**Supplementary Table and Figure legends**

**Supplementary Table 1: Clinicopathologic characteristics of 338 bladder cancer patients**

**Supplementary Table 2: Loss of TAp73 expression is associated with higher grade and muscle-invasive disease.** p73 H-score is reported by grade/phenotype using mean, median, standard deviation and range, and compared using the Kruskal-Wallis exact test.

**Supplementary Table 3:**  **Overall and recurrence-free survival is lower in patients with high p73 methylation.** T stands for the total number of cases (with survival or progression data), E is the number of events (deaths, or progression and death), and C is the number of censored patients (those still alive or progression-free at last follow-up). The 3/5 year survival rates are the estimated percent of patients that would still be alive at 3/5 years. The median survival is the estimated time at which half the patients experienced death.

**Supplementary Table 4:** **Clinicopathologic characteristics of bladder cancer patients who underwent neoadjuvant therapy**

**Supplementary Figure 1: Recurrence-free survival by TAp73 expression.** Kaplan-Meier plot of recurrence-free survival in individuals stratified into three subgroups based on TAp73 H-scores.

**Supplementary Figure 2: p73 promoter is hypermethylated in tumors compared with matched non-tumor bladder tissue.** Samples of paired tumor and adjacent tissue with no evidence of disease (n=52) were interrogated using Illumina 450K DNA methylation array. Box plots of average methylation pattern in individual MIBC patients. Beta values of average methylation interrogated across (a) 12 CpG sites, (b) 9 CpGs in P1 and (c) 1 CpG in P2.

**Supplementary Figure 3: Promoter methylation and survival outcome.** Kaplan-Meier survival analysis with high methylation (solid line) and low methylation (dashed line) patient group at (a&b) the TSS in all patients and (c&d) cg07382920 in patients treated with cisplatin.

**Supplementary Figure 4: High methylation in patients after treatment at cg07382920 is associated with poor survival outcome.** Kaplan-Meier survival analysis with high methylation (red line) and low methylation (blue line) in patients (a&b) after cisplatin treatment (c&d) after chemotherapy.

**Supplementary Figure 5: Expression of p73 isoforms after 1 μM DAC treatment**. Increase in expression seen after treatment in all isoforms except TAp73α in T24 and SV HUC, and TAp73δ and TAp73ξ in SV HUC. \* Values are maxed off the chart, dotted line at 1, less than 1 signifies a decrease after DAC treatment.

**Supplementary Figure 6: Ratio of p73 isoform expression in tumor samples compared to normal**. Values greater than 1 (dotted line) have higher expression in tumor tissue. TAp73δ is the only isoform with a ratio less than one.

**Supplementary Figure 7: DAC reverses cisplatin resistance in CR-T24 cells.** (a&b) TAp73 expression levels in CR-T24 cells analyzed by immunoblotting and qPCR.

**Supplementary Figure 8: Pretreatment with decitabine sensitizes 253J cells to cisplatin.** 253J cells were subjected to *in vitro* clonogenic assay. Cells were pretreated with 2 µM DAC for 48 hours, followed by 1 µg/mL cisplatin treatment for 24 hours. Colonies were stained with crystal violet after an incubation period of 10 days. Results are indicated as surviving fraction as compared to control cells treated with media alone.