

SIV-2

Crystal structures of human DJ-1 and Escherichia coli Hsp31 that share an evolutionarily conserved domain

Sun-Shin Cha

Pohang Accelerator Laboratory

Human DJ-1 and Escherichia coli Hsp31 belong to ThiJ/PfpI family whose members contain a conserved domain. DJ-1 is associated with autosomal recessive early-onset parkinsonism and Hsp31 is a molecular chaperone. Structural comparisons between DJ-1, Hsp31, and an archeal protease, a member of ThiJ/PfpI family, lead to the identification of the chaperone activity of DJ-1 and the proteolytic activity of Hsp31. Moreover, the comparisons provide insights into how the functional diversity is realized in proteins that share an evolutionarily conserved domain. On the basis of the chaperone activity, the possible role of DJ-1 in the pathogenesis of Parkinson's disease is discussed.