# Biotechnological production of lubricant additives from renewable resources

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Modern lubricants are highly developed construction elements present in all machinery, as well as many mechanical applications essential for everyday life. The ever-increasing technical requirements of machinery and components have led to synthesize new additives, thus continuously optimizing the composition of lubricants. With regards to sustainability and biodegradability, the petroleum-based raw materials traditionally used for the synthesis of additives are often inferior to biologically engineered ingredients. As part of the Federal Ministry of Education and Research (BMBF) strategic Alliance, ZeroCarbFP, enzymatic synthesis processes for the production of high-quality lubricant additives from biogenic raw materials and waste streams are developed. In this case, waste streams can be used as both a nutrient for the enzyme production and as a raw material for the synthesis of additives and functionalized base fluids that are currently not technically available and have not yet been considered. The basic materials used for the evaluation of processes are edible fats and oils and residues from biodiesel production (for example glycerol, fatty acids and fatty acid methyl ester).