"Genetic modification strategies for arsenic removal in *Chlamydomonas reinhardtii* "

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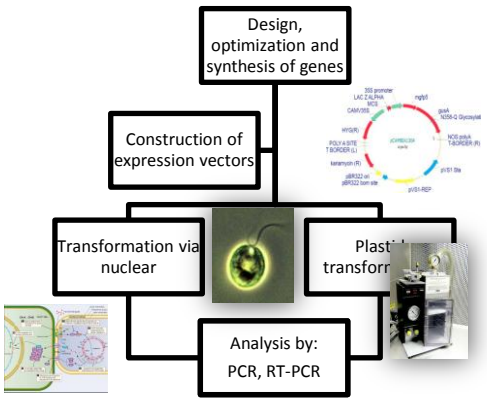
Introduction. Water quality is a crucial factor for health and human benefit. The arsenic is a global pollutant that comes from natural and anthropogenic sources, and it can be present as both inorganic and organic forms (1). The majority of the industries do not eliminate metals from residual water, leading to increases in metal contamination in superficial water and seawater, constituting a health risk. In particular, arsenic intoxication is a health problem in Mexico (2). Phytoremediation is a promising alternative technology for metal detoxification. Microalgae have the ability to metabolize and adsorb metals and metalloids as arsenic (As) (3).

Chlamydomonas reinhardtii, is used in this study as a model of arsenic tolerance enhancement by means of genetic engineering approaches.

Methods.



Results.

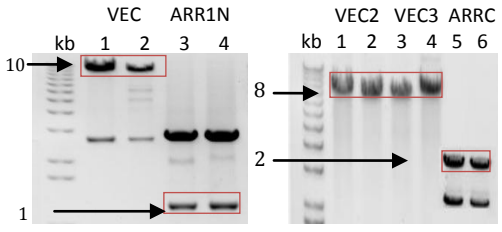


Fig. 1 Enzymatic digestion of vector and insert

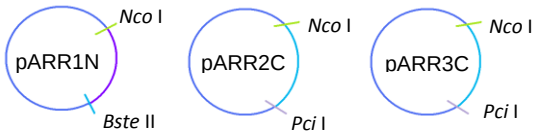


Fig. 2 Constructions

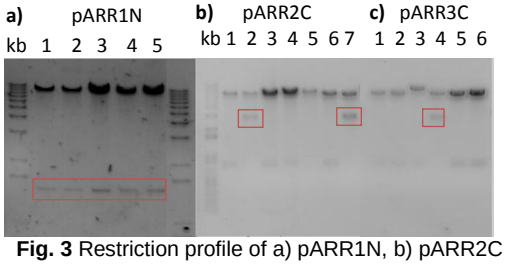


Fig. 3 Restriction profile of a) pARR1N, b) pARR2C and c) pARR3C

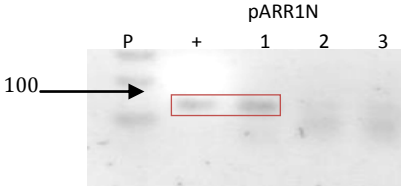


Fig. 4 RT-PCR for *npt*II gene in *C. reinhardtii.*

Conclusions. We have obtained three expression vectors named pARR1N, pARR2C and pARR3C. *C. reinhardtii* was successfully transformed with pARR1N, pARR2C and pARR3C by nuclear and plastid approaches. Specific transcripts were identified for the selective-marker gene. These clones will be analyzed to determine the expression of the specific genes of interest as well as their As tolerance and accumulation mechanisms.

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References.

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