Mutant strains of *Escherichia coli* that lack the ability to form disulfide bonds in exported proteins can readily be isolated. However, there are at least two *E. coli* cell envelope proteins that are essential and require disulfide bonds for their activity – LptD, which is essential for transport of lipopolysaccharides (LPS) to the outer leaflet of the outer membrane, and FtsN, which is essential for cell division. Recent work has shown that in fact, disulphide bond formation is essential for anaerobic growth of *E. coli*.