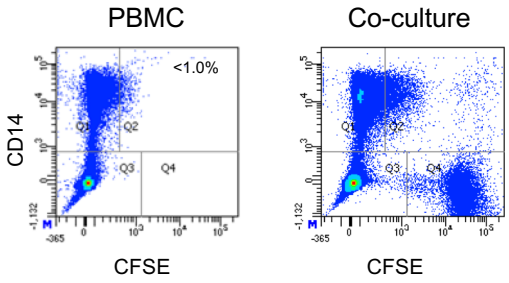
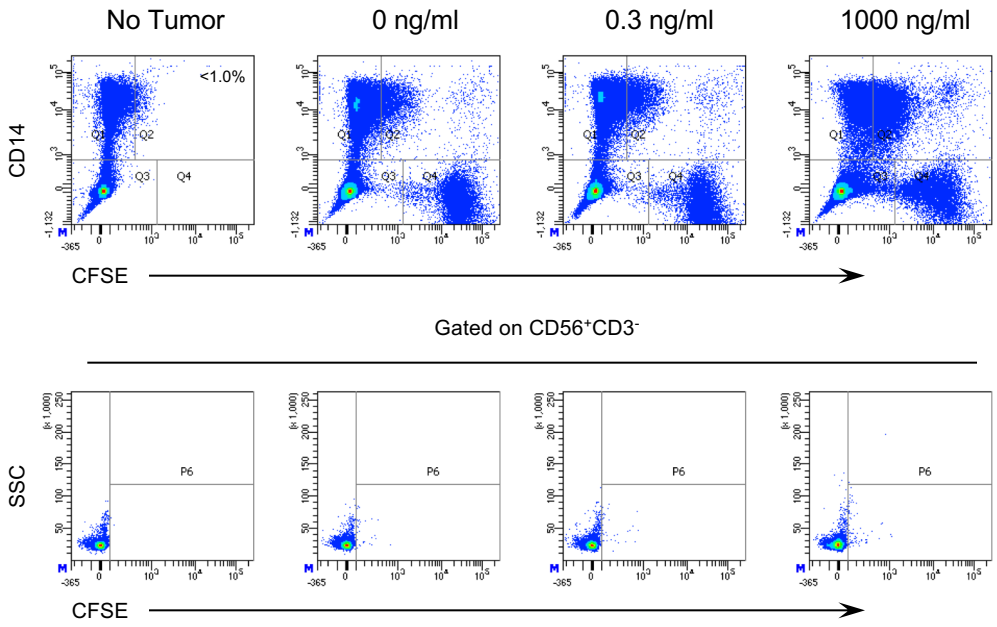


Supplemental Figure 1. Gating of monocytes. PBMC or Co-culture (PBMC + HCC1419) were incubated for 4 hours and then stained for surface markers. CD14 monocytes are on the y-axis while CFSE labeled HCC1419 are on the X-axis. The gate that determined phagocytosis was based on the PBMC population that was not exposed to CFSE labeled tumor cells.

a.



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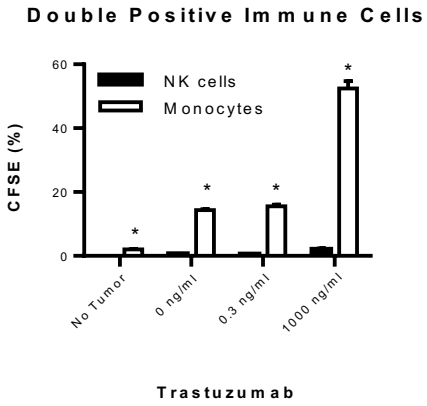
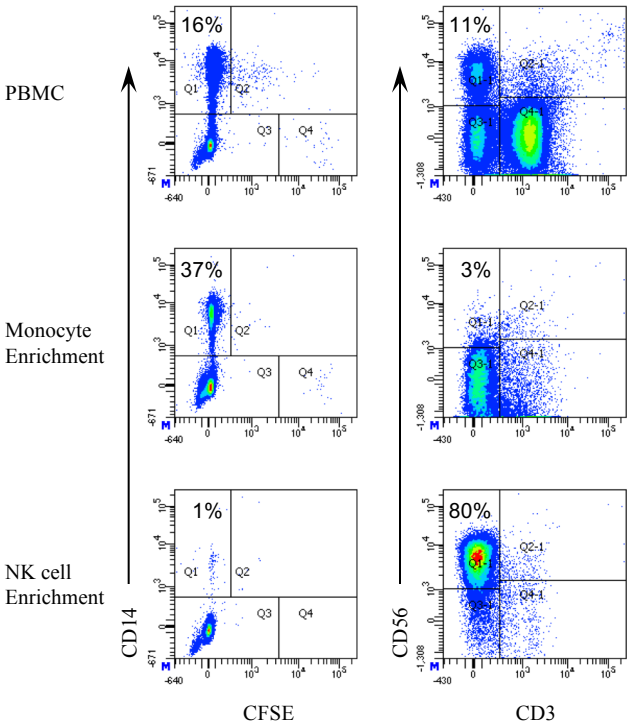
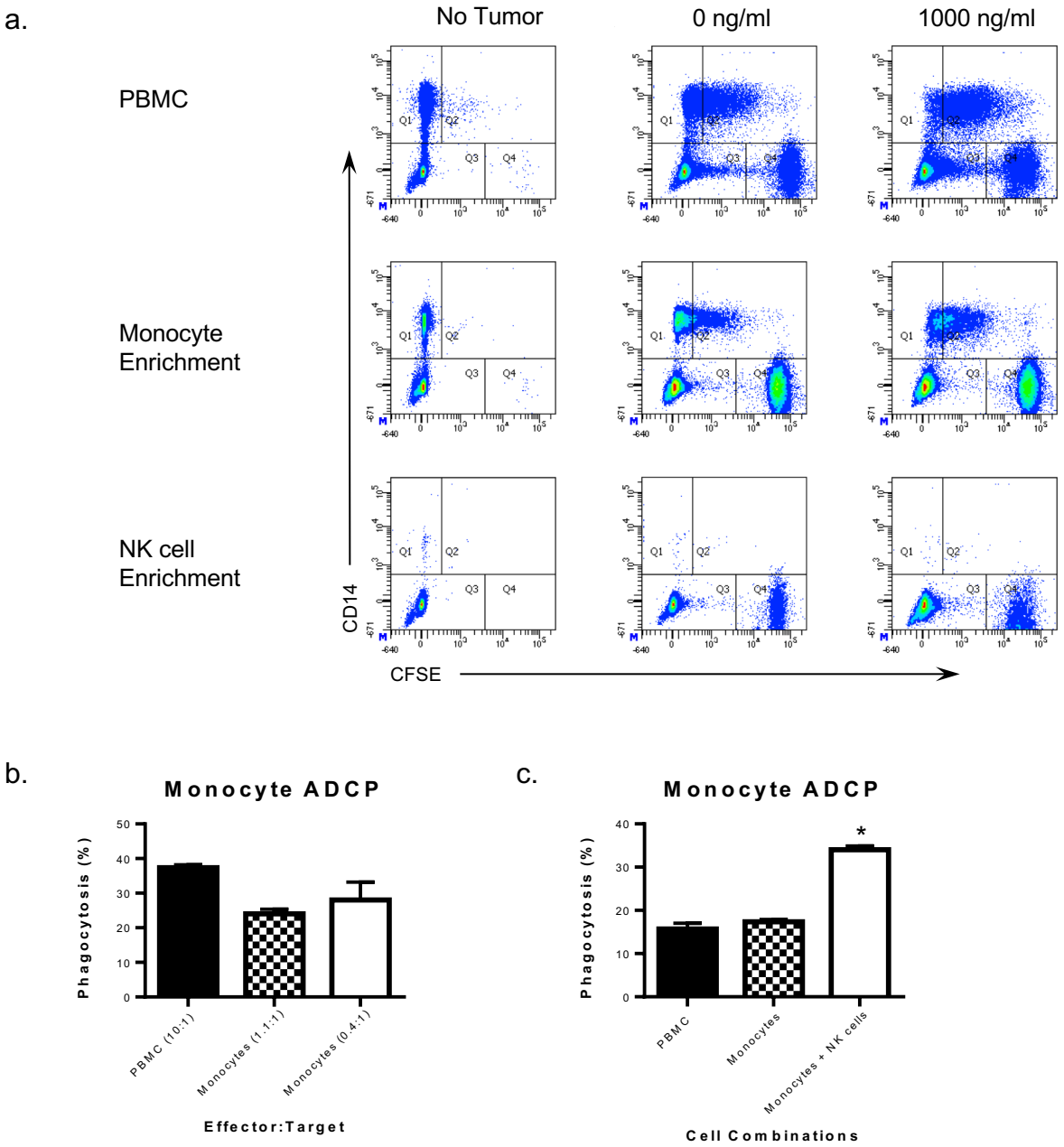


Supplemental Figure 2. Monocytes take up CFSE labeled tumor significantly better than NK cells. PBMC and HCC1419 were co-cultured with various concentrations of trastuzumab. **a.** Gating strategy for CD14 monocytes and $CD56^{+}CD3^{-}$ NK cells that became CFSE positive. **b.** Numerical comparison of CFSE positive NK cells and monocytes. T tests were used to compare CFSE levels in monocytes and NK cells under different conditions. * indicates statistical significance of $P<0.001$.

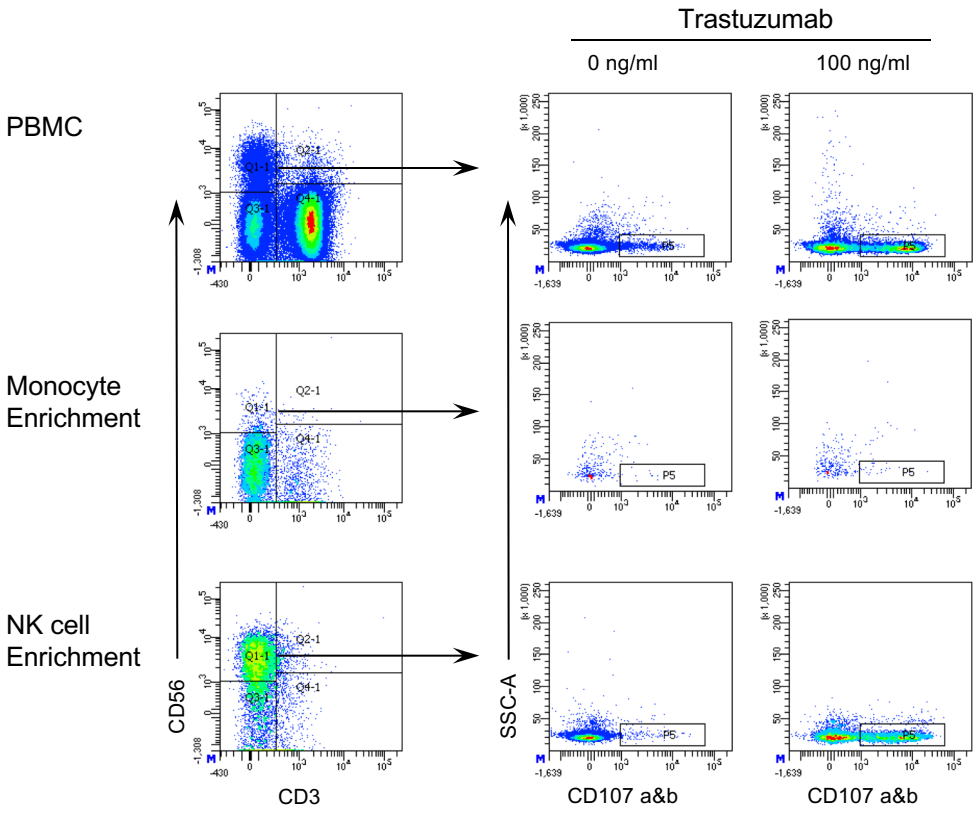


Supplemental Figure 3. Enrichment of monocytes and NK cells by negative selection. Flow cytometry profiles of monocyte and NK cell enrichment compared with PBMC.



Supplemental Figure 4. NK cells enhance phagocytosis but are not required. PBMC, enriched monocytes and enriched NK cells co-cultured with HCC1419 and trastuzumab were evaluated for phagocytosis. Assays were performed as described for Figure 1. **a.** Flow cytometry profiles showing phagocytosis. **b.** Evaluation of phagocytosis obtained from enriched monocytes were evaluated at different effector to target ratios. The PBMC to tumor ratio is 10:1 (Within PBMC, monocytes have effector to target ratio 1.3:1). **c.** PBMC, enriched monocytes and monocytes combined with NK cells were evaluated for antibody-dependent phagocytosis. * indicates statistical significance of $P<0.001$.

a.



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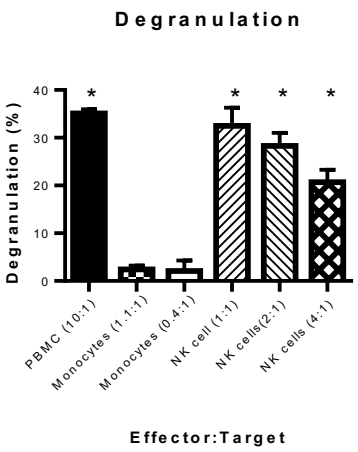
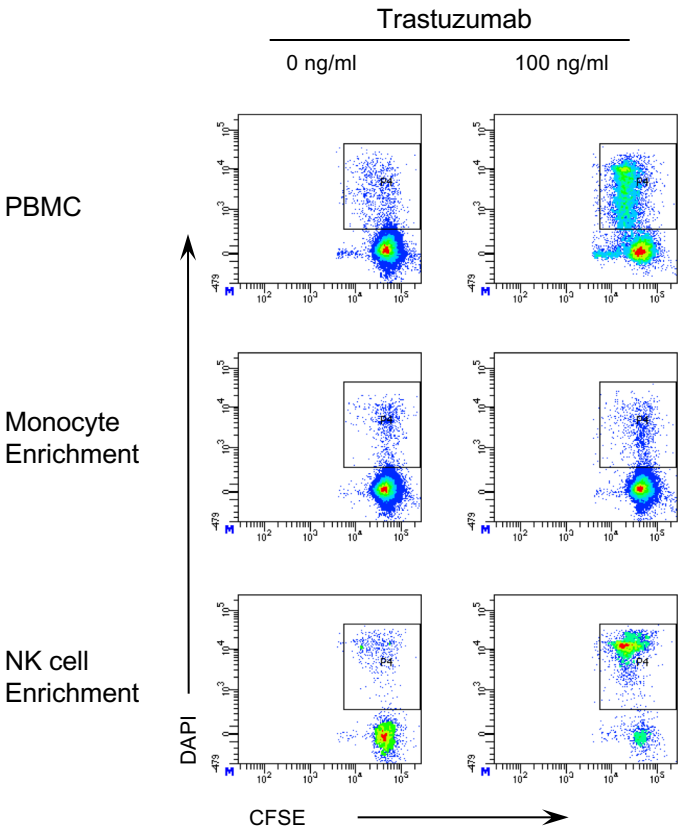


Supplemental Figure 5. Enriched NK cell degranulate in the presences of opsonized tumors. PBMC, enriched monocytes and enriched NK cell cells were co-cultured with tumors and trastuzumab as described in Fig 1. **a.** Flow cytometry profiles showing degranulation. **b.** Different effector to target ratios were evaluated for tumor cell death: PBMC to tumor ratio is 10:1, (Within PBMC, monocytes have an effector to target ratio of 1.3:1). Additionally there are different effector to target ratios of enriched monocytes and NK cells. * indicates statistical significance of $P<0.001$.

a.



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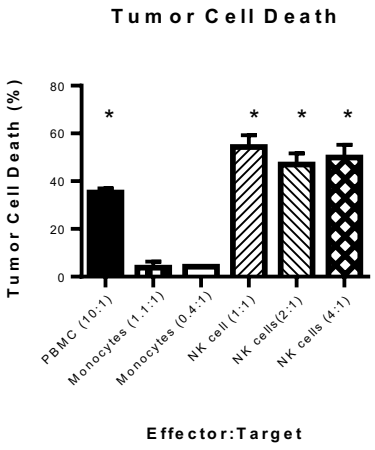
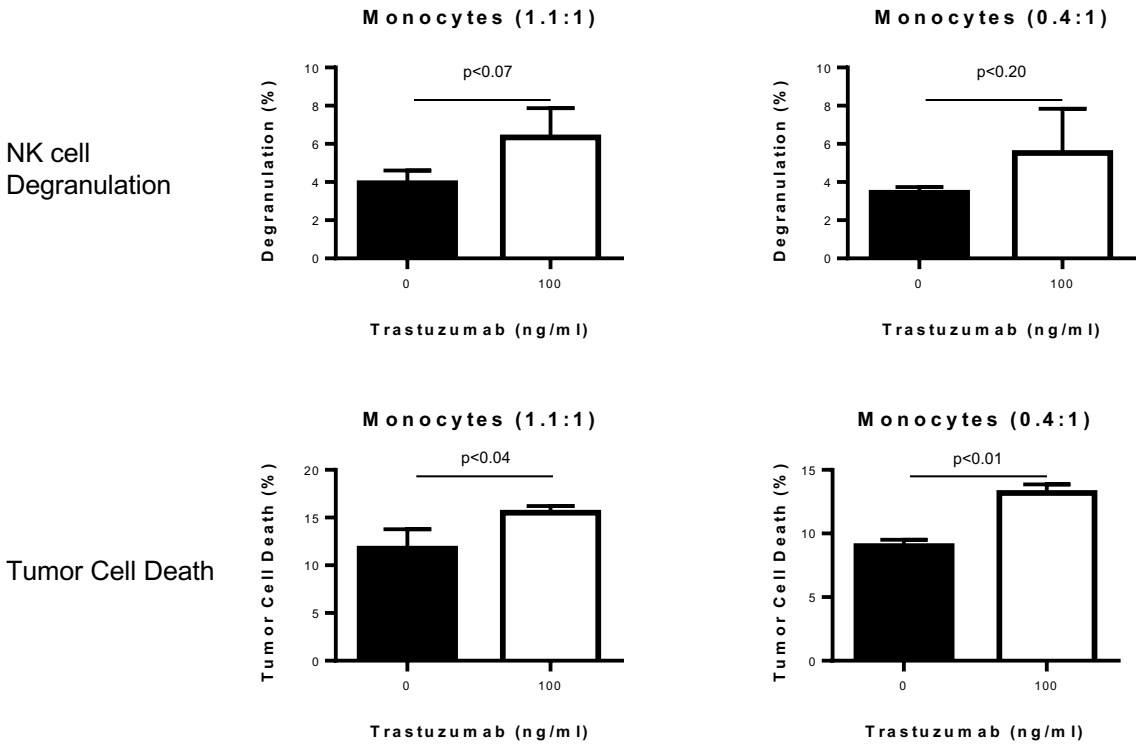
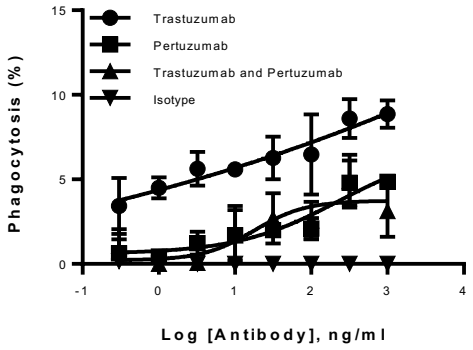


Supplemental Figure 6. NK cells responsible for tumor cell death. PBMC, enriched monocytes and enriched NK cells were co-cultured with HCC1419 and trastuzumab as described by Fig 1. **a.** Flow cytometry profiles showing tumor cell death. **b.** Different effector to target ratios were evaluated for tumor cell death: PBMC to tumor ratio is 10:1, (Within PBMC, monocytes have an effector to target ratio of 1.3:1). Additionally there are different effector to target ratios of enriched monocytes and enriched NK cells. * indicates statistical significance of $P<0.001$.

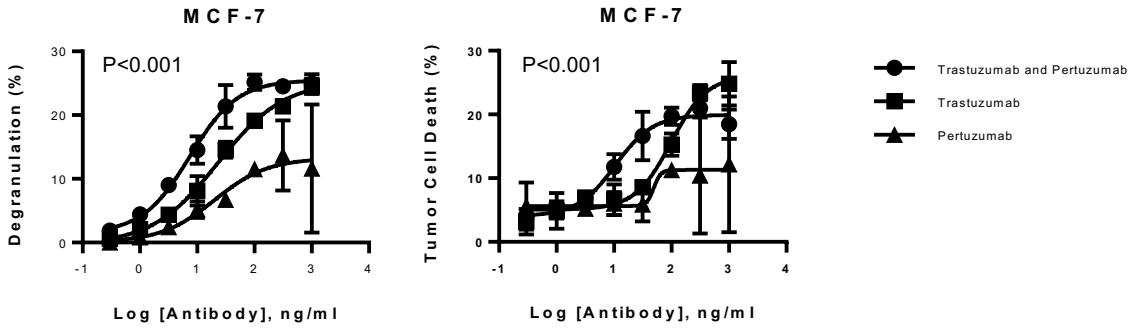
Supplemental Figure 7



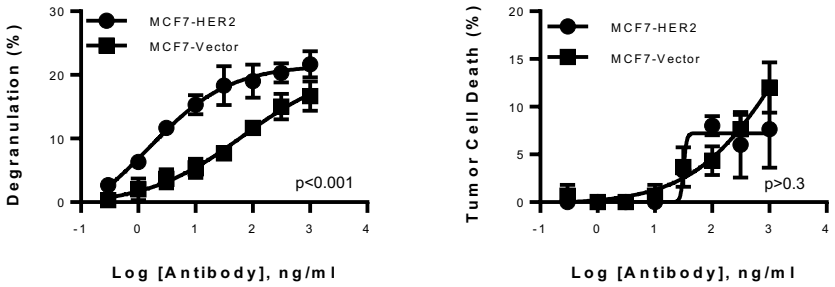
Supplemental Figure 7. Monocytes may contribute marginally to tumor cell death. Tumor cell death was evaluated in enriched monocytes co-cultured with HCC1419 and trastuzumab. Residual NK cell degranulation and tumor cell death were evaluated between control and trastuzumab treated cells. T tests were used to determine significance.



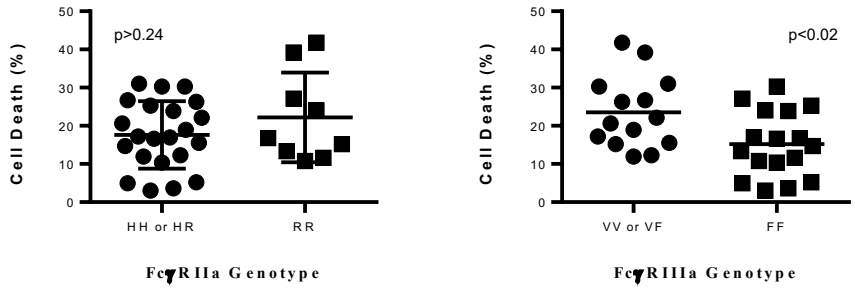
Supplemental Figure 8. Trastuzumab and pertuzumab fail to enhance phagocytosis of HER2 non-gene amplified tumor cells. Phagocytosis was performed as previously described in Fig. 1 using the HER2 non-gene amplified tumor T47D. Various concentration of trastuzumab, pertuzumab, trastuzumab and pertuzumab, or isotype were used to evaluate phagocytosis.



Supplemental Figure 9. Trastuzumab and pertuzumab enhance degranulation and tumor cell death of HER2 non-gene amplified tumors. PBMC were co-cultured with MCF-7 and various concentration of trastuzumab, pertuzumab, and trastuzumab and pertuzumab. After 4 hours, cells were evaluated for degranulation and tumor cell death by flow cytometry. Two-way ANOVA was used to determine significance.



Supplemental Figure 10. MCF-7 HER2 enhances NK cell degranulation but little difference in tumor cell death. PBMC and MCF-7 HER2 or MCF-7 were co-cultured with various concentrations of trastuzumab. Degranulation and tumor cell death were evaluated by flow cytometry. Two-way ANOVA was used to determine significance.



Supplemental Figure 11. FcγRIIIa Genotype required for enhanced NK cell activity. Genotyped PBMC were co-cultured with HCC1419 and trastuzumab and evaluated for the influence of FcγRIIa H/R alleles and FcγRIIIa V/F alleles. T tests were used to determine significance between the different alleles.