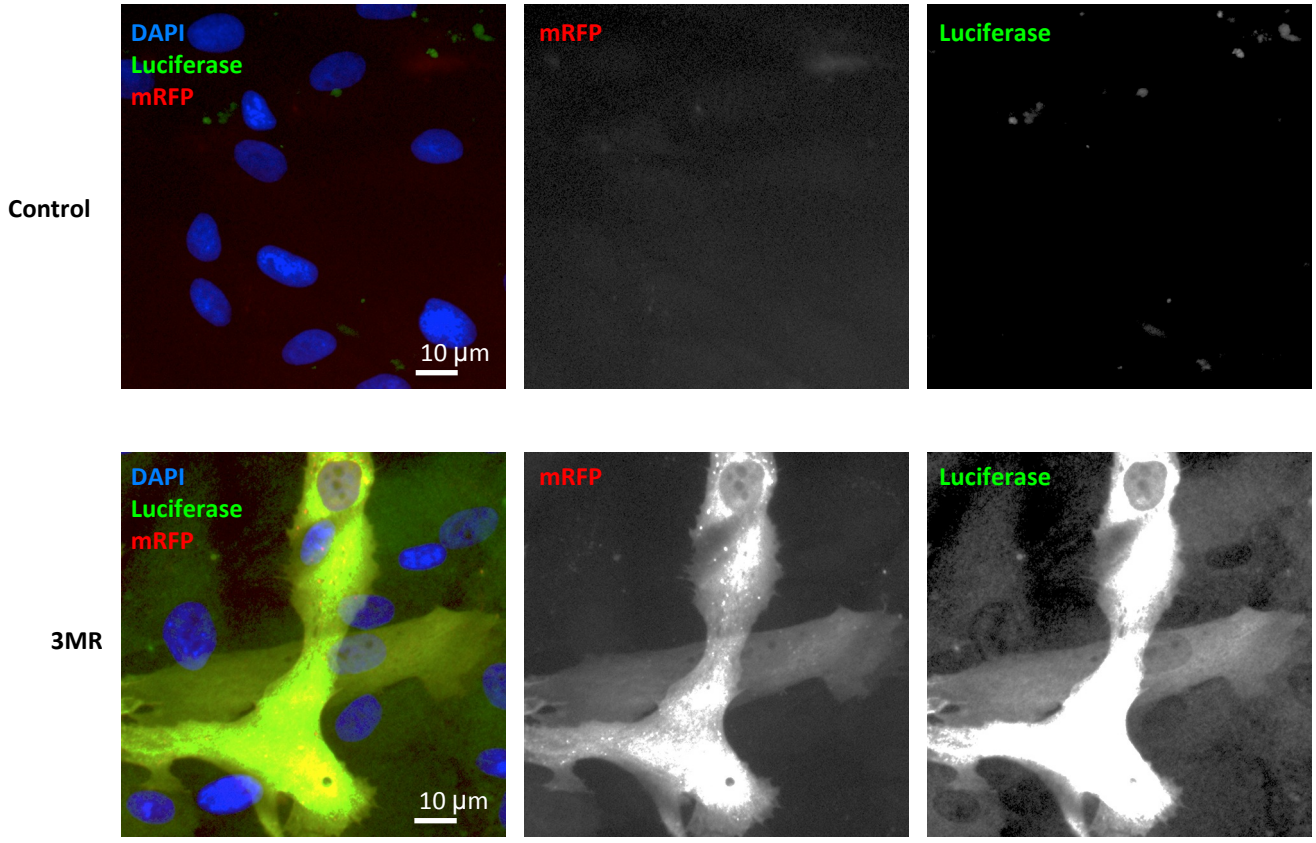
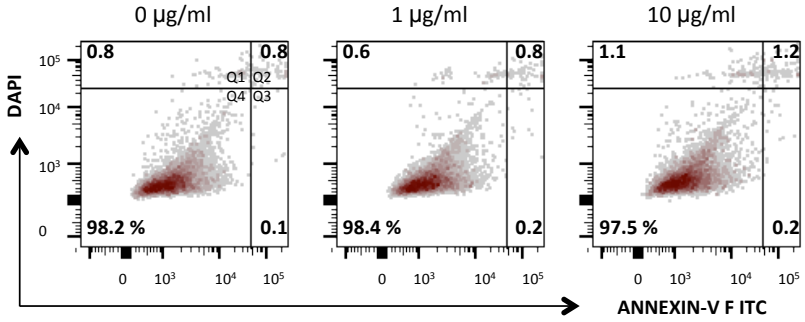
Supplementary Figure S1 Laberge et al.



Supplementary Figure S2 Laberge et al.

A



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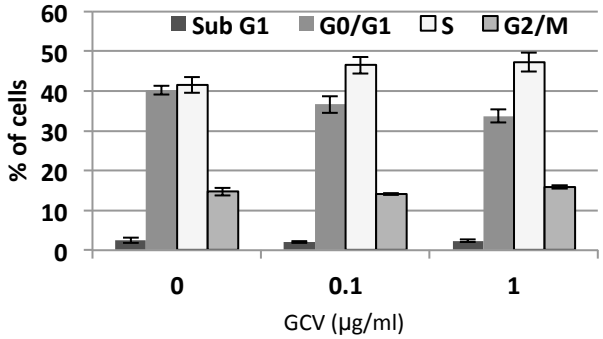

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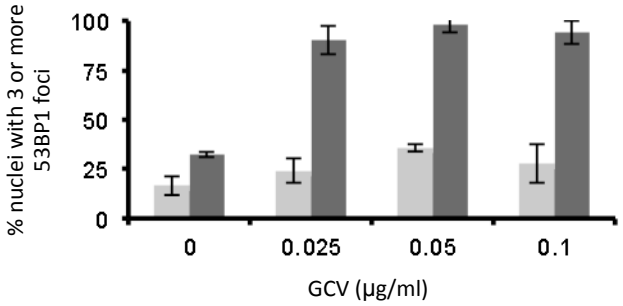
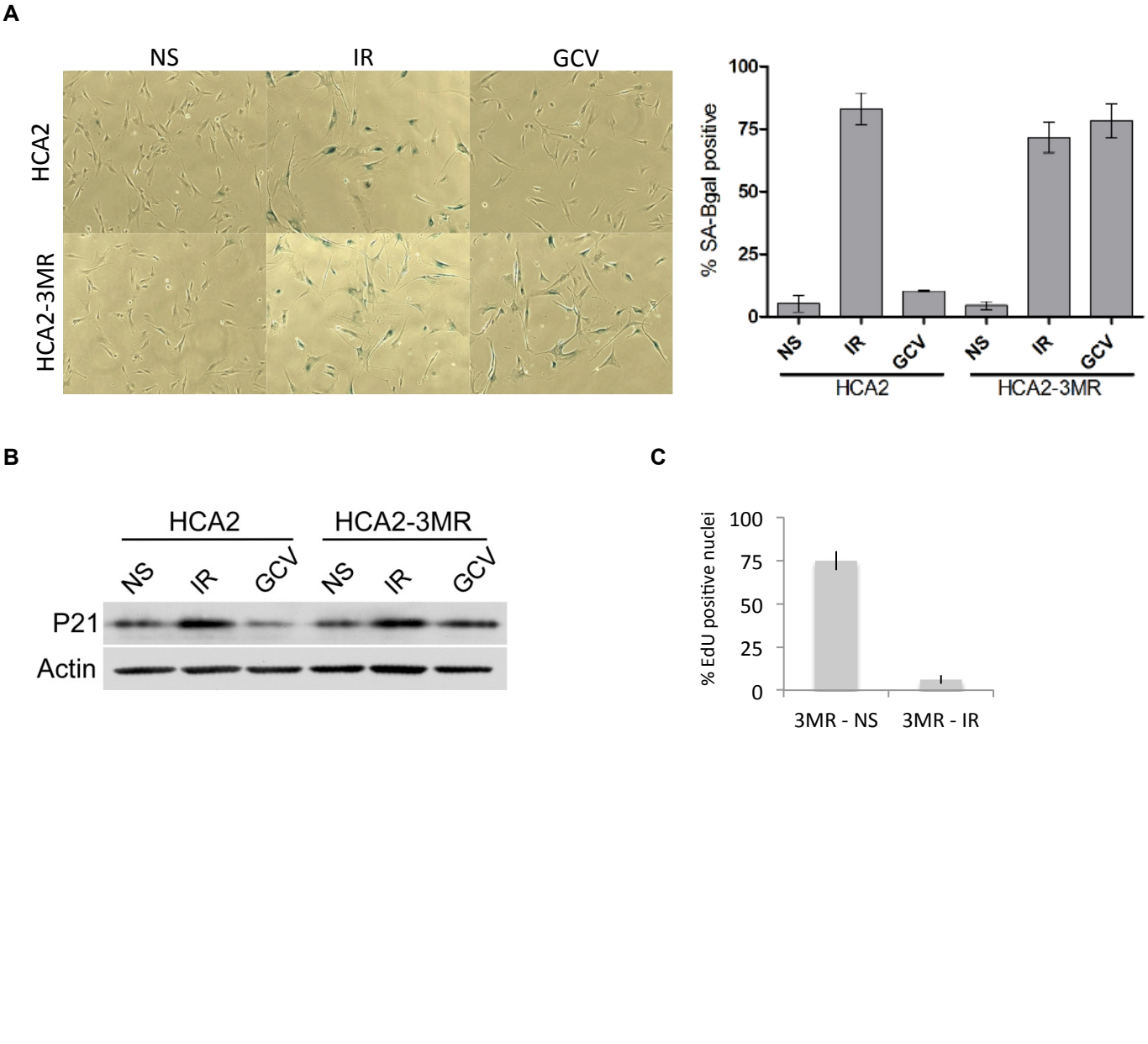


Supplementary Figure S3 Laberge et al.



SUPPLEMENTARY FIGURE LEGENDS

Supplementary Figure S1. 3MR expression in HCA2-3MR cells. HCA2 (Control) or HCA2-3MR (3MR) cells were plated on glass slides, fixed 48 h later and immunostained for rLuciferase (green); mRFP fluorescence from 3MR was captured in red. DNA was stained with DAPI (blue). Left panels show merged RGB colors. Middle panels show the extracted red channel (mRFP) in grayscale; right panels show the extracted green channel (rLuciferase).

Supplementary Figure S2. GCV is non-toxic to control HCA2 cells.
A) HCA2 cells were treated as in Figure 1A and collected 4 days after GCV treatment for live-dead apoptosis analysis by flow cytometry. Representative scatter plots are shown. The data were quantified as in Figure 1 and show the % of cells in the live (Q4), early apoptotic (Q3) or late apoptotic/necrotic (Q1-2) quadrants for each concentration of GCV. B) HCA2 cells were treated as in A) and collected 7 days after GCV addition for cell cycle analysis by flow cytometry. The cell cycle distribution is plotted as the % of cells in each cell cycle phase for each concentration of GCV. C) Persistent DNA damage foci were determined in cells treated with GCV. Light gray: HCA2-control cells; dark gray: HCA2-3MR cells. Cells were on glass slides were given the indicated concentrations of GCV 48 h after plating for 9 days (media + or – GCV were replenished every 2 days). GCV treatment ended for 3 days and the percentage of cells with 3 or more persistent 53BP1 nuclear foci (DNA-SCARS) was determined as described in Figure 1D.

Supplementary Figure S3. Irradiation-induced senescence in HCA2 and HCA2-3MR cells.
24 h after seeding, HCA2 and HCA2-3MR cells were untreated (non-senescent or NS), X-irradiated (10 Gy; IR) or given 0.1 μg/ml GCV (GCV). GCV or media were refreshed after 3 days. After 6 days, GCV was removed and changed for fresh media without GCV. Cells were collected after 9 days for protein extraction or reseeded for SA-βGal. A) Representative SA-

βGal images (left panels) and quantification of the percentage of SA-βGal positive cells (right panel). B) Western blot analysis was performed to determine the levels of the senescence marker cyclin-dependent kinase inhibitor $p21^{WAF1}$. Actin was used as a loading control. C) 24-h EdU DNA labeling index was determined in non-senescent control (3MR-NS) and irradiated (3MR-IR) HCA2-3MR fibroblasts. Cells were seeded on glass slides 24 h after irradiation and EdU was added to the media from day 8 to 9 (24-h pulse) following irradiation. The percentage of EdU positive cells was determined from at least 150 cells per condition.