P006 The FNR regulon and other anaerobically induced genes in *Neisseria gonorrhoeae*: from genomics and proteomics to physiological roles.

Tim Overton and Jeff A. Cole
The School of Biosciences, The University of Birmingham, Birmingham B15 2TT, UK

The *E. coli* transcription factor, FNR, senses oxygen by means of an iron-sulphur centre and activates transcription of more than 100 genes involved in anaerobic growth. FNR homologues are found in many bacteria, including the obligate human pathogen, *Neisseria gonorrhoeae*, the causative agent of the sexually transmitted disease, gonorrhoea. As in *E. coli,* the *N. gonorrhoeae* FNR protein senses oxygen and was previously known to regulate the expression of two genes: a cytochrome *c* peroxidase; and a nitrite reductase essential for anaerobic survival and growth. The nitrite reductase, AniA, is an outer membrane protein, and *aniA* transcription is also regulated by a novel two-component regulatory system, NarQ-NarP, that, unlike its *E. coli* counterpart, detects and responds to nitrite, but not nitrate.

There are reports that other *N. gonorrhoeae* proteins accumulate during anaerobic rather than aerobic growth, including pathogenicity factors such as nitric oxide reductase and sialyltransferase (neither of which are part of the FNR regulon), cell division proteins, and factors that determine serum resistance. The results of a proteomic study of the gonococcal FNR regulon will be reported and compared with FNR regulons in other bacteria. A complementary transcriptomic analysis is in progress.