**Supplementary Figures**

**Supplementary Figure 1:** Expression of signalling proteins in MCF10A-AKT1WT and MCF10A-AKT1E17K cells grown in the presence or absence of doxycycline, in minimal basal medium and growth medium.

**Supplementary Figure 2:** Colony formation in soft agar using MCF10A cells expressing AKT1E17K, AKT1WT, ERBB2V659E or RFP under a tet-inducible promoter in the presence or absence of 1 g/mL doxycycline. Images from triplicate wells are shown.

**Supplementary Figure 3:** Histograms showing the frequencies of colonies of various diameters. The table shows the mean colony diameter and calculated mean number of cells per colony when MCF10A-derived cell lines were grown in soft agar in the presence (+ Dox) or absence (- Dox) of doxycycline. The data represents counts from three wells per cell line.

**Supplementary Figure 4**: Detection of AKT1E17K mutation in HBC-x2 xenograft tissue.

**Supplementary Figure 5:** Effect of AKT inhibitors, AZD5363 and MK-2206 on AKT pathway biomarkers and growth of MGH-U3 cells *in vitro.*