THE ROLE OF REGULATION OF GENE EXPRESSION IN PLASMID STABILITY

Summary

Plasmid survival relies heavily on the regulation of gene expression assuring the balance between the necessity of a certain level of plasmid genetic information being expressed and minimalization of the metabolic burden imposed on the host. The most commonly used regulatory mechanisms are autogenous repression and antisense RNA-mRNA interactions which provide the systems with economy, simplicity, sensitivity and possibility of rapid response to internal and external changes.

IncP-1 plasmids are described in more detail as the paradigm of a multivalent regulatory network, responsible for tight repression, coordination and fine-tuning of almost all plasmid functions and providing simultaneously a high level of security to plasmid genome.

Appropriate recognition and use of environmental stimuli as very important factors in plasmid biology is nicely exhibited by Ti plasmids of *Agrobacterium tumefaciens* and pheromone-responsive plasmids of *Enterococcus faecalis*.