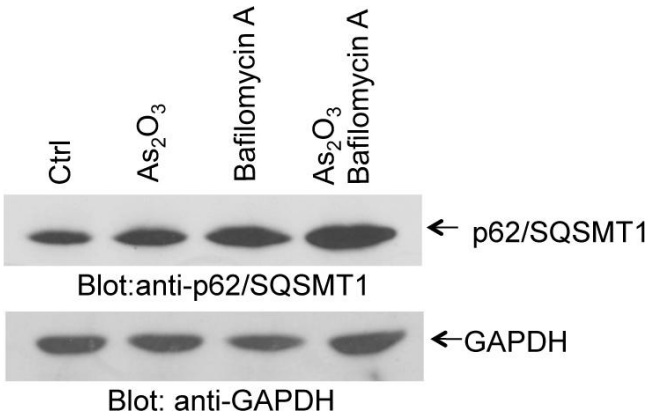

Figure S1 **Autophagy induction in BCR-ABL expressing cells.** K562 cells were incubated with $A_{S2}O_3$ [2µM] and/or bafilomycin A [100nM] for 24 hours, as indicated. Total cell lysates were resolved by SDS-PAGE and immunoblotted with anti-p62/SQSMT1 or anti-GAPDH antibodies, as indicated

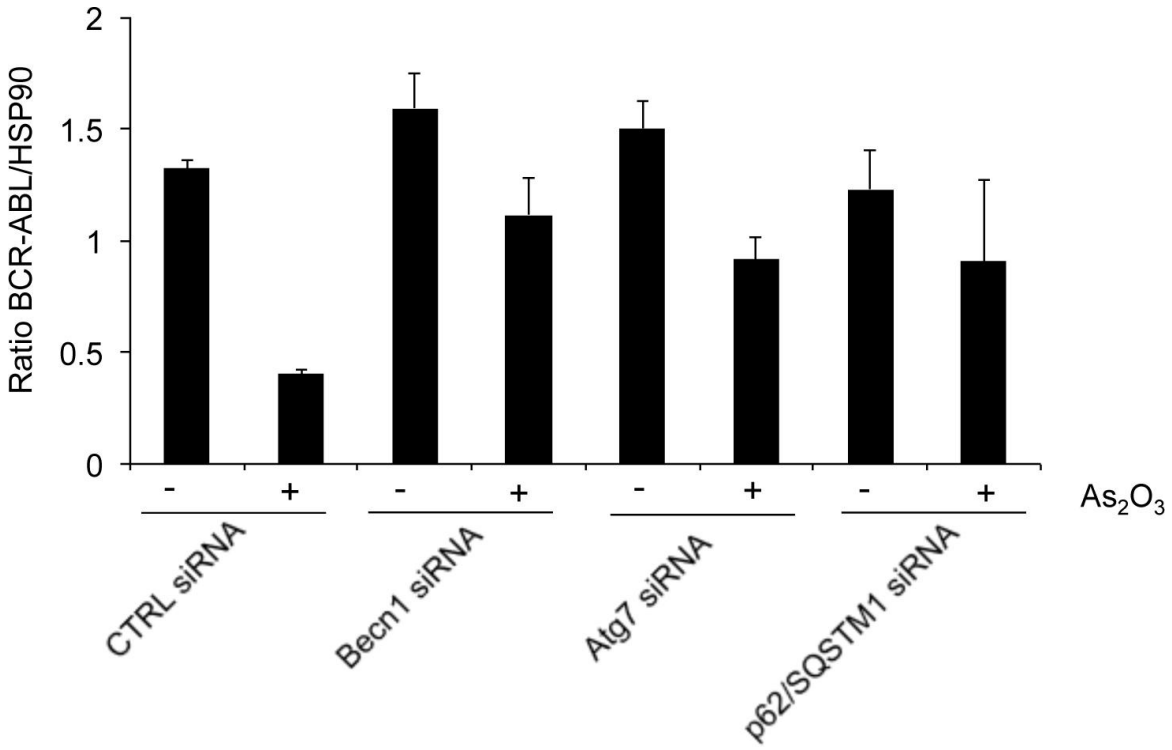

Figure S2 **Quantitative analysis of the effects of siRNA-mediated knockdown of autophagy elements on arsenic trioxide- dependent downregulation of BCR-ABL protein levels.** The signals for BCR-ABL and Hsp90 from the experiment shown in Fig. 2B and an additional similar experiment performed independently were quantitated by densitometry, and the intensity of BCR-ABL relative to Hsp90 expression was calculated. Data are expressed as means of ratios of BCR-ABL to Hsp90 levels ± S.E. for each experimental condition (n=2).

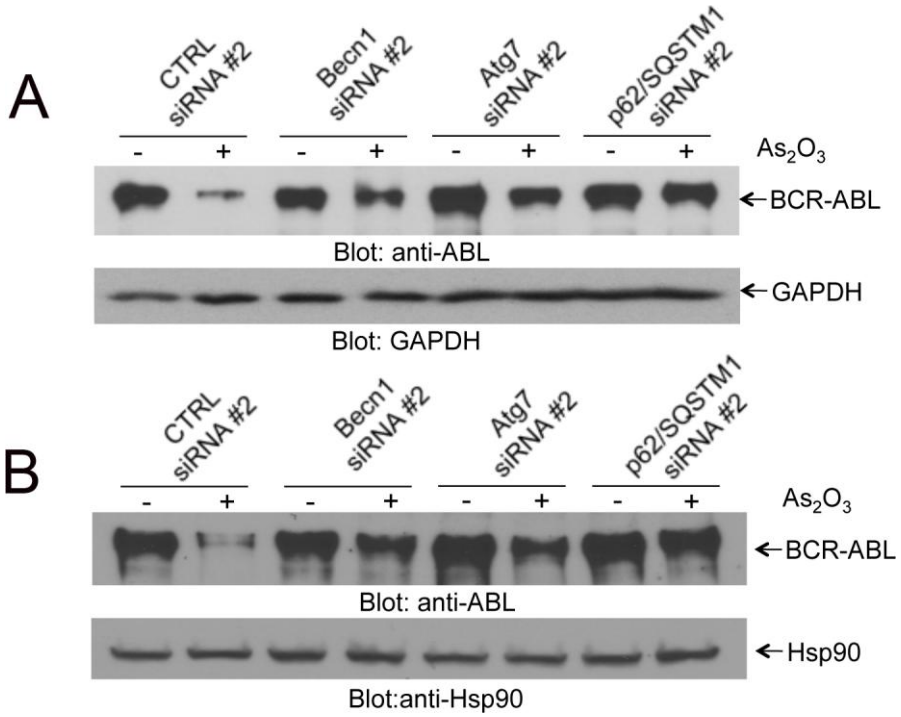

Figure S3 **Arsenic trioxide-induced autophagic degradation of BCR-ABL**. K562 (A) or KT1 (B) cells were transfected with control siRNA or siRNAs #2 specifically targeting Becn1 or Atg7 or p62/SQSTM1 (alternative gene targets from Fig. 2A-B), as indicated and were subsequently treated for 24 hours with $A_{S2}O_3$ [2 μM]. Total lysates were resolved by SDS-PAGE and immunoblotted with the indicated antibodies.

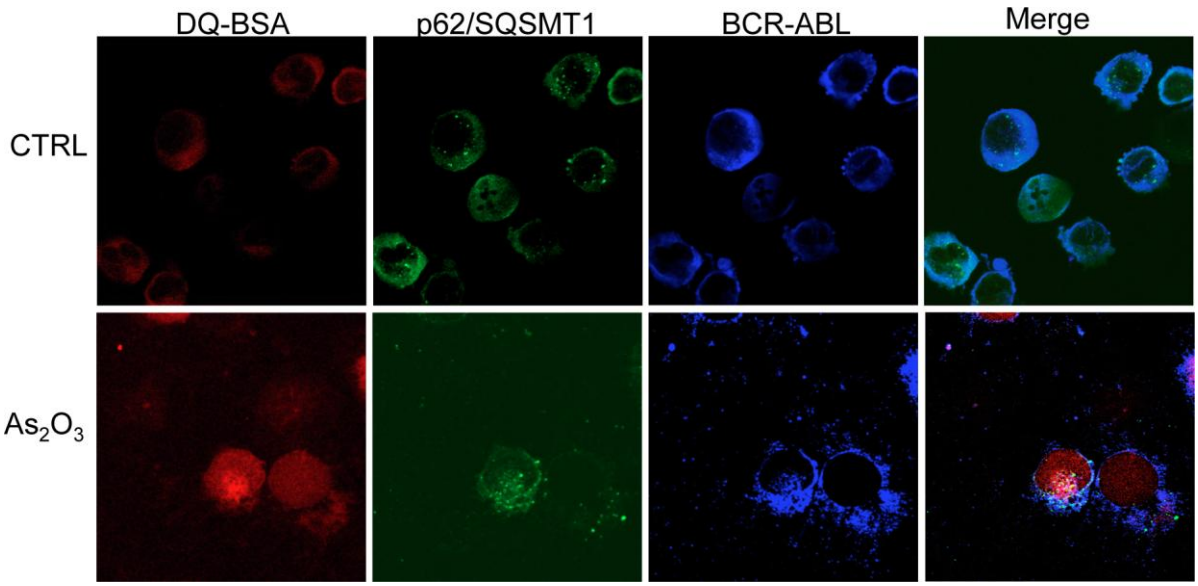

Figure S4 **Lysosomal co-localization of BCR-ABL and p62/SQSTM1.** K562 cells were treated with As_2O_3 [2 μM] for 24 hours. Prior to collection, cells were stained with quenched probe DQ-BSA (red), and after collection stained with either anti-ABL (blue) or anti-p62/SQSTM1 (green) and signals were detected by confocal microscopy. Merged panels indicate overlapping images of the three fluorescing signals, and co-localization of p62/SQSTM1, BCR-ABL and lysosomal probe DQ-BSA.

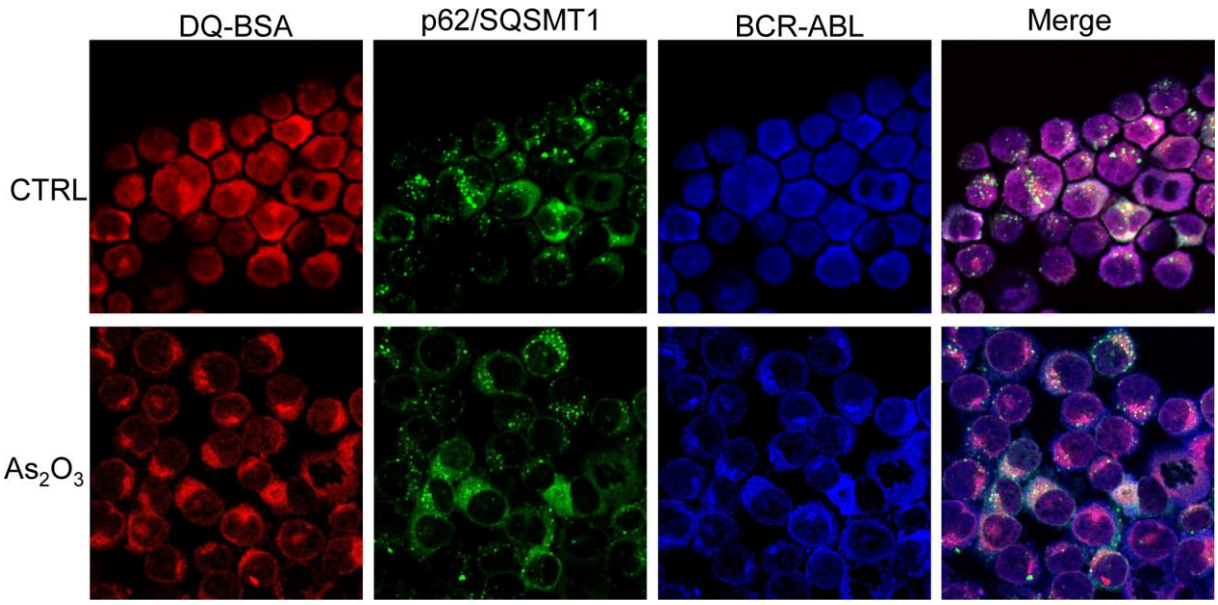

Figure S5 **Lysosomal co-localization of BCR-ABL and p62/SQSTM1.** K562 cells were treated with As_2O_3 [2 μM] for 24 hours. Prior to collection, cells were stained with quenched probe DQ-BSA (red), and after collection stained with either anti-BCR (blue) or anti-p62/SQSTM1 (green) and signals were detected by confocal microscopy. Merged panels indicate overlapping images of the three fluorescing signals, and co-localization of p62/SQSTM1, BCR-ABL and lysosomal probe DQ-BSA.

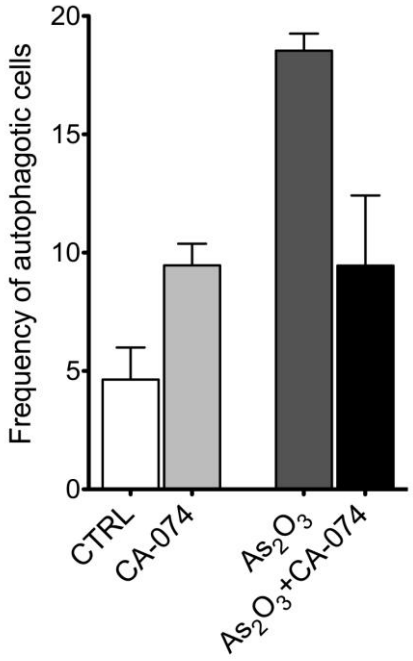

Figure S6 **Arsenic trioxide –dependent autophagy in K562 cells.** K562 cells were treated for 24 hours with As_2O_3 [2 µM] with or without CA-074 [5 µM]. The cells were then stained with acridine orange for quantitation of formation of acidic vesicular organelles (AVOs). An increase in AVOs formation is accompanied with an increase in FL3/PE-Cy5 fluorescence, reflecting induction of autophagy. Means ± S.E. from 3 independent experiments are shown.

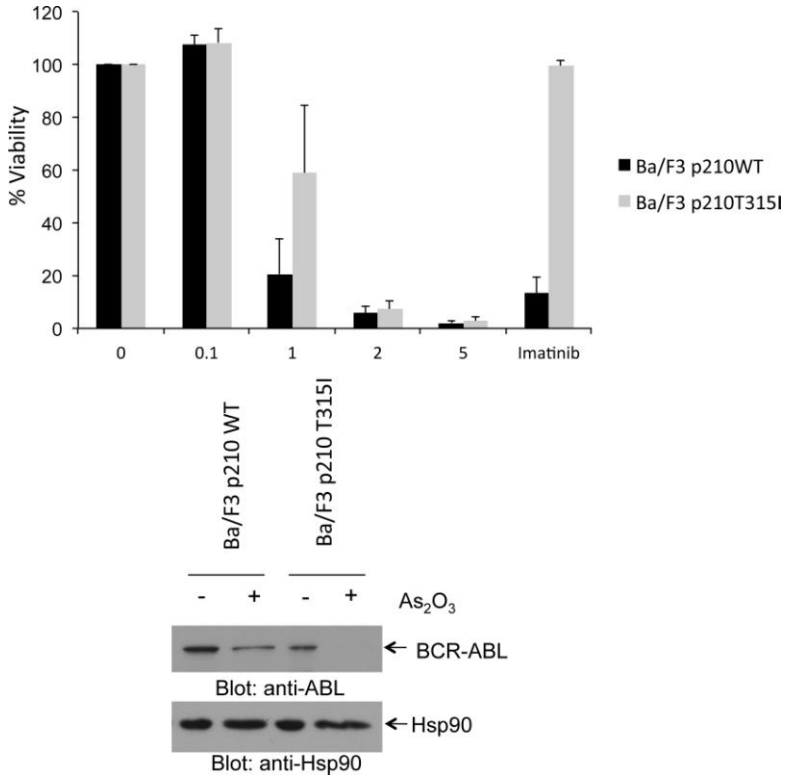

Figure S7 **Inhibitory effects of As_2O_3 on BCR-ABL expressing cells. A,** Ba/F3 cells stably expressing either WT-BCR-ABL or T315I BCR-ABL were treated for 5 days with the indicated concentrations of As_2O_3 (μM) or imatimib and measured levels of cell viability by MTT assays. Data represent means ± S.E. of 4 experiments. **B,** Ba/F3 cells stably transfected with either WT-BCR-ABL or T315I-BCR-ABL were treated with As_2O_3 [2 μM] for 24 hrs. Total lysates were resolved by SDS-PAGE and immunoblotted with the indicated antibodies