Poster Presentation

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Allosteric Signaling in Dihydrodipicolinate Synthase

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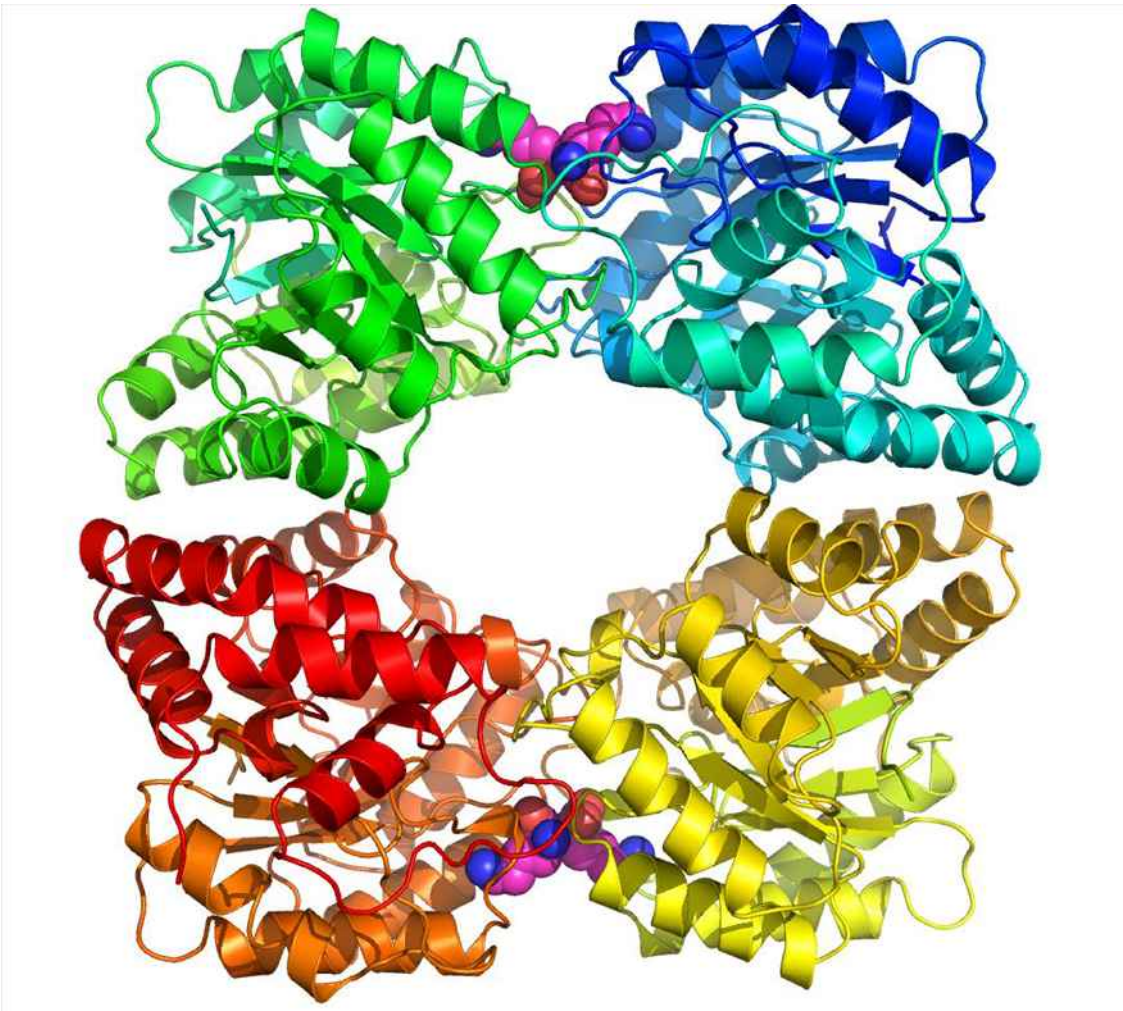
Dihydrodipicolinate synthase (DHDPS) is an enzyme found in most bacterial species and regulates the production of cell wall precursors necessary for the life of the organism. Specifically, DHDPS catalyzes the condensation of pyruvate and aspartate-β-semialdehyde (ASA) to produce dihydrodipicolinic acid leading to the synthesis of cell wall precursors lysine and mesodiaminopimelate. DHDPS is regulated through feedback inhibition when lysine binds at a location distinct from the reactive site. The mechanism by which lysine remotely disrupts catalysis is not well understood. A clear understanding of how the natural inhibitor, lysine, binds to DHDPS and what effects this has on the machinery of the enzyme will be invaluable for development of novel antibiotic leads. Analysis of DHDPS crystals with and without inhibitors has revealed structural changes that appear to link the allosteric and active sites. Our ongoing research examines the validity of observed structural changes in the mechanism of allosteric inhibition.

[1] *Skovpen, Y. V., and Palmer, D. R. J. (2013) Dihydrodipicolinate Synthase from Campylobacter jejuni: Kinetic Mechanism of Cooperative Allosteric Inhibition and Inhibitor-Induced Substrate Cooperativity, Biochemistry*



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