## Supplementary Figure Legends

**Supplementary Figure S1. *JAK2* mRNA quantification in primary breast tumors.** A) Transcripts for *JAK2* (*exon23/24* probe), and the breast cancer genes *ESR1*, *ERBB2*, and *PGR* were measured by quantitative RT-PCR using RNA samples extracted from formalin-fixed, paraffin-embedded breast cancer samples. Values are shown normalized to the endogenous control gene *HMBS*, and samples are arranged on the x-axis in order of increasing RNA abundance / integrity as measured by *HMBS* Ct values. Values greater than six standard deviations from the mean (asterisk) are not to scale. B) Correlation between intra-transcript measurements using Taqman probes for the indicated exon junctions for *JAK2*. C) Transcript levels of *JAK2* (exon23/24 probe), and the breast cancer genes *ESR1*, *ERBB2*, and *PGR* are shown in 14 breast cancer cases in which three separate FFPE tumor samples were available. D) Transcript levels of the breast cancer genes *ESR1*, *ERBB2*, and *PGR* are shown relative to their respective clinical hormone receptor status. U, unavailable.

**Supplementary Figure S2. Evaluating *JAK2* mRNA and protein levels in human breast cancer cell lines.** A) JAK2 protein levels were determined by western blotting in each of the indicated human breast cancer cell lines. The ratio of JAK2 to TUBULIN (loading control) is indicated above each lane. Relative *JAK2* mRNA levels in each cell line were determined by quantitative RT-PCR and are shown normalized to the control genes *RPLP0*, *IPO8*, and *TFRC*. B) *JAK2* mRNA and protein levels are plotted for each cell line. The correlation coefficient (r), is shown above the graph.

**Supplementary Figure S3. Validating the specificity of a total JAK2 antibody for immunohistochemistry.** The specificity of a total JAK2 antibody (clone D2E12, Cell Signaling Technology) for immunohistochemistry was validated using *JAK2*-deficient γ2A cells versus γ2A cells transiently-transfected with a human *JAK2* cDNA.

**Supplementary Figure S4. Ruxolitinib inhibits the anti-CD3-dependent production of IFN-γ**. Murine splenocytes were stimulated with anti-CD3 in the presence of the indicated concentrations of ruxolitinib or a vehicle control (DMSO). IFN-γ levels in culture supernatants were measured by ELISA. Errors bars are the standard deviation of triplicate ELISA determinations.