**Supplemental Figure 1 . Retinoma-like lesions in *Rb/p107DKO* retina**
**A)**sox2/syntaxin staining of disorganized retinoma-like lesion in *Rb/p107DKO* retina at 1 year staining positively for murine retinoblastoma markers. **B)**ki67 (red) with DAPI staining (blue) of adjacent section from the same lesion. Scale bar represents 75uM for low power images, 10uM for magnified image. **C)**Sox2/syntaxin staining of normal area (central region) of the same retina showing normal pattern of sox2/syntaxin expression.
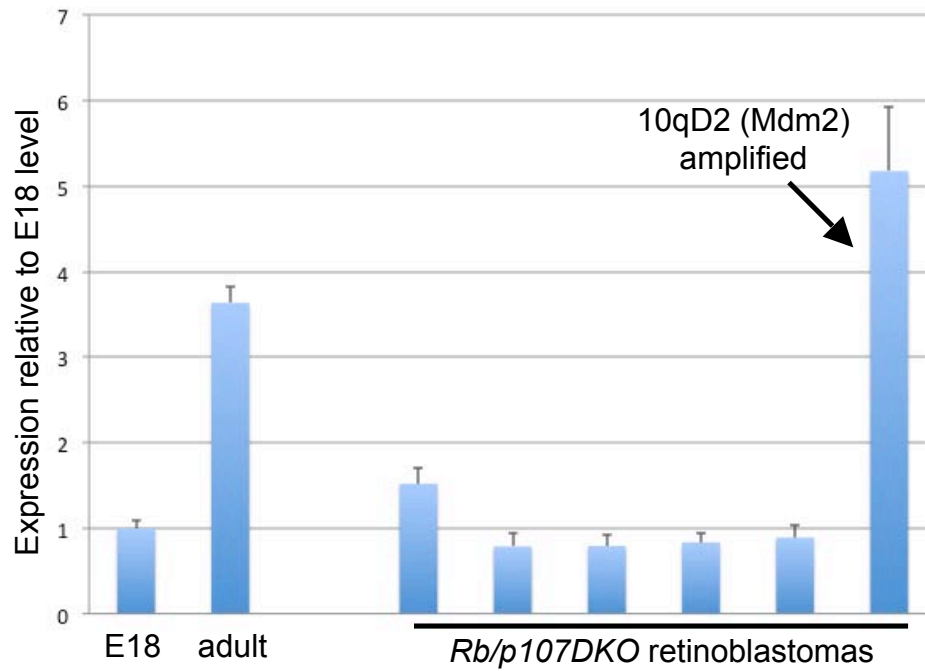
Supplemental Figure 2. Increased Mdm2 expression upon genomic amplification in murine retinoblastomas. Real-time PCR showing expression of Mdm2 in normal retina (E18 and adult) or *Rb/p107DKO* retinoblastomas. The tumor with genomic amplification (arrow) exhibited increased Mdm2 expression compared to non-amplified samples. Data were normalized to actin.
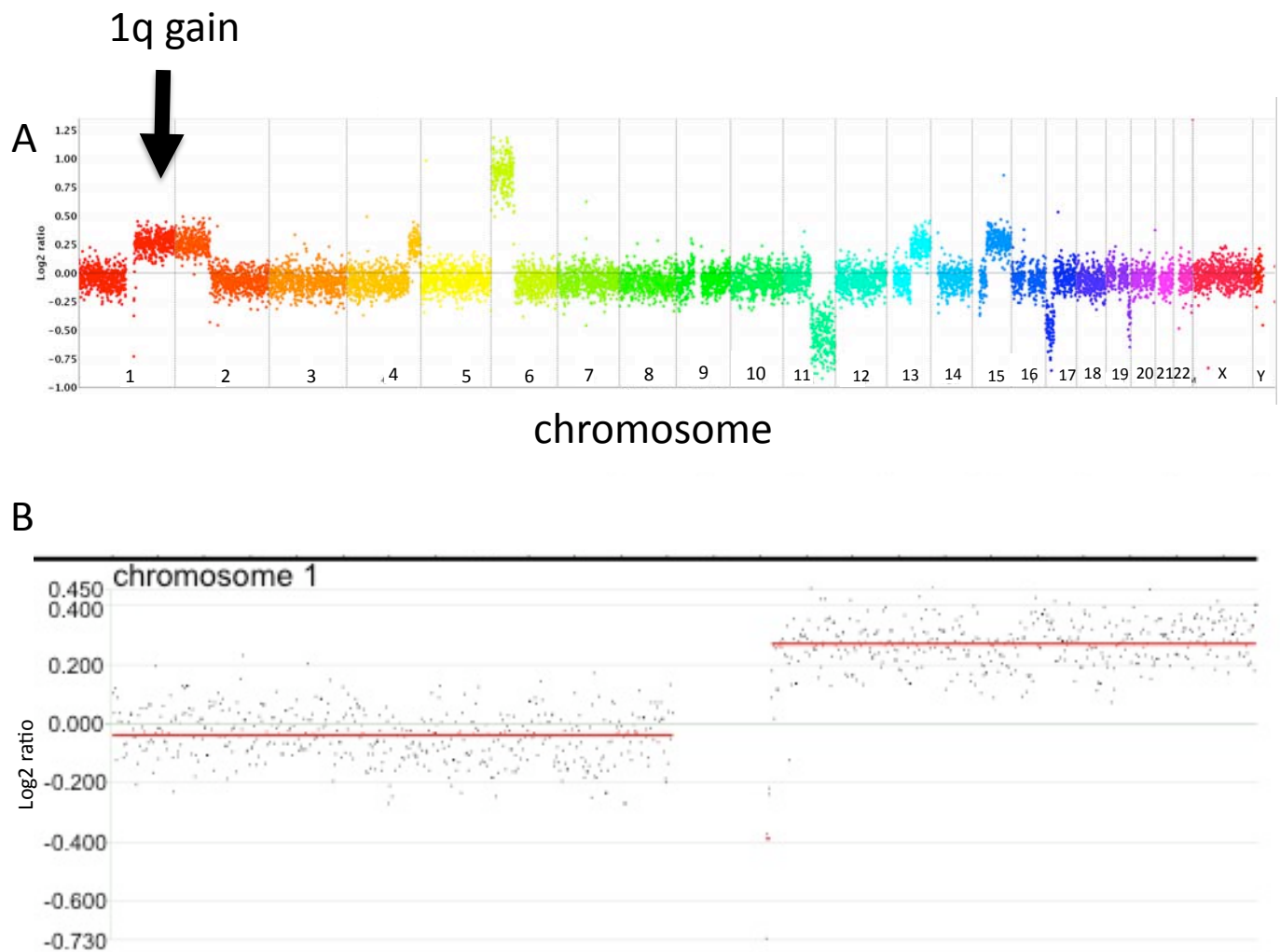
Supplemental Figure 3. 1q gain in human retinoblastoma. A) Array CGH data showing whole genome profile for human retinoblastoma sample with 1q gain. **B)** Chromosome 1 plot showing 1q gain.
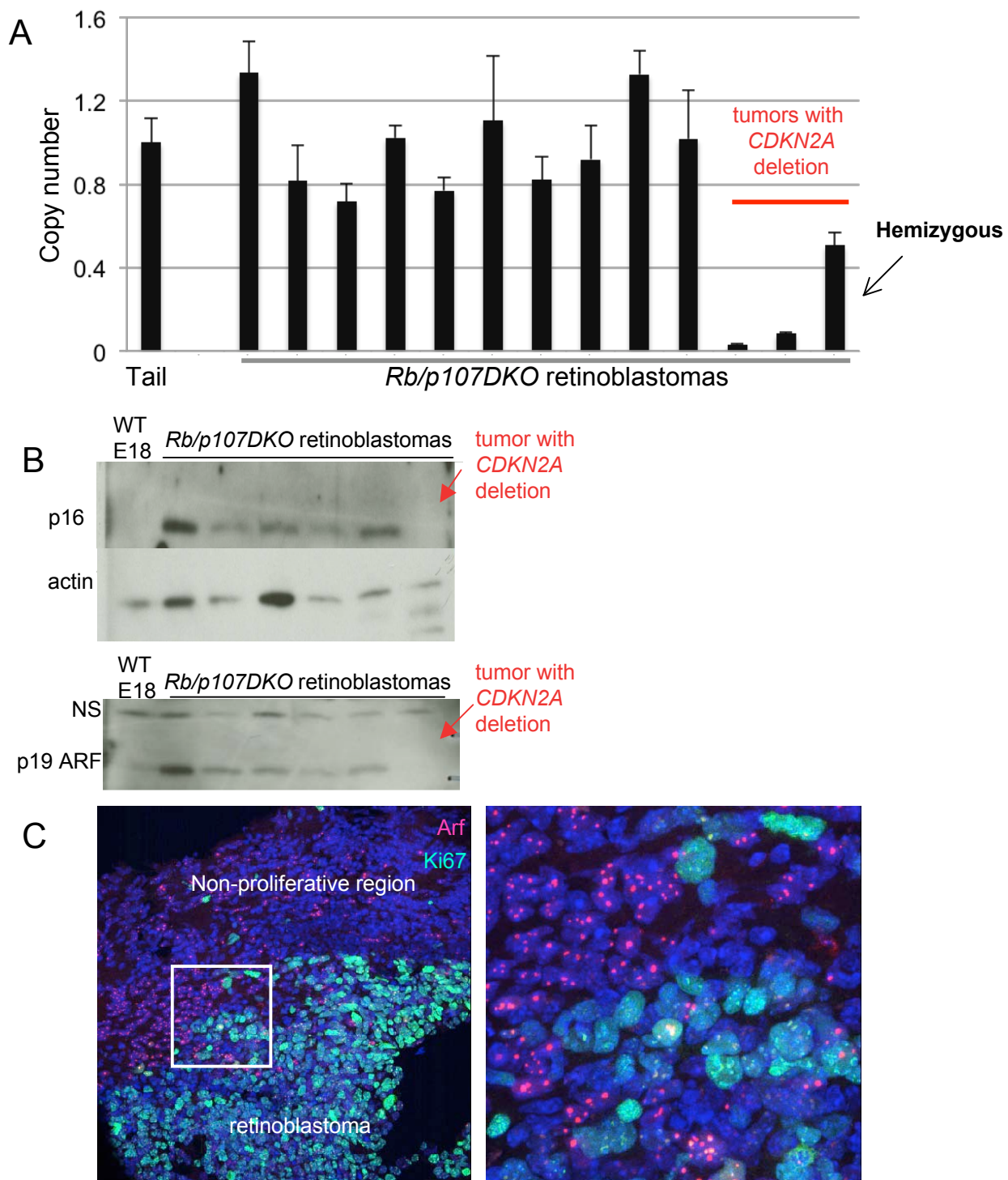
Supplemental Figure 4: Arf and p16 expression in retinoblastoma A) Real-time PCR showing *Cdkn2a* copy number in *Rb/p107DKO* retinoblastomas and control tail DNA. Data are normalized to control gene *Ant1*. Three tumors with *Cdkn2a* deletion are indicated (one tumor exhibits hemizygous deletion). **B)** Western blot analyses showing Arf and p16 expression in *Rb/p107DKO* tumors. NS refers to non-specific band. Sample from last lane is from a murine retinoblastoma with *Cdkn2a* deletion. **C)** Immunohistochemistry showing Arf immunostaining in an *Rb/p107DKO* retinoblastoma. Note that nucleolar Arf expression is predominantly in non-proliferating ki67 negative cells.

A   control

B   Rbp107DKO (1 year)

C   WT kidney (positive control)
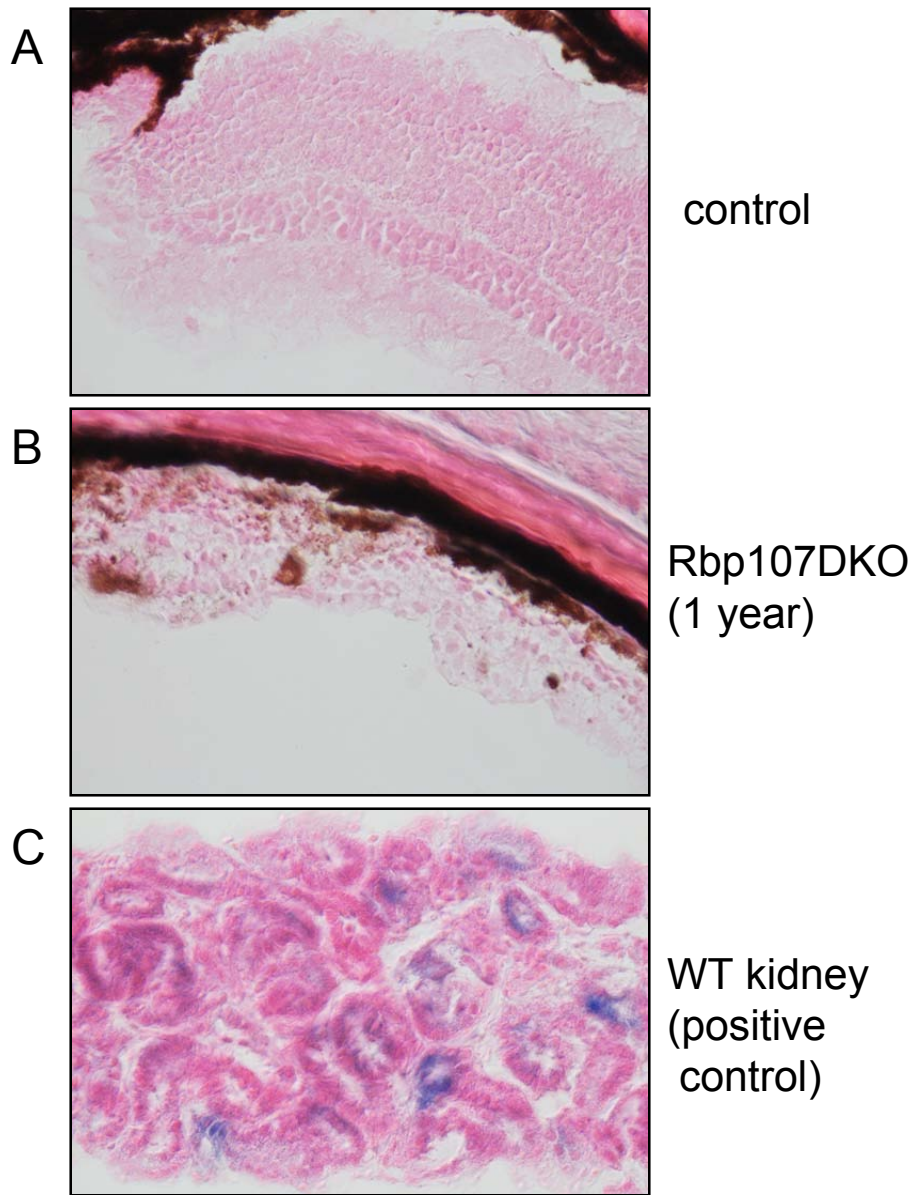
Supplemental Figure 5. Lack of senescence associated Beta Gal staining in *Rb/p107DKO* retina at 1 year of age. Control retina and *Rb/p107DKO* retinas were stained for SA-Beta Gal. No positive cells were detected in the *Rb/p107DKO* lesions. Also shown is kidney from a 1-year old wild-type mouse where senescent SA-beta Gal positive cells (blue stain) are present.
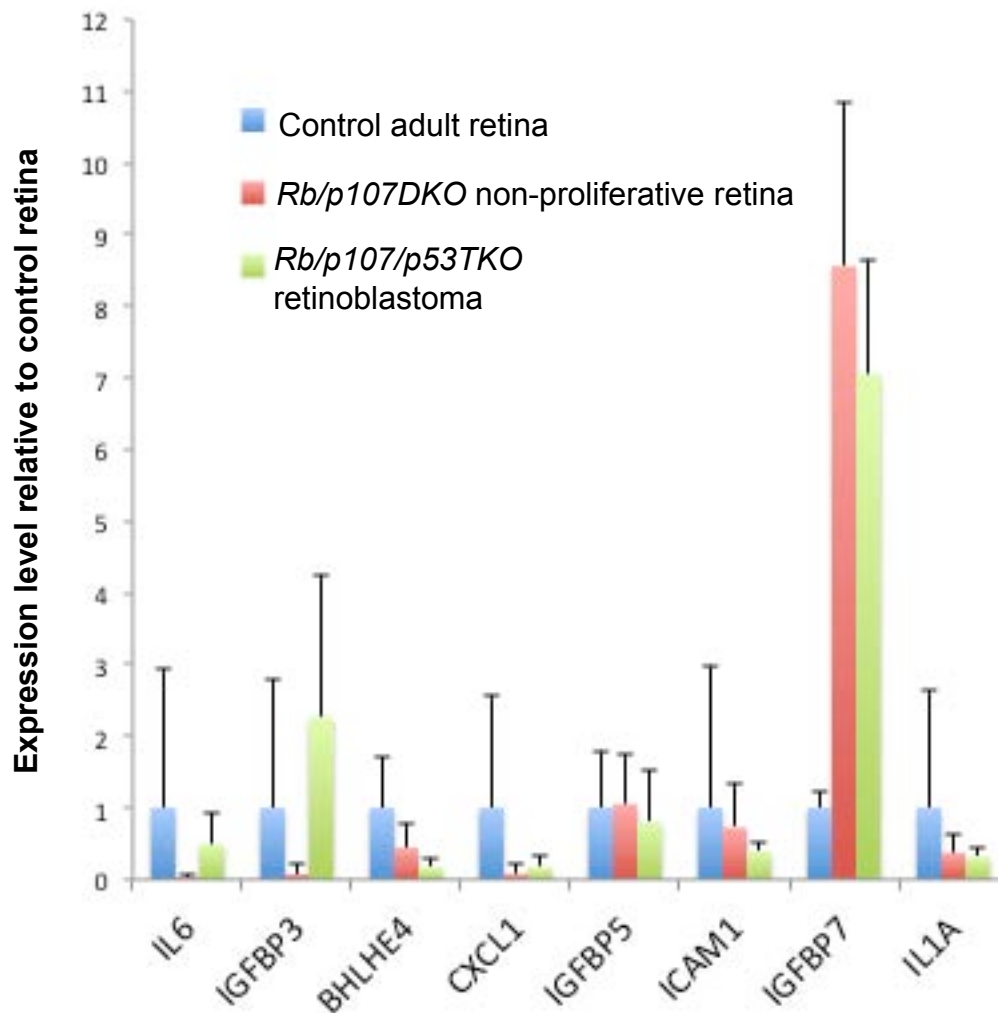
Supplemental Figure 6. Expression of senescence associated secretome factors in non-proliferative lesions from *Rb/p107DKO* retina.
Real time PCR showing expression of transcripts of the senescence associated secretome in control retina vs non-proliferative *Rb/p107DKO* retina. Also shown is expression level in retinoblastomas that arose in *Rb/p107/p53TKOs*. Of the senescence associated transcripts, only *Igfbp7* is upregulated in *Rb/p107DKO* lesions and there is no suppression of *Igfbp7* upregulation in tumors that have inactivated p53. N=5 independent retinas per group, error bars represent standard deviation.

Supplemental Table 1

Primers	forward	reverse
IL6	5' CCG GAG AGG AGA CTT CAC AG 3'	5' TCC ACG ATT TCC CAG AGA AC 3'
Igfbp3	5' CAG GCA GCC TAA GCA CCT AC 3'	5' CTT TCC ACA CTC CCA GCA TT 3'
Bhlhe4	5' CAA CTG AAG CGA CAC CTC AA 3'	5' ATC CGA GGG TCT CAA GAG GT 3'
Cxcl1	5' TGT TGT GCG AAA AGA AGT GC 3'	5' TAC AAA CAC AGC CTC CCA CA 3'
Igfbp5	5' GAC CCC GGA AAT GTA TTC CT 3'	5' CCA ACG CTT TGC TTT CTT TC 3'
Icam1	5' CTT CCA GCT ACC ATC CCA AA 3'	5' CTT CAG AGG CAG GAA ACA GG 3'
Igfbp7	5' GGA AAA TCT GGC CAT TCA GA 3'	5' TGC GTG GCA CTC ATA CTC TC 3'
Il1a	5' AGC AGC CTT ATT TCG GGA GT 3'	5' GTG CAA GTG ACT CAG GGT GA 3'
Actin	5' TCC GTA AAG ACC TCT ATG CC 3'	5' ATC TTC ATG GTG CTA GGA GC 3'