

Immunologic Characterization of a Rhesus Macaque H1N1 Challenge Model for Candidate Influenza Vaccine Assessment

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Figure S1

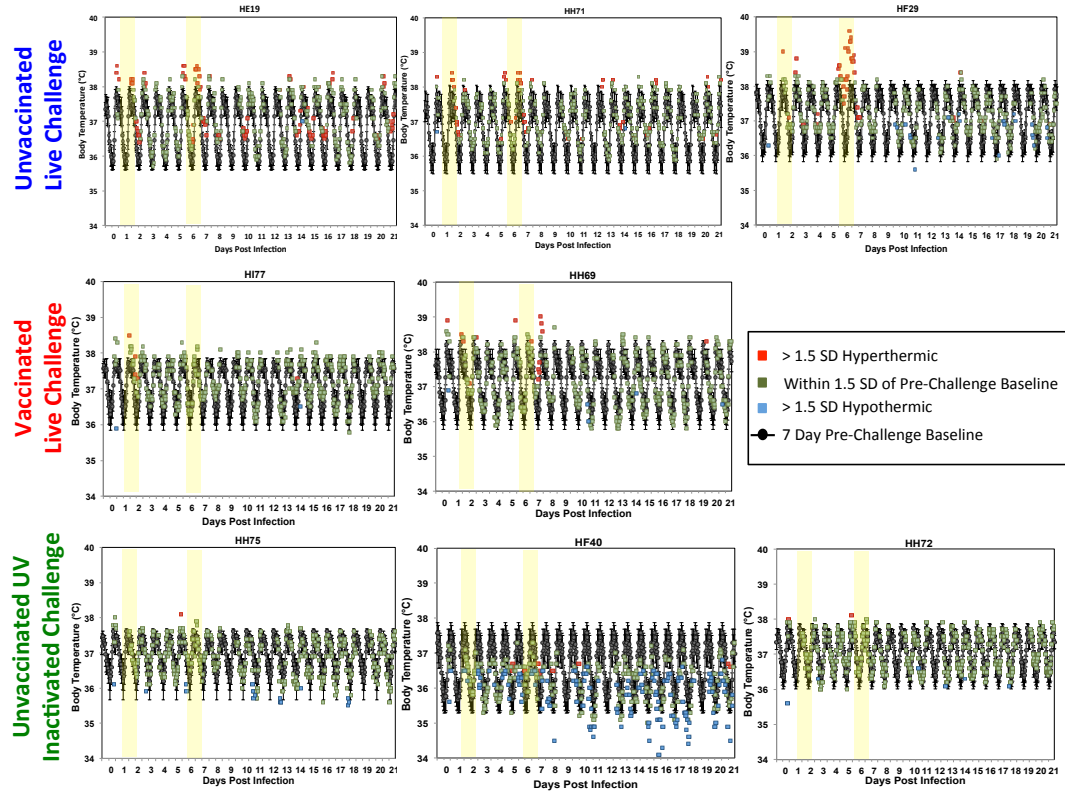


Figure S1. Biphasic fever is associated with live pH1N1 challenge in naïve rhesus macaques. vaccination elicits differential sub-clinical and cellular responses following live virus challenge. The body temperature for each animal was recorded hourly for seven days prior to pH1N1 challenge to establish a pre-challenge baseline. Post-challenge temperature observations are superimposed onto the average baseline observations. Post-challenge temperature observations greater than 1.5 times the standard deviation of the pre-challenge baseline and increased relative to the baseline are indicated by (■) and is considered a “fever-hour” observation. Post-challenge temperature observations greater than 1.5 times the standard deviation of the pre-challenge baseline and decreased relative to the baseline are indicated by (■) and is considered hypothermic observations. All post-challenge temperature observations less than 1.5 times the standard deviation of the pre-challenge baseline are indicated by (■). Day 1 and 6 observations are highlighted in yellow

Figure S2

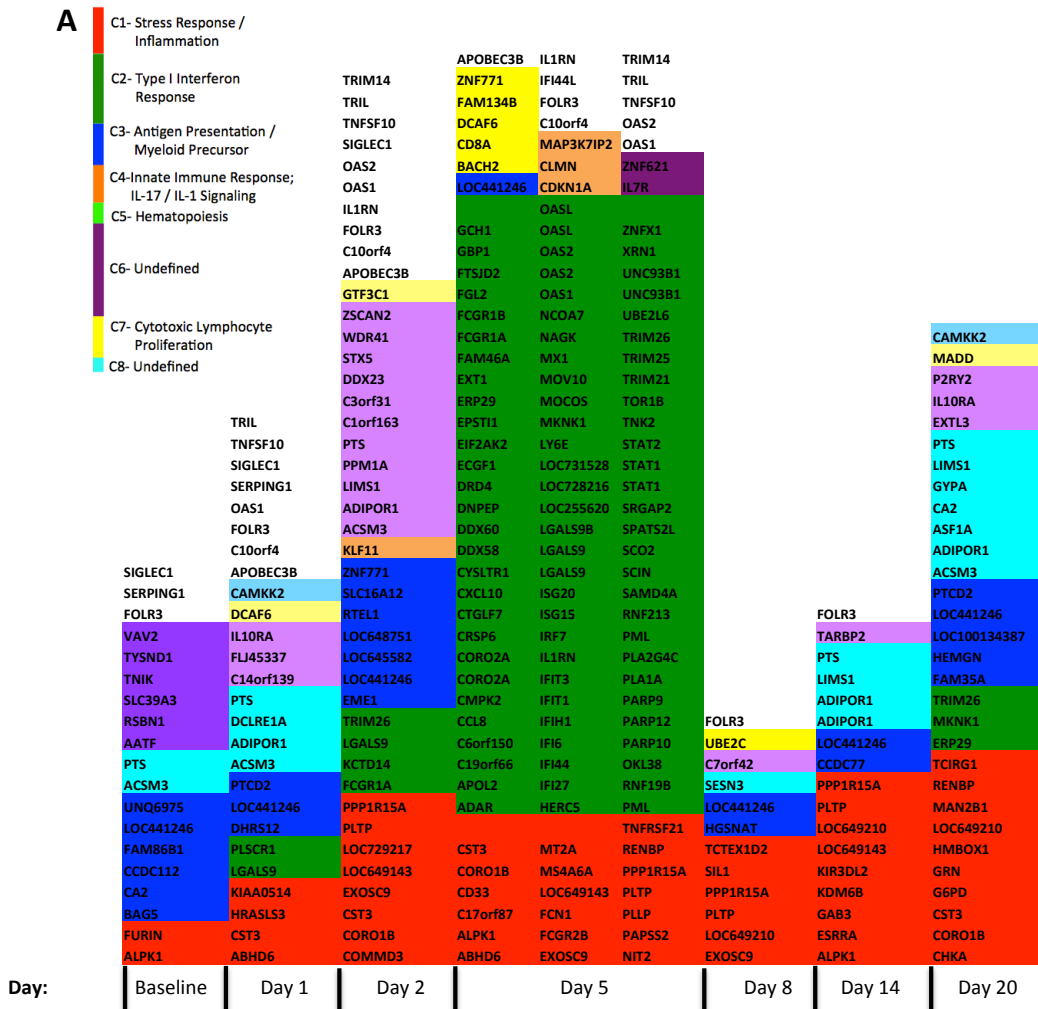


Figure S2. Direct LMMMA comparison between vaccinated and unvaccinated groups At each time point Linear Mixed Model Analysis revealed specific genes from each cluster, defined in Figure 2, that were differentially expressed between vaccinated and unvaccinated arms. FDR=0.05 Gene is colored by cluster membership. Uncolored gene names represent those that were significant in the direct comparison but not significant in the comparison to the shared baseline in Figure 2.

Figure S3

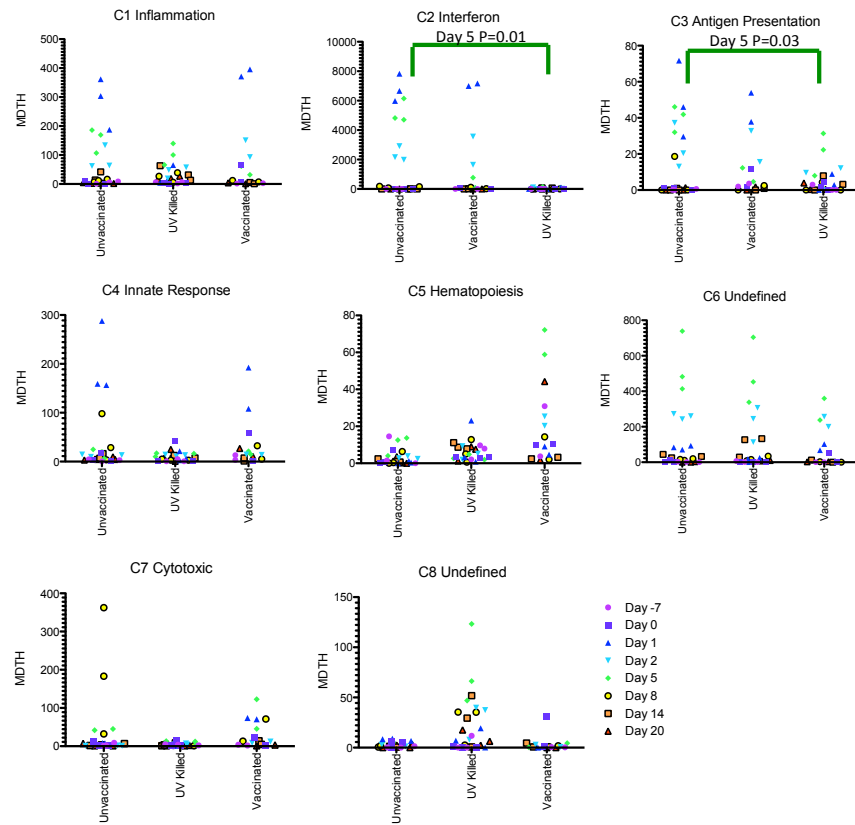


Figure S3. Molecular Distance to Health (MDTH) quantifies the activity of each cluster relative to pre-challenge baseline. The molecular perturbation for all genes within each cluster was calculated and plotted by animal at each time point. Only Type I Interferon (C2) and Antigen Presentation (C3) exhibited significant differences between vaccinated and unvaccinated groups challenged with live virus at any time points. ($p < 0.05$; unpaired t-test with Welch's correction).

Figure S4

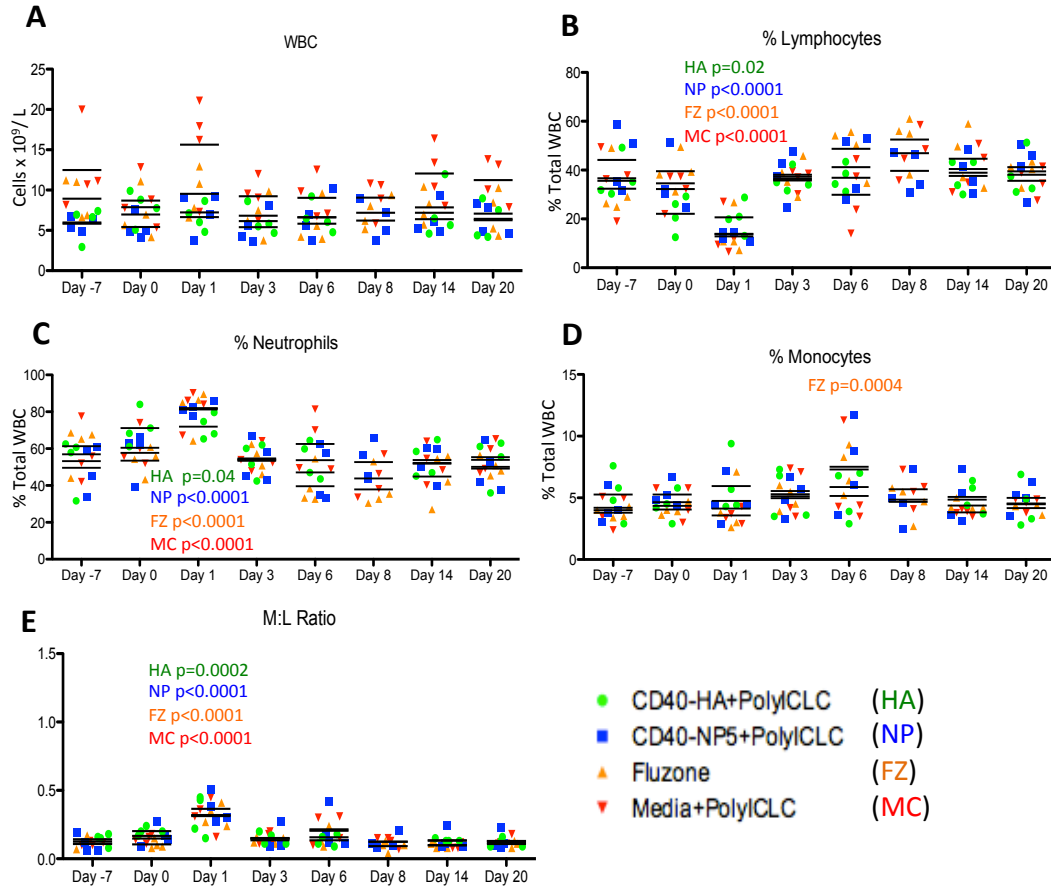


Figure S4. Changes in interferon activity can not be explained by changes in cell frequency. Complete Blood Count (CBC) analysis of Total Cell Count (A), % Lymphocytes (B), %Neutrophils (C), %Monocytes (D) and Monocyte to Lymphocyte Ratio (E). No significant differences in cell populations were observed between control group and vaccination groups at any time point (unpaired t-test with Welch's correction). Indicated p-values reflect significance of changes for each group relative to baseline day 0 (paired t-test). Note: Day 8 observations of the CD40-HA+PolyICLC group were not made due to the impact of hurricane Isaac on the TNPRC.

Figure S5

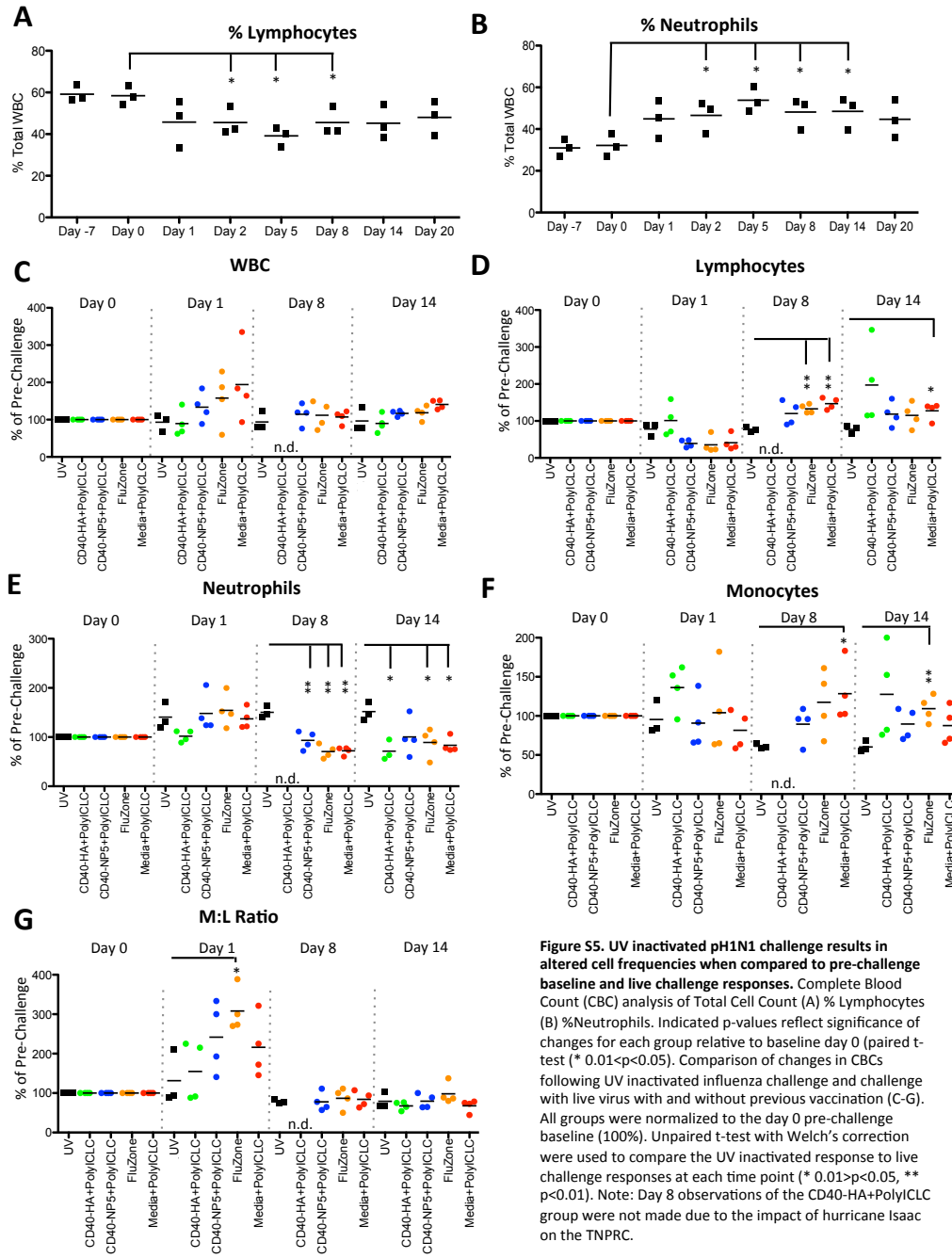


Figure S5. UV inactivated pH1N1 challenge results in altered cell frequencies when compared to pre-challenge baseline and live challenge responses. Complete Blood Count (CBC) analysis of Total Cell Count (A) % Lymphocytes (B) % Neutrophils. Indicated p-values reflect significance of changes for each group relative to baseline day 0 (paired t-test (* 0.01 < p < 0.05)). Comparison of changes in CBCs following UV inactivated influenza challenge and challenge with live virus with and without previous vaccination (C-G). All groups were normalized to the day 0 pre-challenge baseline (100%). Unpaired t-test with Welch's correction were used to compare the UV inactivated response to live challenge responses at each time point (* 0.01 < p < 0.05, ** p < 0.01). Note: Day 8 observations of the CD40-HA+PolyI/C-L group were not made due to the impact of hurricane Isaac on the TNPRC.