**Supplementary Figure 1**  Survival analysis for the entire cohort of 88 OPC patients. A) The OS for the entire cohort at 5.9 years was 55%. The 5-year OS was 65% vs. 30% as a function of HPV-positive vs. negative status. B) The DFS for the entire cohort at 5.9 years was 52%. The 5-year DFS was 70% vs. 20% as a function of HPV-positive vs. negative status.

**Supplementary Figure 2** Volcano plot showing the comparison of miRNA expression between tumor vs. normal samples. Green dots represent miRNAs with no differential expression; orange dots refer to miRNAs with differential expression. The size of the circles represents the number of samples with such a differential expression.

**Supplementary Figure 3** Comparison of differential miRNA expression levels by p16 IHC or HPV16 ISH. The fold changes were calculated as differential miRNA expression levels between p16-positive vs. p16-negativity defined by IHC, or HPV-positivity vs. HPV-negativity by HPV16 ISH. The x- and y-axes refer to fold changes defined HPV16 ISH vs. p16 IHC, respectively. These two sets of p-values were highly correlated, with $R^2=0.78$. 