**Supplemental File 2: Measurement of Immune Response by Flow Cytometry:**

Cell surface staining of PBMCs isolated from patient whole blood samples was performed according to standard procedures using specific antibodies in order to determine concentrations of “naïve/effector” vs. “exhaustion/inhibition’ T cell phenotypes. All populations were gated for viability and leukocytes (CD45+). T lymphocytes were then gated by expression of the T cell receptor (CD3), sub-gated into CD4+ and CD8+ T cells and analyzed for expression of either naïve/effector or exhaustion markers. Cells were analyzed with a Beckman Coulter Cytoflex S flow cytometer and Flow Jo v10.6 software (Tree Star, Inc.). Naïve/effector and memory cells were differentiated using antibodies against CD27, CD28, CD45 RA, and CCR7 (Supplemental Table 1). Exhaustion/inhibition cells were differentiated using antibodies against CTL4, PD-1, Tim3, and LAG3. The table below demonstrates the receptor expression description for each of the cell populations included in the study.

|  |  |
| --- | --- |
| **Cell Population** | **Receptor Expression** |
| Naïve memory T cells | CD45+ CD3+ CD45RA+ CCR7+ |
| Central memory T cells | CD45+ CD3+ CD45RA- CCR7+ |
| Effector memory T cells | CD45+ CD3+ CD45RA- CCR7- |
| Effector T cells | CD45+ CD3+ CD27- CD28- CD45RA lo/- |
| Naïve T cells | CD45+ CD3+ CD27+ CD28+ CD45RA+ |
| Memory T cells | CD45+ CD3+ CD27+ CD28+ CD45RA- |
|  |  |
| Naïve memory CD8 T cells | CD45+ CD3+ CD8+ CD27+ CD28+ CD45RA+ CCR7+ |
| Central memory CD8 T cells | CD45+ CD3+ CD8+ CD27+ CD28+ CCR7+ CD45RA- |
| Effector memory CD8 T cells | CD45+ CD3+ CD8+ CD27+ CD28+ CD45RA- CCR7- |
| Memory CD8 T cells | CD45+ CD3+ CD8+ CD27+ CD28+ CD45RA- |
|  |  |
| Naïve memory CD4 T cells | CD45+ CD3+ CD4+ CD27+ CD28+ CD45RA+ CCR7+ |
| Central memory CD4 T cells | CD45+ CD3+ CD4+ CD27+ CD28+ CCR7+ CD45RA- |
| Effector memory CD4 T cells | CD45+ CD3+ CD4+ CD27- CD28- CD45RA- CCR7- |
| Memory CD4 T cells | CD45+ CD3+ CD4+ CD27+ CD28+ CD45RA- |
|  |  |
| NK Cells | CD45+ CD3- CD56+ |
| NKT cells | CD45+ CD3+ CD56+ |
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