# Pharmacokinetics: career opportunities in non-clinical development

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## Disclaimer

The opinions expressed in this presentation are the author's own and do not reflect the view of Dstl (Defence, Science and Technology Laboratory), the Ministry of Defence, or the government of the United Kingdom of Great Britain and Northern Ireland.

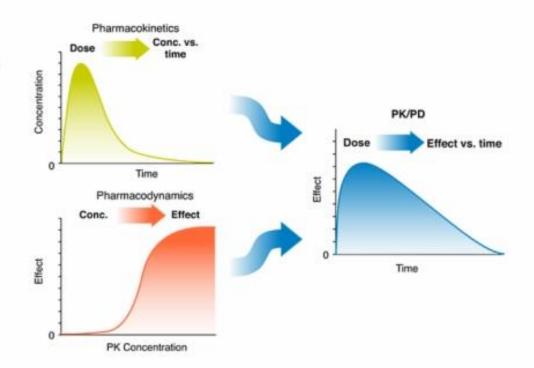
## Preclinical Pharmacokinetics

- ▶ In silico
- Prediction of major sites of metabolism
- Pharmacokinetic modelling
- Pharmacodynamic modelling
- Pharmacokinetic prediction using PBPK modelling

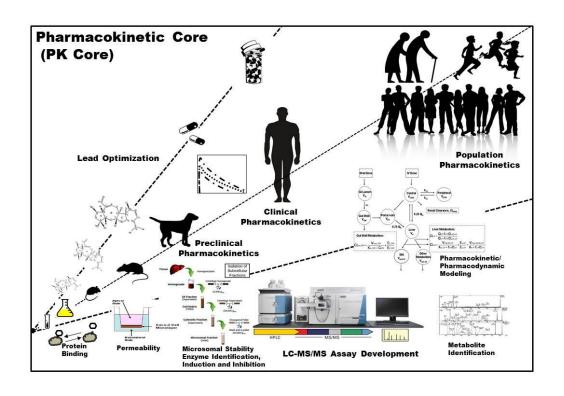
#### PK in Action I PK/PD Modeling

#### PK/PD Models Combine

PK/PD Relationship and Drug Exposure



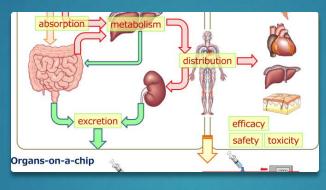
# Non-clinical Pharmacokinetics



#### Hit-To-Lead **Lead Optimization Candidate Selection Pre-Clinical** Candidate Selection Pre-Clinical Hit-To-Lead Lead Optimization + Metabolic clearance + Solubility + Hepatocyte clearance + CYP inhibition + Metabolite profiling + Metabolic stability + Reactive metabolites + CYP induction + Metabolite ID + PAMPA permeability + Time-dependent + CYP phenotyping + CYP inhibition-LCMS CYP inhibition + CYP inhibition-+ Metabolite ID-species + Bioanalytical / PKs florescence + CYP phenotype screen comparison + Dose formulation + Cell-based permeability + hERG inhibition development + Plasma protein binding + Mini-Ames + Brain protein binding + Chemical stability + Cytotoxity + Blood-plasma partitioning

# Do not take my word for it!







## Companies-CROs

https://www.cyprotex.com/adme
pk

https://www.admescope.com/

https://www.covance.com/servic es/analytical-services/drugmetabolism-andpharmacokinetic-services.html

#### Universities

https://www.capkr.manchester.ac.uk/

The Centre for Applied
Pharmacokinetic research (CAPKR) is
a consortium of academic
researchers at The University of
Manchester and nine industrial
pharmaceutical companies.

#### Companies-Modellers

https://www.certara.com/

Home of Phoenix™ PK/PD and/or Simcyp™ PBPK Simulator software platforms, used by top 100 Pharma companies and the US FDA and EMA.

## What do nonclinical pharmacokinetic studies require?

- ► YOU!
- Graduates in
- Analytical chemistry
- Biology
- Biochemistry
- Pharmacy
- Biotechnology
- Mathematics
- Physics

# So thankyou for listening!

Any Questions?