The fdxN gene coding for the 2[4Fe-4S] ferredoxin I of

Rhodobacter capsulatus was cloned, sequenced and found to be located in a *nif* region on the chromosome (1). Just in front of

fdxN, a gene encoding a [2Fe-2S] ferredoxin has been identified

(2, 3, 4) and its product characterized (4). Further upstream, a 600 bp region has been sequenced and is presented below. An

ORF of 480 bp was identified beginning with a CTG, ending

only 18 bp before the start codon of the [2Fe-2S] ferredoxin gene.

This ORF has two possible CTG start codons, the second being

more probable since it is located within the correct distance from a putative ribosome binding site (underlined). The deduced polypeptide contains 159 or 160 amino acids and has a predicted

molecular weight of 17100 - 17200. Significant similarities were found with flavodoxins from other microorganisms, the most

related being the flavodoxin from *Clostridium* MP, the structure

of which was determined by X-ray crystallography (5).

Interestingly, the regions involved in FMN binding in the

Clostridium flavodoxin, Gly57-Asp58 and Phe85 to Trp90 are

The position of this flavodoxin-like gene relative to the two

conserved in the R. capsulatus counterpart.

The nucleotide sequence of a flavodoxin-like gene which precedes two ferredoxin genes in *Rhodobacter capsulatus*

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previously identified ferredoxin genes suggests that the three genes may be cotranscribed. The relevance of such an organization of three electron carrier genes in R. capsulatus is

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intriguing and is being studied further.

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gcgcatgggccgatcctgcgcagccatccgcgcgattatctgacccatacgcggcggctgatttcctcgcgctcgccgccgaaaccggca 90

| gc <u>gaa</u> | laag | acgo | ctg L | ctga L | atct I | ttt F | acg Y | rtct V | .cgg S | cct A | ato Y | ycgg | icca A | CCQ T | icgo A | caco H | ytgg V | JCG A | cago Q | gcg A | jat I | .cc | ato H | jaco D | ggt G | gcc A | gco A | cga I | aaa E | gc S | 179 |
|--|--|-------------|----------|-----------|-----------|-----------|----------|-----------|-----------|----------|----------|-----------|-----------|----------|--------------------|-----------|-----------|-----------|-----------|----------|----------|----------|----------|-----------|----------|----------|----------|----------|----------|----------|-----|
| cccgatgtgcgggtgtcgctctttgatctggagggcggcgagatcaccccttcctggatctgatcgaggaggccgacggcattgcgctg P D V R V S L F D L E G G E I T P F L D L I E E A D G I A L | | | | | | | | | | | | | | | 269 | | | | | | | | | | | | | | | | |
| ggcac G T | gcc P | gaco T | gat I | caao N | cggc G | gat D | gcg A | igtg V | ICGC R | acg T | atc I | tgg W | igaa E | ato M | JCto L | ggco A | Jgcg A | lcto L | ggt V | cga E | ita) | itc I | gaa E | aaco T | | | | | ctg L | | 359 |
| gcggc | ttt F | cggo G | ctc S | ctai Y | tggo G | tgg W | tcg S | G G | gag E | gcg A | gto V | ICGQ R | ictg L | gto V | :gaa E | aaco T | ccgg R | jcto L | gca Q | ggg | g ggc | tg L | aaq K | gato M | gcg R | tct I | :gc | cgo P | gaa E | ccg P | 449 |
| gggtt G L | .gcg R | ggt V | gaa K | gcto L | gcac H | eccc P | tcc S | gcg A | Idcd Y | gaa E | cto L | igaa E | igag E | ggg | IC G Q R | ggca A | F | cgg G | gcg R | ccg F |) } | L L | gco A | cgat D | tca H | cct I | :ga | CCQ T | ggc G | cgg R | 539 |
| gccgc A A | gccgcgccccgcgaggtcgacttcgccgaaatcgcggcgcgcgtgaaacaaaggacggac | | | | | | | | | | | | | | | 600 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Cmp | * * * * * * * * * * * * * * * * * * * | | | | | | | | | | | | | | | * * | | | | | | | | | | | | | | | |
| Rc | | GSY(*** | | | VF | LVE | TRI | .QGI * | .KMR | LPE | PGI | | (LHF | | AELI | EEGI | RAFO | | LAD | HLJ | rgf | RAA | .PRI | EVDI | FAE | IAJ | ٩R | | | | |

Cmp LFGSYGW-GDGKWMRDFEERMNGYGCVVVETPLIVQNEPDEAE-QDCIEFGKKIANI

Figure 1. Nucleotide sequence of the *R. capsulatus* ORF and comparison of its product (Rc) with *Clostridium* MP flavodoxin (Cmp). Nucleotide sequencing was performed on each strand of DNA using plasmid pES2.1 as a template and synthetic oligonucleotides as primers, as previously described (1).

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