# Enzymatic stereoselective synthesis of B-amino acids

Chhiba V, Bode M, Mathiba K, Brady D

## Abstract

The use of enzymes for the enantioselective synthesis of single enantiomer ß-subsituted compounds is of interest, as this structural motif occurs commonly in compounds of pharmaceutical importance, such as adrenergic agents, antidiabetics, antimicrobials, and as nonstandard amino acids in therapeutic peptides or peptidomimetics. Access to these compounds can be achieved through diverse synthetic routes with enantioselective steps catalyzed in different ways, including by means of nitrile hydrolysis. The selectivity of nitrile biocatalysts has been demonstrated on various nitrile-containing substrates. Enantioselectivity has been achieved using either nitrilases or nitrile hydratase-amidase pairs in a cascade reaction. Nitrile-hydrolysing Rhodococci have been applied in the synthesis of both ß$^3$-amino and ß$^2$-amino acids. These discoveries are broadening the biocatalytic toolbox available for the sysnthesis of single enantiomer ß-subsituted amino acids and amides.