

P006 Modulation of transcription by a nucleoprotein assembly: regulation of the *nir* operon promoter in enteric bacteria
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The *Escherichia coli* K-12 *nir* operon encodes a cytoplasmic NADH-dependent nitrite reductase. Transcription of the operon initiates from a single promoter and expression is activated by anaerobiosis and further increased by the presence of nitrite or nitrate. Anaerobic induction is mediated by the FNR protein, whilst nitrite/ nitrate induction is controlled by the NarL and NarP proteins. *In vivo*, the upstream region of the *nir* promoter DNA is sequestered into a complex nucleoprotein assembly, which represses FNR-dependent transcription. This is achieved by the binding of IHF and Fis, two DNA-binding proteins involved in the structuring of the bacterial chromosome. Recent studies have shown that NarL and NarP activate transcription by counteracting this repression and remodelling this inhibitory complex, thus allowing maximal FNR-dependent transcription to take place. We have compared *nir* operon promoter sequences from *E. coli* K-12 with sequences from various enteric bacteria. Whilst the core promoter regions are identical, a number of differences occur in the upstream regions of the promoters especially within the IHF and Fis binding sites. Here we show that the regulation of the enteropathogenic *E. coli* and the *Salmonella enterica* serovar Typhimurium *nir* promoters is different to that of *E. coli* K-12 and that this difference can be attributed to the nucleoprotein complex which forms on the upstream region of each promoter.