# ENGINEERING AN OLEOGINOUS YEAST FOR THE PRODUCTION OF BIODIESEL

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There are economic and social interests in replacing the current energy dependence we have on petroleum-based oleochemicals. *Yarrowia lipolytica*, an oleaginous yeast, has the ability to metabolize unique carbon sources, particularly hydrocarbons and to accumulate large amounts of lipids which could be developed into a source of biodiesel. The ability of *Y. lipolytica* to accumulate triacylglycerols in lipid droplets and the complete sequencing of its genome make *Y. lipolytica* a viable organism to genetically engineer for the production of large quantities of biodiesel precursors. The purpose of this project is to genetically modify *Y. lipolytica* to further increase its production of triacylglycerols by knocking out genes that encode enzymes involved in the β-oxidation of fatty acids. This genetic modification will be accomplished by using homologous recombination to disrupt the genes *POX3-5* and *POT1*. The 5' and 3' untranslated regions of *POX3-5* and *POT1* were amplified by polymerase chain reaction and cloned to allow a drug resistance gene to be introduced between them. Following cloning, these genes will be knocked out from the *Y. lipolytica* genome using drug resistance as a marker. The disruption of these genes is expected to increase the accumulation of triacylglycerols in *Y. lipolytica* lipid droplets versus the wild-type. Progress towards the goals of this project will be reported.

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