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Discovery of Marine Epoxide Hydrolase by Bioinformatics based genome mining

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Enantiopure epoxides are important chiral synthons for producing optically active compounds[1]. Kinetic resolution of racemic epoxides *via* an enantioselective hydrolysis reaction by epoxide hydrolase (EH) is a very promising method since enantiopure epoxides with a high optical purity can be obtained from cheap and readily available racemic epoxides[2, 3]. However, only a limited number of these atypical epoxide hydrolase are available in recombinant form. In this presentation, using a protein sequence motif with homology and expressed sequence tag(EST), putative soluble and microsomal EH were identified in the genome of the marine bioresources. Phylogenetic relationship of EH in fish and marine microorganisms with other microbial and mammalian EHs was reconstructed for prediction of epoxide hydrolase activity. We also screened EH activity from crude enzyme extracts containing fish's putative EH to evaluate the possibility to use marine microbial and fish EH as biocatalysts for the enantioselective resolution of racemic epoxide.

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