Supplementary Materials and Methods

Alkaline Single-cell electrophoresis "COMET Assay"

Cells (2-3x10^5 cells/ml) were suspended in 0.5% low melting point agarose in culture medium and transferred onto a frosted glass microscope slide pre-coated with a layer of 0.5% normal melting point agarose. Slides were immersed in lysis solution [2.5 mol/L NaCl, 100 mmol/L EDTA,10 mmol/L Tris, 1% sodium lauryl sarcosinate, 10% DMSO, and 1% Triton X-100 (pH 10)] at 4°C for 1 h, placed in an electrophoresis tank containing 0.3 mol/L NaOH (pH 13) and 1 mmol/L EDTA for 40 min, subjected to electrophoresis for 25 min at 25 V (300 mA), washed with neutral buffer [400 mmol/L Tris-HCl (pH 7.5)], and stained with 20 μg/mL ethidium bromide. The variables of the ‘‘comets’’ were quantified using Comet Assay 2 software (Perceptive Instrument). Triplicate slides were processed for each experimental point. The tail moment is defined as the product of the percentage of DNA in the tail and the displacement between the head and the tail of the comet.

ELISA

A sandwich ELISA was used to detect Poly(ADP-Ribose) (PAR) polymers. Cells were boiled in PathScan Sandwich ELISA Lysis Buffer (Cell Signaling Technology) supplemented with 1mM PMSF (Phenylmethanesulfonyl Fluoride, Sigma). Cell extracts were then diluted in Superblock buffer (Thermo Scientific) prior to the ELISA Assay. Briefly, 100 μL carbonate buffer (1.5 g/L sodium carbonate Na_2CO_3, 3 g/L $NaHCO_3$) containing the capture antibody (mouse anti-PAR at 4 μg/ml, Trevigen) was added to 96 well plates and incubated overnight at 4°C. The plates were then washed and blocked with Superblock at 37°C for 1 h, and 10 μL of cell extract added to 65 μL of Superblock in each well and the plate incubated overnight at 4°C. After washing, 75 μL buffer (PBS/2% milk/1% mouse serum) containing detection

antibody (Rabbit anti-PAR, diluted 1/1000, Trevigen) was added and the plate incubated for 1 h at RT. The plates were then washed and the wells incubated with 75µL buffer (PBS/2% milk/1% mouse serum) containing an HRP-conjugated anti-rabbit antibody (diluted 1/5000, Abcam) for 1 h at RT. Following multiple washes, 75µL Supersignal Pico (Pierce) was added to the wells. The optical absorbance (OD 425 nm) of each well was determined at various time points (1, 5, and 15 min) to optimize the signal to noise ratio. In Each condition was performed in duplicate wells for all experiments.