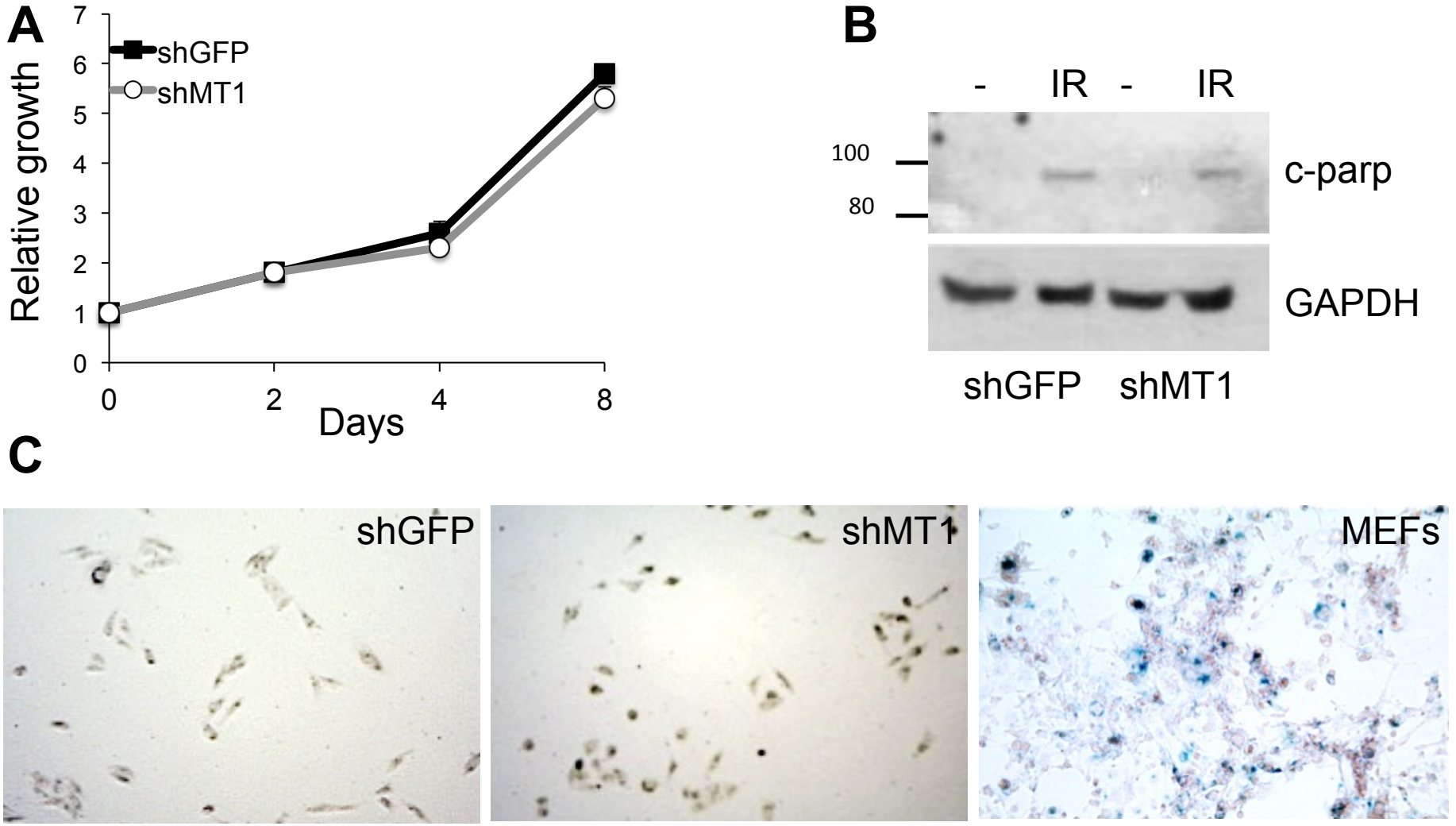
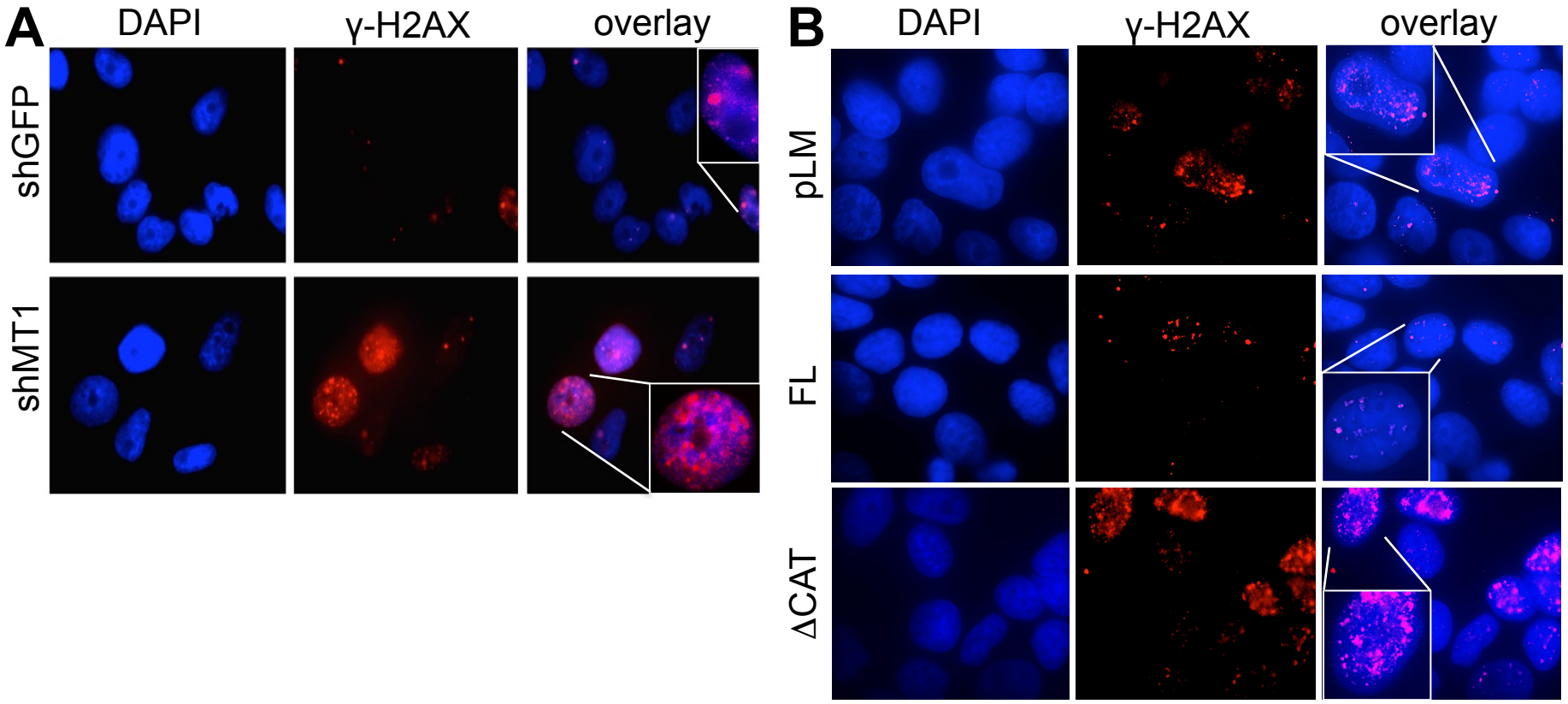


Supplementary Figure 1: A) Growth of shGFP and shMT1-MMP expressing MDA-MB-231 cells. **B)** cleaved PARP of the cells in A, untreated or treated with 8Gy IR. **C)** β-galactosidase staining of the cells in A. Mouse Embryonic Fibroblasts (MEFs) irradiated with 8Gy IR and stained 4 day later were used a positive control. A) cells growth of cells



Supplementary Figure 2: Representative γH2AX staining. A) γH2AX foci staining in MDA-MB-231 cells expressing shGFP or shMT1-MM without any treatment. **B)** γH2AX foci staining in MCF7 cells expressing an empty vector (pLM), Full length Mt1-MMP (FL) or the catalytically dead mutant MT1-MMP (ΔCAT) without treatment.

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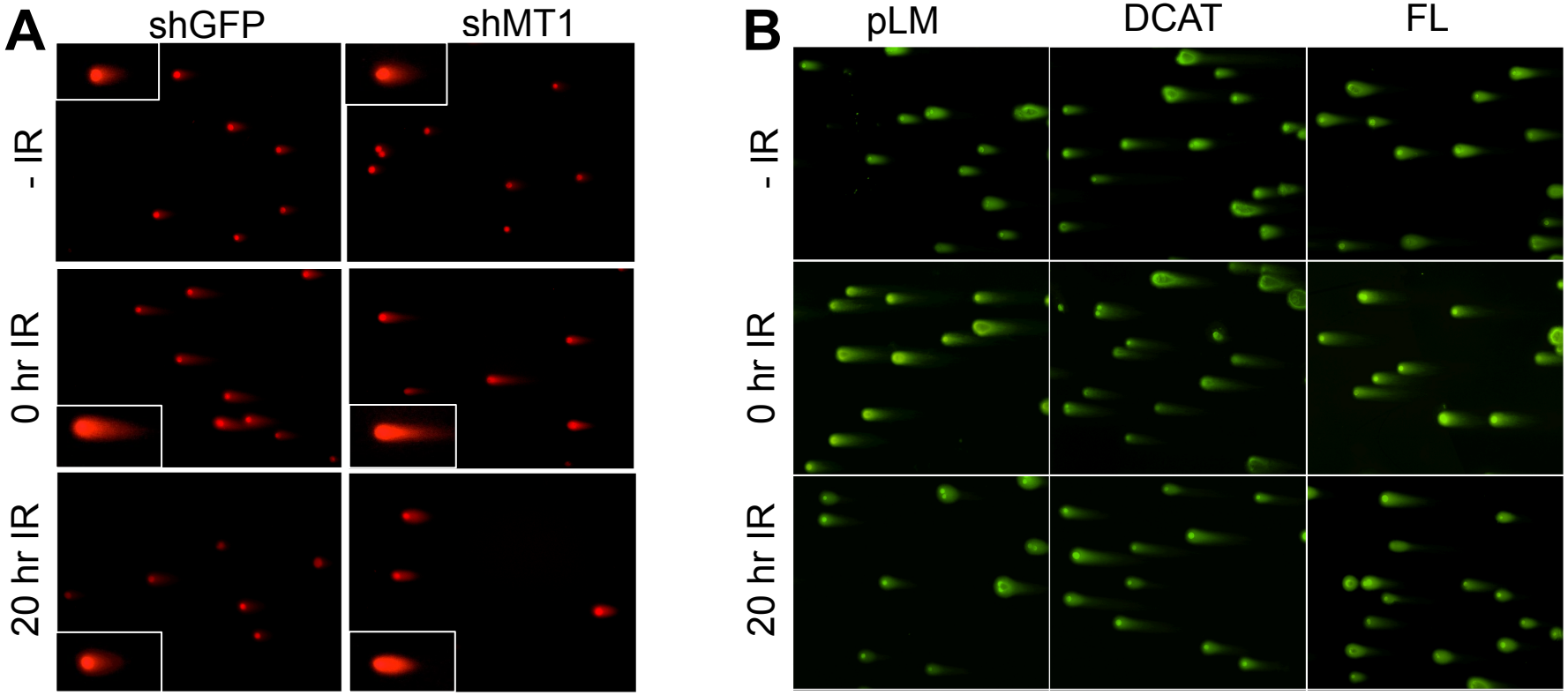

Supplementary Figure 3: Representative single cells staining (comet assay). MDA-MB-231 cells expressing shGFP or shMT1-MMP (**A**) or MCF7 cells expressing an empty vector (pLM), Full length Mt1-MMP (FL) or the catalytically dead mutant MT1-MMP (ΔCAT) (**B**) were treated with 8Gy IR then single cells were embedded in agarose, lysed and subjected to electrophoresis afte the indicated time points. For staining, Ethidium Bromide and SYBR green were used in A and B, respectively.

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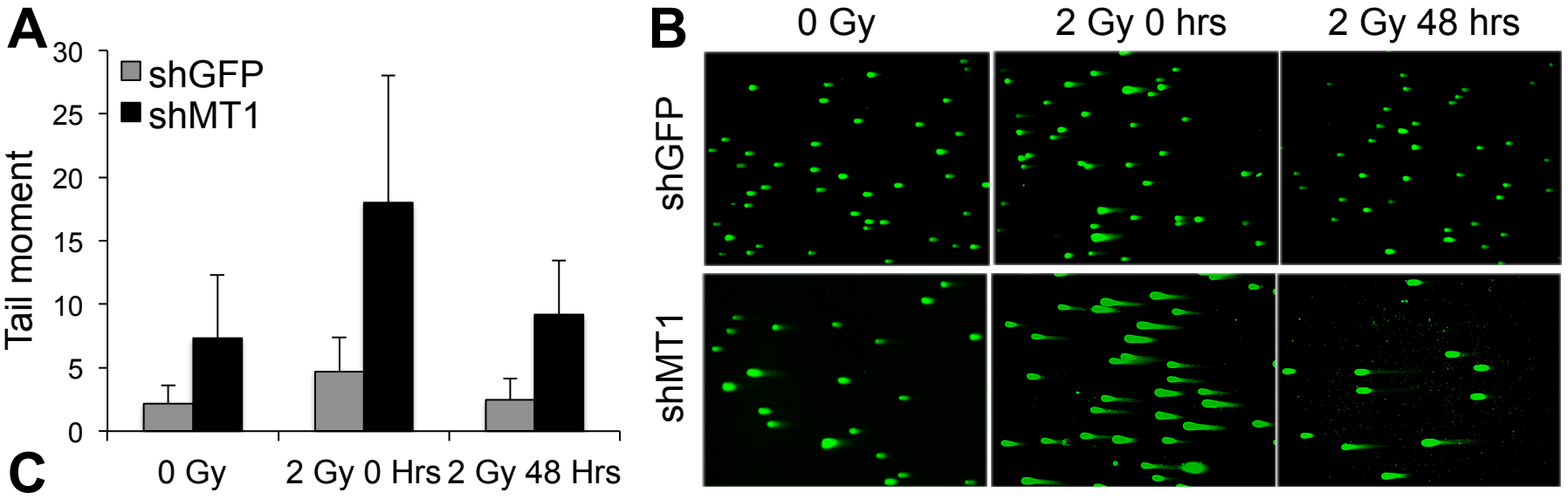
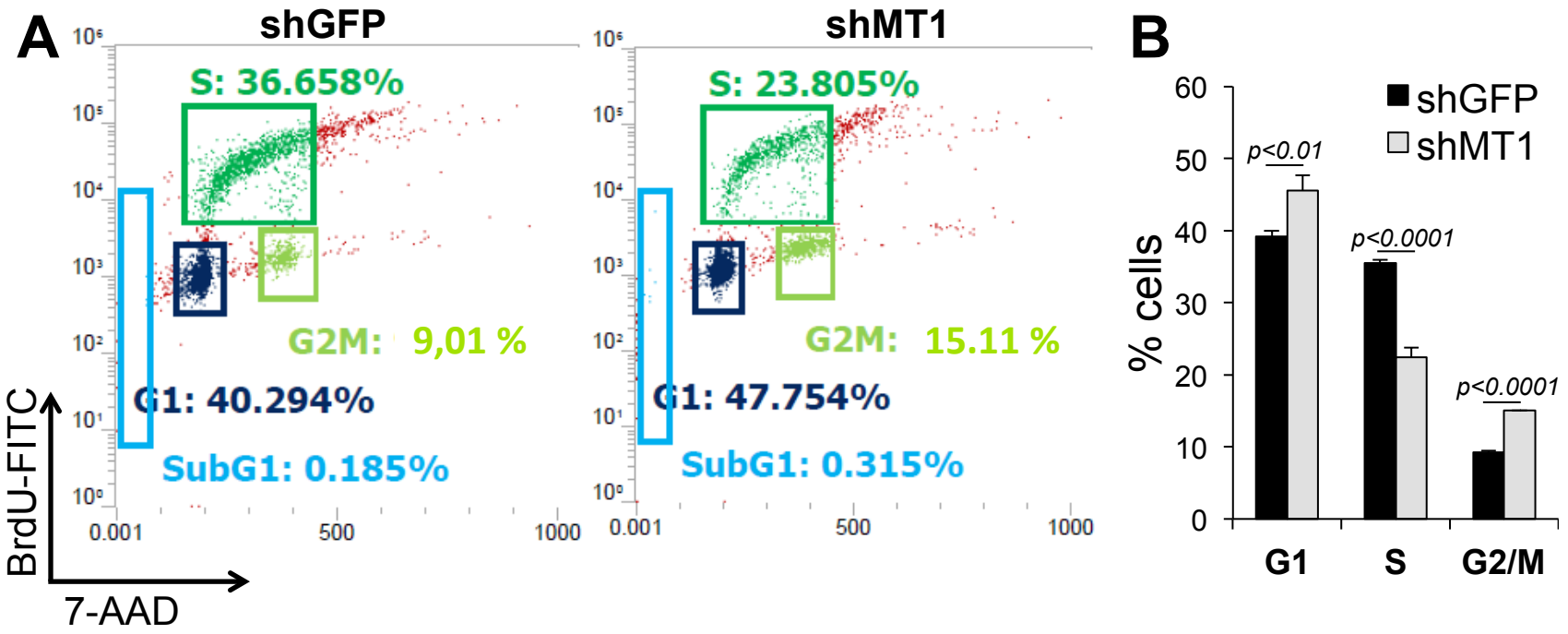


Student's *t* test

shGFP 0Gy vs MT1_0Gy	1.11547E-14
shGFP 2Gy vs MT1_2Gy	1.69484E-13
shGFP 2Gy 48hrs vs shMT1 2Gy_48hrs	2.3091E-18
shGFP 0Gy vs shGFP 2Gy_48hrs	0.134897694
shMT1 2Gy vs shMT1 2Gy_48hrs	0.017545563

Supplementary Figure 4: Comet assay of MDA-MB-231 cells at 48 hours post 2Gy IR. A) Quantification of the tail moment of MDA-MB-231 cells expressing shGFP or shMT1-MMP, irradiated with 2 Gy IR. **B)** Representative single cells staining of the cells in A. **C)** Student's t test of the treatment in A.



Supplementary Figure 5: Cell cycle analysis: A) representative cell cycle profiles of MDA-MB-231 cells expressing shGFP or shMT1-MMP. **B)** % cells in the various cell cycle Phases. Values are the mean of three independent experiments. Cells were pulsed for 1 hour with 10μM bromodeoxyuridine (BrdU, Sigma, St. Louis, MO). After fixationcells were stained with FITC conjugated anti-BrdU, and counterstained with 7-AAD, according to the manufacturer's instruction (BD Biiosciences). Samples were analyzed by flow cytometry (Aria, BD Biosciences), and the FlowJo software program (Cytomation). *Thakur et al*