ANNUAL REPORT

2021

The Mueller Health Foundation

“Our hope is to live in a world where every person has access to effective treatment options for infectious diseases and infectious diseases ultimately become eradicated.”

The Mueller Health Foundation Vision

A LETTER FROM THE PRESIDENT

Our team at The Mueller Health Foundation would like to start by expressing our most heartfelt gratitude to the entire TB community as well as our partners and collaborators for the tremendous amount of work that has been completed over the past 12 months. We are so grateful for the commitment and resilience of all of those fighting to make a difference in TB and for showing unwavering perseverance even during the difficult times of the continuing global COVID-19 pandemic.

The COVID-19 pandemic has unfortunately had a very negative impact on TB funding, research, diagnostics, and treatment options. Furthermore, there has been a significant increase in TB deaths across the globe with more than 4100 people dying every day, which includes 650 children, according to the WHO. To further exacerbate the problem, the WHO states that only 5.8 million people were diagnosed and treated with TB in 2020, down from 7.1 million in 2019. A ray of hope was provided by the TB community's response in 2021 by deploying new digital X-ray units, using Artificial Intelligence (AI) in improving research, and implementing mobile diagnostics for TB to meet the increasing diagnostic and treatment needs of those affected by TB.

Nonetheless, despite these advancements, the overall progress towards eradicating TB has been set back by over a decade and it is now more important than ever to continue investing time and resources in finding novel preventative and treatment options, particularly for resistant strains of TB. Multidrug-resistant TB (MDR-TB) as well as extensively Drug Resistant TB (XDR-TB) are on the rise and continue to remain a public health crisis.

In an effort to support the fight against infectious diseases and to prevent more global pandemics, The Mueller Health Foundation is committed to continue to help foster and support innovative research that can lead to new treatment options, particularly for the treatment of tuberculosis and resistant strains of TB. Our total committed funds at The Mueller Health Foundation comprise about 4% of grants made by private philanthropies around the globe in 2021.

We hope that the new year will provide many opportunities to advocate for more funding and to make many more tools and improved treatment options available to all of those affected by TB.
We thank the TB community for continuing to believe in this cause and encourage everyone to actively join the fight against TB around the globe in 2022!

Prof. Dr. Peter Mueller
Founder and President
The Mueller Health Foundation

MHF 2021 HIGHLIGHTS IN NUMBERS

MHF Investments Made

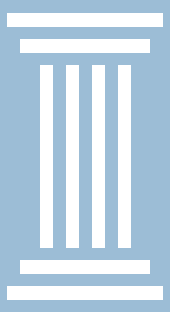
$ 497,480 USD
Distributed in New Grant Funds in 2021

$ 4,307,488 USD
Committed through 2024

MHF Committed Funds comprise **4%** of the global funds committed by private philanthropies in 2021 to Tuberculosis.

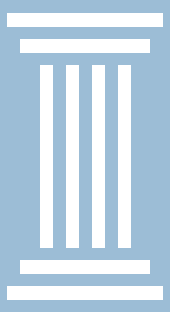
Grant Funds Spent by Strategic Pillar

$ 776,612 USD



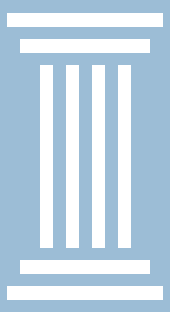
I. Clinical Research and Science

$ 14,000 USD



II. Data and Technology

$21,000 USD



III. Education and Awareness

Partnerships and Conferences

We at the Mueller Health Foundation strongly believe in creating lasting partnerships across all sectors and participating in the global TB community. We are proud to be able to maintain our relationships with our collaborators and are always looking to add new supporters to our network. We also believe in continuous education and attending conferences to learn about the latest developments in our sector.

12
Total Partnerships Maintained

1
New Partnership Added

Participated in **6** Conferences

Focus of the Conferences:
Blockchain and Technology: 2
Public Private Partnerships: 1
Best Practices in Philanthropy: 1
Global TB Awareness: 2

Communication

We are always eager to showcase our work and the work of our grantees and partners across a variety of different outlets. We have worked hard this year to expand our followers and to create an engaged online community across the globe to help us increase awareness for TB and infectious diseases.

210 %
Increase in Twitter Followers

104 %
Increase in LinkedIn Followers

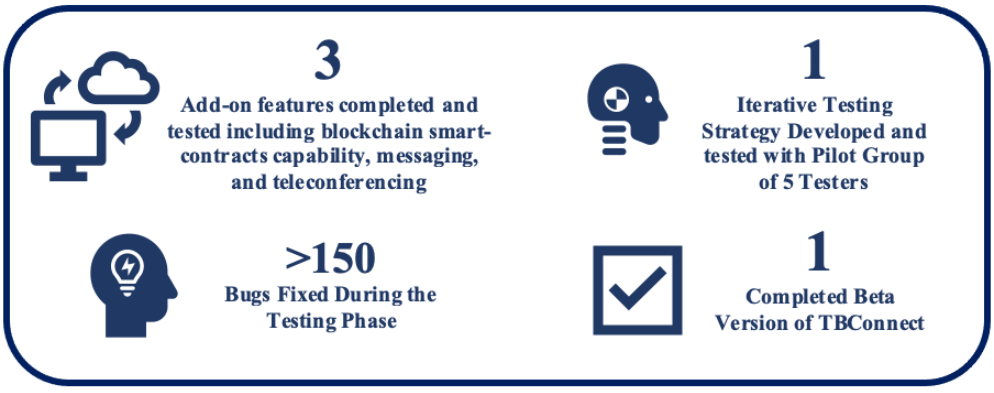
3500%
Increase in Instagram Followers

Education and Thought Leadership

We strongly believe in contributing to the existing body of knowledge through a variety of channels including monthly newsletters, infographics, reports, and videos to increase awareness around TB. It is also important for us to support the work of others in the TB field through reviewing and providing input and feedback on their research findings.

TBConnect Blockchain Platform

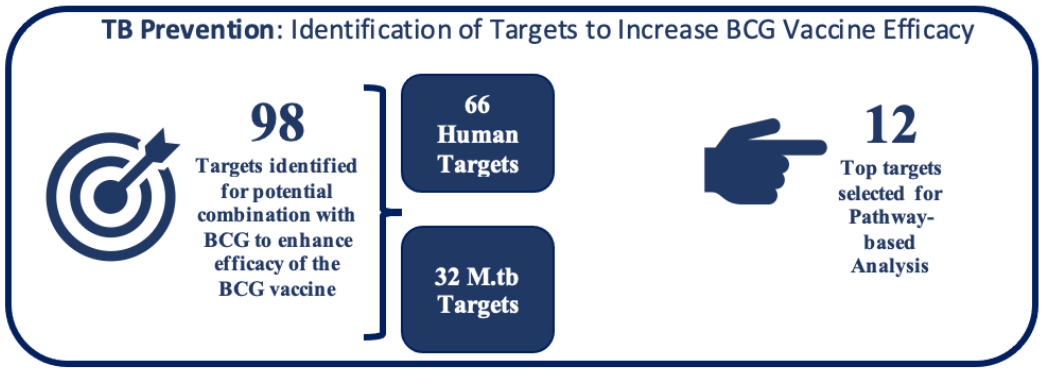
The Mueller Health Foundation is excited about the creation of the first version of its Ethereum blockchain application TBConnect, which aims to create a global network of key stakeholders in the field of tuberculosis to allow for improved information exchange and collaboration. MHF has successfully partnered with ValueCoders, a software development company based in India, and has completed the beta version of the TBConnect application.

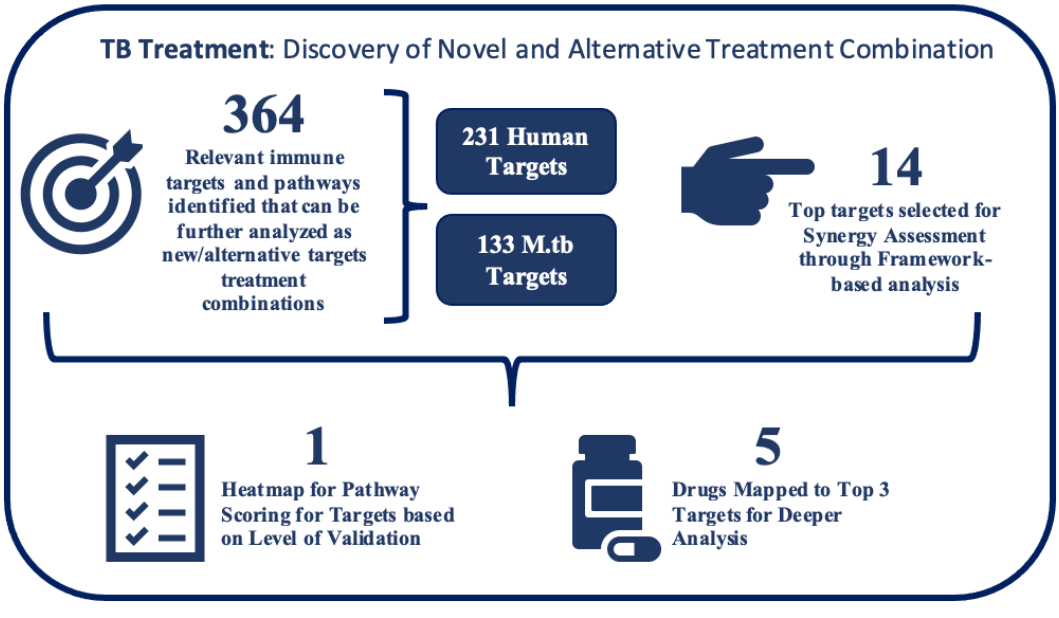


HIGHLIGHTS FROM OUR GRANTEES AND PARTNERS

InveniAI

The Mueller Health Foundation has partnered with InveniAI, a highly successful AI technology company based in Guilford, CT, USA, and New Delhi, India, to create a new high-value AI-driven machine learning platform called TBMeld® to identify and accelerate transformative therapies and vaccines for the management, treatment, and cure of tuberculosis (TB). The overarching goal of the collaboration is to pioneer the use of precision medicine to be able to provide tailored, highly effective, more tolerable and shorter treatment options for TB patients affected by both resistant and non-resistant strains of TB. On both the TB prevention as well as the treatment side, top targets have been identified and initial drug mapping to the identified targets has been completed, thereby leading us one step closer to identifying alternative treatment combinations.





PVP Collaboration with Boston Children's Hospital

Given the heavy burden of global TB and the newfound promise in translational vaccinology, the Precision Vaccines Program (PVP) at Boston Children's Hospital, directed by Dr. Ofer Levy, had engaged in a partnership with The Mueller Health Foundation to reduce the burden of tuberculosis (TB) via immunization. Together with PVP, the Mueller Health Foundation has created an educational video to raise awareness for TB for the general public. Additionally, valuable insights were gained on trained immunity and summarized in a paper with the main outcome demonstrating that that BCG-trained immune responses are age-specific. Additionally, a literature review was completed with a focus on in silico analysis of TB antigens expressed under hypoxic conditions and down-selection of immunogenic epitopes to identify good antigen candidates and new immunological targets based on known antigen-specific immunity to tuberculosis and known hypoxic antigens.

1 Completed an 8-minute video to educate the public on TB

1 Scientific Paper Published and Presented

1 Literature Review for Top TB Antigens to Target

David Russell's Lab at Cornell University

The Russell Lab at Cornell University has developed a novel approach to analyze how individual host immune cells react divergently to the bacteria that cause tuberculosis. Together with The Mueller Health foundation, the Russel Lab is building on this platform of single cell profiling of active Mycobacterium tuberculosis (Mtb) infection in vivo to assess the relative susceptibility of Mtb subpopulations to the actions of current and emerging anti-tuberculosis drugs. The goal is to generate a "road map" that connects drug susceptible and drug tolerant bacterial populations and facilitates the rational design of combinatorial anti-tuberculosis drug regimens to provide more effective coverage of the total bacterial population. This could increase efficacy and shorten the course of treatment. Due to the host cell responses to TB infection being epigenetically controlled, the collaboration further focuses on a new approach that takes epigenetic reprogramming into consideration. Initial screenings of epigenetic modifiers in vitro have demonstrated favorable impacts on inhibiting TB cell growth without affecting the viability of host immune cells. Additional in vivo experiments will help to validate potential drug targets that have already been identified and particular focus will be given to patient safety and toxicity profiles.

1 Completed primary screen of Epigenetic Modifiers Library

4 Common classes of inhibitors identified

THANK YOU

We would like to express our deepest gratitude to our supports, partners, and collaborators, for their time, insight, wisdom and contributions. Our work would not be possible without the many individuals from academic institutions, scientific and medical experts, biotech- and high-tech companies, multilateral agencies, non-governmental organizations and global networks, who willingly gave their time, experience and contributions to make a difference in the fight against infectious diseases!

InveniAI
Innovate with Intelligence

Precision Vaccines Program

owmyeye productions

Massachusetts Institute of Technology

Northwestern University

University of Liverpool

Harvard University

Combined Therapeutics

BioXcel
Medicines Through Ingenuity

Boston Children's Hospital
Until every child is well

Chinese Academy of Sciences

Cornell University

ValueCoders
On-Demand Software Teams


The Mueller
Health Foundation