

### PK - ADME

### ADME: IN VITRO METABOLISM

- P450 induction (q-PCR; LC-MS)
- P450 inhibition (LC-MS)
- Plasma stability
- Hepatic clearance
- Renal clearance

**Pre-Clinical** 

### PROTEIN BINDING & STABILITY STUDIES

- Brain tissue binding
- Whole blood binding
- Plasma protein binding
- Blood to plasma ratio

**Pre-Clinical** 

### PERMEABILITY & TRANSPORTERS

- Caco-2 permeability
- MDCK-MDR1 permeability
- HaCaT permeability
- P-gP substrate identification
- P-gP inhibition

**Pre-Clinical** 

### BIODISTRIBUTION STUDIES

- Nucleic acid based drugs biodistribution
- Protein biodistribution (ELISA)
- NCE biodistribution (LC-MS)
- Immunohistochemistry
- Cell uptake

**Discovery & Pre-Clinical** 

### PD - TOX

### PD: PHARMACODYNAMICS

- Biomarkers discovery & detection
- Biomarkers quantification
- Biomarkers validation

Discovery, Pre-Clinical & Clinical (I-III)

#### TOXICOLOGY

- Citotoxicity
- Hemocompatibility
- Genotoxicity
- Anti-drugs antibodies assay
- Cell viability

Discovery & Pre-Clinical

## MoA & EFFICACY

### IN VITRO MECHANISM OF ACTION

- Apoptosis & necrosis assays
- Cell chemotaxis

Discovery

#### **IN VITRO EFFICACY**

- In vitro enzimatic assays: development & validation (EC50 & IC50)
- Biologics binding specificity: IP-LC-MS identification
- MIC & MBC

Discovery

### **ANALYTICS**

### TEST ITEM CHARACTERIZATION

- HPLC-UV
- UPLC-UV-MS/MS
- Size exclusion chromatography (SEC)
- Cation exchange chromatography (CEX)
- Intact & reduced protein analysis
- Peptide mass fingerprinting (PMF)
- SDS Page on reduced & non reduced proteins
- 2D Page on reduced proteins
- Image analysis
- Western blotting

Discovery & Pre-Clinical

BIOANALYTICAL METHOD DEVELOPMENT/VALIDATION

- Quantitative & qualitative analysis of proteins in complex matrices
- Quantitative analysis of nucleic acids in complex matrices
- Quantitative analysis of small molecules & peptides in complex matrices

Discovery, Pre-Clinical & Clinical (I-III)

### **MED-TECH**

### IN VITRO DIAGNOSTICS

- IVD equipment, reagents & assays validation
- IVD analytical performance evaluation
- IVD clinical performance evaluation
- Clinical documentation revision (by Pathologist)

Discovery & Launch

### MEDICAL DEVICE

- Cytotoxicity
- Genotoxicity
- Hemocompatibility
- Intracutaneous reactivity in vivo
- Acute systemic toxicity
- Skin Sensitization (LLNA)

Discovery & GLP

## **QUALITY CONTROL**

### PRODUCTION PROCESS QUALITY CONTROL

- Nucleic acids (mammalian, fungi, bacteria, virus)
- Exonucleases & endonucleases
- Endotoxins (LAL test)
- Mycoplasma
- Host cell DNA & proteins
- Conductivity
- Bioburden
- Surfactant residues (total, anionic, non ionic) + TOC
- Stability studies

Discovery & Launch



# **FIELD STUDIES FIELD STUDIES**

- Field phase
- Method development, validation & application
- Analytical phase for residues detection & quantification

**GLP** 

## **CHEMISTRY**

#### **ORGANIC CHEMISTRY**

- Synthesis of chelating agents: DOTA, NOTA & other derivatives
- Synthesis method development & optimization
- Customized product synthesis (from mg to hg)
- Synthesis of APIs impurities
- Extraction & purification from complex matrices
- Conjugation: PEG, biotin, biomolecules & probes

Discovery & Launch

