Expression of NmpR-dependent promoters in *Myxococcus xanthus* under hypoxic conditions

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Myxococcus xanthus is an environmental bacterium that exhibits extensive cooperative social behaviors, known as social (S) motility. Other behaviors, like multicellular development and predation, require S-motility. The NmpRSTU multi-component regulatory system is involved in S-motility and has been implicated in regulating genes related to oxygen utilization. Notably, *M. xanthus* is an obligate aerobe, suggesting that gene regulation by the NmpRSTU system may be critical for survival in low-oxygen soil environments. The current model proposes that during hypoxic conditions, a signaling pathway that includes sequential sensor kinases, NmpU and NmpS, culminates in phosphorylation of the response regulator NmpR, which then activates transcription of genes involved in oxygen utilization. To investigate this regulation, *in vivo* transcription from NmpR-dependent promoters was analyzed using a *lacZ* reporter in strains grown under hypoxic conditions. Preliminary results indicate that promoter *mxan_1578*, containing a metallo-beta-lactamase protein, was significantly upregulated after five hours in hypoxia compared to ambient oxygen levels. Two other promoters, *mxan_4236* and *mxan_5532* also showed an increased trend over time. One promoter, *mxan_3966*, containing a universal stress protein, was significantly downregulated after 20 hours in hypoxia. Further investigation will provide more detail into which genes are particularly important for the *M. xanthus* response to low oxygen.