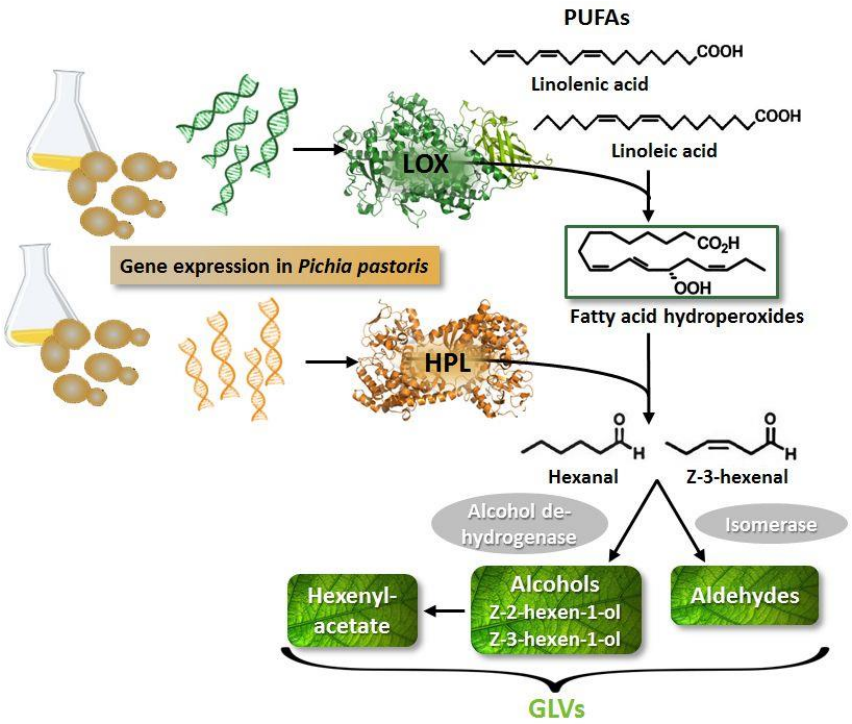
ACIB – the Austrian Centre of Industrial Biotechnology – is one of the leading research centres in the field of industrial biotechnology. ACIB is dedicated to joint research at the industrial-academic interface. Seven Austrian Universities and more than 50 leading industry partners are working together within the ACIB research program.

MASTER THESIS

Lipoxygenases and Hydroperoxide Lyases – Towards 'Green Leaf Volatiles'

Background

Green leaf volatiles (GLVs) are C_6- or C_9-aldehydes and alcohols that are commonly used as aroma and flavor compounds with a fresh green odor of fruits and vegetable. As GLVs fulfill important biological functions in plant defense, communication, and stress response, these compounds can also be used in pest control, food storage and the cosmetic/personal care sector. **Lipoxygenases (LOX)** and **hydroperoxide lyases (HPL)** are the key enzymes and suitable biocatalysts for the production of GLVs. LOXs catalyze the peroxidation of polyunsaturated fatty acids (PUFAs) like linoleic and α-linolenic acid. Hydroperoxy fatty acids are further cleaved by HPLs into aldehydes and oxo-acids. The enzymes are widely distributed in plants, mammals, bacteria and fungi, but have been predominantly studied in and extracted from plants. However, the production of GLVs from plant extracts is limited by low enzyme concentration, stability and specificity. Therefore, recombinant enzyme expression is envisaged as a biocatalytic alternative for more efficient GLV synthesis.



Besides gaining wide hands-on experience, we offer you the possibility to contribute your results to a publication, support for your research, and nice and helpful colleagues.

For further information, please contact me!
Holly Stolterfoht (working group of Margit Winkler/ Harald Pichler),
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Institute of Molecular Biotechnology/ACIB – Austrian Centre of Industrial Biotechnology

Your aims

The overall goal of this project is the production of GLVs by recombinant lipoxygenase and hydroperoxide lyase in *Pichia pastoris*. To achieve this, the following is planned:

- Find out which LOX and HPL genes can be expressed in *Pichia pastoris* (e.g. by Western Blot)
- Screen *Pichia* clones expressing LOX/HPL for best yield and activity (diverse assays)
- Identify and quantify the products of the combined LOX and HPL reactions (GC/HPLC-MS)

We are looking forward to receiving **your application via our application portal application.acib.at (ref. 04_2019).**
Application deadline: 1. March 2019

This job advertisement addresses qualified male and female persons equally. ACIB is not part of any collective agreement under Austrian law. It is intended to offer a minimum monthly payment of EUR 420,00 for the Position advertised (basis 10 hours per week).