

The first step in the journey from imprecise drug therapy to precision medicine - REPO4EU's Euro/Global Platform for Drug Repurposing

The consortium of REPO4EU ([Precision drug REPurPOsing For EUrope and the world](#)) is pleased to announce the launch of an ambitious joint initiative selected and granted almost €23M by the European Commission as part of the Horizon Europe Programme.

REPO4EU's ultimate goal is to build and grow an industry-level European online platform for validated precision drug repurposing with a global reach. This platform will operate as the go-to data hub for key information, training resources, matchmaking and cooperation in drug repurposing.

The platform will provide extensive expertise throughout the whole value chain in drug repurposing: from freedom-to-operate analysis to intellectual property protection and business development, health technology assessment, ethics and data governance considerations.

During the next 7 years, **28 partners** from **10 countries** (The Netherlands, Germany, Austria, Spain, Sweden, Romania, Belgium, Portugal, Switzerland and the United States) will join forces to make REPO4EU a reality and create a unique platform for drug repurposing, pooling stakeholders and expertise at a global stage to create a "made in Europe", fully-fledged infrastructure for drug repurposing.

Drug repurposing

But what exactly is drug repurposing? To answer this question, there is first a need to address the elephant in the room: to this day, we still rely on 19th century disease definitions – often named after specific organs, symptoms or even doctors –, when it has become painfully obvious that trying to compartmentalize the human body into small, completely isolated parts with no connection to one another is an extremely naïve endeavour.

The truth is that our disease definitions are no longer valid – and the end of medicine as we know it is quickly approaching.

Even though we have witnessed an exponential increase in the volume of drug discovery investments since the 80s, overall efficacy has stagnated in the pharmaceutical sector – there is currently no way of differentiating between patients who will benefit and those who will not, and unwanted side effects cannot be predicted reliably.

The reason? There is a conceptual problem in how we define diseases and, consequently, in the way we currently approach drug development. Most underlying disease mechanisms are not understood and are thus rather treated symptomatically in an imprecise manner.

Systems Medicine is organ-agnostic

This philosophy lies at the core of what we call systems medicine: the ambition to map the full network of human diseases – the so-called *diseasome* – to unravel the hidden connections between mechanistically similar diseases. In the *diseasome*, diseases appear in clusters, indicating a common genetic origin through shared risk genes. These clusters radically change what we call a disease: now, the underlying causal molecular mechanism becomes our disease definition.



It all comes down to a very simple thought: if we can understand the underlying mechanisms that govern a specific disease, surely, we can repurpose drugs for another disease that shares some of those common elements?

The answer is yes! Mechanism-based drug repurposing will revolutionize the way we approach drugs – it will help us find new uses for already registered drugs, increase precision and radically cut down on costs and time in the drug development process – jumping straight into clinical trials that are small, precise, innovatively designed and compliant with the highest safety and operational excellence standards.

Curing diseases with high precision

Chronic diseases are only chronic because we do not know how to cure them yet. REPO4EU's organ-agnostic approach will push drug repurposing to its full potential by mixing Big Data, Artificial Intelligence-driven bioinformatics and Network Science with advanced cheminformatics to redefine diseases in a mechanism-based manner and repurpose drugs beyond their original target.

REPO4EU will thereby unlock unprecedented breakthroughs in precision, efficacy and cost-effectiveness, de-risking drug repurposing and paving the way towards personalized therapies and ultimately, precision medicine.

A resource for researchers, companies, healthcare providers, payers, and patients

Whether you need to secure bioinformatics support for an unmet medical need, explore a registered compound or a specific mechanism; assess your freedom to operate, outline a patenting strategy or browse regulatory advice; liaise with a business partner, locate a clinical trial test site for phase I-III or craft a business plan... we have the experts and the experience to help you!

REXPO22 - The 1st International Conference on Drug Repurposing

REPO4EU will officially start this September, and what better way to kick things off than with a high-profile conference? We are delighted to present [REXPO22](#), the very first instalment in our REXPO series of international conferences on drug repurposing.

Networking has always been the prime focus of any scientific and business event and this one is both: high impact science and innovative business. Come join us September 2nd-3rd at Maastricht for two days of vibrant keynotes from world-renowned experts and busy discussion around the future of drug repurposing!

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