Supplementary Figure S1. A) 1 Principal component analysis of the subset of probes characterized by an IC ≥0.3 when HEL or UKE-1 cells were treated with JAK2 inhibitor; B) Hierarchical clustering of genes differentially expressed in HEL (H) and UKE cells (U) upon treatment with JAK2 Inhibitor; C) Venn diagram showing the overlap between genes differentially expressed upon JAK2 inhibition and genes regulated in response to JAK2. D) Ingenuity Pathway analysis indicating classes of genes regulated upon JAK2 inhibition or JAK2 overexpression.

Supplementary Figure S2. SOFT files of GSE2006 (ET platelets) and GSE3410 (MF CD34+) were imported into GeneSpring software. GSE9827 (ET CD34+) and our PV CD34+ dataset were renormalized by MAS5 from Cel files in order to compare with those expression profiles of GSE2006 and GSE3410. After MAS5 normalization, probe sets were filtered, omitting probesets expressed below the 20^{th} percentile. Significant analysis was performed by one-way ANOVA with corrected p-value from Benjamini Hochberg FDR of 0.05 and identified 419 entities from each pair of comparison (a total of 6 comparison) with SNK post-hoc test. Hierarchical clustering was performed using 419 entities.

Supplementary Table S1. Patient information

Supplementary Table S2. Genes differentially regulated between PV and controls by a fold change of 2 or more, $p<0.05$ after RMA normalization

Supplementary Table S3. Genes differentially regulated between PV and controls by a fold change of 2 or more, $p<0.05$ after GC-RMA normalization

Supplementary Table S4. Affymetrix probesets identified by mean of rank product analysis (pfp ≤ 0.05, 500 permutations) in PV patients array data (pfp= percentage of false prediction, p = p value calculated by rank product).

Supplementary Table S5. Biological Function of Genes Significantly Regulated In PV Samples as determined using Ingenuity Pathway Analysis (IPA) software.

Supplementary Table S6. 305 probe sets differentially expressed in CD34+ cells expressing transduced with wild-type JAK2 compared to control CD34+ cells, both grown in the presence of erythropoietin. Pfp- percentage of false prediction. p -p value calculated by rank product.

Supplementary Table S7. 168 probe sets differentially expressed in CD34+ cells transduced with JAK2V617F compared to control CD34 cells, both grown in the presence of erythropoietin.

Supplementary Table S8. Unique genes expressed in response to JAK2 alone, JA2V617F alone, or genes expressed in common in CD34+ cells when compared to control CD34+ cells.

Supplementary Table S9. Genes regulated in common in UKE1 and HEL cells treated with JAK inhibitor I versus DMSO. The experiment was performed on biological triplicates: H1, H2 and H3 are the triplicate samples for HEL cells; U1, U2 and U3 are the triplicate samples for UKE1 cells.