

## Immune system hoards iron supply to fight microbes

Disease is an act of piracy. When microbes infect us, they steal our resources so they can thrive at our expense. We fight them off with direct attacks, using an army of immune cells and antibodies. But we also have subtler countermeasures: we can, for example, deprive them of the nutrients they need.

Iron is one such nutrient. Many of the most important enzymes only work when they embrace iron atoms, and that's true for blue whales and bacteria alike. So, when bacteria infect us, they try to scavenge iron from our bodies. We, in turn, try to halt their advances by withholding this nutrient.

Matthew Barber and [Nels Elde](#) from the University of Utah School of Medicine have found clear signs of this war over iron in two molecules: transferrin, an animal protein that stores iron in a tight embrace, and TbpA, a bacterial protein that literally snatches iron from transferrin's grasp.

These proteins have gone through repeated bursts of rapid evolution. Time and again, bacterial TbpAs have evolved to better prise iron from our grasp, while the transferrins of humans and other apes have evolved to clutch the element more tightly. We have been waging this war against iron pirates for millions of years, and neither side shows any side of giving ground.

**Read full, original article:** [The Long War Against the Iron Pirates](#)