Supplementary Figure 1. Chromosome segregation errors in irradiated mitotic cells.

a, Example of a U251 anaphase spindle 25 minutes after IR exposure that contains lagging chromosomes stained for microtubules (red), centromeres (green), and DNA (blue). Scale bars 5-μm. b, Example of U251 anaphase spindle 25 minutes after IR exposure that contains lagging chromosome stained for γ-H2ax (green) and DNA (blue). Scale bar 5-μm. c, Western blots of U251 cells expressing GFP and GFP-tagged kinesin-13 proteins, stained using anti-GFP antibodies. DM1-α antibody was used to blot for α-tubulin as a loading control. Molecular weight markers (in kDa) are depicted on the right side of the immunoblot.
Supplementary Figure 2. Overexpression of Kif2b alters viability of irradiated mitotic cells without altering basal growth rates or ploidy in culture.

**a.** Surviving fraction of irradiated mitotic RPE1 cells and cells expressing GFP-Kif2b as a function of radiation dose. Bars represent mean ± s.e.m, n = 3 experiments; * p<0.05; ns, non-significant, 2-tailed t-test.

**b.** Number of cells per plate as a function of time of GFP expressing and GFP-Kif2b expressing U251 cells, data points represent mean ± s.e.m, n=4 experiments.

**c.** Karyotypic distribution of GFP expressing and GFP-Kif2b expressing U251 cells, n=50 spreads per condition, p=0.73, t-test.
Supplementary Figure 3. Kif2b expression leads to tumor radiation resistance.

Absolute bioluminescence signal as a function of time after intracranial injection of U251 cells expressing GFP or GFP-Kif2b. Data derived from a sample experiment. IR treatment (24Gy total) was administered starting on day 18 with 4Gy fractions every other day. The experiment was performed with three animals in each arm and was replicated three times. In this graph, error bars show the standard error of the mean (SEM) of animals within an arm of a representative experiment.
Supplementary Figure 4. Kinesin-13 overexpression in U251 cells.

Western blots of U251 cells expressing GFP-tagged kinesin-13 proteins Kif2b (lane 1), Kif2b (lane 2), MCAK (lane 3), and GFP (lane 4) stained using anti-GFP antibodies. DM1-α antibody was used to blot for α-tubulin as a loading control. Molecular weight markers (in kDa) are depicted on the left side of the immunoblots.