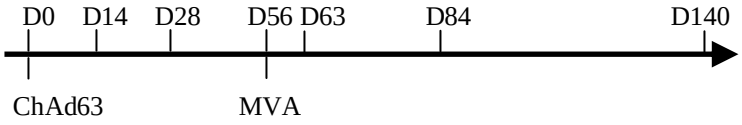
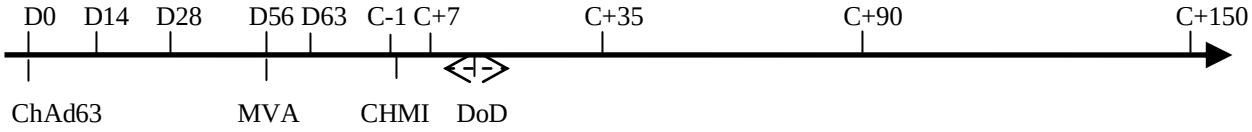
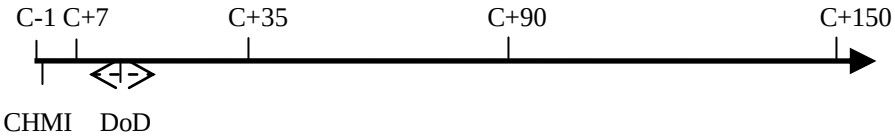
A **Phase Ia**



B **Phase IIa**



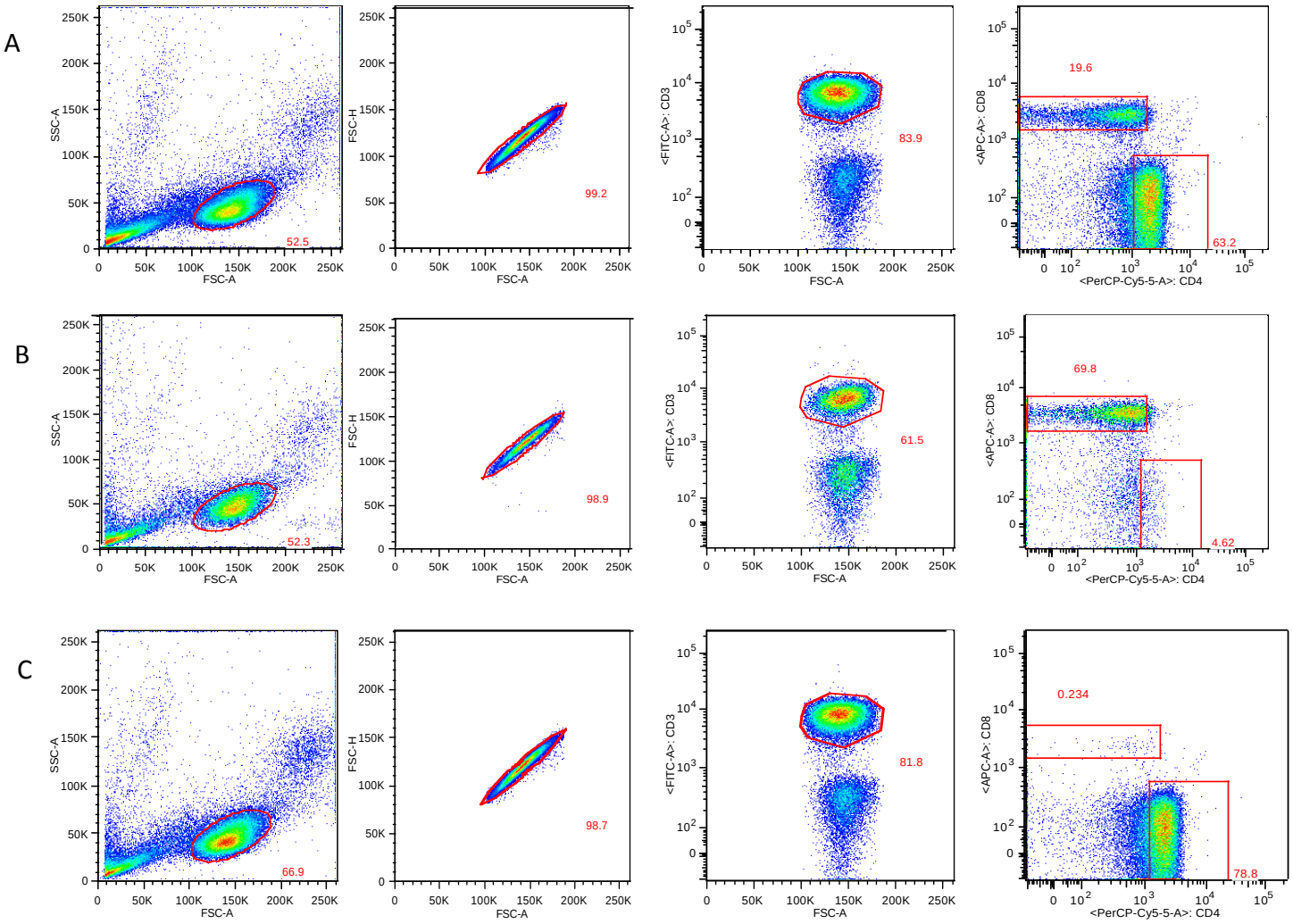
C **Phase IIa: Infectivity Controls**



Supplemental Figure 1.

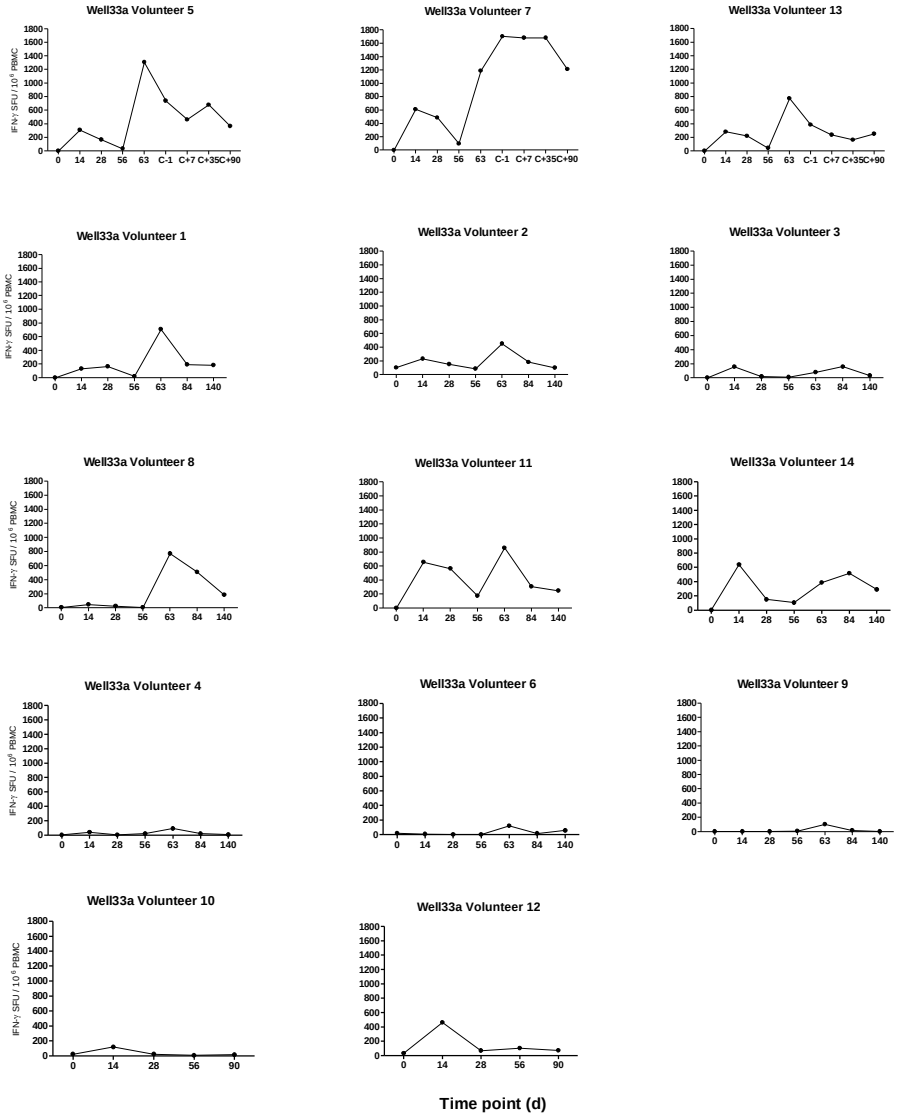
Vaccine Trial Timeline.

T cell responses from key time-points within Phase Ia **(A)** and Phase IIa **(B)** clinical trials were analysed in this study. ChAd63 priming vaccination was followed 8 weeks later with MVA booster vaccination. In Phase IIa studies, controlled human malaria infection (CHMI) followed MVA booster vaccination between 2-3 weeks later. Phase IIa infectivity control volunteers **(C)** underwent CHMI without previous vaccination in parallel with Phase IIa vaccinated volunteers.



<u>Supplemental Figure 2</u>.
CD4$^+$ and CD8$^+$ T cell depletion efficiency.

Cells were gated by Lymphocytes/Singlets/CD3$^+$ before gating on CD4$^+$ and CD8$^+$, displayed left to right. (**A**) Undepleted cells, (**B**) CD8$^+$ (CD4$^+$ depleted) cells, (**C**) CD4$^+$ (CD8$^+$ depleted) cells. CD3$^+$ gates contain the following numbers of events, Undepleted (39,668), CD8$^+$ (9730), CD4$^+$ (34,229). Depletion efficiency was >98% for CD4$^+$ and >99% for CD8$^+$. 4/14 volunteers were tested for depletion efficiency. Plots of volunteer #3 are presented and are representative of observed results.



Supplemental Figure 3.

Individual responses to the Well33a pool over time in primary clinical trial MSP1 ELISPOT assays.

Graphs show total T cell IFN-γ response to the Well33a peptide pool over time (reported as SFU per million PBMC). The Well33a pool contains 9 20mer peptides. Volunteers #5, 7 and 13 received ChAd63 prime and MVA booster vaccinations followed by CHMI. Volunteers #10 and 12 received only ChAd63 prime vaccination. All remaining volunteers received ChAd63 prime and MVA booster vaccinations.