Description of Additional Supplementary Files

File name: Supplementary Video 1

Description: Retrograde migration of MEF knockout \( W_{wox}^{-/-} \) cells upon encountering wild type \( W_{wox}^{+/+} \). \( W_{wox} \) knockout MEF cells (right chamber; labeled with Cell TrackerRed) and wild type MEF cells (left chamber; labeled with Cell TrackerGreen) were seeded onto the left and right chambers of the culture insert (from ibidi), respectively. Following 24-hr culturing, the insert was gently removed with a pair of forceps. Time-lapse microscopy was then carried out under 10% FBS/medium at 37°C with 5% CO\(_2\). Each picture frame was taken per 10 minutes. Many wild type cells underwent apoptosis.

File name: Supplementary Video 2

Description: Cell migration assay for L929S versus L929R cells cultured in 10%FBS/RPMI medium. L929S (left chamber) and L929R cells (right chamber) were co-cultured using RPMI medium supplemented with 10% FBS, respectively. Time-lapse microscopy was then carried out at 37°C with 5% CO\(_2\). Each picture frame was taken per 10 minutes.

File name: Supplementary Video 3

Description: Cell migration assay for MDA-MB-435s versus MEF wild type cells. MDA-MB-435s (left chamber) and MEF wild type cells (right chamber) were co-cultured using RPMI medium supplemented with 2% FBS, respectively. Time-lapse microscopy was then carried out at 37°C with 5% CO\(_2\). Each picture frame was taken per 10 minutes.

File name: Supplementary Video 4

Description: UV/cold shock induces bubbling cell death (BCD) in L929S. L929S cells were exposed to UV 960 mJoule/cm\(^2\) and subsequent cold shock at 4°C for 5 min, and then subjected to imaging by time-lapse microscopy at room temperature. A picture was taken per 5 min.
File name: Supplementary Video 5

Description: UV/cold shock induces pop-out explosion death in L929R. L929R cells were exposed to UV 960 mJoule/cm² and subsequent cold shock at 4°C for 5 min, and then subjected to imaging by time-lapse microscopy at room temperature. A picture was taken per 10 min.

File name: Supplementary Video 6

Description: Cell migration assay for glioblastoma U87-MG versus L929S cells. L929S (right chamber) and U87-MG (left chamber) were co-cultured in an insert (ibidi) using RPMI medium supplemented with 2% FBS, respectively. Time-lapse microscopy was then carried out at 37°C with 5% CO₂. Each picture frame was taken per 10 minutes.

File name: Supplementary Video 7

Description: Cell migration assay for squamous cell carcinoma SCC9 versus SCC15 cells. SCC15 (right chamber) and SCC9 (left chamber) were co-cultured in an insert (ibidi) using DMEM-F12 medium supplemented with 2% FBS. Time-lapse microscopy was then carried out at 37°C with 5% CO₂. Each picture frame was taken per 10 minutes.

File names: Supplementary Videos 8 and 9

Description: Sudden impact of MEF Wwox knockout by wild type cells leads to activation of the ectopic survival IκBα/ERK/WWOX signaling in the knockout cells. MEF Wwox knockout cells were transiently overexpressed with ECFP-IκBα, EGFP-ERK and DsRed-WWOX, and then cultured for 24 to 48 hr, followed by adding the wild type cells from suspension. Cell-to-cell impact induced the IκBα/ERK/WWOX signaling in the knockout cells (Video 8; shown as FRETc in artificial white color). Wild type cells were undergoing membrane blebbing and apoptosis (Video 9).

File names: Supplementary Videos 10 and 11

Description: The survival IκBα/ERK/WWOX signaling does not activate effectively in the MEF wild type cells upon sudden encountering with MEF Wwox knockout cells. MEF wild type cells were transiently overexpressed with ECFP- IκBα, EGFP-ERK and DsRed-WWOX and cultured for 24 to 48 hr, followed by adding the MEF Wwox knockout cells from suspension. Activation of the
IkBα/ERK/WWOX signaling did not occur effectively in the wild type cells (Video 10; shown as FRETc). Apoptosis did not occurred in the wild type cells (Video 11).

File name: Supplementary Video 12

Description: MDA-MB-231 cell monolayers, overexpressing IkBα/ERK1/WWOX, were impacted by L929S from suspension. By sudden impact with L929S, MDA-MB-231 cells exhibited activation of the ectopic IkBα/ERK/WWOX signaling (red), as determined by time-lapse microscopy. L929S underwent apoptosis.
Supplementary Videos for Supplementary Figures 2 and 5: Video 13 to 42

(Videos available at DOI: 10.6084/m9.figshare.14560782)

File name: Supplementary Video 13

Description: Video for Suppl. Fig. 2a. UV induces Ca2+ influx and BCD in WWOXf cells, but explosion in WWOXd cells. WWOXf L929S cells were stained with Fluo-8 (50 µM) and non-toxic levels of PI (2 µg/ml) and DAPI (10 µg/ml), and then exposed to UV 480 mJoule/cm². The cells were subjected to time-lapse microscopy immediately at room temperature. 200x magnification. Each picture frame was taken per 2 minutes.

File name: Supplementary Video 14

Description: Supplementary video for Suppl. Fig. 2a. UV induces Ca2+ influx and BCD in WWOXf cells, but explosion in WWOXd cells. WWOXd L929R cells were stained with Fluo-8 (50 µM) and non-toxic levels of PI (2 µg/ml) and DAPI (10 µg/ml), and then exposed to UV 480 mJoule/cm². The cells were subjected to time-lapse microscopy immediately at room temperature. 200x magnification. Each picture frame was taken per 2 minutes.

File name: Supplementary Video 15

Description: Supplementary video for Suppl. Fig. 2b. UV induces Ca2+ influx and BCD in WWOXf cells, but explosion in WWOXd cells. WWOXf YMY normal human skin keratinocytes or epithelial cells were stained with Fluo-8 (50 µM) and non-toxic levels of PI (2 µg/ml) and DAPI (10 µg/ml), and then exposed to UV 480 mJoule/cm². The cells were subjected to time-lapse microscopy immediately at room temperature. 200x magnification. Each picture frame was taken per 2 minutes.

File name: Supplementary Video 16

Description: Supplementary video for Suppl. Fig. 2b. UV induces Ca2+ influx and BCD in WWOXf cells, but explosion in WWOXd cells. WWOXd YMY neurofibromatosis NF1 skin cells were stained with Fluo-8 (50 µM) and non-toxic levels of PI (2 µg/ml) and DAPI (10 µg/ml), and then exposed to UV 480 mJoule/cm². The cells were subjected to time-lapse microscopy immediately at room temperature. 200x magnification. Each picture frame was taken per 2 minutes.
**File name: Supplementary Video 17**

**Description:** Supplementary video for Suppl. Fig. 2c. UV induces Ca2+ influx and BCD in WWOXf cells, but explosion in WWOXd cells. WWOXf DU145 prostate cancer cells were stained with Fluo-8 (50 µM) and non-toxic levels of PI (2 µg/ml) and DAPI (10 µg/ml), and then exposed to UV 480 mJoule/cm². The cells were subjected to time-lapse microscopy immediately at room temperature. 200x magnification. Each picture frame was taken per 2 minutes.

**File name: Supplementary Video 18**

**Description:** Supplementary video for Suppl. Fig. 2c. UV induces Ca2+ influx and BCD in WWOXf cells, but explosion in WWOXd cells. WWOXf MCF7 breast cancer cells were stained with Fluo-8 (50 µM) and non-toxic levels of PI (2 µg/ml) and DAPI (10 µg/ml) and then treated with ceritinib (60 µM). The cells were subjected to time-lapse microscopy immediately at room temperature. 200x magnification. Each picture frame was taken per 2 minutes.

**File name: Supplementary Video 19**

**Description:** Supplementary video for Suppl. Fig. 2c. UV induces Ca2+ influx and BCD in WWOXf cells, but explosion in WWOXd cells. WWOXf HCT116 colon cancer cells were stained with Fluo-8 (50 µM) and non-toxic levels of PI (2 µg/ml) and DAPI (10 µg/ml), and then treated with Na3VO4 (500 µM). The cells were subjected to time-lapse microscopy immediately at room temperature. 200x magnification. Each picture frame was taken per 2 minutes.

**File name: Supplementary Video 20**

**Description:** Supplementary video for Suppl. Fig. 2c. UV induces Ca2+ influx and BCD in WWOXf cells, but explosion in WWOXd cells. WWOXf HCT116 colon cancer cells were stained with Fluo-8 (50 µM) and non-toxic levels of PI (2 µg/ml) and DAPI (10 µg/ml), and then exposed to UV 720 mJoule/cm². The cells were subjected to time-lapse microscopy immediately at room temperature. 200x magnification. Each picture frame was taken per 2 minutes.

**File name: Supplementary Video 21**
Description: Supplementary video for Suppl. Fig. 2c. UV induces Ca2+ influx and BCD in WWOXf cells, but explosion in WWOXd cells. WWOXf L929S cells were stained with Fluo-8 (50 µM) and non-toxic levels of PI (2 µg/ml) and DAPI (10 µg/ml), and then treated with androgen agonist CI-4AS-1 (30 µM). The cells were subjected to time-lapse microscopy immediately at room temperature. 200x magnification. Each picture frame was taken per 2 minutes.

File name: Supplementary Video 22

Description: Supplementary video for Suppl. Fig. 2c. UV induces Ca2+ influx and BCD in WWOXf cells, but explosion in WWOXd cells. WWOXf SH-SY5Y cells were stained with Fluo-8 (50 µM) and non-toxic levels of PI (2 µg/ml) and DAPI (10 µg/ml), and then exposed to UV 480 mJoule/cm². The cells were subjected to time-lapse microscopy immediately at room temperature. 200x magnification. Each picture frame was taken per 2 minutes.

File name: Supplementary Video 23

Description: Supplementary video for Suppl. Fig. 2c. UV induces Ca2+ influx and BCD in WWOXf cells, but explosion in WWOXd cells. WWOXf normal human skin cells were stained with Fluo-8 (50 µM) and non-toxic levels of PI (2 µg/ml) and DAPI (10 µg/ml), and then exposed to UV 480 mJoule/cm². The cells were subjected to time-lapse microscopy immediately at room temperature. 200x magnification. Each picture frame was taken per 2 minutes.

File name: Supplementary Video 24

Description: Supplementary video for Suppl. Fig. 2c. UV induces Ca2+ influx and BCD in WWOXf cells, but explosion in WWOXd cells. WWOXf DU145 prostate cancer cells were stained with Fluo-8 (50 µM) and non-toxic levels of PI (2 µg/ml) and DAPI (10 µg/ml), and then treated with 0.035% H2O2. The cells were subjected to time-lapse microscopy immediately at room temperature. 200x magnification. Each picture frame was taken per 2 minutes.

File name: Supplementary Video 25

Description: Supplementary video for Suppl. Fig. 2c. UV induces Ca2+ influx and BCD in WWOXf cells, but explosion in WWOXd cells. WWOXf mink lung Mv1Lu epithelial cells were stained with Fluo-8 (50 µM) and non-toxic levels of PI (2 µg/ml) and DAPI (10 µg/ml), and then exposed to UV 480 mJoule/cm². The cells were subjected to time-lapse microscopy immediately at room temperature. 200x magnification. Each picture frame was taken per 2 minutes.
File name: Supplementary Video 26

Description: Supplementary video for Suppl. Fig. 2c. UV induces Ca2+ influx and BCD in WWOXf cells, but explosion in WWOXd cells. WWOXf NT2D1 cells were stained with Fluo-8 (50 µM) and non-toxic levels of PI (2 µg/ml) and DAPI (10 µg/ml), and then exposed to UV 480 mJoule/cm². The cells were subjected to time-lapse microscopy immediately at room temperature. 200x magnification. Each picture frame was taken per 2 minutes.

File name: Supplementary Video 27

Description: Supplementary video for Suppl. Fig. 2c. UV induces Ca2+ influx and BCD in WWOXf cells, but explosion in WWOXd cells. WWOXf NT2D1 cells were stained with Fluo-8 (50 µM) and non-toxic levels of PI (2 µg/ml) and DAPI (10 µg/ml), and then treated with 0.035% H2O2. The cells were subjected to time-lapse microscopy immediately at room temperature. 200x magnification. Each picture frame was taken per 2 minutes.

File name: Supplementary Video 28

Description: Supplementary video for Suppl. Fig. 2c. UV induces Ca2+ influx and BCD in WWOXf cells, but explosion in WWOXd cells. WWOXf NCI-H1299 cells were stained with Fluo-8 (50 µM) and non-toxic levels of PI (2 µg/ml) and DAPI (10 µg/ml), and then treated with ceritinib (90 µM). The cells were subjected to time-lapse microscopy immediately at room temperature. 200x magnification. Each picture frame was taken per 2 minutes.

File name: Supplementary Video 29

Description: Supplementary video for Suppl. Fig. 2d. UV induces Ca2+ influx and BCD in WWOXf cells, but explosion in WWOXd cells. WWOXd B16F10 cells were stained with Fluo-8 (50 µM) and non-toxic levels of PI (2 µg/ml) and DAPI (10 µg/ml), and then treated with ceritinib (90 µM). The cells were subjected to time-lapse microscopy immediately at room temperature. 200x magnification. Each picture frame was taken per 2 minutes.

File name: Supplementary Video 30
Description: Supplementary video for Suppl. Fig. 2d. UV induces Ca2+ influx and BCD in WWOXf cells, but explosion in WWOXd cells. WWOXd B16F10 cells were stained with Fluo-8 (50 µM) and non-toxic levels of PI (2 µg/ml) and DAPI (10 µg/ml), and then treated with CI-4AS-1 (30 µM). The cells were subjected to time-lapse microscopy immediately at room temperature. 200x magnification. Each picture frame was taken per 2 minutes.

File name: Supplementary Video 31

Description: Supplementary video for Suppl. Fig. 2d. UV induces Ca2+ influx and BCD in WWOXf cells, but explosion in WWOXd cells. WWOXd B16F10 cells were stained with Fluo-8 (50 µM) and non-toxic levels of PI (2 µg/ml) and DAPI (10 µg/ml), and then exposed to UV 480 mJoule/cm². The cells were subjected to time-lapse microscopy immediately at room temperature. 200x magnification. Each picture frame was taken per 2 minutes.

File name: Supplementary Video 32

Description: Supplementary video for Suppl. Fig. 2d. UV induces Ca2+ influx and BCD in WWOXf cells, but explosion in WWOXd cells. WWOXd B16F10 cells were stained with Fluo-8 (50 µM) and non-toxic levels of PI (2 µg/ml) and DAPI (10 µg/ml), and then treated with an aliquot (10 µl) of a cocktail of proteinase inhibitor. The cells were subjected to time-lapse microscopy immediately at room temperature. 200x magnification. Each picture frame was taken per 2 minutes.

File name: Supplementary Video 33

Description: Supplementary video for Suppl. Fig. 2d. UV induces Ca2+ influx and BCD in WWOXf cells, but explosion in WWOXd cells. WWOXd NB69 cells were stained with Fluo-8 (50 µM) and non-toxic levels of PI (2 µg/ml) and DAPI (10 µg/ml), and then exposed to UV 480 mJoule/cm². The cells were subjected to time-lapse microscopy immediately at room temperature. 200x magnification. Each picture frame was taken per 2 minutes.

File name: Supplementary Video 34

Description: Supplementary video for Suppl. Fig. 2d. UV induces Ca2+ influx and BCD in WWOXf cells, but explosion in WWOXd cells. WWOXd U87-MG cells were stained with Fluo-8 (50 µM) and non-toxic levels of PI (2 µg/ml) and DAPI (10 µg/ml), and then exposed to UV 480 mJoule/cm². The cells were subjected to time-lapse microscopy immediately at room temperature. 200x magnification. Each picture frame was taken per 2 minutes.
File name: Supplementary Video 35

Description: Supplementary video for Suppl. Fig. 2d. UV induces Ca2+ influx and BCD in WWOXf cells, but explosion in WWOXd cells. WWOXd L929R cells were stained with Fluo-8 (50 µM) and non-toxic levels of PI (2 µg/ml) and DAPI (10 µg/ml), and then treat with PMA (50 µM). The cells were subjected to time-lapse microscopy immediately at room temperature. 200x magnification. Each picture frame was taken per 2 minutes.

File name: Supplementary Video 36

Description: Supplementary video for Suppl. Fig. 2d. UV induces Ca2+ influx and BCD in WWOXf cells, but explosion in WWOXd cells. WWOXd MDA-MB-231 cells were stained with Fluo-8 (50 µM) and non-toxic levels of PI (2 µg/ml) and DAPI (10 µg/ml), and then exposed to UV 480 mJoule/cm². The cells were subjected to time-lapse microscopy immediately at room temperature. 200x magnification. Each picture frame was taken per 2 minutes.

File name: Supplementary Video 37

Description: Supplementary video for Suppl. Fig. 2d. UV induces Ca2+ influx and BCD in WWOXf cells, but explosion in WWOXd cells. WWOXd MDA-MB-435s cells were stained with Fluo-8 (50 µM) and non-toxic levels of PI (2 µg/ml) and DAPI (10 µg/ml), and then exposed to UV 480 mJoule/cm². The cells were subjected to time-lapse microscopy immediately at room temperature. 200x magnification. Each picture frame was taken per 2 minutes.

File name: Supplementary Video 38

Description: Supplementary video for Suppl. Fig. 2d. UV induces Ca2+ influx and BCD in WWOXf cells, but explosion in WWOXd cells. WWOXd 4T1 cells were stained with Fluo-8 (50 µM) and non-toxic levels of PI (2 µg/ml) and DAPI (10 µg/ml), and then exposed to UV 960 mJoule/cm² and then cols shock at 4°C for 5 min. The cells were subjected to time-lapse microscopy immediately at room temperature. 200x magnification. Each picture frame was taken per 2 minutes.

File name: Supplementary Video 39
Description: Supplementary video for Suppl. Fig. 2d. UV induces Ca2+ influx and BCD in WWOXf cells, but explosion in WWOXd cells. WWOXd L929R cells were stained with Fluo-8 (50 µM) and non-toxic levels of PI (2 µg/ml) and DAPI (10 µg/ml), and then exposed to UV 720 mJoule/cm². The cells were subjected to time-lapse microscopy immediately at room temperature. 200x magnification. Each picture frame was taken per 2 minutes.

File name: Supplementary Video 40

Description: Supplementary video for Suppl. Fig. 5. Human tongue SCC4, 9, and 15 cells in migration, BCD and calcium influx. WWOXf SCC15 cells were stained with Fluo-8 (50 µM) and non-toxic levels of PI (2 µg/ml) and DAPI (10 µg/ml), and then exposed to UV 960 mJoule/cm². The cells were subjected to time-lapse microscopy immediately at room temperature. 200x magnification. Each picture frame was taken per 2 minutes.

File name: Supplementary Video 41

Description: Supplementary video for Suppl. Fig. 5. Human tongue SCC4, 9, and 15 cells in migration, BCD and calcium influx. WWOXf SCC9 cells were stained with Fluo-8 (50 µM) and non-toxic levels of PI (2 µg/ml) and DAPI (10 µg/ml), and then exposed to UV 960 mJoule/cm². The cells were subjected to time-lapse microscopy immediately at room temperature. 200x magnification. Each picture frame was taken per 2 minutes.

File name: Supplementary Video 42

Description: Supplementary video for Suppl. Fig. 5. Human tongue SCC4, 9, and 15 cells in migration, BCD and calcium influx. WWOXf SCC4 cells were stained with Fluo-8 (50 µM) and non-toxic levels of PI (2 µg/ml) and DAPI (10 µg/ml), and then exposed to UV 960 mJoule/cm². The cells were subjected to time-lapse microscopy immediately at room temperature. 200x magnification. Each picture frame was taken per 2 minutes.