

A novel membrane-bound Ech [NiFe] hydrogenase in *Desulfovibrio gigas*



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Abstract: In the present study, we report the identification of an operon with six coding regions for a multisubunit membrane-bound [NiFe] hydrogenase in the genome of *Desulfovibrio gigas*. Sequence analysis of the deduced polypeptides reveals a high similarity to subunits of proteins belonging to the family of Ech hydrogenases. The operon is organised similarly to the operon coding for the Ech hydrogenase from *Methanosarcina barkeri*, suggesting that both encode very similar hydrogenases. Expression of the operon was detected by Northern blot and RT-PCR analyses, and the presence of the encoded proteins was examined by Western blotting. The possible role of this hydrogenase is discussed, relating it with a potential function in the H₂ cycling as a mechanism for energy conservation in *D. gigas*. The present study provides therefore valuable insights into the open question of the energy conserving mechanism in *D. gigas*. (C) 2003 Elsevier Science (USA). All rights reserved.

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