

Supporting Information

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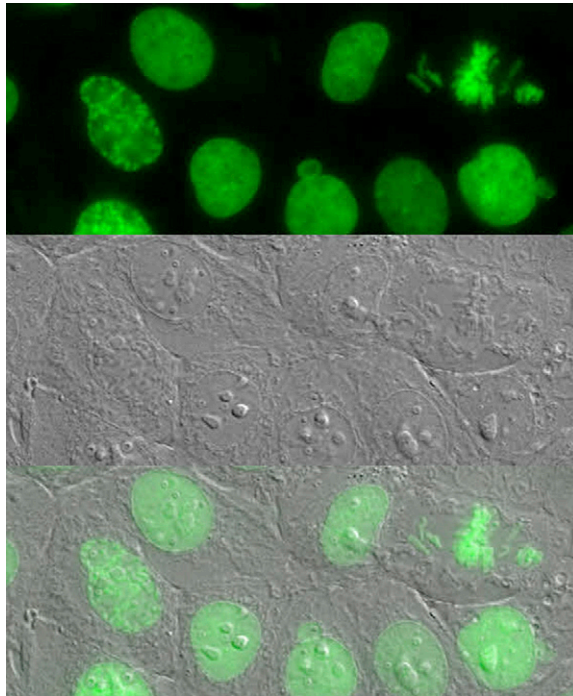
Movie S1. Fluorescence (*Left*), DIC (*Center*) and overlaid (*Right*) images of DLD1 cells stably expressing histone H2B-RFP observed by time-lapse fluorescence and DIC microscopy at 2-min intervals using a 60 \times 1.4NA objective, as described in *Materials and Methods*. This movie relates to Fig. 3*F*. Normal mitosis in control cell. Note that the last chromosome aligns before the cell enters anaphase.

[Movie S1](#)



Movie S2. Fluorescence (*Left*), DIC (*Center*) and overlaid (*Right*) images of DLD1 cells stably expressing histone H2B-RFP observed by time-lapse fluorescence and DIC microscopy at 2-min intervals using a 60 \times 1.4NA objective, as described in *Materials and Methods*. This movie relates to Fig. 3*G*. Lagging chromosomes in a cell overexpressing Mad1 for 24 hours. The lagging chromosomes each form their own micronucleus.

[Movie S2](#)



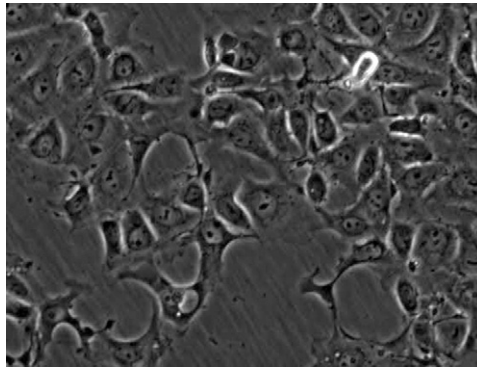
Movie S3. Fluorescence (*Top*), DIC (*Middle*) and overlaid (*Bottom*) images of DLD1 cells stably expressing histone H2B-RFP observed by time-lapse fluorescence and DIC microscopy at 2-min intervals using a 60× 1.4NA objective, as described in *Materials and Methods*. This movie relates to Fig. 3*H*. Cells overexpressing Mad1 entering anaphase with misaligned chromosomes. Both mitotic cells pictured enter anaphase with misaligned chromosomes, some of which form micronuclei.

[Movie S3](#)



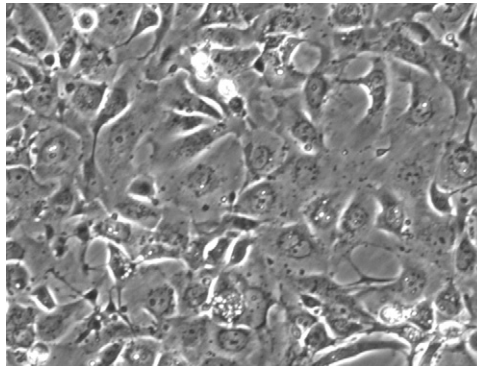
Movie S4. Fluorescence (*Left*), DIC (*Center*) and overlaid (*Right*) images of DLD1 cells stably expressing histone H2B-RFP observed by time-lapse fluorescence and DIC microscopy at 2-min intervals using a 60× 1.4NA objective, as described in *Materials and Methods*. This movie relates to Fig. 3*I*. Cell overexpressing Mad1 which enters anaphase with misaligned chromosomes and also exhibits lagging chromosomes.

[Movie S4](#)



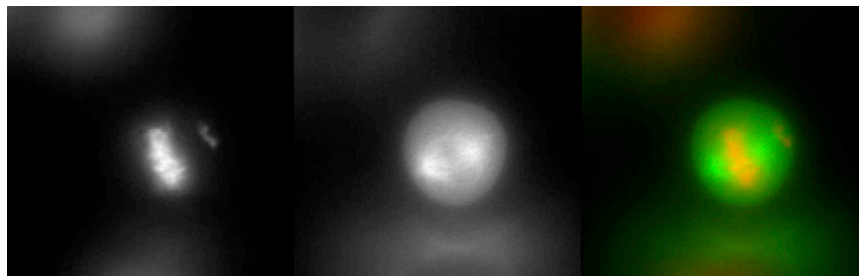
Movie S5. Phase contrast time-lapse imaging of DLD1 cells acquired at 10-min intervals using a 10 \times , 0.13NA objective and perfect focus, as described in *Materials and Methods*. This movie relates to Fig. 4A *Upper*. Control DLD1 cells dividing. On average, control cells require 109.3 min to complete mitosis (defined as cell rounding to flattening).

[Movie S5](#)



Movie S6. Phase contrast time-lapse imaging of DLD1 cells acquired at 10-min intervals using a 10 \times , 0.13NA objective and perfect focus, as described in *Materials and Methods*. This movie relates to Fig. 4A *Lower*. DLD1 cells overexpressing untagged Mad1 speed through mitosis in, on average, 61.8 min.

[Movie S6](#)



Movie S7. This movie relates to Fig. S4. An MDA-MB-231 breast cancer cell expressing histone H2B-RFP (*Left*) and GFP-tubulin (*Center*) enters anaphase with a misaligned chromosome, showing that a weakened mitotic checkpoint does occur in a subset of CIN cancer cell lines.

[Movie S7](#)

Other Supporting Information Files

[SI Appendix \(PDF\)](#)