Supplementary Information

Supplementary Materials and Methods

γH2AX/Rad51 immunofluorescence

Cells were seeded on coverslips in six-well plates and incubated in 2 mL medium containing 10 μmol/L AG014699 (Selleckchem Houston, TX, USA) for 24 h. Coverslips were washed twice with ice-cold PBS, fixed with ice-cold methanol at −20°C for 10 min, rehydrated with two changes of PBS for 20 min, permeabilized with blocking buffer (KCM buffer: 120 mM KCl, 20 mM NaCl, 10 mM Tris-HCl, 1 mM EDTA plus 0.1% Triton X-100, 2% bovine serum albumin, 10% milk powder, and 10% normal goat serum) and incubated with primary anti–phospho-histone H2AX (Ser^{139}) antibody (clone JBW301, mouse monoclonal antibody; Upstate, Millipore Corp.) diluted in blocking buffer (1:200) for 2 h at room temperature. After washing the coverslips, primary antibody for Rad51 (anti-Rad51 rabbit polyclonal antibody; Calbiochem, EMD Biosciences, Inc.) was added and incubated for 2 h at room temperature before overnight incubation at 4°C. Secondary anti-mouse and anti-rabbit antibodies (Alexa Fluor 546 goat anti-mouse IgG, diluted 1:200; Alexa Fluor 488 goat anti-rabbit IgG, diluted 1:100; Life Technologies) were added to the coverslips and incubated at room temperature for 1 h in the dark. Coverslips were mounted on slides using ProLong® Gold Antifade Reagent with DAPI (Promega) and analyzed using a laser scanning microscope (Axioskop 2 plus, Carl Zeiss Co., Ltd). γH2AX and Rad51 foci were quantified in 30 nuclei from three different fields of each coverslip. The average number of γH2AX and Rad51 foci per cell was expressed as percentage of untreated controls.

PARP activity

PARP activity in cell extracts before and 24 h after addition of 10 μmol/L AG014699 was measured by a colorimetric assay according to the manufacturer's instructions (PARP Universal Colorimetric Assay Kit, R&D Systems).

Supplementary Figure legends

Supplementary Figure S1. PARP activity was measured in wild-type and Rho(0) cells 24 h after treatment with rucaparib and expressed as percentage of untreated cells.

Supplementary Figure S2. Total ATP levels were measured in wild-type, cybrids and Rho(0) cells using a luciferin/luciferase-based kit.

Supplementary Figure S3. (**a**) Total DNA extracted from normal prostate (N; n=6), BPH (n=2) and prostate carcinoma (PCa; n=1) specimens was subjected to long-PCR analysis of the complete mtDNA. M= *molecular weight marker*. (**b**) For the 9 PCa patients presented in Figure 7a, mtDNA from peripheral blood lymphocytes obtained at the time of surgery was analyzed concomitantly (*top panel*). Amplification of β-globin was used as quality and quantity control of the total DNA (*bottom panel*).