

Transcription regulation of plastid genes *cysT* and *cysA* in Viridiplantae

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Two plastid genes *cysT* and *cysA*, which are required for sulfate transport in some Viridiplantae species including the parasite of invertebrates *Helicosporidium* sp., are supposed to be regulated by binding a putative factor near to their promoters. Most species have at least one suitable candidate for bacterial type promoters in the 5'-leader regions of these genes. No promoters were found in 5'-leader regions of both *cysT* and *cysA* in green algae *Nephroselmis olivacea*, *Pycnococcus provasolii*, *Bryopsis hypnoides*, *Leptosira terrestris* as well as in some Jungermanniopsida species; in the 5'-leader regions of *cysA* in green algae *Chlorella variabilis* and *Chlorokybus atmophyticus*; in the 5'-leader regions of *cysT* in green algae *Zygnema circumcarinatum*. Near to each promoter under consideration except those in *C. atmophyticus* and *Marchantia polymorpha*, there is a conservative motif with consensus TAAWATGATT, sometimes directly repeated. The motif is often located near to the -35 box of the promoter or overlaps that box. A significant variability of distance between the motif and the promoter box suggests that the motif is a site of repressor binding.

This regulation prediction confirms *Helicosporidium* sp. belongs to the class Trebouxiophyceae. On the other hand, it emphasizes importance of sulfate transport for the parasite and can serve as a key for understanding roles of their plastids. Absence of such regulation in *L. terrestris* can mean the change of specificity of the transporter to a substratum. The conjecture is also corroborated by change of both proteins *CysT* and *CysA* in this species.