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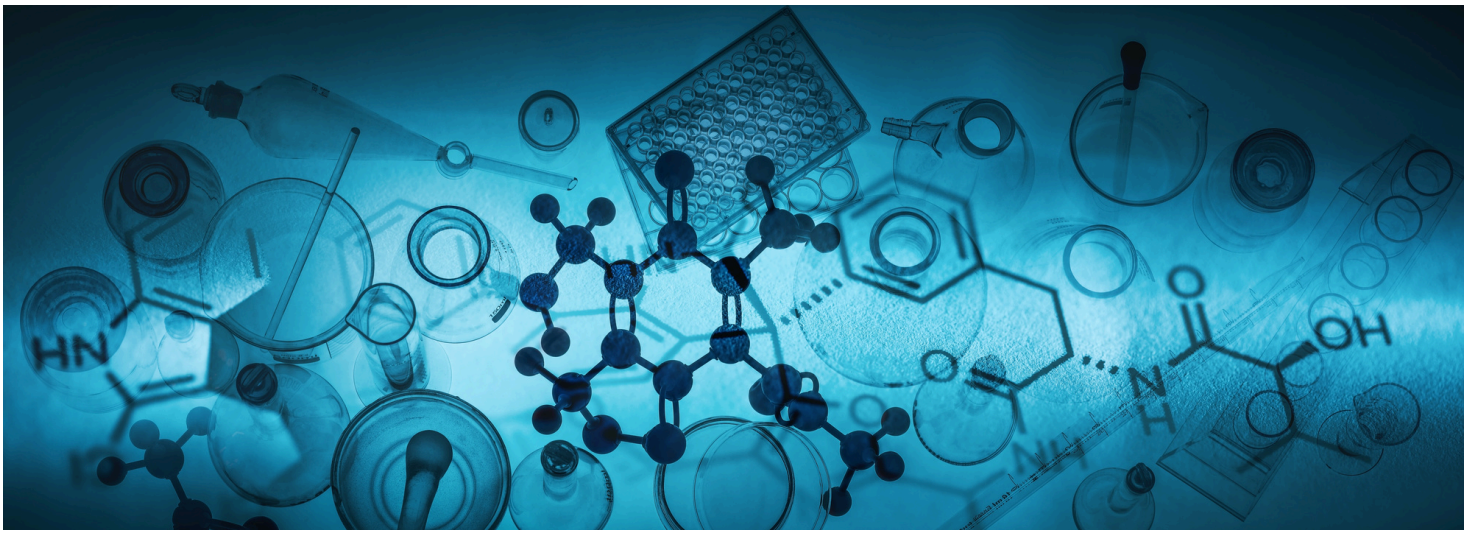
THE MONTHLY DOSE

Official Newsletter of The Mueller Health Foundation



WHAT'S NEW AT THE MUELLER HEALTH FOUNDATION:

With hearts full of appreciation and gratitude, we wanted to update you that our HeroRat Carolina has stepped into her well-earned retirement this month.

Over her impressive 6.8-year career, Carolina evaluated 208,235 patient samples and achieved an overall detection accuracy of 86.3%.

Carolina's efforts and achievements will leave a lasting legacy, as each patient she helped diagnose represents a victory in the fight against TB.

From all of us at MHF: Thank you, Carolina, for all the hard work - we hope you enjoy your retirement and all your favorite treats!

PC: APOPO HeroRats

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. We are also proud to continue our support of our HeroRat Carolina who has been trained by APOPO, a charity focused on training rats to detect TB in sputum samples across Africa. APOPO has put together a wonderful collection of success stories from TB survivors, and this month we would like to highlight Haruna's story:

Haruna lost her daughter to tuberculosis, and she felt a deep fear when her clinic was unable to determine the cause of her illness. She expressed, "I've been ill for three months now. It started with a terrible cough and night sweats, but now I am very weak from not being able to eat much. I was tested for tuberculosis (TB) twice by my local clinic, but both times the results were negative. I was confused and scared. It's very discouraging when you are getting worse, and no one can help you." After her last test, the clinic contacted her to inform her that they had provided a wrong diagnosis because they had not detected the TB in her body. They explained that she needed to come back immediately to begin treatment for TB. Her sample had been sent to APOPO, where it was tested by trained rats capable of detecting TB, and they found the infection. APOPO then rechecked the sample using advanced equipment, confirming the accuracy of the rats' findings. Haruna began treatment and, although still ill, she felt better every day. She recalled the fear she experienced, particularly because TB had already claimed one of her two children. Both of her children had been sick and had gone to the clinic for testing, but once again, the clinic could not determine the cause of their illnesses. After a month and four tests, her daughter passed away, leaving behind two children whom Haruna and her family now help care for. Her son was eventually diagnosed with TB and is currently on the road to recovery. Haruna noted the prevalence of TB in Tanzania, emphasizing the need for better diagnostic methods before it becomes too late. She expressed her gratitude to APOPO and the HeroRats, stating, "They saved my life. I wish all clinics could have the support of these creatures. Maybe then my daughter would still be alive, and my grandchildren would have their mother." To read her full story please follow the link here: https://apopo.org/what-we-do/detecting-tuberculosis/success-stories/haruna/

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 about the prevention and treatment of tuberculosis around the world.

The Mueller Health Foundation

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 (TB). Below are our top **3** picks for **November:**

1.Potential Drugs for Cancer Treatment May Help Tackle Tuberculosis

Cornell University researchers, including David Russell, who works closely with The Mueller Health Foundation, have found that the GID/CTLH protein complex, initially explored for cancer therapy, holds potential as a treatment for tuberculosis by helping immune cells resist and combat Mycobacterium tuberculosis. This bacterium often evades immune responses, causing infections that can persist even in patients receiving treatment. The GID complex has shown the ability to reduce bacterial growth within immune cells, thus aiding cell survival and enhancing the body's ability to fight the infection. Researchers are now focused on identifying compounds that can replicate the effects of the GID complex, creating a foundation for future drug development targeting TB. If successful, this approach could lead to innovative therapies that use the body's natural immune defenses to control TB more effectively, particularly in drug-resistant cases. This research provides a promising new direction in the search for TB treatments by leveraging insights from cancer biology. To learn more, you can access the article at: https://www.nature.com/articles/s41467-024-53637-z

2.The STOP TB Partnership Announced the Next-generation SIILTIBCY Test to Detect TB Infections

The Stop TB Partnership's Global Drug Facility recently announced the availability of the SIILTIBCY skin test, developed by the Serum Institute of India, at an affordable price of $1.50 USD per dose to detect TB infections. Unlike traditional tests, SIILTIBCY uses TB-specific antigens, offering higher accuracy without cross-reactivity from BCG vaccinations, and it does not require laboratory infrastructure, making it ideal for low-resource settings. This WHO-endorsed test addresses a significant gap in TB prevention by enabling cost-effective testing for TB infections, particularly among high-risk groups. SIILTIBCY's introduction aligns with the recent UN TB targets, which call for 30 million people, including household contacts, to receive TB preventive treatment by 2027. The test is expected to boost detection rates, reduce TB transmission, and facilitate informed preventive treatment decisions, helping countries make progress toward global TB elimination. To learn more, you can read about the article here: https://www.stoptb.org/news/breaking-news-only-150-to-detect-tb-infection-with-next-generation-siiltibcy-test

3.New Findings on TB Could Change How We Treat Inflammatory Disorders

Researchers at Rockefeller University have discovered that a rare genetic mutation in a family caused a deficiency in TNF (tumor necrosis factor), a key immune system protein, leading to high susceptibility to tuberculosis (TB) while leaving resistance to other infections unaffected. This finding sheds light on TNF's role in targeting TB, specifically within lung macrophages, rather than supporting a broad immune response. The study suggests that TNF's targeted function could offer insights into alternative TB treatments that enhance immune responses specifically against TB, providing safer approaches than current TNF blockers, which can unintentionally increase TB risk in patients with autoimmune disorders. The research opens up new possibilities for treating inflammatory diseases by focusing on selective modulation of TNF activity, rather than broadly suppressing it. These findings may help in developing novel therapies that minimize TB risk while effectively treating inflammatory and autoimmune conditions. You can read the full paper here: https://www.nature.com/articles/s41586-024-07866-3

DID YOU KNOW?

The recently released *WHO Global Tuberculosis Report 2024* provides a comprehensive and up-to-date assessment of the TB epidemic and summarizes progress in the prevention, diagnosis, and treatment of the disease at global, regional, and country levels. Below are some key highlights from the report:

- Approximately 8.2 million people were newly diagnosed with TB in 2023 – the highest number recorded since WHO began global TB monitoring in 1995. This represents a notable increase from 7.5 million reported in 2022, placing TB again as the leading infectious disease killer in 2023, surpassing COVID-19.
- While the number of TB-related deaths decreased from 1.32 million in 2022 to 1.25 million in 2023, the total number of people falling ill with TB rose slightly to an estimated 10.8 million in 2023.
- With the disease disproportionately affecting people in 30 high-burden countries, India (26%), Indonesia (10%), China (6.8%), the Philippines (6.8%) and Pakistan (6.3%) together accounted for 56% of the global TB burden. According to the report, 55% of people who developed TB were men, 33% were women, and 12% were children and young adolescents.
- Globally, in 2023, 175,923 people were diagnosed and treated for multidrug-resistant or rifampicin-resistant TB (MDR/RR-TB); this was 44% of the 400,000 people estimated to have developed MDR/RR-TB in 2023.
- Global funding for TB prevention and care decreased further in 2023 and remains far below target. Low- and middle-income countries (LMICs), which bear 98% of the TB burden, faced significant funding shortages. Only US$ 5.7 billion of the US$ 22 billion annual funding target was available in 2023, equivalent to only 26% of the global target.

Information Source:
https://www.who.int/publications/i/item/9789240101531