Dna sequence analysis, primer design, protein expression, and mutagenesis assessm...

Science, Biology

RecA is a recombinant gene and when in the presence of single-stranded DNA, can behave as a catalyst in the hydrolysis process of ATP. It can also function in ATP dependant reactions such as Duplex DNA’s uptake of single-stranded DNA and homologous single-stranded DNA’s ATP propelled hybridization. (NCBI, 2008). Its function is likened to the mechanism and composition of copper amine oxidase, in that it acts in microbes to make use of amine substrates considered to be unusual such as carbon or nitrogen.

As mentioned previously, recA resides in the presence of single-stranded DNA. Protein secretion can be said to have taken place in the presence of single sequencing. The protein recA is unique due to its function as a copper ligase and its modification which takes place after the translation process. Post translation, a residue of tyrosine 412 will yield cofactor TPQ. Lysine 83 is also a residue of the reaction.

In the event that it is decided to undertake mutagenesis in order to mutate lysine 83 into alanine; we would quickly see that reaction outcomes would be quite different. When mutation (genetic alterations) take place, the chemistry involved with the organisms and molecules becomes different even if the change is slight. With quick-change mutagenesis, we are able to target site changes that act to alter specific protein outcomes due to changing amino acid sequences. Changing lysine 83 through mutagenesis to alanine may be desirable for more than one reason. In many instances, changing out lysine for alanine can, in fact, delay certain entropic effects such as crystallization, such as in the case of e. Coli where crystallization formation can be essential for post mutation testing.

Lysine production in genetically engineered bacteria will tend to promote the

fermentative production of other amino acids. Replacing residue lysine 83 with alanine 83 however, may be a wise alteration as many organisms can’t survive in the absence of lysine.