

Structural Characterization of *E. coli* Histidine Synthesis Pathway.

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The study of the histidine biosynthesis pathway commenced more than 50 years ago and was of utmost importance for the development of the operon concept and understanding the regulation of gene expression. The catalytic steps and the intermediates in this pathway were firmly established and the analysis of the organization of *his* genes in bacteria, archaeobacteria and yeast led to the recognition of gene rearrangement, fusion, elongation and duplication. For many years the knowledge of three-dimensional structures of enzymes from this pathway was lagging far behind. However, in great part due to the structural genomics efforts this situation has changed dramatically in the last five years and the structures of all enzymes involved in this pathway have now been determined and enzymatic mechanisms for most of them established. Our own efforts have led to the determination of four enzyme structures. I will review the structures and mechanism of several of these enzymes.