Clinical pharmacology and Pharmacogenomics

Challenges

Patients respond highly variably to drug therapy. The reason may be pharmacokinetic and/or pharmacodynamic differences between patients, due to differences in metabolizing enzymes, transporters, ion channels, receptors and signaling mechanisms. Stage of development, organ disease (kidney, liver, heart, lungs), genetic variability, dietary and environmental factors all influence expression of several of the determinants of drug response. Challenges are to understand the underlying mechanisms for obtaining clinical effects of drug therapy and how to avoid adverse side effects. Therefore, our main research focus is to investigate the clinical effects and clinical toxicology of drug use and the role of genetic variants on pharmacokinetics and pharmacodynamics of drugs. The drugs we mainly focus on are cardiovascular drugs, anticancer drugs, anti-infective drugs and narcotic drugs.

Projects

- DNA and RNA variation in genes determining pharmacological activity of drugs
- Pharmacokinetics and pharmacodynamics of methadone in renal failure
- The role of antiplatelet and anticoagulant drugs in bleeding complications
- Heart failure-induced changes in gene expression of the rat heart
- Methods for improved monitoring of anticancer drugs, antimicrobial drugs and toxic substances

Group leader

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