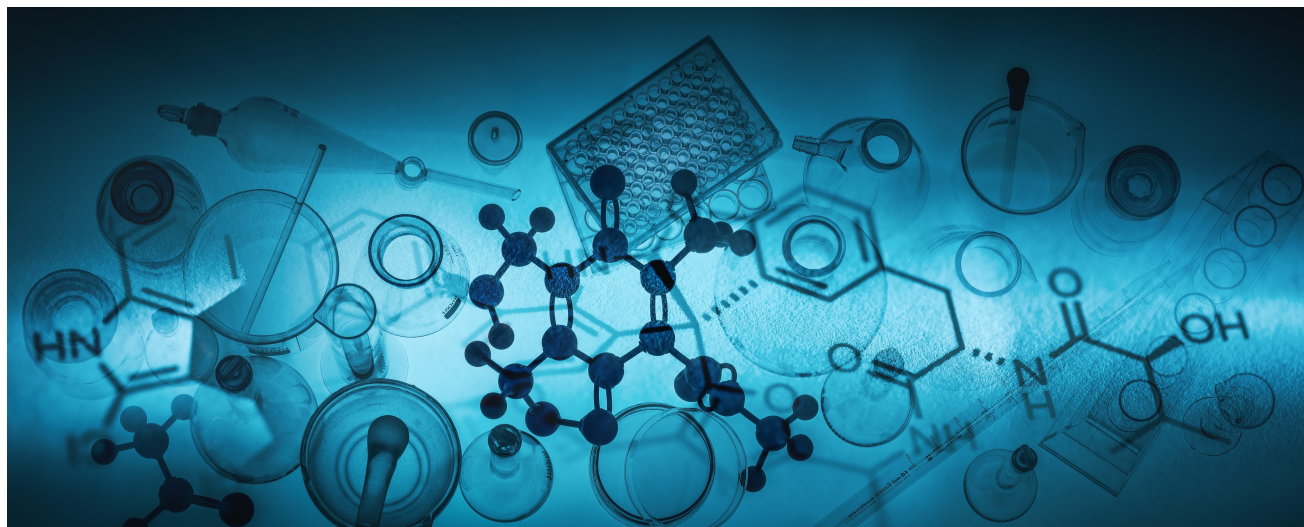


THE MONTHLY DOSE

Official Newsletter of The Mueller Health Foundation



WHAT'S NEW AT THE MUELLER HEALTH FOUNDATION:

In case you missed it, as part of our myth-busting series, we have been dispelling a common myth related to tuberculosis every week on #TBThursdays since June on our Twitter account. To see all the myths we have already tackled and to stay up to date, please follow us on Twitter using the handle **@MuellerHealth**

Stay tuned for more updates!

LATEST NEWS: FIRST CATALOGUE OF TUBERCULOSIS MUTATIONS DEVELOPED BY WHO AND IMPERIAL COLLEGE

The largest catalogue of tuberculosis (TB) mutations has been developed by the WHO in collaboration with Imperial College. The catalogue for the *Mycobacterium tuberculosis* (Mtb) genome lists more than 17,000 mutations and will help medics and health services around the world to interpret genome sequencing results and treat patients more quickly and using appropriate drug regimens. Additionally, the accompanying WHO report summarizes the analysis of over 38,000 isolates with matched data on whole genome sequencing and phenotypic drug susceptibility testing from over 40 countries for 13 anti-TB medicines. It also lists the mutations, their frequency and association with or not with resistance and includes methods used, mutations identified and summaries of important findings for each drug. To learn more or to download the catalogue and report, please use the following link: <https://www.who.int/publications/i/item/9789240028173>

For more news, please also take a look at our top 3 picks for August 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 AUGUST

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 **August**:

1. Targeting TB with a One-Two Punch

Scientists report that a novel technique that analyzes how individual immune cells react to the bacteria that cause tuberculosis (TB) could pave the way for new vaccine strategies against this deadly disease, and provide insights into fighting other infectious diseases around the world. The approach was developed in the lab of David Russell, PhD, the William Kaplan Professor of Infection Biology in Cornell's department of microbiology and immunology in the College of Veterinary Medicine, and detailed in a new collaborative research paper published in the Journal of Experimental Medicine. You can access the full article at:

<https://www.genengnews.com/news/targeting-tb-with-a-one-two-punch/>

2. Scientists Develop New Method of Diagnosing TB from Skin

A team of scientists, including those from the University of Cape Town (UCT), have developed a new diagnostic methodology enabling a non-invasive, fast and highly accurate way of detecting tuberculosis (TB). The new diagnostic pathway called A-Patch includes nano sensors, which detect TB compounds emitted from the skin. A specifically designed sensor array translates these findings into a point-of-care diagnosis by discriminating between active pulmonary TB patients and controls with sensitivity above 90% and 70% specificity. Read the full article here:

<https://www.news.uct.ac.za/article/-2021-07-16-scientists-develop-new-method-of-diagnosing-tb-from-skin>

3. First 3-D View of TB Granulomas Alters Paradigm of Their Shape and Formation

For 70 years, clinicians thought they knew the shape of tuberculosis granulomas in the lungs of patients. Histology showed round features, and researchers intuitively assumed that meant the granulomas were spherical or ovoid. That long-lived paradigm is now shown to be wrong, in a study by researchers at the University of Alabama at Birmingham and the Africa Health Research Institute, or AHRI, Durban, KwaZulu-Natal, South Africa. The new research has created a three-dimensional view of diseased lung tissue from tuberculosis patients, using micro-computed tomography, or microCT. This revealed that the larger granulomas were anything but round — rather they had complex, branched shapes. One granuloma looked somewhat like a ginger root, another like a cluster of early buds on a cherry tree, before the blossoms appear. To learn more, read the full paper here:

<https://www.uab.edu/news/research/item/12178-first-3-d-view-of-tb-granulomas-alters-paradigm-of-their-shape-and-formation>

DID YOU KNOW?

This month, we would like to highlight some interesting facts related to tuberculosis and gender.

- With the exception of Afghanistan, rates of tuberculosis cases are higher for men than women globally.
- In 2019, the TB case distribution was as follows:
 - 32% women (>15 years of age)
 - 56% men (>15 years of age)
 - 12% children (<15 years of age)
- Men and boys also account for a larger share of TB mortality, making up 53% of HIV-negative people who died of TB in 2019, and 57% of HIV-positive TB deaths.
- There are two instances in which women carry a higher TB burden than men:
 - Women of reproductive age are more susceptible to developing TB disease than men of the same age, possibly due to fluctuating oestrogen levels that compromise immunity.
 - Extrapulmonary TB is more common in women than men and more difficult to diagnose.
- Cultural and financial barriers can act as major obstacles for women seeking care, therefore women may delay accessing care until illness is severe.

Source:

http://www.stoptb.org/assets/documents/global/awards/tbreach/TB-REACH_Gender2021-web.pdf