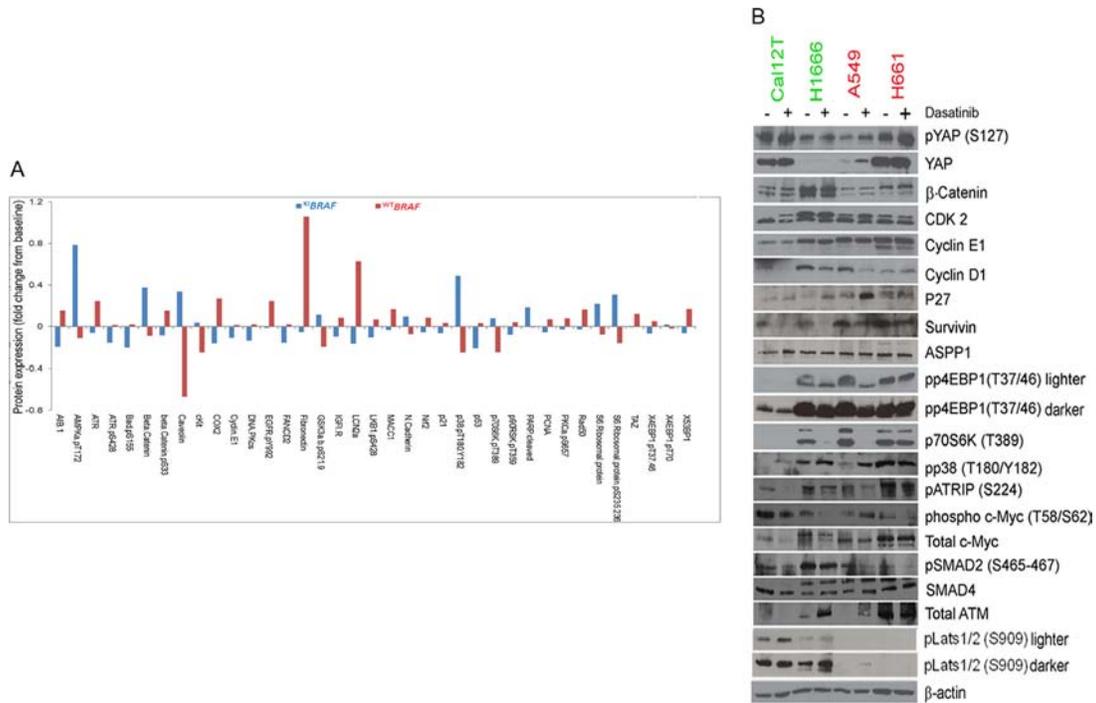
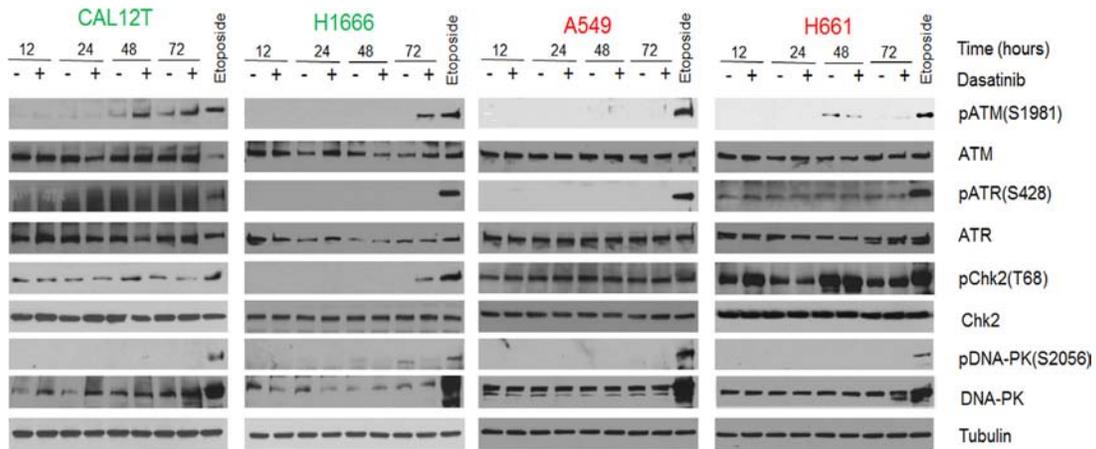


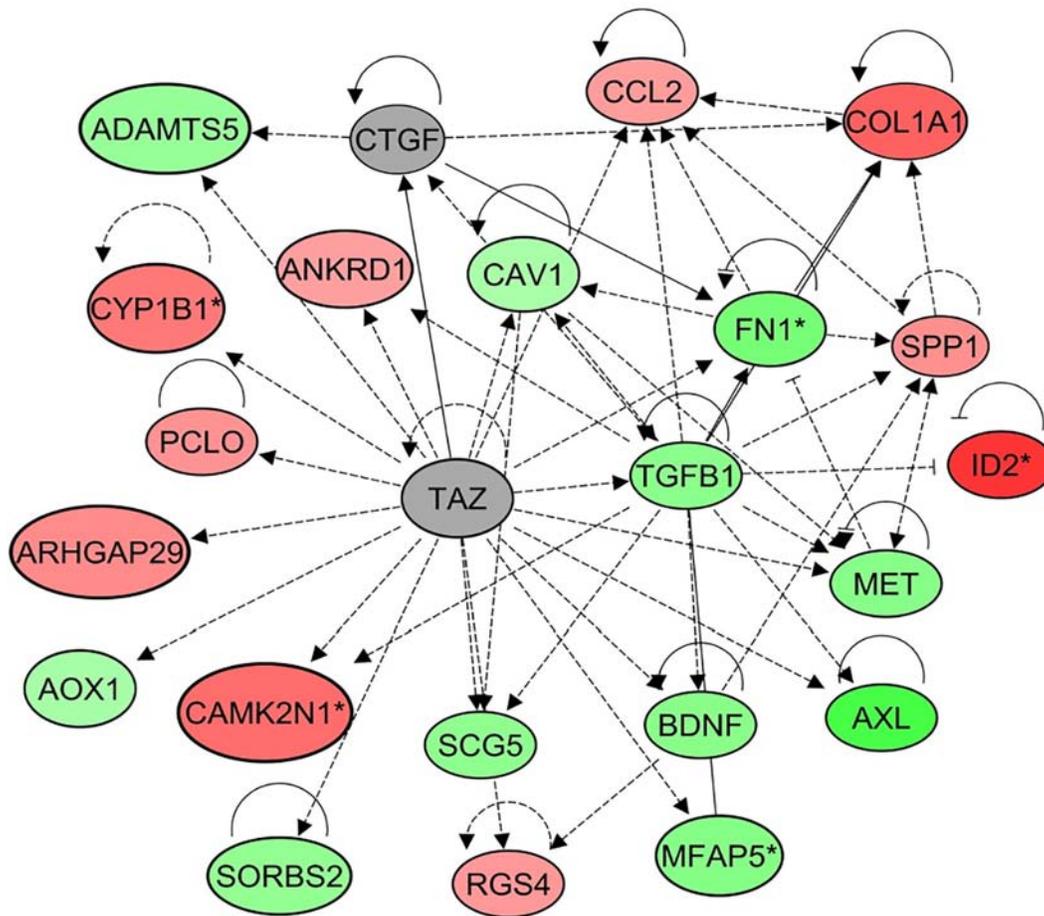
**Supplementary Figure S2: E2F and target genes were differentially modulated following 72 hours of dasatinib treatment in NSCLC cell lines with <sup>K1</sup>BRAF compared to cells with <sup>W1</sup>BRAF.** NSCLC cell lines were incubated with 150nM dasatinib for the indicated times and qPCR was performed to measure levels of the indicated genes. \**P* < 0.05 compared with control.



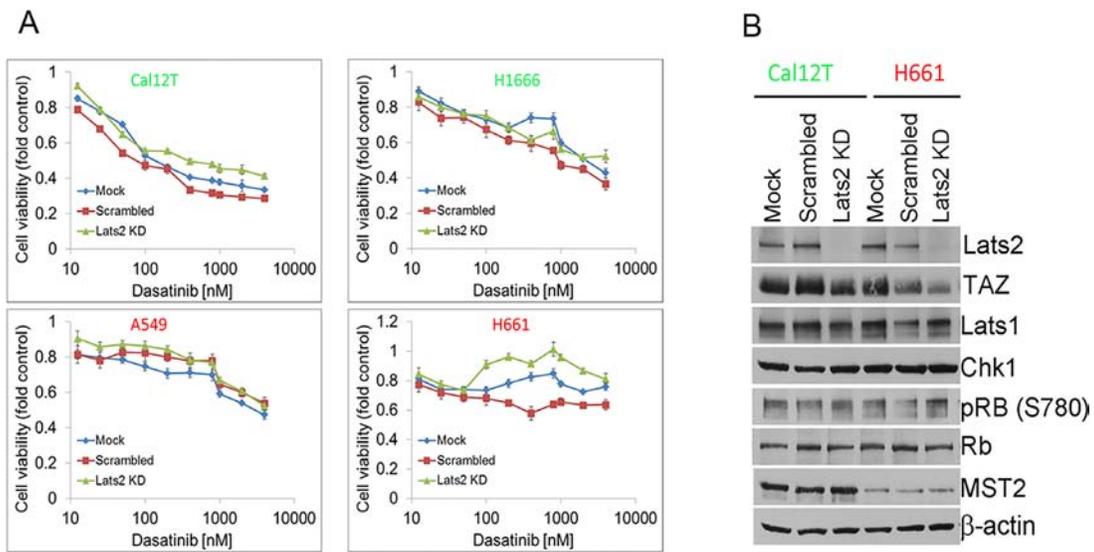
**Supplementary Figure S3: A.** Expression of all 137 measured proteins before and after 72 hours of incubation with 150nM dasatinib was compared between non-small cell lung cancer cells with kinase-inactivating *BRAF* mutations (<sup>K1</sup>*BRAF*) and cells with wild-type *BRAF* (<sup>WT</sup>*BRAF*). Proteins that were differentially regulated between <sup>K1</sup>*BRAF* cells and <sup>WT</sup>*BRAF* cells were included in the figure. None of these differences reached statistical significance. **(B)** Western blot analysis of levels of indicated proteins in non-small cell lung cancer cells incubated with 150nM dasatinib or vehicle control for 72 hours.



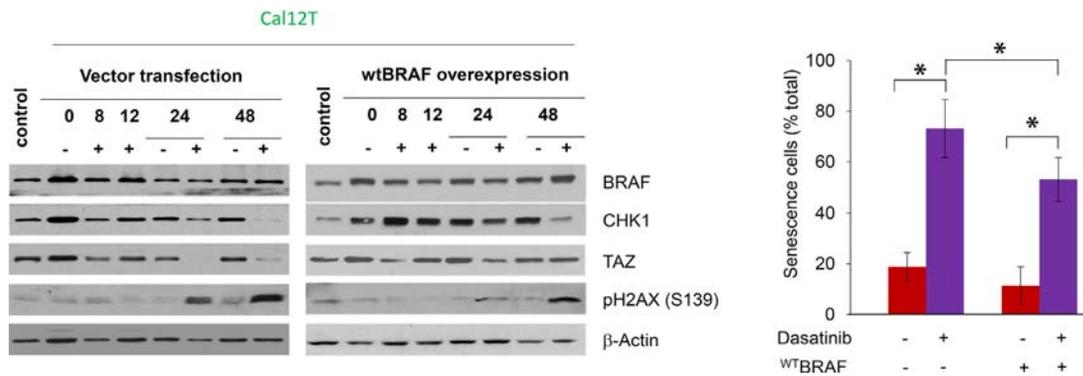
**Supplementary Figure S4: DNA damage response proteins in <sup>K1</sup>*BRAF* and <sup>WT</sup>*BRAF* NSCLC cell lines.** Western blot analysis showing changes in protein expression for cells incubated with 150nM dasatinib for the indicated times. 5 μM etoposide was used as a positive control.



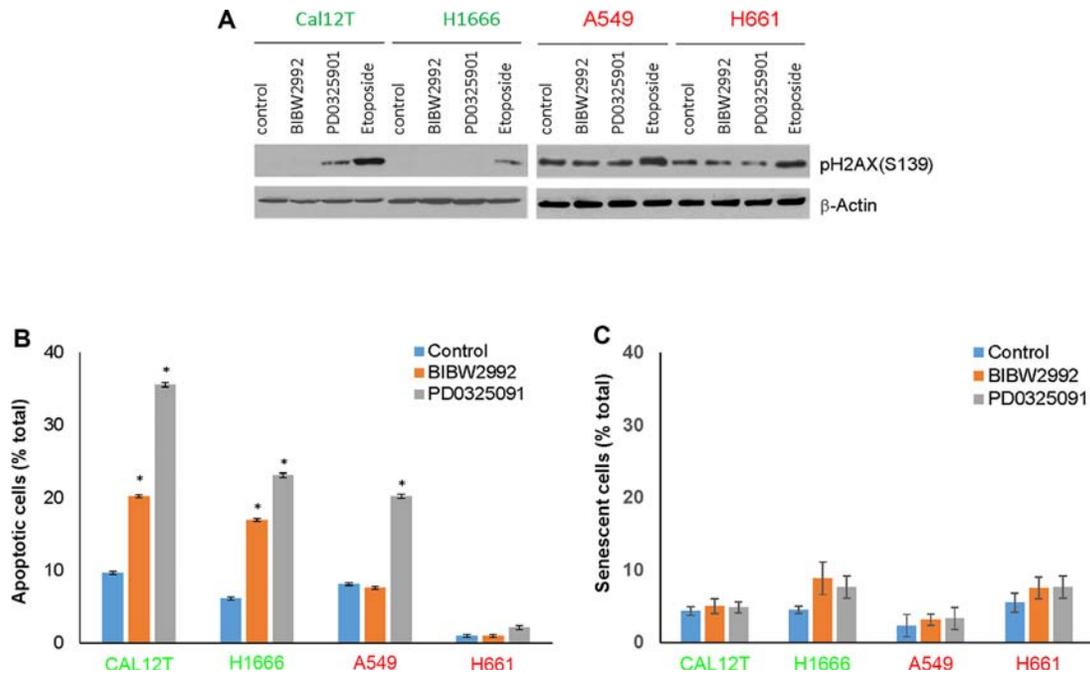
Supplementary Figure S5: Differentially modulated TAZ target genes were topologically organized using IPA.



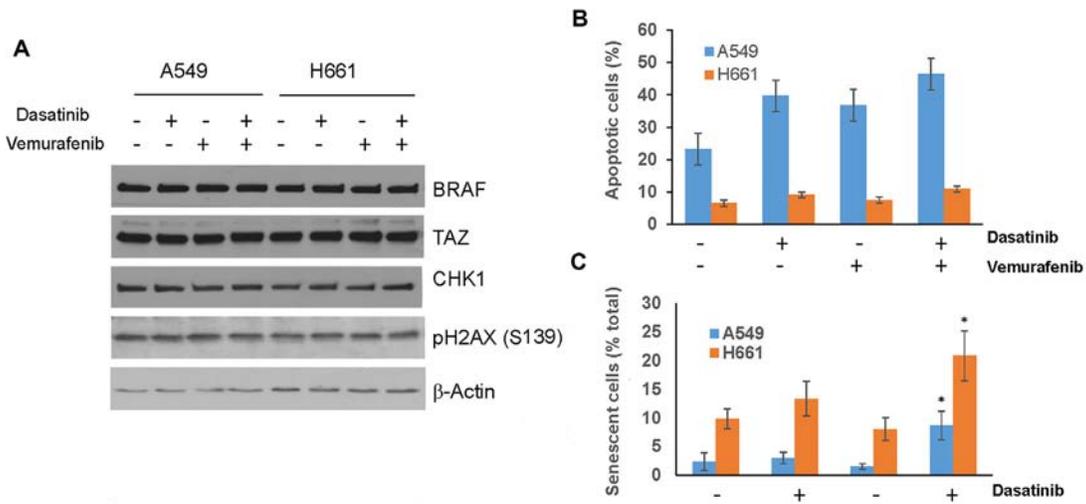
**Supplementary Figure S6: A.** H1666 cells were transfected with siRNA against Lats2 and sensitivity to dasatinib was measured using the MTT assay at the indicated drug concentrations after 72 hours of incubation. **(B)** Knockdown (KD) was confirmed by Western blot analysis.



**Supplementary Figure S7: Overexpression of  $^{WT}BRAF$  in NSCLC cells with  $^{KI}BRAF$  reduced dasatinib-induced senescence, DNA damage, and effect on TAZ and Chk1 expression.** Cal12T cells were transfected with a DNA vector containing BRAF or vector alone and Western blot analysis performed with the indicated antibodies at the indicated times (**A**). Senescence was estimated using  $\beta$ -galactosidase staining in transfected cells treated with 150nM dasatinib or vehicle control for 72 hours. \* $P < 0.05$  compared with control or as indicated.



**Supplementary Figure S8: The biological effects of the EGFR and MEK inhibitors BIBW2992 and PD0325901 are distinct from those of dasatinib in NSCLC with <sup>K1</sup>BRAF.** NSCLC cell lines were incubated with 150nM BIBW2992 or 1  $\mu$ M PD0325901 for 72 hours. **A.** Western blot analysis performed with the indicated antibodies. 5  $\mu$ M etoposide was used as a positive control for  $\gamma$ H2AX expression. **B.** Apoptosis was estimated using Annexin V staining. **C.** Senescence was estimated using  $\beta$ -galactosidase staining. Error bars represent standard deviation. \* $P < 0.05$  compared with control.



**Supplementary Figure S9: The biological effects of the combination BRAF inhibition with dasatinib in NSCLC with <sup>WT</sup>BRAF are distinct from those of dasatinib in NSCLC with <sup>K1</sup>BRAF.** NSCLC cell lines were incubated with 2 μM vemurafenib or 150nM dasatinib for 72 hours. **A.** Western blot analysis performed with the indicated antibodies. **B.** Apoptosis was estimated using Annexin V staining **C.** Senescence was estimated using β-galactosidase staining. Error bars represent standard deviation. \**P* < 0.05 compared with control.

**Supplementary Table 1: Pathways and gene sets that were significantly differentially modulated by dasatinib between  $K^I$ *BRAF* and  $W^T$ *BRAF* cells**

**Supplementary Table 2: Differential modulation by dasatinib between  $K^I$ *BRAF* and  $W^T$ *BRAF* cells of E2F1, 2, and 3 target genes**

**Supplementary Table 3: Differential modulation by dasatinib between  $K^I$ *BRAF* and  $W^T$ *BRAF* cells of E2F1, 2, and 3 and TP53**

**Supplementary Table 4: List of drugs tested in NSCLC cell lines in the Genomics of Drug Sensitivity in Cancer, Cancer Cell Line Encyclopedia, and at MD Anderson listed separately**

**Supplementary Table 5: Compiled list of drugs tested in NSCLC cell lines in the Genomics of Drug Sensitivity in Cancer, Cancer Cell Line Encyclopedia, and at MD Anderson**

**Supplementary Table 6: Primers used for SYBR green–based real-time PCR**