References:
Bala, N.; Chimni, S. S. Tetrahedron: Asymmetry 2010, 21, 2879

Natural role:
Thought to be detoxification of reactive metabolites like epoxides; these enzymes are related to haloalkane dehalogenases.

Mechanism:
The mechanism shown below involves a covalent intermediate; a more recently discovered class of epoxide hydrolases, represented by limonene epoxide hydrolase, involve direct hydrolysis.

Application in biocatalysis:
Either the enantioenriched epoxide or diol can be used for synthetic applications.

Examples:
Whole cell biocatalysis provided results on par with the Jacobsen cobalt salen catalyst; both methods provided about 40% yield and > 99% ee. The epoxide is an intermediate in the kinase inhibitor BMS-536924.


Isolating the enantioenriched epoxide can provide a key intermediates in total syntheses.

Thought to be detoxification of reactive metabolites like epoxides; these enzymes are related to haloalkane dehalogenases.