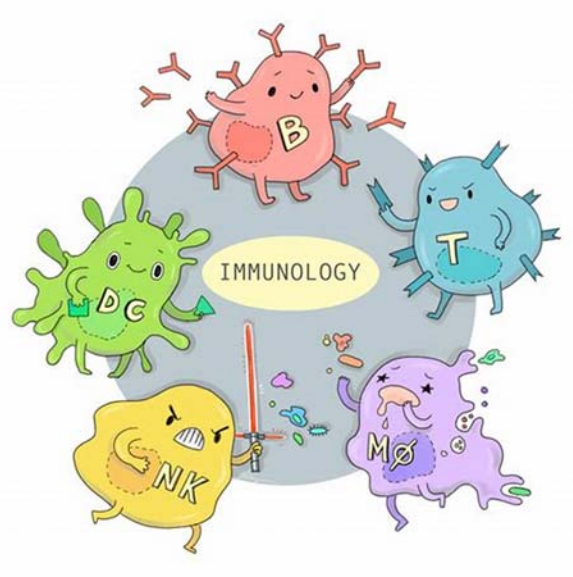
oxford vaccine group

www.ovg.ox.ac.uk

UNIVERSITY OF OXFORD

ON THE EARLY CELLULAR IMMUNE RESPONSE DURING *SALMONELLA* TYPHI INFECTION

Marije Verheul



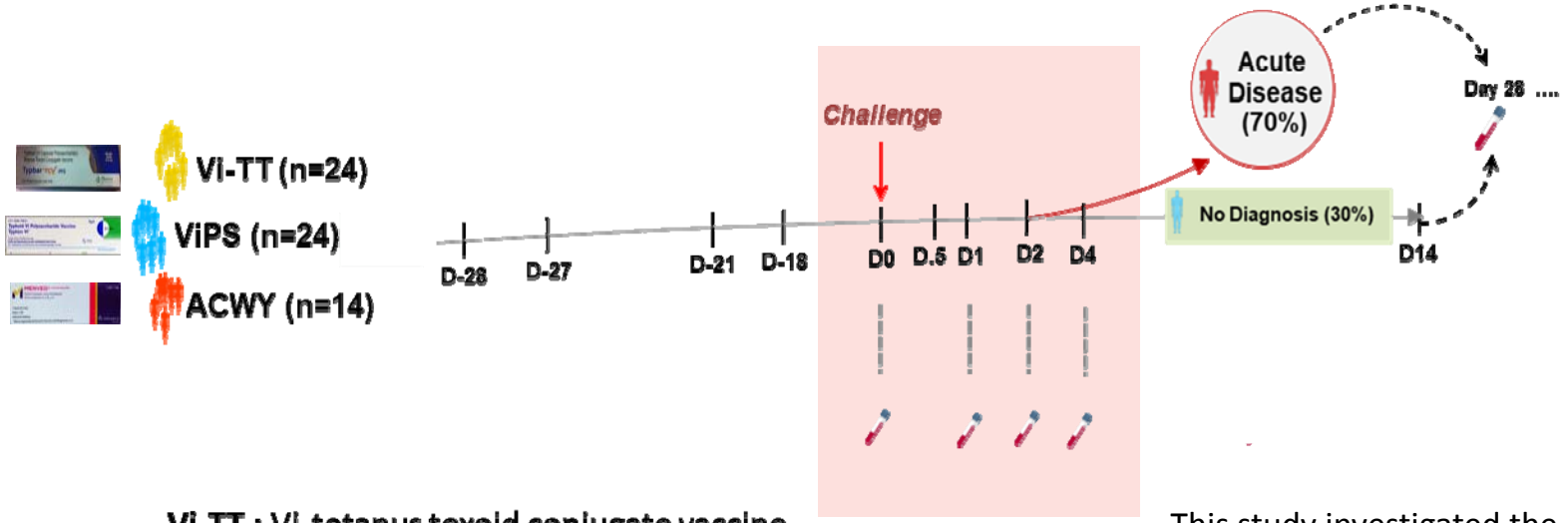
BILL & MELINDA GATES foundation

ADITEC

NHS
National Institute for Health Research

www.ovg.ox.ac.uk

Vaccines against *S.* Typhi



Vi-TT : Vi-tetanus toxoid conjugate vaccine
VI-PS: Vi-polysaccharide vaccine
ACWY: Men ACWY vaccine (Control vaccine)

This study investigated the effect of typhoid vaccines on development of typhoid fever

BILL & MELINDA GATES foundation
ADITEC Advanced Immunisation Technologies
NHS National Institute for Health Research

www.ovg.ox.ac.uk

AIM

- To characterize the cellular response after *S.* Typhi infection
  - What are the cellular changes observed after challenge?
  - Is there a cellular profile associated with Vaccination
  - Is there a cellular profile associated with Outcome

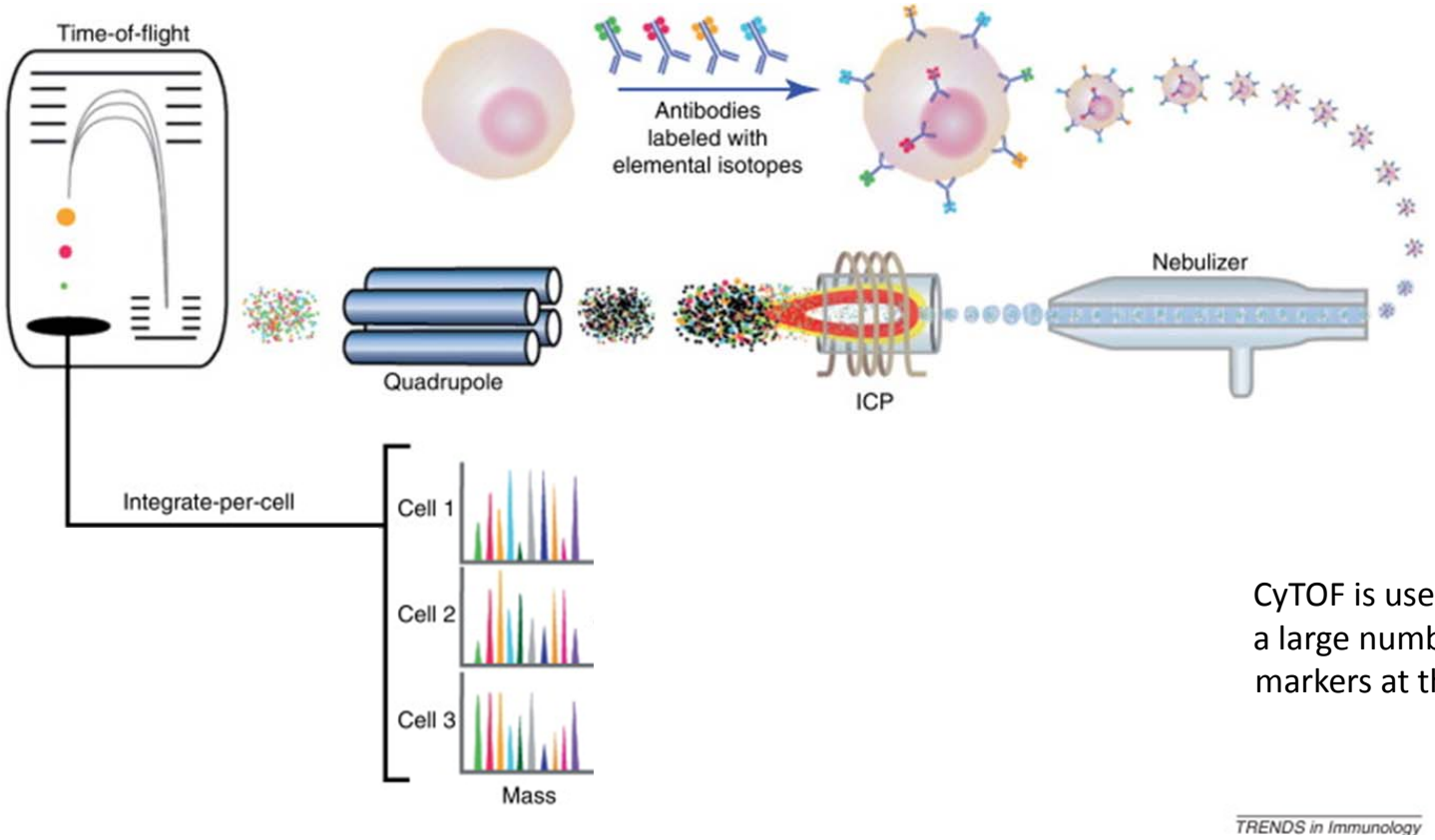
More information on cellular responses after vaccination can be found on poster 25, from Deborah Cross

BILL & MELINDA GATES foundation
ADITEC
NHS National Institute for Health Research

oxford vaccine group
www.ovg.ox.ac.uk

Methods - CyTOF

UNIVERSITY OF OXFORD



CyTOF is used to measure a large number of cellular markers at the same time

TRENDS in Immunology

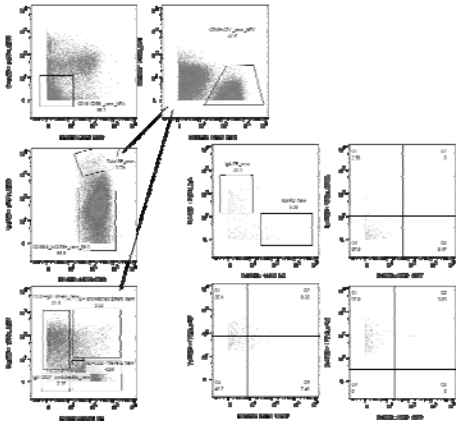
BILL & MELINDA GATES foundation

ADITEC Advanced Immunization Technologies

NHS National Institute for Health Research

Analysis

- Classical gating



- Too many combinations to look into everything

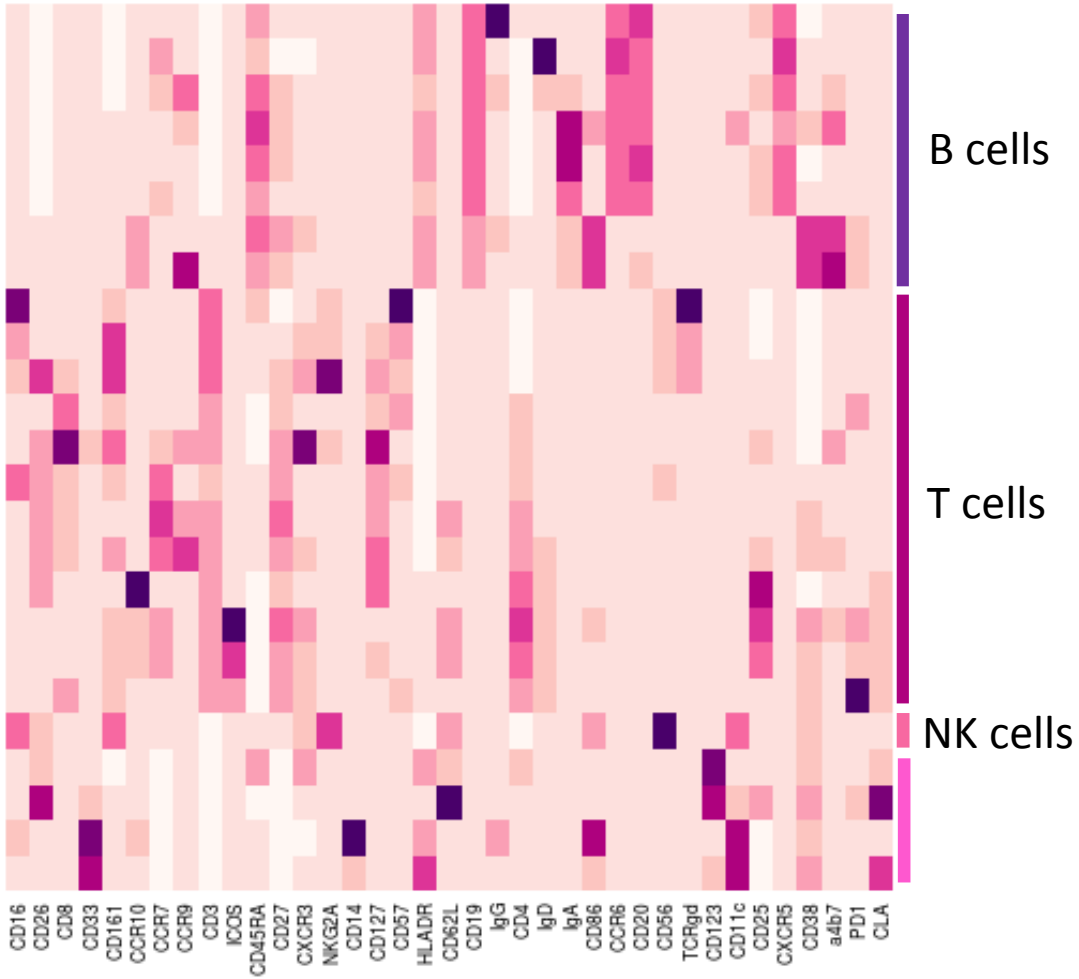
- Unbiased clustering

- Computational sorting of cells into groups (“clusters”)

oxford vaccine group
www.ovg.ox.ac.uk

UNIVERSITY OF OXFORD

Clustering

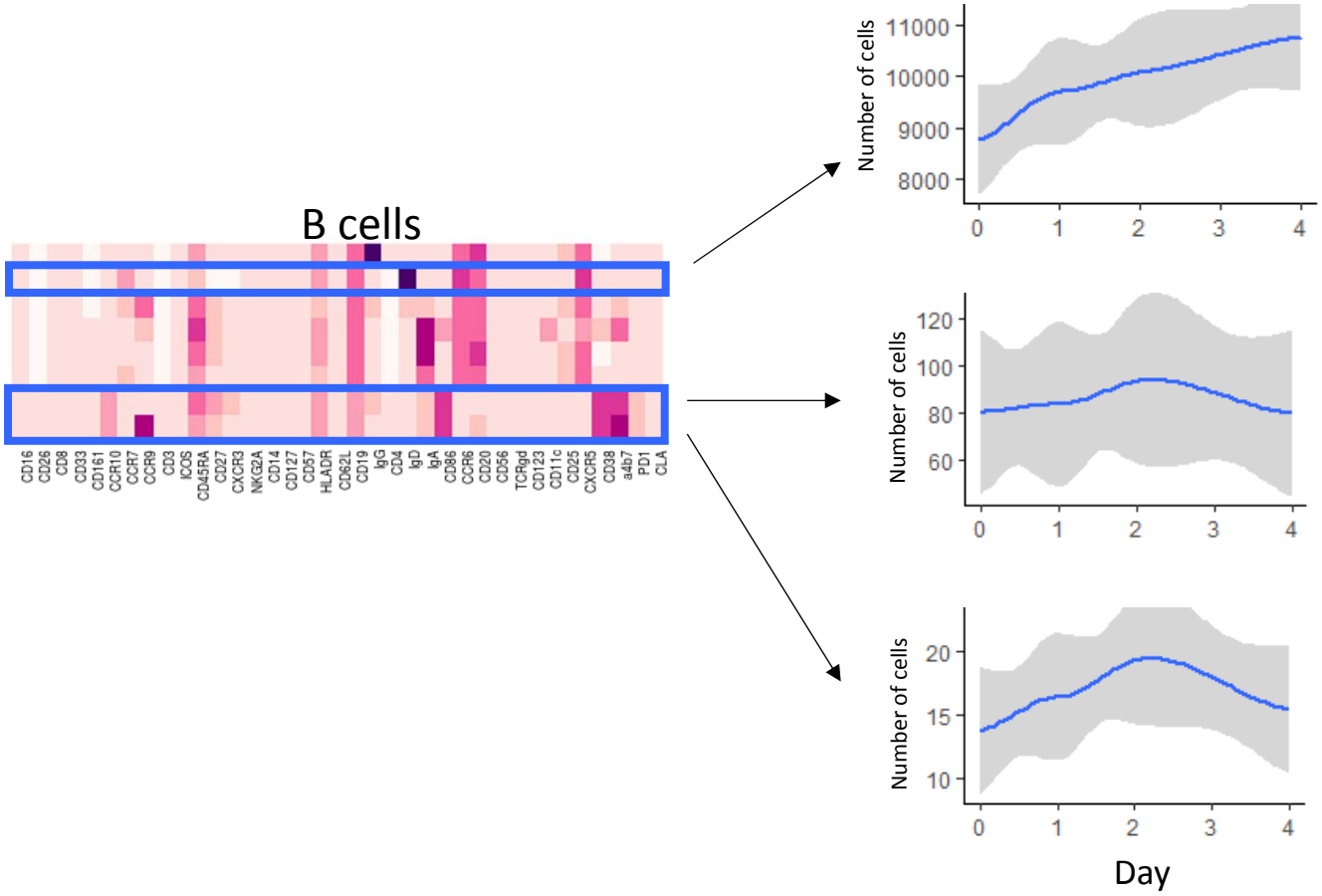


BILL & MELINDA GATES foundation

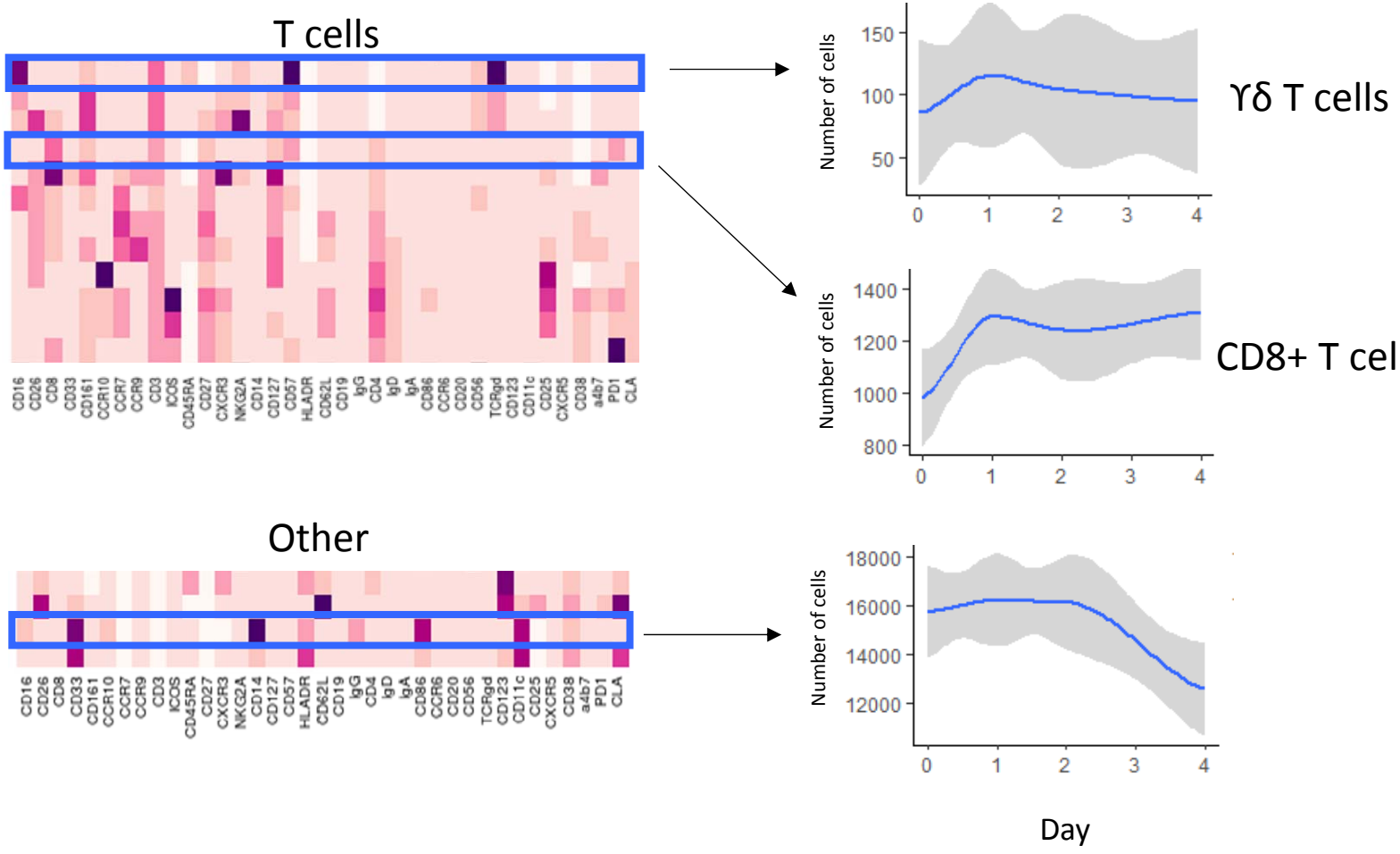
ADITEC Advanced Immunisation Technologies

NHS National Institute for Health Research

Changes over time



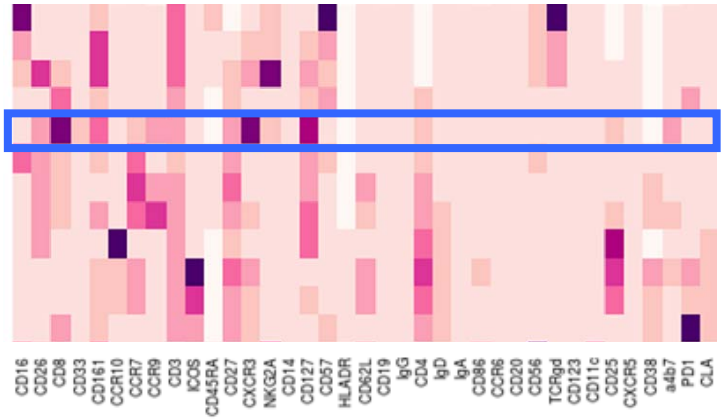
Changes over time



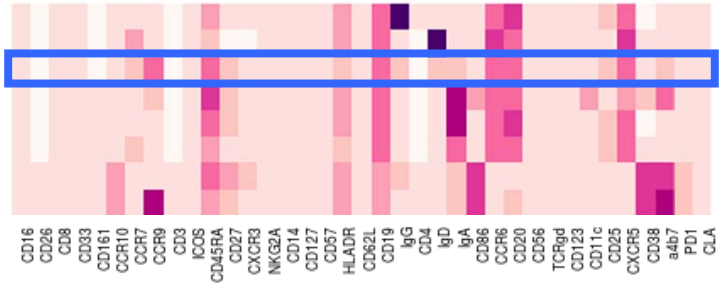
Influence of Vaccination

www.ovg.ox.ac.uk

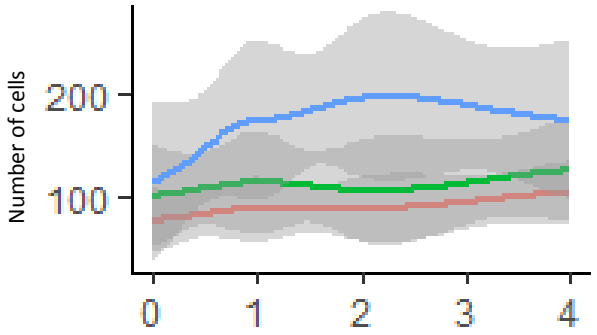
T cells



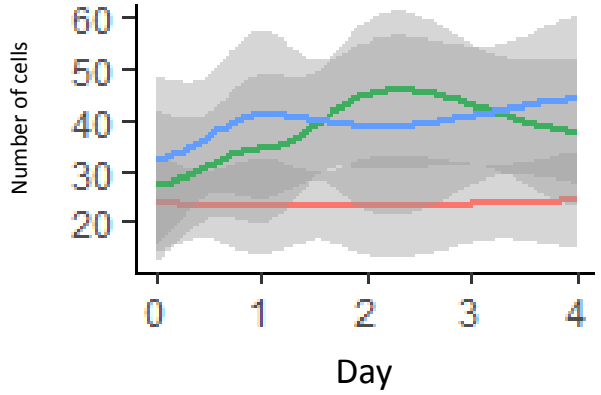
B cells



CXCR3+ CD8+ T cells



CCR9+, CCR6+, CXCR5+ B cells



Vaccine

CTRL

Vi-PS

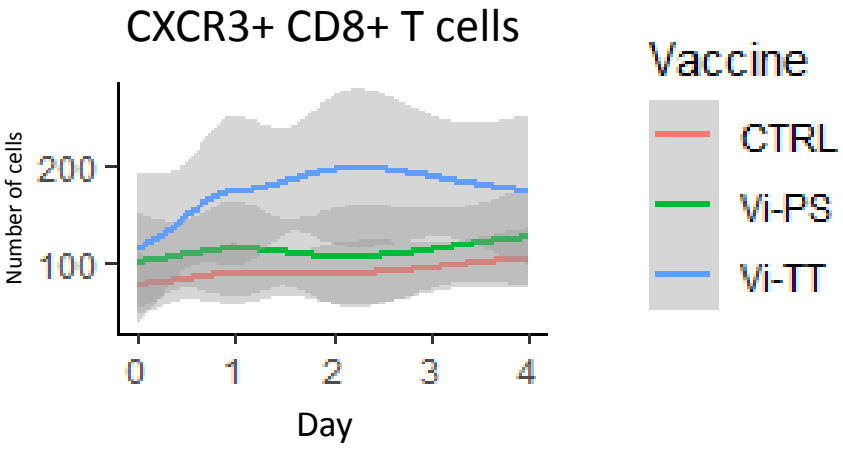
Vi-TT

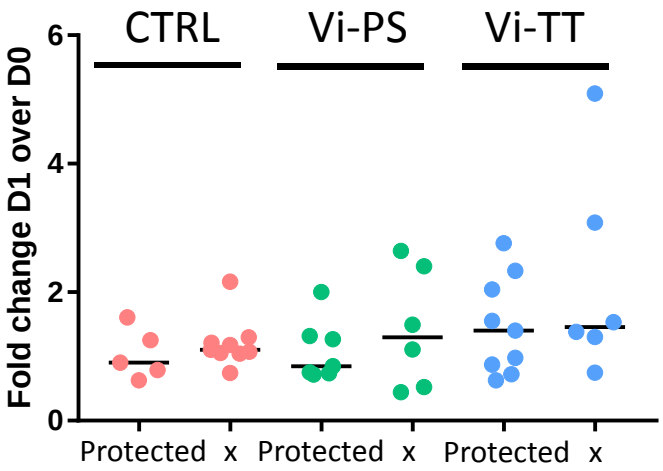
BILL & MELINDA GATES foundation

ADITEC

NHS National Institute for Health Research

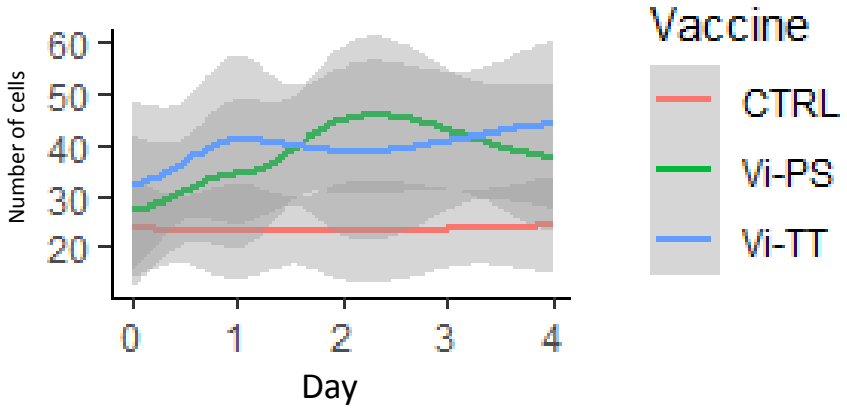
Associations with outcome

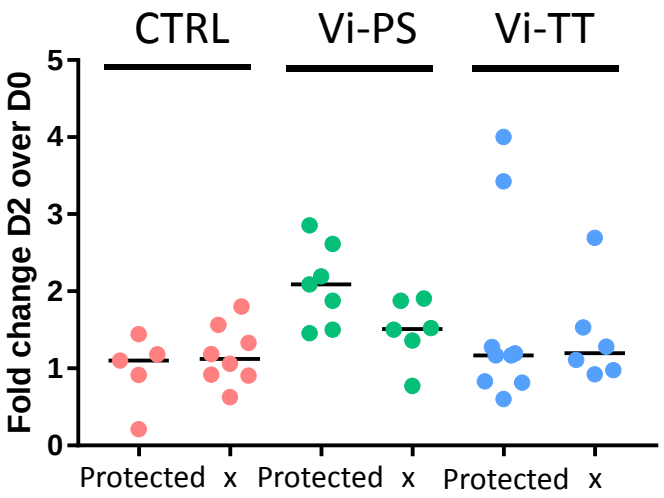




Associations with outcome

CCR9+, CCR6+, CXCR5+ B cells





Summary

- *S.* Typhi infection induces early cellular responses, in most subsets
- Vaccination changes the early response to infection

- Additional computational analysis methods are required to further investigate the current data.
- These findings should be confirmed in future studies.

Acknowledgements

Michael Leipold
Natalia Sigal
Kira Foygel
Sofia Maysel-Auslender
Gerlinde Obermoser
Holden Maecker

Deborah Cross
Irina Mohorianu
Jennifer Hill
Christoph Blohmke
Andrew Pollard