

BIV-03-ledesma-amaro-C1net-public-summary-application

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Towards engineering C1substrate utilisation in industrial yeasts

*Yarrowia lipolytica* is an industrial yeast able to produce high amount of fuels and chemicals from glucose. However, the bioprocess to synthesise these products are not economically feasible due to the high cost of the substrate used. Therefore there is a high interest in making *Y. lipolytica* able to grow and produce fuels and chemicals from cheaper carbon sources and several works from Dr. Ledesma-Amaro have engineered this organism to use alternative substrates such as starch or lignocellulosic materials. But still, the cost of the process must be reduced. Carbon dioxide is cheap and abundant , thus, a perfect carbon source for industrial fermentations but *Y. lipolytica* is unable to use it.

This project aims to engineer *Y. lipolytica* to make it able to capture carbon dioxide and use it as co-substrate to produce fuels and chemicals. For this aim, several enzymes in the utilization pathway of this substrate from heterologous sources will be optimized to work in this yeast.