Molecular profiles of CXCR5+ CD4 Memory cells Associated with Flu Vaccine Response

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Table 1. Pediatric patients with HIV+ and HIV- negative were given a single dose of trivalent inactivated influenza vaccine (TIV) during 2012-2013 flu season. Peripheral blood was collected before and (T1) and 21 days post-vaccination (T2). PBMC were cryopreserved and numbers of patient with Semiquantitative (SR, Ab titer >140) at T1, T2 and T2-4 fold increase in Ab titer were defined as responders to TIV. Vaccine Non-responders (NR) are depicted.

Table 2. Gene panel used for Fluidigm BioMark experiments, divided into functional categories. All primer sets were used for Flu Vaccine Responses gene expression assays. Genes were chosen according to basic biological questions, literature, and microarray data generated by our lab.

Results

Background.

Vaccination is critical for the induction of effective T cell responses against influenza and other pathogens. Influenza infection of humans is associated with increased levels of CD4+ and CD8+ T cells, which are required for the development of a memory response against influenza infection. In general, the H1N1 virus is known to stimulate the immune system and cause a number of different reactions in the body. The immune system is an important component of the body's defense against infection, and it responds to different stimuli by producing antibodies and T cells that can help fight off the infection.

Patient Cohort.

We used Fluidigm technology to interrogate gene expression of a curated panel of 96 genes in several cell populations (PBMC, CD4+ T cells, pTFH, and non-pTFH) of HIV+ and HIV negative children in samples collected before seasonal Flu vaccination in an attempt to identify predictive signatures of vaccine responses in patients who were classified as R and NR post vaccination. In vitro stimulation of PBMC from the vaccine group and the respective TNFα non-responders revealed pTFH defects in gene induction related to TFH functions and TCR signaling, suggesting that both pTFH and non-pTFH, rather than specific parameters, are associated with good responses to Flu vaccination.

Summary and Conclusions.


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