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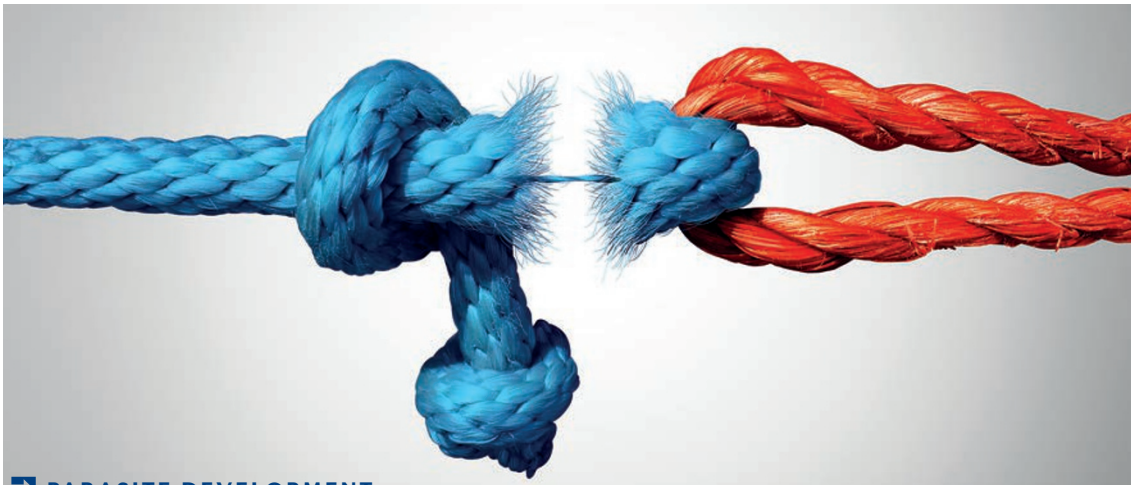

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PARASITE DEVELOPMENT

Plasmodium breaks the linkage

> *Plasmodium* spp. parasites induce the disconnection of the actin cytoskeleton from the host cell membrane

A crucial step in the life cycle of *Plasmodium* spp. parasites is the transition from the liver stage to the blood stage; however, the molecular mechanisms that are involved in this transition are still poorly understood. During this process, the liver-stage forms of the parasite are released from hepatocytes into the blood as merosomes, which are host cell-derived membrane vesicles that contain infectious parasites. Previous studies reported that infected hepatocytes undergo morphological changes during the formation of merosomes, including cell rounding and detachment from neighbouring cells. In this study, Burda *et al.* found that *Plasmodium berghei* liver-stage merozoites induce the breakdown of the host cell actin cytoskeleton, which leads to the destabilization of the host cell membrane.

Live-cell imaging revealed that following rupture of the parasitophorous vacuole membrane (which surrounds the intracellular parasites), the cortical actin completely detaches from the host cell membrane and collapses in the centre of the cell. Moreover, the authors found that during egress, phosphatidylinositol 4,5-bisphosphate (PtdIns(4,5)P2), the PtdIns(4,5)P2-dependent actin-plasma membrane linker protein ezrin as well as membrane proteins, including the cell adhesion protein epithelial cadherin (E-cadherin), were lost from the plasma membrane. These findings suggest that the loss of phospholipids and membrane proteins might contribute to the observed disruption of the actin–plasma membrane linkage. The authors propose a model whereby *Plasmodium* spp. parasites induce the disconnection of the actin cytoskeleton from the host cell membrane during egress from host hepatocytes, and the resulting destabilization of the plasma membrane might promote merosome formation. Future studies are now required to investigate the molecular mechanisms that lead to the manipulation of the host cell membrane by *Plasmodium* spp. parasites.

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ORIGINAL ARTICLE Burda, P.-C., Caldelari, R. & Heussler, V. T. Manipulation of the host cell membrane during *Plasmodium* liver stage egress. *mBio* **2**, e00139-17 (2017)