topographic model, in contrast, is precisely controlled and enables confident characterization of long-wavelength topography. MLA observations confirm that the northern floor of Caloris is elevated relative to other parts of the basin interior, so much so that in places the floor lies above the basin rim (Fig. 3). This portion of the floor of Caloris appears to be part of a quasi-linear rise that trends generally west-southwest–east-northeast and extends over approximately half the circumference of Mercury at mid-latitudes (Fig. 1A). The floors of younger impact craters within and near Caloris (Fig. 3) display departures from the horizontal that generally correlate with regional tilts imparted by the long-wavelength topography of the region and are consistent with modification of Mercury's long-wavelength topography some time after the formation of Caloris and the emplacement of its interior and exterior volcanic plains.

The changes in long-wavelength topography within the Caloris basin and northern plains, and perhaps elsewhere on Mercury, occurred after both the end of heavy impact bombardment and the emplacement of the largest expanses of volcanic plains on the planet. One possible source of long-wavelength topography is the isostatic response to variations in crustal thickness. However, the oldest terrains on Mercury display crater size-frequency distributions at large crater diameters similar to those on the most densely cratered parts of the Moon (*24*). Thus, crustal formation substantially predated long-wavelength topographic change and cannot explain the observations. A second possible source of such long-wavelength change in topography is mantle convection (*25*). However, recent mantle convection simulations (*26*) constrained by internal structure models consistent with Mercury's long-wavelength gravity field (*4*) and by the latitudinal distribution of surface insolation do not produce surface deformation of the magnitude required to explain the observed topography. Another contribution to topographic change is volcanic and magmatic loading of the lithosphere along with its flexural response, which has a predictable pattern. Finally, long-wavelength changes in topography could be a deformational response to interior planetary cooling and contraction (*27*). Evidence for topographic changes during Mercury's evolution is consistent with evidence from the geometry of ridges and lobate scarps that these features accommodated surface strain over a substantial fraction of Mercury's geological history (*28*). Observations of the topography add to the growing body of evidence that Mercury was a tectonically, volcanically, and dynamically active planet for much of its evolution.

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Acknowledgments: The MESSENGER project is supported by the NASA Discovery Program under contracts NAS5-97271 to the Johns Hopkins University Applied Physics Laboratory and NASW-00002 to the Carnegie Institution of Washington. We are grateful for the myriad contributions from the MLA instrument and MESSENGER spacecraft teams, and we appreciate three helpful reviews of an earlier version of the paper.

Supplementary Materials

www.sciencemag.org/cgi/content/full/science.1218805/DC1
Materials and Methods
Figs. S1 and S2
Table S1
Reference (*30*)

6 January 2012; accepted 2 March 2012
Published online 21 March 2012;
10.1126/science.1218805

ESCRT-III Governs the Aurora B–Mediated Abscission Checkpoint Through CHMP4C

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The endosomal sorting complex required for transport (ESCRT) machinery plays an evolutionarily conserved role in cytokinetic abscission, the final step of cell division where daughter cells are physically separated. Here, we show that charged multivesicular body (MVB) protein 4C (CHMP4C), a human ESCRT-III subunit, is involved in abscission timing. This function correlated with its differential spatiotemporal distribution during late stages of cytokinesis. Accordingly, CHMP4C functioned in the Aurora B–dependent abscission checkpoint to prevent both premature resolution of intercellular chromosome bridges and accumulation of DNA damage. CHMP4C engaged the chromosomal passenger complex (CPC) via interaction with Borealin, which suggested a model whereby CHMP4C inhibits abscission upon phosphorylation by Aurora B. Thus, the ESCRT machinery may protect against genetic damage by coordinating midbody resolution with the abscission checkpoint.

The final separation of daughter cells during cytokinesis is the ancestral function of the endosomal sorting complex required for transport (ESCRT) machinery (*1*–*5*) which also acts to resolve equivalent membrane scission events in multivesicular body (MVB) formation (*6*, *7*) and human immunodeficiency virus–1 (HIV-1) budding (*8*, *9*). Midbody recruitment of ESCRT-III, the filament-forming scission machinery, is an essential event in cytokinesis that is thought to provide constrictive force during abscission (*2*, *10*–*12*). An Aurora B–dependent