

Increasing chances of clinical trial success with AI and precision medicine

Through the Hartree National Centre for Digital Innovation (HNCDI) programme, REPROCELL worked with the STFC Hartree® Centre and IBM to create a novel application capable of providing insights into precision medicine for clinical trial design.

Challenge

For every successful drug, nine others fail during clinical trials. Many promising drugs never reach the market because current trial designs are broad, resulting in failures when only a subset of patients respond positively. A variety of factors such as genetics, environment and behaviour can all impact patient response. What if we could understand these factors better and use this knowledge to target drug trials to patients who are more likely to respond positively to treatment? We can - this is known as precision medicine. REPROCELL aims to use precision medicine for drug development to identify individuals for clinical trials that are likely to respond well to specific drug candidates.

Approach

Our team worked with REPROCELL to create Pharmacology-AI, a novel application capable of providing essential insights for precision medicine. Access to IBM's auto-omics tool was provided, which allowed analysis of large datasets to identify the most suitable predictive models. Our team then built a bespoke AI platform with custom software to manage, further analyse and present understandable insights for industry users. Pharmacology-AI recognises clinical trial patient identifiers such as genetic, environmental or behavioural factors, and characterises the potential response for an individual to a specific drug candidate. With this insight, the development and design of effective clinical trials can be streamlined.

"Pharmacology-AI is unique in its ability to quickly reveal the genomic or clinical features driving drug response. We're excited to see what insights the platform can offer to clients developing early-stage precision medicine strategies."

Graeme Macluskie
REPROCELL Europe Ltd



Credit: Adobe Stock

Benefits

Combining precision medicine and AI allows the design, development and validation of life-saving treatments. By identifying those most likely to respond well in trials through precision medicine, many more drugs will make it to market and be accurately prescribed to those who will benefit. Pharmacology-AI has the potential to benefit the pharmaceutical industry by reducing costs associated with failed drug trials and advancing the development of more innovative digital technologies in the future.

At a glance

- Pharmacology-AI enables identification of patients more likely to respond well to specific drug candidates
- Potential to reduce the number of failed drug trials, saving time and investment for the pharmaceutical industry
- Improved clinical trial design through patient population insights as a result of Pharmacology-AI
- Combination of precision medicine and AI to allow the design, development and validation of life saving treatments

Who we are

The Hartree Centre was created by UK Government to help businesses and public sector organisations accelerate the adoption of high performance computing (HPC), big data analytics, artificial intelligence (AI) and quantum technologies. We play a key role in realising UK Government's Industrial Strategy by stimulating applied digital research and innovation, creating value for the organisations we work with and generating economic and societal impact for the UK. We are proud to be part of UK Research and Innovation.

What we do

- Boost productivity and innovation for industry
- Offer training and skills development
- Provide insights into future technologies
- Give tailored business development support
- Build bespoke small teams around your project

