

# The **FUTURE** Initiative

Enabling the delivery of the right dose of the right drug, to the right patient at the right time

Precision medicine is an emerging approach for the treatment and prevention of disease that takes into account the individual characteristics of each patient. The tailoring of medical treatments to allow for variability in a person's genetic make-up will ultimately enable healthcare professionals and researchers to predict more accurately which treatment and prevention strategies for a particular disease will work better.

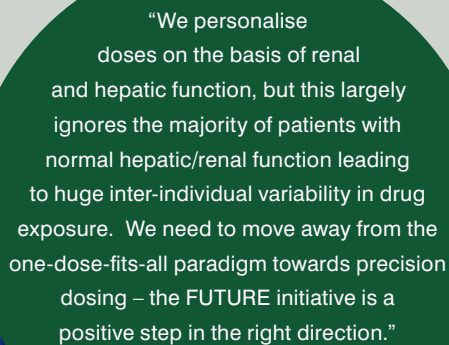
The FUTURE Initiative, led by Professor Sir Munir Pirmohamed and developed by a team of expert staff within our world renowned MRC Centre for Drug Safety Science, is an innovative project aimed at improving the benefit-risk profile of medicines through precision dosing and refining the drug development process to produce medicines that are effective and minimise the risk of dose limiting toxicity.

The project provides a 'one-stop-shop' for the recruitment of genotyped healthy volunteers for studies that assist in improving drug efficacy and safety and it can also be used for any volunteer study that requires defined genotypes. Our novel approach uses Illumina genome-wide array technology to genotype DNA from blood samples taken from over 3,000 healthy volunteers (from a range of ethnicities) and a large number of patients (renal impairment and hepatic insufficiency) for 850,000 polymorphisms. This provides easy and quick access to a large database of volunteer information.

The database can be interrogated to obtain a cohort of consented volunteers with a particular genotype who are available to take part in clinical trials and experimental medicine studies. Using volunteers with a known genotype enables an earlier understanding of the impact of any polymorphisms in drug metabolising enzymes and drug transporter genes on the pharmacokinetics and dosing requirements of developmental medicines. We can also identify individuals with variants in pharmacodynamic genes to gain a deeper understanding of on-target and off-target drug effects.

While our primary focus is to support the development and acceleration of genotype-guided drug metabolism and transporter studies, the volunteer database (with genome-wide coverage) also provides utility for other volunteer studies that require defined genotypes.





“We personalise doses on the basis of renal and hepatic function, but this largely ignores the majority of patients with normal hepatic/renal function leading to huge inter-individual variability in drug exposure. We need to move away from the one-dose-fits-all paradigm towards precision dosing – the FUTURE initiative is a positive step in the right direction.”

**Professor Sir Munir Pirmohamed**

## Open for collaboration

We work with a wide range of organisations to help achieve the following:

### Pharmaceutical/ biotechnology companies and Clinical Research Organisations

- A cost- and time-efficient way to identify and recruit volunteers with the most appropriate genetic background for their studies and trials.

### Regulators and drug development companies

- Improved information on doses, more accurate drug labels and better understanding of efficacy and safety issues.

### Healthcare organisations, NHS Hospital Trusts and patients

- A move away from one-dose-fits-all to precision dosing.

### Higher Education Institutions and Research Groups

- Access to a wide range of data and information to help inform research and achieve objectives.

If you are involved in the design, operation and commissioning of clinical studies and feel you could benefit from engaging with the FUTURE Initiative, please get in touch to discuss opportunities for collaboration.

## Benefits of engaging with us

- Cost and time-efficient way to undertake early phase studies in volunteers and patients as part of the drug development process, with major downstream impacts of better dosing and more informative drug labels.
  - Access to a large, secure, up-to-date database of over 3,000 volunteers genotyped for polymorphisms in drug metabolising and transporter genes, including an increasing number with associated medical history (renal impairment and hepatic insufficiency - to be expanded as the project progresses)
  - Close liaison with the experienced FUTURE Initiative team for managed access to volunteer details
  - Access to world-leading experts in pharmacogenomics and precision medicine to advise on study design
  - Access to an MHRA-accredited Clinical Research Unit at the Royal Liverpool Hospital for study implementation ([www.clinicalresearchliverpool.nhs.uk](http://www.clinicalresearchliverpool.nhs.uk))
  - The potential to develop pharmacokinetic models that can be used for predicting doses according to genotype

If you are interested in a genotype which does not already appear in our extensive database we will be happy to explore the possibility of conducting bespoke genotyping.

## Why work with us?

- **Award-winning:** We operate within the Department of Molecular and Clinical Pharmacology recently honoured with the Queen's Anniversary Prize, one of the most prestigious awards in higher education, for outstanding quality and innovative work.
- **World-renowned:** We are highly skilled and knowledgeable within the field of personalised medicine and drug safety, and work closely with experts in areas including HIV drug safety, paediatric pharmacology, epilepsy therapy, cancer pharmacology, regenerative medicine's safety, drug discovery, toxicology and drug safety, antimicrobial pharmacodynamics, and drug molecular nano-formulations.
- **Unique:** Our FUTURE Initiative project is the first of its kind in the UK and our innovative approach puts us at the forefront of developments.
- **Impactful:** We carry out internationally significant research that breaks new ground and have an extensive record of peer-reviewed publications in high impact journals.

## Contact Us

### Future Initiative Team

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