CTVD Circular

October 2015 | Collaboration for TB Vaccine Discovery | Volume 2

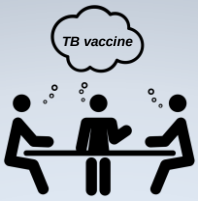
On September 29, 2015, the TB vaccine team had a Strategy Review with Bill Gates and Sue Desmond-Hellman. This strategy was developed over a 9-month period in 2014 and implementation has already begun. In the session, we discussed the rationale for TB vaccine discovery and development, new approaches to vaccine discovery that we are pursuing, new paradigm for testing TB vaccines, CTVD, and our TB vaccine investment priorities. ***Overall, we received positive feedback on the new strategy as a whole, on CTVD, and on our priorities for implementation.***

A Reminder: What is the CTVD? ***The primary aim of the CTVD is to foster innovation and collaboration in the up-stream TB vaccine discovery and development space.*** The CTVD hopes to provide a platform for investigators in the TB vaccine field to exchange ideas and knowledge, and will facilitate access to best-in-class, standardized services that will ultimately accelerate research and improve quality. ***Early data sharing is central and will be achieved at annual meetings, and through regular virtual meetings of research communities.***

At the CTVD launch, the participants agreed that ***a capacity building / exchange program between CTVD members would be valuable***. In response to this, we have created the ***Visiting Scientist Program*** and the ***Early Career Scientist Recognition*** Program:

Visiting Scientist Program: The program is designed for a personnel from a CTVD member institution who has a scholarly and intellectual interest in the state-of-the-art techniques, instruments, and innovations available in another CTVD member institution that can strengthen the capacity of the visiting scientist's institute for TB research. Through this program, scientists from CTVD member institutions from around the world are invited to spend from 2 weeks to a maximum of 8 weeks and participate in established research studies in a laboratory of a CTVD member institution of their choice. More information here.

Early Career Scientist Recognition: Today's early career scientists are essential to ensure that the field remains innovative, scientifically robust and infuse new ways of approaches to tackle the scientific challenges. The CTVD has implemented a process to recognize the efforts of early career scientists who have made significant contributions to research in TB host-pathogen biology, immunology, and vaccinology. The Early Career Scientist award carries with it a travel grant to attend a TB-related conference. More information here.



Research communities aim to ***address specific areas critical for TB vaccine discovery and development***. They are led by persons from outside the foundation, and will meet at least 1 day in the year in person, and at least 1 more virtually. ***Each community is mandated with discussing the issues at hand and devising priority areas that have to be addressed.*** We hope that individuals within these communities would initiate funding applications to major funders, including the foundation, to address priorities. ***Anyone can take part in these communities – if relevant, please contact the appropriate leader***. *[Ctrl + click for the email addresses]*

Aerosol vaccination
Aurelio Bonavia
Steffen Stenger

Donor Unrestricted T Cells
Dave Lewinsohn
D. Branch Moody

NHPs
Mario Roederer
Bob Seder

Whole cell vaccines
Paul Henri Lambert
Tom Scriba

Publications of Interest

Thank you to Ann Ginsberg, Tom Evans, Lew Schrager, Carlos Martin, and Ian Orme for the suggestions.

TB vaccines; promoting rapid and durable protection in the lung.

Andersen P, Urdahl KB.
Curr Opin Immunol Jun 2015

- Most TB vaccine candidates aim to amplify IFN-γ producing memory T cells in the blood.
- The frequency of IFN-γ producing T cells in blood does not correlate with protection. Animal models suggest vaccine-induced T cell responses should be rapid and sustained.
- Lung resident-memory T cells may prevent or curb early infection. Central memory T cells migrate to the site of infection and provide durable protection.

Tuberculosis vaccines and prevention of infection.

Hawn TR, Day TA, Scriba TJ, Hatherill M, Hanekom WA, Evans TG, Churchyard GJ, Kublin JG, Bekker LG, Self SG.
Microbiol Mol Biol Rev. Dec 2014

- Development of an effective TB vaccine is a top global priority that has been hampered by an incomplete understanding of protective immunity to TB.
- Thus far, preventing TB disease, rather than infection, has been the primary target for vaccine development.
- Several areas of research highlight the importance of including pre-infection vaccines in the development pipeline.

Side-by-side comparison of T cell reactivity to Mycobacterium tuberculosis antigens in diverse populations.

Carpenter C, Sidney J, Kolla R, Nayak K, Tomiyama H, Tomiyama C, et al.

- The study compared T cell recognition of 59 prevalently recognized antigens in individuals latently infected with Mtb (LTBI), and uninfected individuals with previous BCG vaccination, from 9 locations and populations with different HLA distribution, Mtb exposure rates, standards of TB care.
- The comparison revealed similar response magnitudes in diverse LTBI and BCG-vaccinated cohorts and significant correlation between responses in LTBIs from the USA and other locations.

Tuberculosis vaccines: Time for a global strategy.

Kaufmann SHE, Evans TG, Hanekom WA
Sci Trans Med 25 Feb 2015

- **We need a global strategy for the development of better tuberculosis vaccines.**

Tuberculosis vaccines: barriers and prospects on the quest for a transformative tool

Karp CL, Wilson CB, Stuart LM
Immunological Reviews 2015

- The road to a more efficacious vaccine that could be a truly transformative tool for decreasing tuberculosis morbidity, mortality, and transmission, is quite daunting.
- Abetted by better conceptual clarity, clear acknowledgment of the degree of our current immunobiological ignorance, the availability of powerful new tools, the generation of more creative diversity in tuberculosis vaccine concepts, the development of better fit-for-purpose animal models, and the potential of more pragmatic approaches to the clinical testing of vaccine candidates, the field has promise for delivering novel tools.

The Efficacy of the BCG Vaccine against Newly Emerging Clinical Strains of Mycobacterium tuberculosis.

Henao-Tamayo M, Shanley CA, Verma D, Zilavy A, Stapleton MC, Furney SK, Podell B, Orme IM. PLoS ONE Sept 2015.

- To date, most new vaccines against Mycobacterium tuberculosis, including new recombinant versions of the current BCG vaccine, have usually been screened against the laboratory strains H37Rv or Erdman.
- In this study the authors took advantage of our recent work in characterizing an increasingly large panel of newly emerging clinical isolates to determine to what extent vaccines would protect against these [mostly high virulence] strains.

DMSA Update

21 institutions have agreed to the wordings and signed the Data and Materials Sharing Agreement (DMSA). Thank you.

CTVD Funders' Community. We propose to bring together representatives of the ***NIH, Wellcome Trust, DFID, DGIS, British MRC and EU*** initially, to meet virtually or in person once or twice a year to **discuss the outputs of the research communities – priorities for funding in their specific area**. As such, we may be able to co-leverage funding for priorities, or at least discuss possibilities.

SAVE THE DATE
CTVD Annual Meeting
Jun 30 & Jul 1, 2016 - Seattle

We welcome your contributions for the 3rd CTVD Circular (January 2015). Information about vaccine projects you are involved in or other scientific information (e.g. a recent TB vaccine, host-pathogen biology, or immunology publication of interest) you wish to share for the benefit of other CTVD members. Please do not hesitate to send comments and suggestions to:

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