

We produce mammalian Phase I and II metabolites using microbial chemistry, mammalian tissue and enzymology expertise:

- For DMPK / ADME / TOX
- For Met ID
- As standards for quantitation
- For bioactivity testing
- For stability studies

### Proven Reactions

Methyl hydroxylation  
Methylene hydroxylation  
Methine hydroxylation  
Aromatic hydroxylation  
N-oxidation  
N-demethylation  
O-demethylation  
Carbonyl reduction  
Heterocycle oxidation (AO)  
Aromatic O-glucuronidation  
Aromatic N-glucuronidation  
Non-aromatic O-glucuronidation  
Non-aromatic N-glucuronidation  
Acyl-glucuronidation  
N-sulfation  
O-sulfation  
Glycosidation  
Thiol conjugation (GSH/NAC)  
Sequential reactions e.g. hydroxylation & glucuronidation

For more information about our services, contact us at [mail@hyphadiscovery.co.uk](mailto:mail@hyphadiscovery.co.uk)

## Scaling up the production of human and other mammalian metabolites

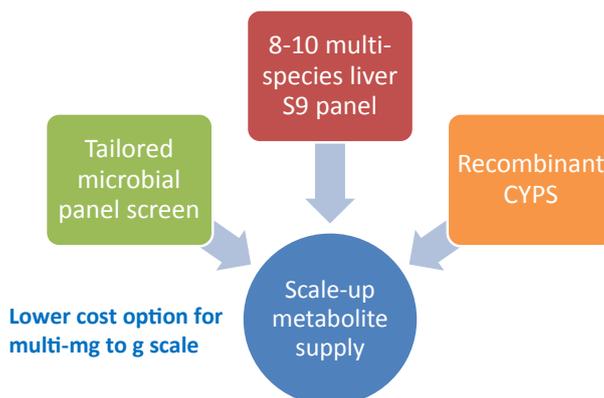
### Scalable S9 and microsomal incubations

Hypha's scale-up services now include provision of metabolites using a panel of **hepatic S9 and microsomal fractions**, to complement our successful microbial biotransformation platform. This addition boosts the success rate from 86% to **over 90% coverage of target metabolites**.

Hypha's S9 fraction based reactions are scalable to provide multi mg quantities of target metabolites at high purity. The microbial route provides a cost advantage for larger mg to gram scale amounts, as the microbes make their own co-factors.

Our panels can be tailored to generate scaled up amounts of **oxidative, glucuronidated, sulfated or thiol-conjugated metabolites**. Both approaches offer the advantage of generating Phase I and subsequent conjugated metabolites arising from sequential or multi-step reactions due to intact molecular diversity of the native enzymatic systems.

As part of the new broadened service, we ensure a broad mammalian metabolic coverage comprising 8-10 different species in the initial screen. These are typically evaluated alongside our microbial panels allowing the best yielding and most cost effective process to be scaled up to deliver high purity metabolites. We are successful **96%** of the time in scaling up the reaction observed in the initial screen and all purified material is provided back to our clients, even if the yield exceeds that required.



Through availability of all these options, we are able to offer a comprehensive service for obtaining metabolites at whatever scale and route is required.

*"We contacted Hypha Discovery to generate specific phase I and phase II metabolite standards in sufficient quantities and purity to allow structural confirmation and quantitation. Hypha exceeded expectations, providing 60mg of a phase I metabolite and over 100mg of a phase II metabolite at high purity. Hypha's team was a pleasure to work with and communicative and responsive throughout the process. We will undoubtedly be working with Hypha Discovery in the future."*

**Jason Boer, Senior Principal Investigator  
Incyte Corporation, USA**

We work with 7 out of 10 of the top pharma companies and 4 out of 6 of the top agrochemical companies worldwide. Some of our clients include:



### ABOUT HYPHA DISCOVERY

Hypha Discovery Ltd is a UK-based microbial biotechnology company providing solutions to pharmaceutical and agrochemical R&D partners worldwide through the production of mammalian and microbial metabolites, as well as specialising in microbially-derived chemicals.