humans, the distant relatives of the humans in Africa in whom tuberculosis likely first originated. In this process, the seals likely gave tuberculosis back to humans. The following two studies shed more light onto this emerging theory:

- In 2014, Arizona State University scientists published research about pre-contact tuberculosis found in human bones near the coast in South America. The ancient DNA showed the strain of TB found in the human remains was not similar to modern-day human TB strains, but actually matched the TB variant found in seals and seal lions, *Mycobacterium pinnipedii*.
- A more recent study analyzed three additional TB genomes from human bones found much further away from the coast of South America - two from the plateau that surrounds Bogotá and a third from inland Peru. This suggests that the seal-associated tuberculosis really did spread through the Americas.
- The anthropologists believe this TB strain could have morphed from traveling from seal to human, to traveling from seal to human to human. Another theory is that the seals could have spread TB to other animals, such as guinea pigs or llamas, which in turn spread it to humans far away from the coast.
- The research shows that complex TB transmission chains, involving multiple host species, existed a thousand years ago. So given today's highly interconnected and globalized world, the risk of potentially virulent animal TB variants "jumping" into humans and causing epidemics should not be underestimated.



Information Source:
<https://news.asu.edu/20220316-asu-scientists-make-new-discoveries-about-tuberculosis-transmission-between-seals-and>
<https://www.theatlantic.com/science/archive/2022/03/mystery-how-tuberculosis-got-americas/627088/#>