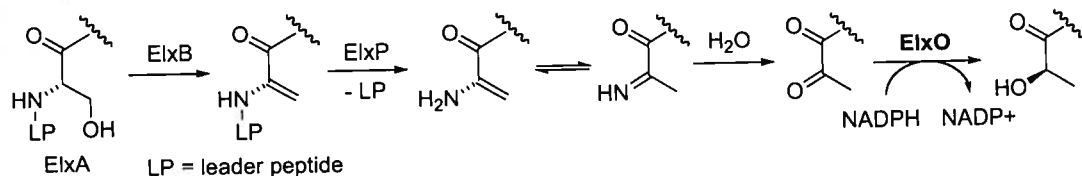


## Biosynthesis of the Antimicrobial Peptide Epilancin 15X

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Lantibiotics are antimicrobial peptides that are ribosomally synthesized and then posttranslationally modified to their biologically active forms. The recently discovered lantibiotic epilancin 15X is active against resistant strains of *S. aureus* and *Enterococci*. The unusual N-terminal (*R*)-2-hydroxypropionyl group (Hop) is potentially involved in the bioactivity. To understand its biosynthesis, the epilancin 15X gene cluster was sequenced. Hop is likely produced by dehydration of a Ser residue in the precursor peptide ElxA by the dehydratase ElxB, followed by cleavage of the leader peptide by the protease ElxP, and spontaneous hydrolysis of the N-terminal dehydroalanine residue. The resulting diketone is reduced to the alcohol by a novel NADPH dependent reductase ElxO. Using substrate analogs synthesized by solid phase peptide synthesis, the enzymatic activity of ElxO was reconstituted *in vitro*. This highly promiscuous enzyme could be potentially used to prepare novel lantibiotics with improved bioactivity.



## A Catalytic Brønsted Base Strategy for Linear, Allylic C—H Amination

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A Brønsted base activation mode for oxidative, Pd(II)/sulfoxide-catalyzed, intermolecular C—H allylic amination is described. Catalytic amounts of *N,N*-diisopropylethylamine were found to efficiently promote the linear allylic amination reaction with high levels of stereo-, regio-, and chemoselectivity. This departure from Lewis acid activation allows unprecedented functional group tolerance for a C—H amination method. For example, powerful synthetic building blocks and natural product derivatives containing reactive Lewis basic functionality such as epoxides, aldehydes, esters, nitriles, phenols, and even alcohols can be aminated without the use of protecting groups. Useful transformations of *N*-tosylcarbamate products as well as evidence to support this novel activation mode are discussed.

