Ironing out the details of intestinal repair

Intestinal inflammation, such as occurs in inflammatory bowel disease (IBD), infections and colorectal cancers, often results in intestinal bleeding and hence anaemia. Given the function of liver-derived hepcidin as a master regulator of systemic iron homeostasis, Bessman et al. looked at the role of hepcidin in iron regulation in the gut. They describe a new pathway by which dendritic cell (DC)-derived hepcidin promotes intestinal repair.

Hepcidin-deficient (Hamp−/−) and wild-type (Hamp+/+) mice had similar levels of intestinal tissue damage after dextran sodium sulfate (DSS) administration, but the Hamp−/− mice had persistent weight loss, disruption of intestinal architecture and reduced colon lengths compared with Hamp+/+ mice after DSS withdrawal. By contrast, the recovery of Hamp+/+ mice, which lack hepatocyte-derived hepcidin, from DSS exposure was comparable with that of wild-type mice. Therefore, a non-hepatocyte source of hepcidin is required for mucosal repair.

Bessman et al. showed that type 2 conventional DCs (cDC2s) are the main myeloid source of hepcidin in the mouse colon after DSS administration and that intestinal cDCs are important producers of hepcidin also in patients with IBD. Furthermore, cDCs were shown to produce hepcidin in vitro in response to microbial stimulation. HampΔCD11c mice, which lack hepcidin expression in cDCs, had a similarly impaired recovery phenotype to Hamp−/− mice after DSS withdrawal, which shows that cDC-derived hepcidin is required for intestinal repair.

As liver-derived hepcidin promotes degradation of the cellular iron efflux transporter ferroportin, one possibility is that the lack of hepcidin in Hamp−/− and HampΔCD11c mice results in an increase in ferroportin expression, which promotes the uptake of iron from the lumen of the gut. This could contribute to the increased intestinal iron absorption and the development of anaemia in these mice.

HIV hides in platelets

The main target cells of HIV are CD4+ T cells and other immune cells, such as macrophages and dendritic cells. In addition, the virus has been found in other cell types, including haematopoietic progenitor cells, astrocytes and even platelets. However, the relevance of these findings for infection and pathogenesis is not entirely clear. Real et al. now show that platelets indeed can contain replication-competent HIV that can propagate infection to macrophages.

Early studies from the 1990s already found HIV RNA in platelets but it was unclear whether this RNA came from intact, infectious virions. Later in vitro work showed that virions interact with platelets and megakaryocytes, the bone marrow cells that produce platelets. Real et al. now set out to determine whether platelets also harbour HIV in infected people.

The authors declare no competing interests.