

### Introduction to Drug Discovery

Drug discovery and development results from a complex and improbable research involving:

- ◆ Candidate compounds generation from natural compounds or chemical libraries
- ◆ Purification and sample preparation for further analysis
- ◆ Candidate drugs testing from the earliest steps (thousands of compounds from libraries) to pre-clinical stages (few compounds, animal testing), and up to the final steps (formulated drug) (characterisation, biological assays, toxicology).

This includes predictive tools, physical measurements, cell assays, and in vivo assays. Each round of testing should select more suitable compounds, improve theoretic knowledge to improve pharmacology models, new candidate generation, and prepare both production process and clinical testing.

InterFine provides outstanding chemical libraries (custom synthesis, compound plating). InterChrom provides remarkable tools for the purification and sample preparation. Biosciences Innovations offers several reagents for the drug testing, notably for in vitro microarrays screenings and in vitro cell assays as well for toxico-assays. All together, Interchim is your expert partner of Drug discovery and development, especially with HTS tools.

### Combinatorial chemistry

A company for custom services leader in the market of chemicals collections designed for bioassays screening

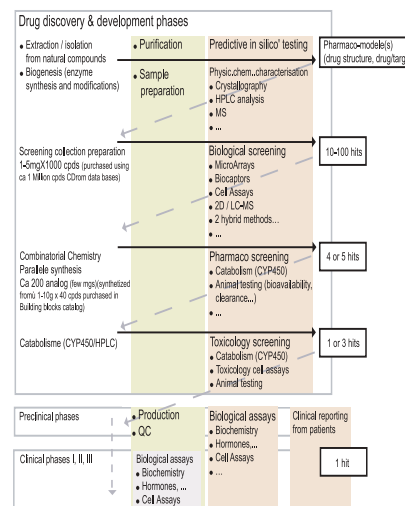
Thanks to a network of dozens of suppliers specialized in combinatorial chemistry and parallel synthesis, we are able to provide the largest molecules choice supplied in HTS formats.

You can consult our collections database available as a CD.

Why Choosing Interchim ?

- ◆ Our suppliers are selected for their skills and expérience in HTS chemistry area. Suppliers of "virtual collections" are banned !
- ◆ Our CD is updated 3 times a year. This allows to get accurate delivery information and quicker know ledge of molecules.
- ◆ Choosing Interchim as unique contact spare you a precious time. A single supplier takes care for you of all logistics, product sorting, packaging, preparation of Isis and excel files for delivery...
- ◆ Custom packagings.

You can choose the packaging of your products. We offer products in your own bar-coded vials, or in 96-wells microplates, with or without DMSO.



NB : Interchim provides also products and services for the production and assays in the clinical and after: raw chemicals in bulk quantities, pilot to large scale chromatography purification media and columns, and QC bioassays and diagnostic assays.

### Technical tip

#### Drug candidate generation & requirements

Pharmaceutics have several sources of compounds to generate new drug candidates:

-identification then **isolation of bioactive molecules** from natural substances (plants, bacteria, venoms...).

-**synthesis of large collections of chemicals**. This approach developed rapidly and dominated the pharmaceutical industry, notably with combinatorial synthesis and parallele synthesis. Other methods include enzyme biocatalysis.

-**engineering of bioactive molecules** (affine, or blocking) through established methods including antibodies, nucleic probes, peptides, PNAs, aptamers, and other synthetic chemicals.

HTS ADMETox in vitro and in silico approach  
Foreign molecules (xenobiotics), notably drugs and toxins, are often lipophilic, which favours absorption by gut, but has a usually slow elimination in urine and feces with possible toxic effects. Their elimination may be direct, but often depends on their conversion to more hydrophilic compounds. Some drugs need also to undergo some transformations to exert their pharmacologic effect through their metabolites. The metabolization involves mainly enzymes, but also oxidation. Enzyme from body fluids also may have crucial role for specific applications. But generally liver is the primary site for conversion. The pathways are divided in two phases :

**The phase I metabolism** consists in oxidation, reduction, and hydrolysis, and takes place mainly in endoplasmic reticulum of liver cells (microsomes, P450 being the most important and versatile system). This make by-product usually more reactive.

**The phase II metabolism** consists in addition of chemical groups which usually make the compound less toxic and easier to excrete. It takes place mainly in cytosol, and in microsomes for glucuronidation.

These requirements are important for the drug design and evaluation essentially through ADMETox studies, beside some "in silico" tools.