

**Supplementary Movie 1.** Progression through mitosis in control HeLa cells expressing histone H2B-GFP (corresponding to Figure 4A, a). Z-stacks were taken every 90 sec using a spinning-disk confocal microscope.

**Supplementary Movie 2-3-4.** Progression through mitosis in HeLa cells depleted for Seh1 and expressing histone H2B-GFP, recorded 32h (Movie S2), 50h (Movie S3) or 63h (Movie S4) after siRNA transfection (corresponding to Figure 4A, b-d). Z-stacks were taken every 90 sec using a spinning-disk confocal microscope.

**Supplementary Movie 5.** Progression through mitosis in HeLa cells depleted for Seh1 and expressing histone H2B-GFP, recorded 96h after siRNA transfection. Z-stacks were taken every 90 sec using a spinning-disk confocal microscope.