



Johnson Matthey
Catalysts

Johnson Matthey introduces the NeX-Zyme generation of biocatalysts

With the recent acquisition of X-Zyme GmbH, a leading biocatalysis company, Johnson Matthey Catalysts is excited to offer a novel family of bio-catalysts which complement the chiral synthetic capabilities of our current chemo-catalyst technology offering.

This combined portfolio of catalytic technologies allows us to design the most efficient synthetic route for our clients.

You now have **one reliable resource** for all your chemo- and bio-catalysis needs.

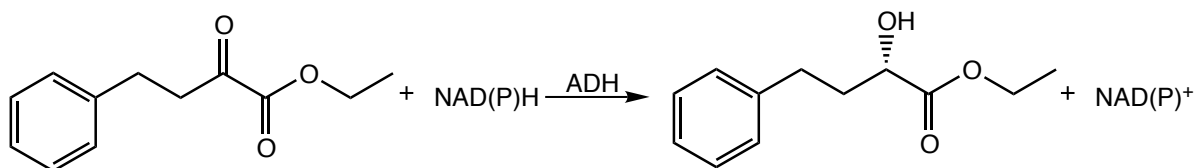


Biocatalysis Technology

Enzymes are an important asset to the catalytic toolbox for the production of fine chemicals and pharmaceuticals. The synthetic scope and catalytic activity of enzymes often complement chemical catalysis. Consequently, oxidoreductases are a valuable tool in organic chemistry for the synthesis of chiral compounds.

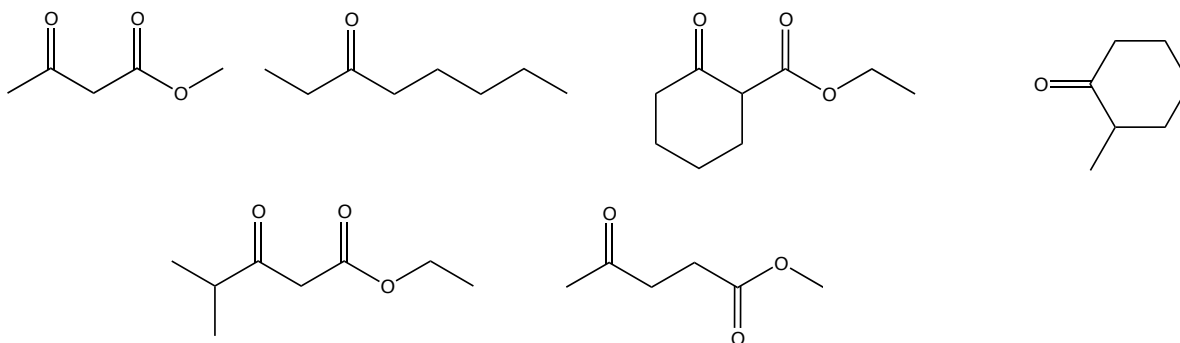
Alcohol Dehydrogenase

Application: Synthesis of enantiomerically pure alcohols with (S) or (R)-configuration



A broad range of carbonyl compounds (including aldehydes, aliphatic, aromatic, cyclic ketones, diketones, ketoacetals and ketoesters) can be asymmetrically reduced to their corresponding chiral alcohols with high enantioselectivity.

Various substrates of the Carbonyl Reductases



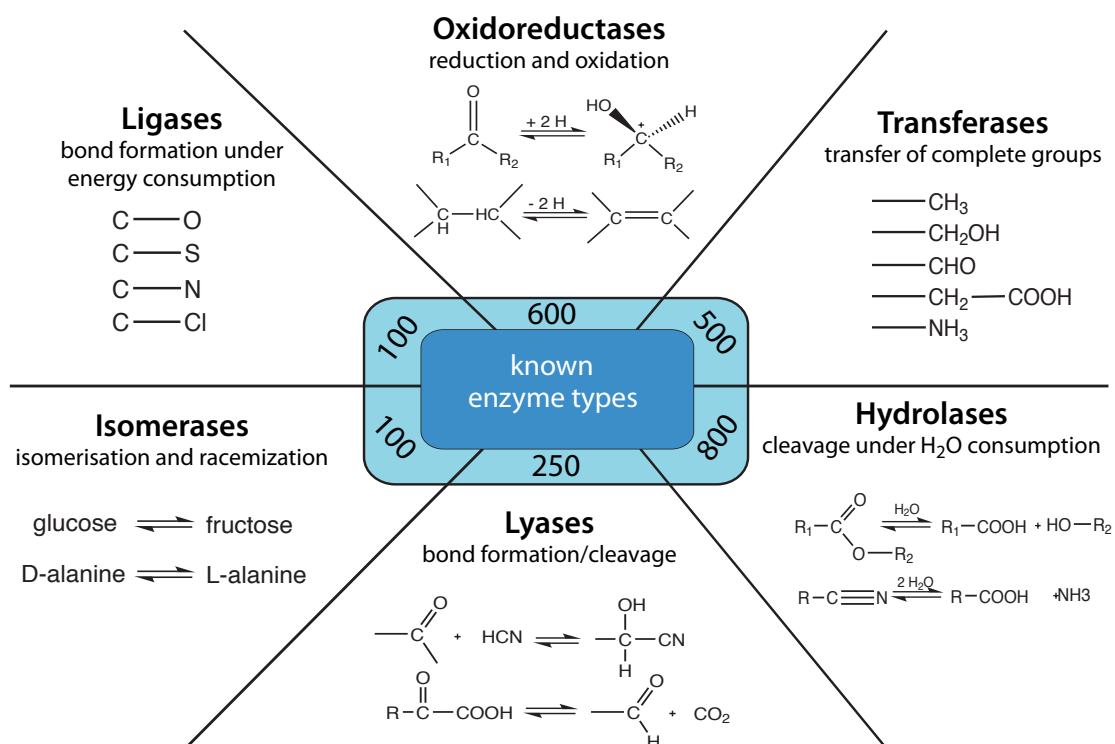
Products

- Alcohol Dehydrogenases
- Aldehyde Reductases
- Cofactor regeneration
- Esterases
- Ether Reductases
- Hydrohydrin Dehydrogenases
- Monooxygenases
- Sulfhydryl Oxidases
- Others
 - (e.g. oxidases, transferases, lipases, etc.)

Services

- Screening of libraries for specific biocatalysts
- Isolation and production of identified variants
- Improvement of selected biocatalysts by means of protein engineering and/or directed evolution
- Assistance in search and operation of new libraries
- Fermentation capabilities to provide enzymes in kilo quantities, both our own or customer's enzyme technology
- FTE of enzyme fermentation and optimization followed by process optimization and production of target molecule

Classes of Enzymes

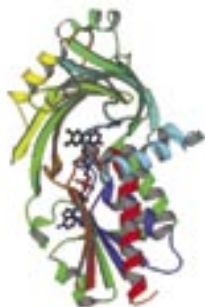


Biocatalysis Facilities

- 150 Liter-Fermentor
- Molecular Biology Lab
- Purification and Analysis Lab
- Cultivation Lab, Incubator Shakers
- Bioreactors up to 200 Liters
- Enzyme Libraries
- Large Centrifuges, Freeze Dryers/
Lyophilization
- Glass-lined reactors, 100 / 250 / 400
/ 1000 liters Reactors
- Analytical Lab - GC, HPLC and IR
- Fine distillation - one 250 liter
reactor is equipped with a 3m
Sulzer Pak column
- ISO 9001. cGMP

Enzyme Kits

- Alcohol Dehydrogenases
- Esterases
- Lipases
- Ether Reductases
- Cofactor Regeneration
- Amine Dehydrogenases
- Fructosyltransferases



www.jmcatalysts.com/pharma

www.xzyme.com

For additional information on our biocatalysis technologies, please contact us at inquiries@jmus.com