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Ethyl acetate production by the elusive alcohol acetyltransferase from yeast

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Ethyl acetate is an industrially relevant ester that is currently produced exclusively through unsustainable processes. Many yeasts are able to produce ethyl acetate, but the main responsible enzyme has remained elusive, hampering the engineering of novel production strains. Here we describe the discovery of a new enzyme (Eat1) from the yeast *Wickerhamomyces anomalus* that resulted in high ethyl acetate production when expressed in *Saccharomyces cerevisiae and Escherichia coli*. Purified Eat1 showed alcohol acetyltransferase activity with ethanol and acetyl-CoA. Homologs of Eat1 are responsible for most ethyl acetate synthesis in known ethyl acetate-producing yeasts, including *S. cerevisiae*, and are only distantly related to known alcohol acetyltransferases. Eat1 is therefore proposed to compose a novel alcohol acetyltransferase family within the α/β hydrolase superfamily. The discovery of this novel enzyme family is a crucial step towards the development of biobased ethyl acetate production and will also help in selecting improved *S. cerevisiae* brewing strains.

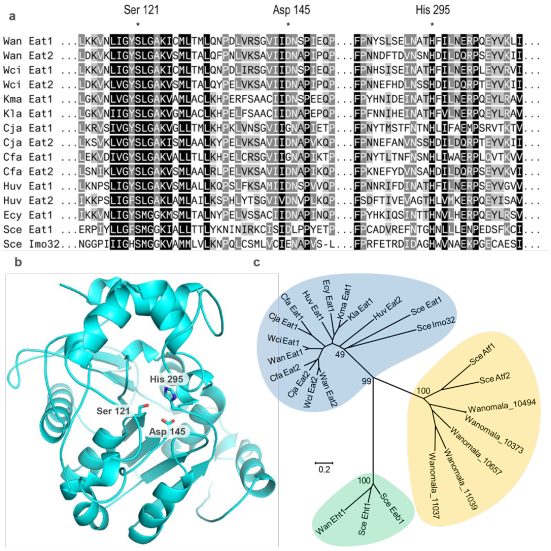

Figure1: Phylogeny of several AAT families. The newly discovered eat1 family is depicted in blue

Biography

Aleksander J Kruisa is associated with Wageningen University, The Netherlands. He started working at the Wageningen University, and research interests focuses on the efficient production of chemicals by microorganisms.

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