Understanding how compounds move into, through and out of the body, and what happens to them while they are in there, is vital for the safe and effective development of any chemical substance. This information is not just essential for creating new, more effective drugs to treat illness and disease, but also has applications across a range of industries.

The PKTK group combines world-leading expertise in two key areas:

**Pharmacokinetics (PK)** – what happens to a drug from the moment that it is administered up to the point it is completely eliminated from the body.

Pharmacokinetics can influence the efficacy and toxicity of therapies. The ability to predict the distribution of drugs is particularly relevant in scenarios such as drug-drug interactions, optimisation of novel formulations, bioequivalence studies, pharmacogenetics, and special populations.

**Toxicokinetics (TK)** – the rate at which a chemical enters the body and what happens to it once it is inside.

Understanding the absorption, distribution, metabolism and excretion processes of chemical compounds is critical to quantifying the potential for penetration and accumulation of compounds in tissues and/or organs, as well as for inhibition or induction of metabolism. Toxicokinetic studies can be carried out in a variety of fields, including food additives, pesticides and biocides, cosmetics, environmental pollutants, and occupational and industrial chemicals.

We can create a tailored programme of support for clients that integrates in silico and in vitro models to investigate compound absorption, distribution, metabolism and excretion at the molecular and cellular level, to support the development process or define follow-up studies.
Our team
Based at the University of Liverpool, Andrew Owen, Marco Siccardi and David Back are at the forefront of pharmacological research of anti-infective drugs. We have developed innovative experimental approaches to clarify compound distribution, through pharmacokinetic, pharmacogenetic, modelling and molecular-based studies involving national and international collaborations.

Our services
We provide a complete range of services from study design to protocol optimisation and interpretation of data.

We offer flexible modelling approaches to simulate a range of scenarios and can use both physiologically based and population based pharmacokinetic models to replicate these important biological processes.

We are committed to supporting our clients in the design and optimisation of clinical studies as well enhancing their understanding of drug distribution.

Why use the PKTK modelling group?
• **Highly specialised**: We are a unique group integrating state-of-the-art experimental and computational approaches.
• **Pioneering**: Our team has developed and validated several innovative experimental and clinical techniques to characterise compound distribution, predict pharmacokinetics and simulate clinical scenarios.
• **Collaborative**: We work with a diverse range of organisations from international research centres, regulatory agencies and foundations to SMEs and pharmaceutical companies.
• **Proven impact**: Our work has contributed to the clarification of compound distribution, informed several clinical trials and contributed to international guidelines.