

## Supplementary Video Legends

**Supplementary Video 1. Mitotic progression in control cell that was cut in the cytoplasm.** A metaphase cell expressing H2B-mCherry and mEGFP- $\alpha$ -tubulin was imaged by 3D-confocal microscopy and cut by a pulsed 915 nm laser at the region indicated by the white line. Time = 00:00 min:s at the first image acquired immediately after laser microsurgery. The cut was positioned so that the mitotic spindle remained intact.

**Supplementary Video 2. Mitotic progression after acute detachment of a metaphase chromosome.** A metaphase cell expressing H2B-mCherry and mEGFP- $\alpha$ -tubulin was imaged by 3D-confocal microscopy and cut by a pulsed 915 nm laser at the region indicated by the white line to detach a chromosome from the metaphase plate. Time = 00:00 min:s at the first image acquired immediately after laser microsurgery.

**Supplementary Video 3. Anaphase entry in presence of a unaligned chromosome.** A metaphase cell expressing H2B-mCherry and mEGFP- $\alpha$ -tubulin was imaged by 3D-confocal microscopy and cut by a pulsed 915 nm laser at the region indicated by the white line to detach a chromosome from the metaphase plate. Time = 00:00 min:s at the first image acquired immediately after laser microsurgery.

**Supplementary Video 4. Mad2-EGFP recruitment after laser-mediated chromosome detachment.** A metaphase cell expressing H2B-mCherry and mouse Mad2-EGFP was imaged by 3D-confocal microscopy and cut by a pulsed 915 nm laser at the region indicated by the white line to detach a chromosome from the metaphase plate. Time = 00:00 min:s at the first image acquired immediately after laser microsurgery.

**Supplementary Video 5. Securin-mEGFP degradation after laser-mediated chromosome detachment.** A metaphase cell expressing H2B-mCherry and securin-mEGFP was imaged by 3D-confocal microscopy and cut by a pulsed 915 nm laser at the region indicated by the white line to detach a chromosome from the metaphase plate. Time = 00:00 min:s at the first image acquired immediately after laser microsurgery. In this cell, the chromosome recongresses to the metaphase plate before anaphase entry.

**Supplementary Video 6. Securin-mEGFP degradation in a cell that enters anaphase in presence of an unaligned chromosome.** A metaphase cell expressing H2B-mCherry and securin-mEGFP was imaged by 3D-confocal microscopy and cut by a pulsed 915 nm laser at the region indicated by the white line to detach a chromosome from the metaphase plate. Time = 00:00 min:s at the first image acquired immediately after laser microsurgery. This cell enters anaphase in presence of the dealigned chromosome.

**Supplementary Video 7. Securin-mEGFP degradation in a cell exposed to 12 ng/ml nocodazole.** A cell expressing H2B-mCherry and securin-mEGFP was imaged by 3D-confocal microscopy from prophase until anaphase. Time = 00:00 min:s at prometaphase onset.