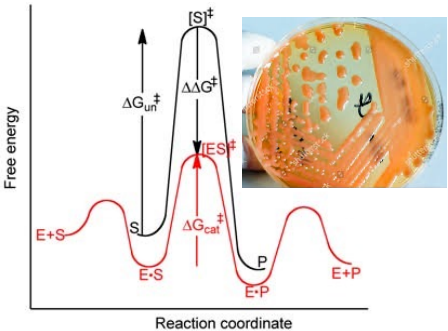
Trmp1, 45th Enzyme in 46-Enzyme Pathway, 'Refusing to Stabilize Transition State'



(New Brunswick, NJ) Biochemists at Rutgers have reported a puzzling nonproductive behavior exhibited by the 45th enzyme in a key 46-enzyme metabolic pathway found within a branch of bacteria. Lack of *Trmp1* catalytic activity leads to the toxic build up a β-carotene-derived intermediate, resulting in cells becoming bloated and bright orange. "It's nonsensical that evolution would select for such a robust pathway involving so many checks and balances only to stop short of generating a final product," stated the study's lead investigator. *Trmp1*, despite its promiscuous binding to substrate, appears "incapable or unwilling" to stabilize the transition state in order to reduce ΔG^{act}, a most basic function expected of any enzyme. "It's just bizarre that a protein would behave likes this," said a bioinformatician familiar with the study. "It's almost like the enzyme just doesn't want to fulfill its fundamental role in the very process that it was designed to serve." The failure of *Trmp1* to carry out its minimal catalytic obligations may lead to difficulties for the downstream acting protein, *Bdn1*, to function optimally. "At first we just assumed that *Trmp1* was some kind of pseudogene, something that resembles a normal gene but has no useful function in cells," explained the lead investigator. "But the more we study it, the more it appears that *Trmp1* is some kind of aberrant dominant negative, a protein that seemingly squanders the work carried out by all previous genes in the pathway. It just flies in the face of how biology is supposed to work!" remarked the nonplussed scientist. Researchers are also entertaining the possibility that *Trmp1* is just an extraordinarily selfish DNA element or "genomic parasite". Notably, it appears that *Trmp1* is currently under strong negative selection within the population, which should lead to the gene being eradicating in coming generations.

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