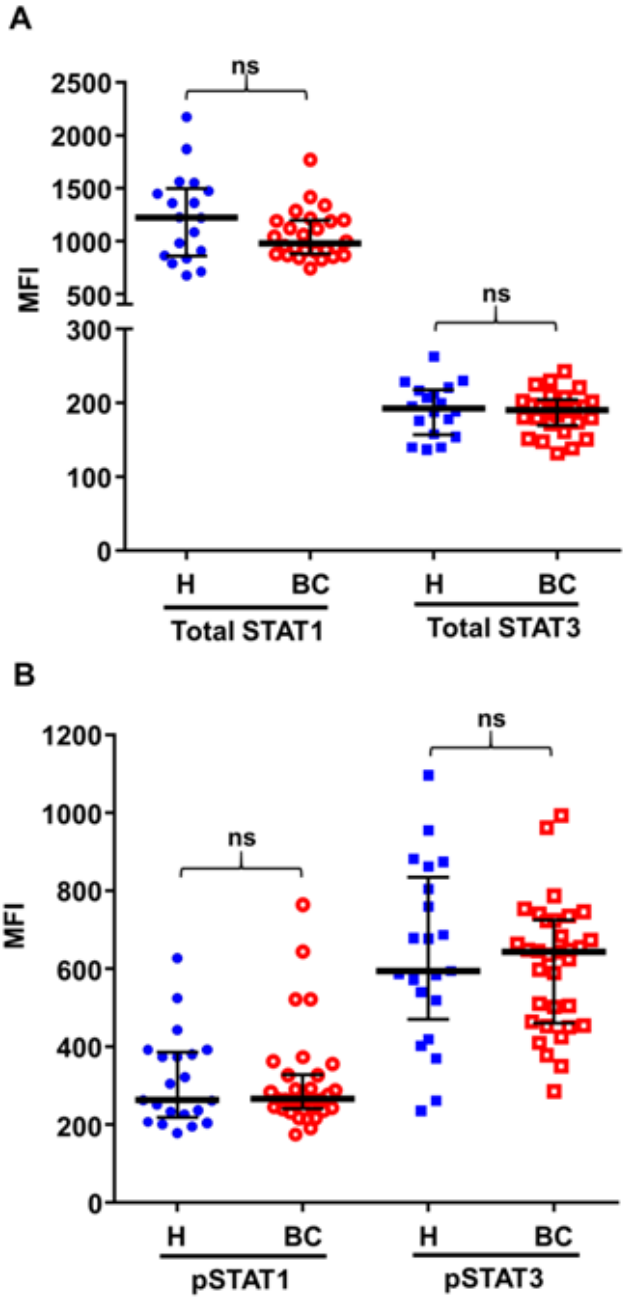
Supplementary data

The supplementary file contains 2 figures (Fig S1 and S2) and 1 table (Table S1).
Fig S1: Similar level of total STAT1/3 and similar level of basal pSTAT1/3 were found in CD4 naïve T cells from healthy donors and BC patients, suggesting that the observed defective IL-6 signaling responses were not caused by lower level of total STAT1/3 or basal pSTAT1/3 in BC patients.
Fig S2: Among relapsed BC patients, similar IL-6 signaling responses were found at diagnosis and at relapsed, indicating that impaired IL-6 signaling responses persistent through progression. In relapsed patients who went on to achieve remission, there was a trend towards higher IL-6 signaling in some patients.
Fig S3: Lower IL-6 signaling response in peripheral $CD4^+$ naïve T cells from melanoma (Mel), gastrointestinal (GI) and lung cancer (LC) patients.
Table S1: No significant associations were found between IL-6 signaling response and clinicopathologic characteristics (age, tumor grade, T status or subtype) of BC patients.



Figures S1. Impaired IL-6 signaling responses in CD4$^+$ naïve T cells is not due to levels of total STATs or basal pSTATs. (A) The expression levels of total intracellular STAT1 and STAT3 in unstimulated naïve CD4 T cells from healthy donors (n=18) and BC patients (n=26) were determined by flow cytometry. **(B)** Basal levels of phosphorylated STAT1 and STAT3 in unstimulated naïve CD4 T cells from healthy donors (n=21) and BC patients (n=33) were determined by phosphoflow cytometry with anti-pSTAT1(pY701) and anti-pSTAT3(pY705) antibodies. Unpaired t test. ns=not significant.

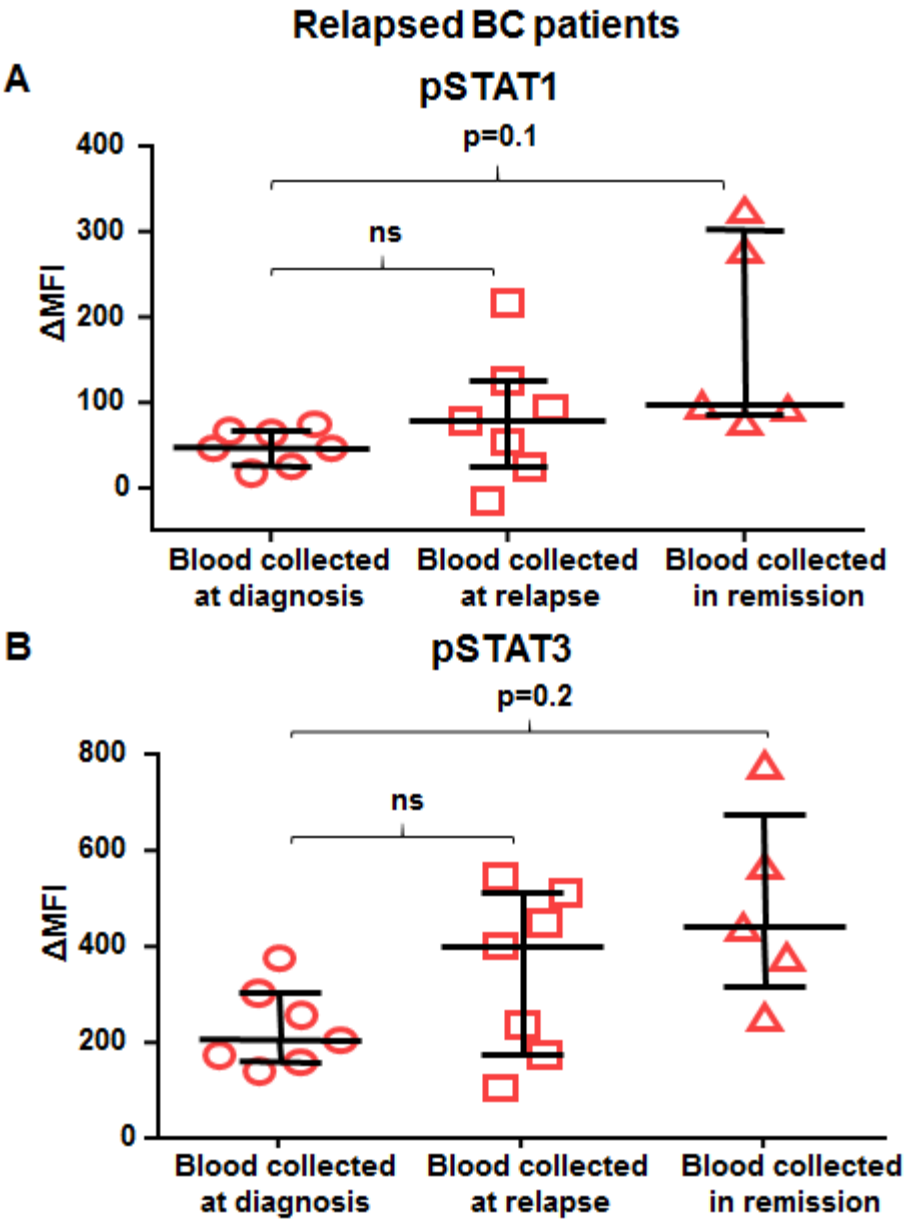


Figure S2. IL-6 signaling responses in relapsed patients. Among relapsed BC patients, IL-6 induced phosphorylation of STAT1 **(A)** and STAT3 **(B)** in naïve $CD4^+$ T cells were analyzed from blood collected at diagnosis (n=7), at time of relapse (n=7), or in remission after relapse (n=5). One way ANOVA. ns=not significant.

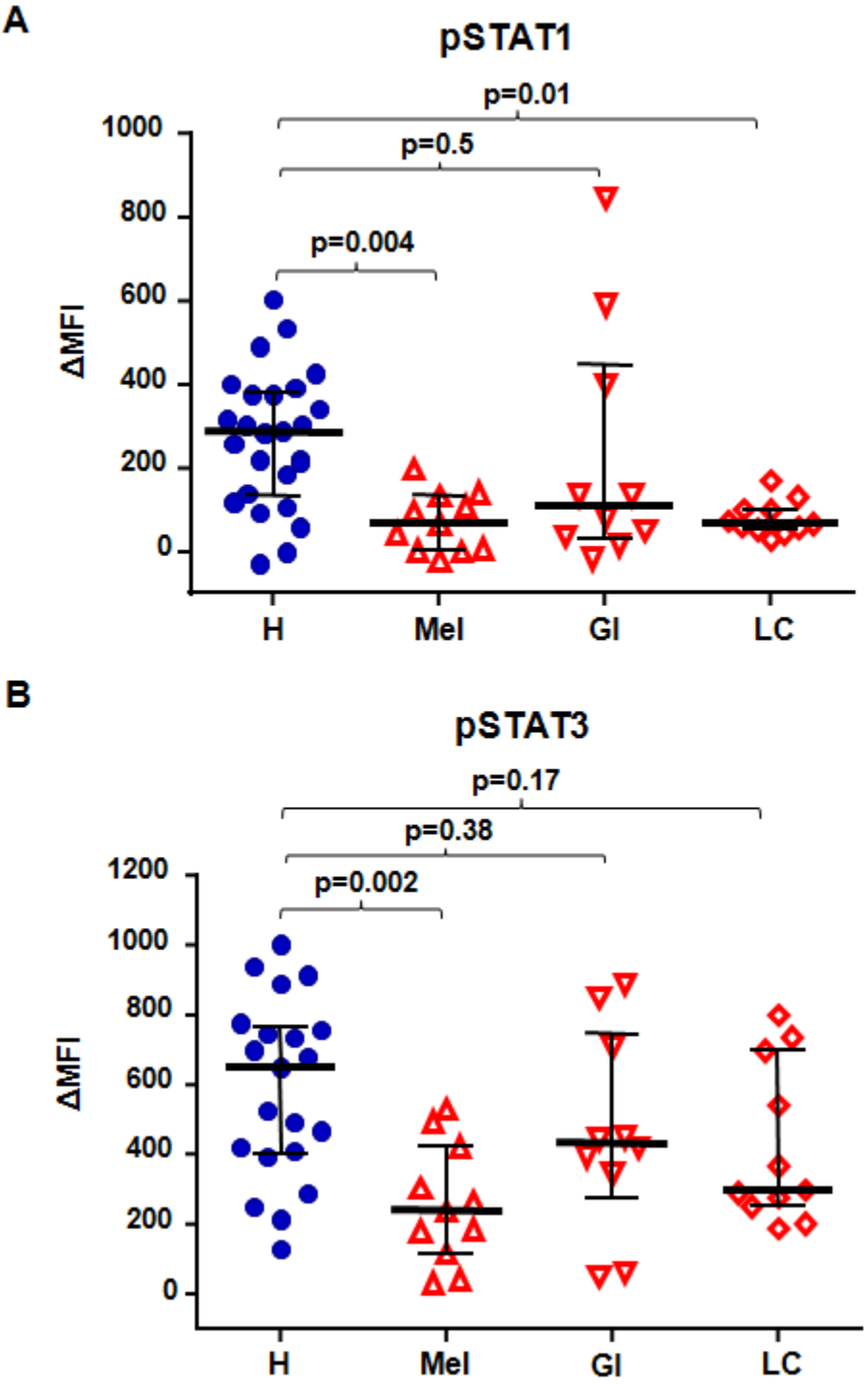


Figure S3. Lower IL-6 signaling responses in melanoma, gastrointestinal and lung cancer patients. IL-6 induced phosphorylation of STAT1 **(A)** and STAT3 **(B)** in peripheral naïve $CD4^+$ T cells were compared between melanoma (Mel) (n=11), gastrointestinal (GI) (n=10) and lung cancer (LC) (n=11) patients and age-matched healthy donors (n=26).

Table S1. Correlation between IL-6 signaling response and clinicopathological characteristics

Variables	pSTAT1	pSTAT3
	r (p-value)	r (p-value)
Age	0.13 (0.34)	0.05 (0.72)
Tumor stage	-0.13 (0.38)	-0.01 (0.99)
Grade	-0.03 (0.82)	0.1 (0.45)
Nodal status	-0.02 (0.89)	0.07 (0.62)
Subtype	(0.98)	(0.89)

Note: Correlations tested by Pearson's Correlation Coefficient