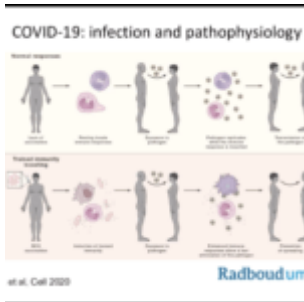
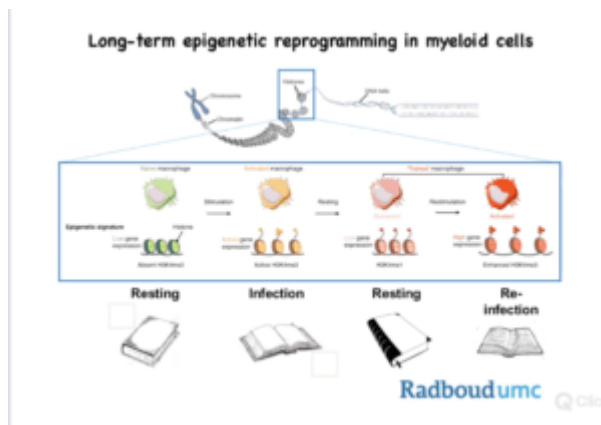


IUIS Webinar: Trained immunity and BCG vaccination: a tool against COVID-19?



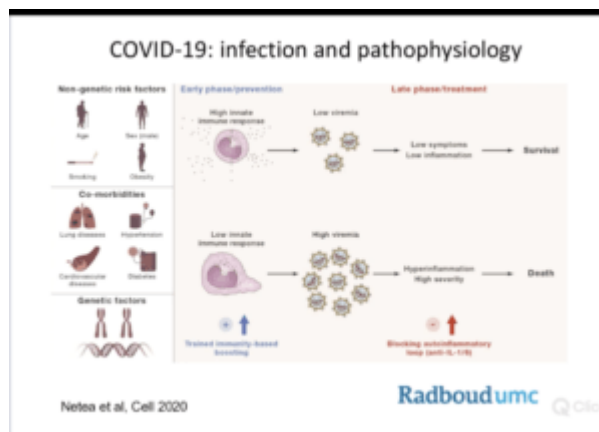
Mihai Netea (head of the division of Experimental Medicine, Department of Internal Medicine, Nijmegen University Nijmegen Medical Center) gave a brilliant seminar on “Trained immunity and BCG vaccination: a tool against COVID-19?” BCG a vaccine designed to combat Tuberculosis, has been shown to provide beneficial non-specific responses against unrelated pathogens, including respiratory viruses. During his talk, he highlighted:



Studies, including a systematic review by [Higgins et al., 2016 BMJ](#) and WHO-SAGE report that provided evidence for BCG associated protection against all cause mortality due to respiratory diseases and sepsis in children. Reduced all cause mortality has been attributed to improved innate immunity which results in increases innate immune responses upon secondary infection, a phenomena known as

trained immunity.

- Trained immunity has been attributed to long-term epigenetic reprogramming of myeloid cells e.g macrophages, which facilitate rapid upregulation of innate effector functions upon challenge. These epigenetic changes are dependent on changes in the metabolic pathway e.g increased glycolysis and krebs cycle which results in metabolites that activate epigenetic modifications.
- He provided evidence for BCG associated trained immunity against unrelated viral infection in humans e.g yellow fever. This trained immune responses were facilitated by increased expression of IL-1 β .



- Trained immunity effects are facilitated by induction of epigenetic reprogramming of myeloid cell progenitors in the bone marrow (Cirovic et al., in press). As a result newly produced cells e.g macrophages are more permissive to activation, and facilitate early clearance of pathogens.
- In the case of COVID-19, Prof Netea suggested that BCG-induced trained immunity would rapidly induce high innate immune functions which would restrict SARS-CoV-2 replication leading to low symptoms, reduction in SARS-CoV-2 associated hyperinflammation and improved survival.
- Lastly, he described ongoing trials that will determine if BCG does provide some heterologous immunity against COVID-19. He reiterated that BCG vaccination if successful, would only buy time till a COVID-19 specific

vaccine is available.

Also Read:

- [BCG induced trained immunity & COVID-19](#)
- [BCG & COVID-19](#)
- [Does BCG improve de novo malaria immunity ?](#)