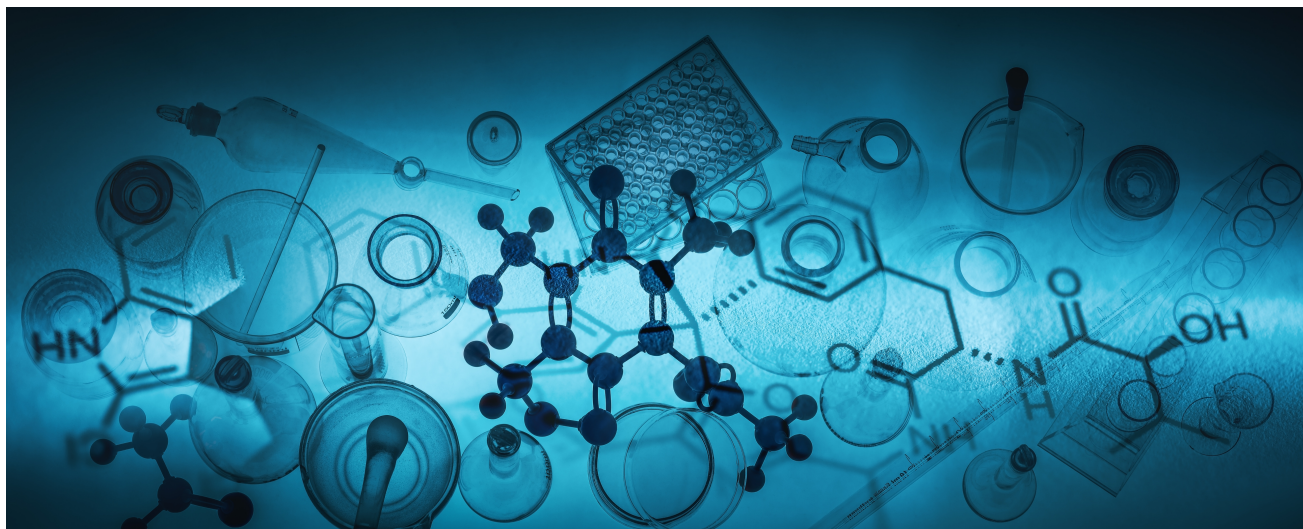


THE MONTHLY DOSE

Official Newsletter of The Mueller Health Foundation



WHAT'S NEW AT THE MUELLER HEALTH FOUNDATION:

To stay informed on the latest developments in the field of TB across the world, our team at MHF participated in the UN General Assembly side event on TB. We are currently working on developing a detailed infographic to highlight interesting facts and learnings from the session!

Stay tuned for more updates!

LATEST NEWS: NEW COLLABORATION WITH DR. DAVID RUSSELL'S LABORATORY AT CORNELL UNIVERSITY

We at The Mueller Health Foundation are excited to announce a new collaboration with Dr. David Russell, the William Kaplan Professor of Infection Biology in the Department of Microbiology and Immunology at Cornell University. The Mueller Health Foundation has awarded him and his laboratory a \$2 million grant over four years to efficiently develop novel treatment regimens for tuberculosis. By integrating host immune responses into traditional antimicrobial research the grant will enable Russell and his team to chart how different drugs affect tuberculosis-causing bacteria as well as help different populations of host immune cells fight off the infection. Russell's team first builds a baseline using four front-line tuberculosis drugs and several new emergent drugs. After Russell's team has established the efficacy of each drug against the different bacterial and host-immune cell subpopulations in vivo, they will then identify compounds that alone or in combination have the potential to provide improved coverage across the entire Mtb bacterial population with their varying defenses and susceptibilities. If these experiments go well, the team would examine promising drug regimens in human immune cells gathered from human tuberculosis patients, which would pave the way to development of human therapeutics. You can access the full press release here: <https://www.vet.cornell.edu/news/20211005/russell-lab-receives-grant-drive-new-drug-development-tuberculosis>

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. Development of New Multivariable Prognostic Model to Better Facilitate Early Tuberculosis Diagnosis

Researchers have developed a parsimonious multivariable prognostic model to better facilitate early tuberculosis (TB) diagnosis and safer scale-up of tuberculosis preventive therapy (TPT) to people living with HIV (PLHIV) by avoiding TPT prescription to clients with asymptomatic active TB, who need TB treatment. As a result of the model, the simple and feasible clinical score allowed for more targeted treatment administration, which can help to facilitate reductions in mortality from undiagnosed TB and allows for safer administration of TPT during proposed global scale-up efforts.

To learn more, you can access the full journal article at:

<https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1003739>

2. Biochemists Detail Protein Vital to Tuberculosis to Better Address Antibiotic Resistance

While several antibiotics can treat TB infections, some strains of the *M. tuberculosis* have evolved to be partially or completely resistant to numerous frontline and secondary antibiotics typically used against them. The intrinsic resistance of *M. tuberculosis* to the majority of available drugs relies both on the impermeability of its cell envelope, and its ability to activate specific genes and physiological states. WhiB7 is a transcriptional regulatory protein underlying this adaptive process. Transcription of the WhiB7 gene is upregulated in response to a variety of antibiotics having different structures and targets, as well as in response to metabolic signals. Further understanding and detailing of WhiB7 as a potential new drug target may lead to novel insights for addressing antibiotic resistance going forward.

To learn more, you can read the full article here:

<https://www.sciencedirect.com/science/article/abs/pii/S1097276521004494>

3. Tuberculosis Programs Should Focus More on Young People, Researchers Say

To deal with the global tuberculosis epidemic, researchers say that greater focus on young people is needed in global tuberculosis programs to better address the spread of the disease. Researchers at Karolinska Institutet in Sweden, among others, have mapped key factors that affect the treatment outcomes in 10- to 24-year-olds with tuberculosis in Brazil, where the disease is increasing. In this national cohort, tuberculosis treatment success rates were lower than WHO End TB Strategy targets, with almost a fifth of participants experiencing unfavourable treatment outcomes. Homelessness, HIV, and illicit drug use were the main factors associated with unfavourable outcome.

To learn more, you can access the full paper here:

[https://www.thelancet.com/journals/langlo/article/PIIS2214-109X\(21\)00300-4/fulltext](https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(21)00300-4/fulltext)

DID YOU KNOW?

This month, we would like to highlight some interesting facts related to the diagnosis and notification rate of TB around the globe.

- According to data from 200 countries reported by the WHO, there was a 25-30% drop of TB case notification in the first 6 months of the COVID pandemic compared to the same period in 2019.
- Nine high TB burden countries representing 60% of the global TB burden had a total decline of 1 million people in TB diagnosis in 2020 (when compared with 2019). The decline ranged from 16%-41% (an average of 23%) in individual countries.
- The decline was seen more in Asian countries and India, where there was a 70% decline in TB notifications in the first 15 weeks of the Covid-19 pandemic, compared to the same period in 2019.
- In the United States, there was a 20% decrease in the notification rate of TB, which is also likely due to under diagnosis during the 2020 COVID-19 pandemic according to the CDC.
- Continued lack of timely TB diagnosis could lead to an increase in the number of people developing TB by more than 1 million per year from 2020 to 2025 and an additional 1.4 million TB deaths during this time.

Source:

STOP TB Partnership Modeling Analysis:
http://www.stoptb.org/assets/documents/covid/TB%20and%20COVID19_Modelling%20Study_5%20May%202020.pdf

WHO TB Risks:

<https://www.who.int/news/item/14-10-2020-who-global-tb-progress-at-risk>

CDC:

<https://www.cdc.gov/mmwr/volumes/70/wr/mm7012a1.htm>