



mepps
project

hasa
limited

*Predicting Microbial
Degradation with Mepps.*

Shared Knowledge, Shared Progress

Mepps is a new expert knowledge base software project for the prediction of microbial degradation in the environment.

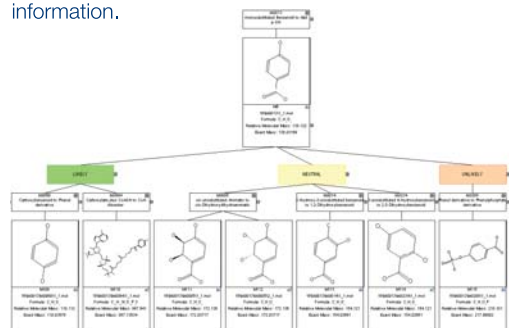
What Is It?

This is a project resulting from a collaboration between Lhasa Limited (www.lhasalimited.org) and the University of Minnesota (<http://umbbd.msi.umn.edu>), based on knowledge from the University's Pathway Prediction System.

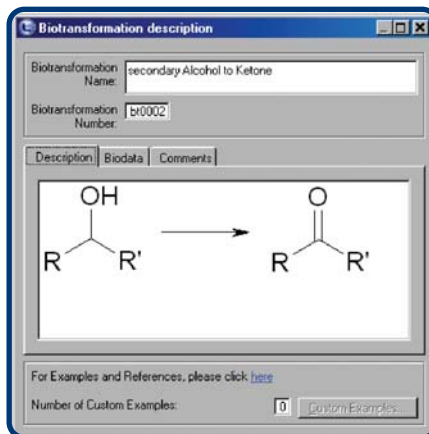
Containing information on microbial biocatalytic reactions and biodegradation pathways, we are currently extending this knowledge to be able to predict biodegradation to help with a wide range of environmental issues.

How Does It Work?

Mepps can predict the degradation pathways of new, unregistered structures. During a Mepps session, the program predicts microbial degradation using a combination of matching substructures from our expert knowledge base and a reasoning engine. Results are presented as a biodegradation tree displaying predicted degradants and their biodegradation pathways with levels of likelihood of the biotransformation occurring. If you want to look at more detail, all predictions are supported by examples and comments via a convenient link to the University of Minnesota Biocatalysis Biodegradation Database (UM-BBD). With this information you can examine what degradants you might see from your query structure and therefore tailor your study to incorporate this information.

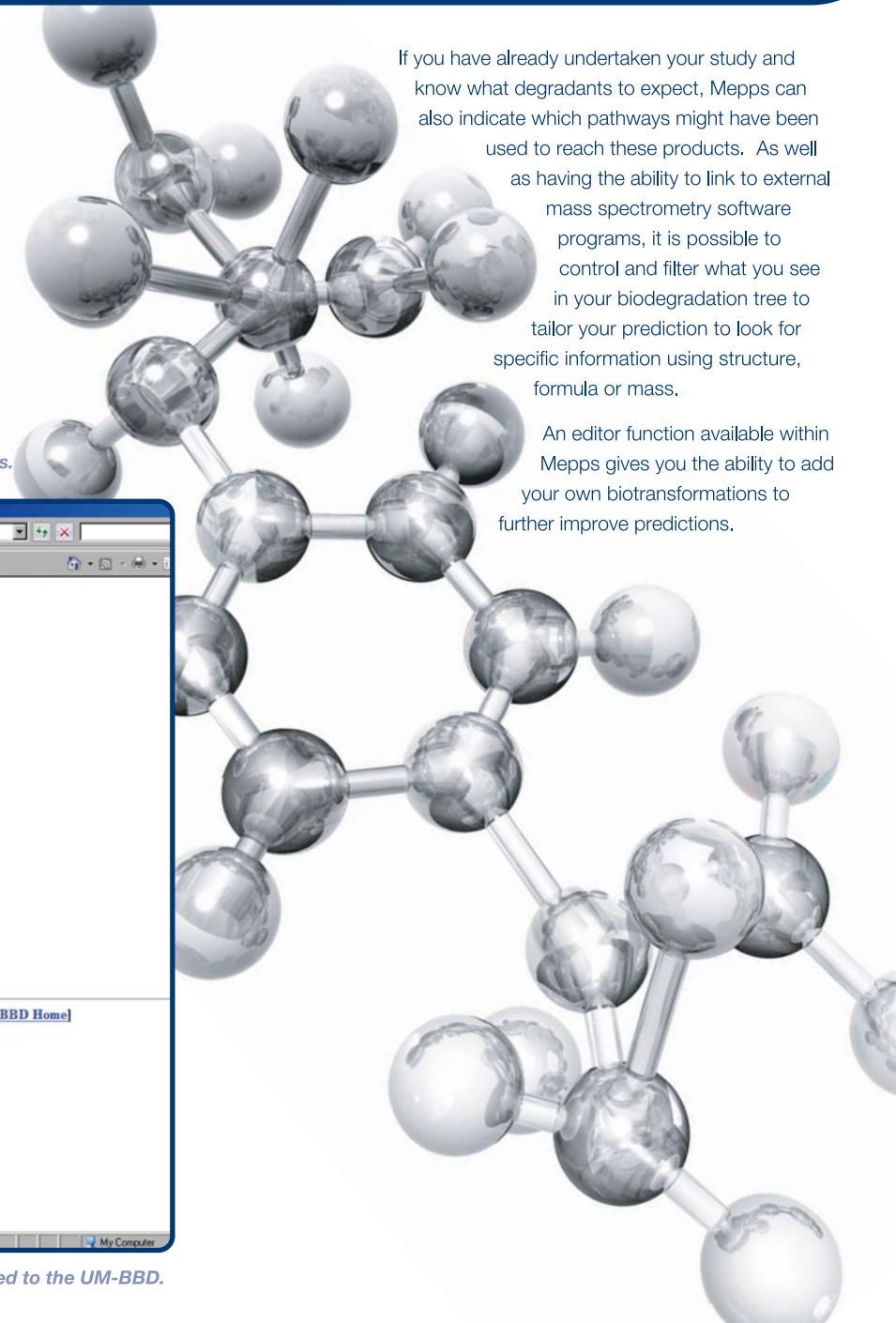


Example of a biodegradation tree in Mepps.



Example of a biotransformation description in Mepps.

Illustration of the examples and references connected to the UM-BBD.



If you have already undertaken your study and know what degradants to expect, Mepps can also indicate which pathways might have been used to reach these products. As well as having the ability to link to external mass spectrometry software programs, it is possible to control and filter what you see in your biodegradation tree to tailor your prediction to look for specific information using structure, formula or mass.

An editor function available within Mepps gives you the ability to add your own biotransformations to further improve predictions.

How Does This Help?

Environmental assessment

Using the Mepps predictive tool it is possible to create a biodegradation profile for a range of applications including the examination of:

- Ⓛ Likelihood of chemical breakdown in landfill (EU Landfill Directive 1999)
- Ⓛ Contaminated land pollutant prediction and clean up (EPA Part 2A)
- Ⓛ Likelihood of removal of chemicals at sewage treatment works (Discharge Compliance)

The impact of chemicals and agrochemicals on the environment

Mepps can aid with the examination of chemical biodegradation to ensure:

- Ⓛ That the substance fits in with the principles of Green Chemistry
- Ⓛ That the substance does not pose any threat to human health or the environment under the REACH initiative
- Ⓛ That the substance should fit into the requirements of the EU Registration Directive 91/414 (Registration of Agrochemicals)

Biodegradation of pharmaceuticals in the environment

- Ⓛ Chemists have been documenting widespread pharmaceutical contamination of lakes, streams, and groundwater. Mepps gives a good 'first screen' indication of the environmental fate of a drug in the environment, which addresses a pharmaceutical company's need to comply with Integrated Pollution Prevention and Control.
- Ⓛ With the revised guidelines on EU Council Directive 2001/83/EC (applications for marketing authority of a medicinal product for human use) requiring an environmental risk assessment on each drug, Mepps will allow the user to identify which degradants to look for.

How To Get Involved

Lhasa is currently looking for sponsors for Mepps.

If you are interested in sponsoring this new and exciting project, please contact Lhasa Limited for further information. (Details below)



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