

Comparison of the sulfate-reducing capacity of *Desulfovibrio vulgaris* Hildenborough deleted for the operon containing *qmoABC* and a hypothetical protein (DVU0851) versus deletion of the hypothetical protein alone

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Deletion of the operon encoding *qmoABC* and a hypothetical protein (HP) (DVU0848-51) in the sulfate-reducing bacterium *Desulfovibrio vulgaris* Hildenborough resulted in an inability to respire sulfate. No suppressed mutants appeared in cultures of the deletion strain incubated in the presence of sulfate. Curiously, the $\Delta(qmoABC\ HP)$ mutant was also unable to ferment pyruvate. Respiration of sulfate and fermentation of pyruvate was restored by complementation with the *qmoABC*, HP genes. In order to determine the contribution of the promoter-distal hypothetical protein to the ability of this organism to reduce sulfate and ferment pyruvate, a second deletion was made of this gene alone. Although the mutant deleted for the single gene was able to reduce sulfate, it grew more slowly than wild-type and was stimulated by methionine and cysteine. Complementation restored growth to near wild-type levels.