KEY WORDS AND PHRASES FOR ENZYME REGULATION CONCEPT MAP

The tryptophan is able to bind to a site on the allosteric repressor protein, changing its shape and enabling it to interact with the operator region. Once the repressor binds to the operator, RNA polymerase is unable to get beyond the operator and transcribe the genes for tryptophan biosynthesis. Transcription of the enzymes that allows for tryptophan biosynthesis is turned off.

Some repressors are synthesized in a form that readily binds to the operator and blocks transcription. However, the binding of a molecule called an inducer alters the shape of the regulatory protein in a way that now blocks its binding to the operator and thus permits transcription.

The repressor protein, coded for by a regulatory gene, normally does not bind to the operator region of the *trp* operon and the five enzymes needed to synthesize the amino acid tryptophan are made.

Binding of a molecule called an inducer to the activator alters the shape of the activator in a way that now allows it to bind to the activator-binding site. The binding of the activator to the activator-binding site, in turn, enables RNA polymerase to bind to the promotor and initiate transcription.

Some repressors are synthesized in a form that cannot by itself bind to the operator. The binding of a molecule called a corepressor, however, alters the shape of the regulatory protein to a form that can bind to the operator and block transcription.

The binding of the regulatory protein to the operator prevents RNA polymerase from passing the operator and transcribing the coding sequence for the enzymes.

If the activator is present, RNA polymerase is unable to bind to the promoter and transcribe the genes.

competitive inhibition

non-competitive inhibition