

## **Description of Additional Supplementary Files**

File Name: Supplementary Movie 1.

Description: Representative time-lapse movie (from three independent experiments) of bipolar division in a siR-tubulin labeled MDA-MB-231 cell treated with control siRNA. Images were acquired every 2 min and are played back at 7 frames per second.

File Name: Supplementary Movie 2.

Description: Representative time-lapse movie (from three independent experiments) of spindle pole splitting in a siR-tubulin labeled MDA-MB-231 cell treated with KIF18A siRNA. Images were acquired every 2 min and are played back at 7 frames per second.

File Name: Supplementary Movie 3.

Description: Representative time-lapse movie (from three independent experiments) of a siR-tubulin labeled MDA-MB-231 cell treated with KIF18A siRNA entering mitosis with multiple spindle poles. Images were acquired every 2 min and are played back at 7 frames per second.

File Name: Supplementary Movie 4.

Description: Representative time-lapse movie (from two independent experiments) of spindle pole splitting in a siR-tubulin labeled MDA-MB-231 cell treated with KIF18A and MAD2 siRNAs. Images were acquired every 2 min and are played back at 7 frames per second.

File Name: Supplementary Movie 5.

Description: Representative time-lapse movie (from two independent experiments) of centrosome fragmentation in a monopolar MDA-MB-231 cell expressing mRFP-pericentrin after treatment with KIF18A siRNA and 20  $\mu$ M monastrol. Images were acquired every 2 min and are played back at 7 frames per second.

File Name: Supplementary Movie 6.

Description: Representative time-lapse movie (from three independent experiments) of spindle pole splitting in a siR-tubulin labeled MDA-MB-231 cell treated with KIF18A siRNA and 500 nM UMK57. Images were acquired every 2 min and are played back at 7 frames per second.