

Description of Additional Supplementary Files

File Name: Supplementary Movie 1

Description: **Fluorescence time-lapse microscopy of a control HeLa/GFP-H2B mitotic cell.** Images were acquired at 3-min intervals with a fluorescence microscope. The duration of mitotic progression was quantified and is presented in Supplementary Fig. 1e and f.

File Name: Supplementary Movie 2

Description: **Fluorescence time-lapse microscopy of a PRMT6-depleted HeLa/GFP-H2B mitotic cell.** Images were acquired at 3-min intervals with a fluorescence microscope. The duration of mitotic progression was quantified and is presented in Supplementary Fig. 1e and f.

File Name: Supplementary Movie 3

Description: **Tomographic time-lapse microscopy of a control HeLa mitotic cell.** Images were acquired at 1-min intervals with a tomographic microscope. The density of the metaphase chromosomes was quantified and is presented in Fig. 2b.

File Name: Supplementary Movie 4

Description: **Tomographic time-lapse microscopy of a PRMT6-depleted HeLa mitotic cell.** Images were acquired at 1-min intervals with a tomographic microscope. The density of the metaphase chromosomes was quantified and is presented in Fig. 2b.

File Name: Supplementary Movie 5

Description: **Fluorescence time-lapse microscopy of a control HeLa/GFP-CenpA prometaphase cell.** Images were acquired at 0.5-s intervals with a confocal microscope. The distance between CenpA pairs was quantified and is presented in Fig. 2g.

File Name: Supplementary Movie 6

Description: **Fluorescence time-lapse microscopy of a PRMT6-depleted HeLa/GFP-CenpA prometaphase cell.** Images were acquired at 0.5-s intervals with a confocal microscope. The distance between CenpA pairs was quantified and is presented in Fig. 2g.

File Name: Supplementary Movie 7

Description: **Fluorescence time-lapse microscopy of a control HeLa/GFP-CenpA metaphase cell.** Images were acquired at 0.5-s intervals with a confocal microscope. The distance between CenpA pairs was quantified and is presented in Fig. 2g.

File Name: Supplementary Movie 8

Description: **Fluorescence time-lapse microscopy of a PRMT6-depleted HeLa/GFP-CenpA metaphase cell.** Images were captured every 0.5 s with a confocal microscope. The distance between paired CenpA was quantified and is presented in Fig. 2g.

File Name: Supplementary Movie 9

Description: **Fluorescence time-lapse microscopy of a PRMT6 inhibitor-treated HeLa/GFP-CenpA prometaphase cell.** Images were acquired at 0.5-s intervals with a confocal microscope. The distance between CenpA pairs was quantified and is presented in Supplementary Fig. 4e.

File Name: Supplementary Movie 10

Description: **Fluorescence time-lapse microscopy of a PRMT6 inhibitor-treated HeLa/GFP-CenpA metaphase cell.** Images were acquired at 0.5-s intervals with a confocal microscope. The distance between CenpA pairs was quantified and is presented in Supplementary Fig. 4e.