

Isolation and nucleotide sequence of the *Thiobacillus ferrooxidans* genes for the small and large subunits of ribulose 1,5-bisphosphate carboxylase/oxygenase

Pulgar, Victor

Gaete, Leonardo

Allende, Jorge

Orellana, Omar

Jordana, Xavier

Jedlicki, Eugenia

The genes encoding for the large (*rbcL*) and small (*rbcS*) subunits of ribulose-1,5-bisphosphate carboxylase (RuBisCO) were cloned from the obligate autotroph *Thiobacillus ferrooxidans*, a bacterium involved in the bioleaching of minerals. Nucleotide sequence analysis of the cloned DNA showed that the two coding regions are separated by a 30-bp intergenic region, the smallest described for the RuBisCO genes. The *rbcL* and *rbcS* genes encode polypeptides of 473 and 118 amino acids, respectively. Comparison of the nucleotide and amino acid sequences with those of the genes for *rbcL* and *rbcS* found in other species demonstrated that the *T. ferrooxidans* genes have the closest degree of identity with those of *Chromatium vinosum* and of *Alviniconcha hessleri* endosymbiont. Both *T. ferrooxidans* enzyme subunits contain all the conserved amino acids that are known to participate in the catalytic process or in holoenzyme assembly. © 1991.