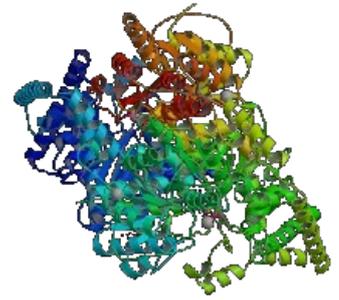


Pyruvate dehydrogenase

The **pyruvate dehydrogenase complex** is a complex of three enzymes inside the mitochondria: pyruvate decarboxylase, dihydrolipoyltransacetylase, and dihydrolipoyldehydrogenase. The complex works as a whole in the presence of coenzymes TPP, NAD^+ , lipoate in the form of lipoamide, FAD and coenzyme A. Pyruvate dehydrogenase catalyzes the oxidative decarboxylation of pyruvate with the binding of acetyl to TPP, dihydrolipoyltransacetylase catalyzes the transfer of acetyl from TPP via lipoamide to coenzyme A, and dihydrolipoyldehydrogenase regenerates lipoamide using FAD, from which FADH_2 is formed, which regenerates in turn by NAD^+ , from which $\text{NADH} + \text{H}^+$ is formed. The enzyme is inhibited by arsenic in the oxidation state of As(III) (arsenates,...), which blocks lipoamide.



Pyruvate dehydrogenase