Multiple cytokine analysis based on QuantiFERON-TB Gold Plus in different tuberculosis infection status: an exploratory study

zhengrong Yang，Lifan Zhang，Qiping Ge,Yueqiu Zhang,Fengying Wu,Mengqiu Gao,Xiaoqing Liu*
Peking Union Medical College Hospital, Chinese Academy of Medical Science, Beijing,100730, China
liuxq@pumch.cn

Objective

To explore the differences of multiple cytokines secretion based on QuantiFERON-TB Gold Plus (QFT-Plus) antigens stimulation, and to screen cytokines with potential to differentiate tuberculosis infection status.
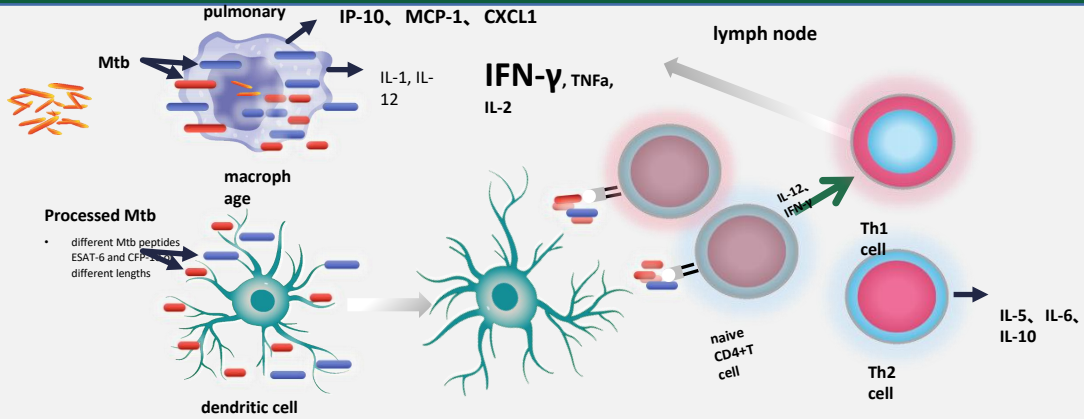
Introduction

Fig. 1 Cytokines and immune cells involved in the in immune process of Mycobacterium tuberculosis infection

Methods

- **TB1:** Primarily detects CD4+ T cell
- **TB2:** Optimized for detection of CD4+ and CD8 + T cell responses
- **TB2-TB1:** to elicit cell-mediated immune responses from CD8 + T cell

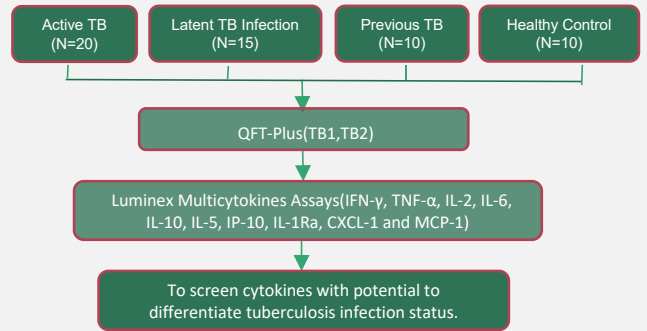**Fig. 2** QFT-Plus antigen to elicit cell-mediated immune responses from CD4+ and CD8 + T cell

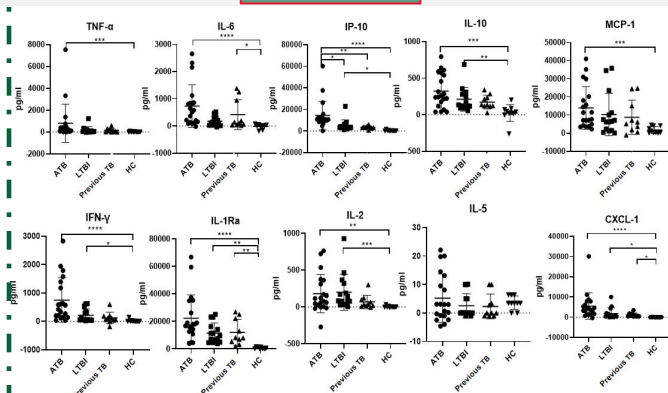**Fig. 3** Experimental flow chart

Results

Results 1

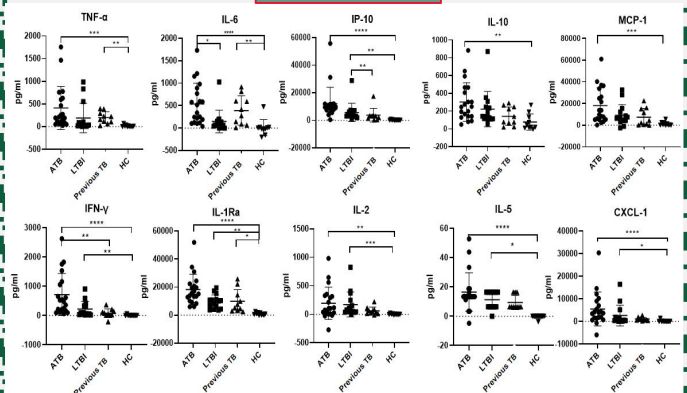**Fig. 4** Cytokine levels in QFT-Plus TB1 stimulation in each group. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Results 2

Fig. 5 Cytokine levels in QFT-Plus TB2 stimulation in each group. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
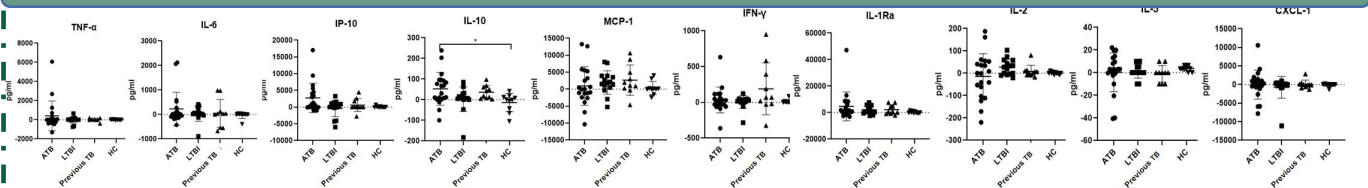
Results3

Fig. 6 Cytokine levels in QFT-Plus TB2-TB1 stimulation in each group. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Conclusion

In addition to IFN-γ, the detection of IL-2, IL-1Ra, CXCL-1 by QFT-Plus may have the potential to detect tuberculosis infection. Combined detection of IP-10 and IL-6 levels may have the potential to differentiate active TB from latent TB infection.

Reference

[1] WHO, Global Tuberculosis Report 2020, http://www.who.int/tb/publications/global_report/en, (2020).
[2]Day, C.L. et al. (2011) J.Immunol. 187, 2222.
[3] Rozot, V. et al. (2013) Eur. J. Immunol. 43, 1568