

Commentary: Werner Lanthaler

The data-driven autobahn to cures

Silicon Valley in the US has turned into a Silicon World at a staggering pace. It took less than 15 years from the first iPhone to reach a world full of smart devices that feel as if they have always been there. From listening to music, to ordering food, to checking up on our friends and family. Our daily lives have long turned into a steady stream of constantly sending and receiving data. Data has widely replaced money as a currency too. More and more people make a living not by selling steel, oil, or real estate, but by mining and analysing data. But data has one more trick up its sleeve: it can serve to make us healthier as well. To this end, the digitalisation of our daily lives, the 'internet of things,' has to become an 'internet of life.' In this article, I describe how Evotec is responding to this trend with an 'autobahn to cures.'

Today, 90% of all available therapeutics are only effective in 50% of patients. Medical research in the past has been so preoccupied with the search for efficacy that there has been little time or the means to extract meaning from inefficacy. In many cases, however, discovering a systematic inefficacy of a therapeutic approach is almost as, if not more, valuable than finding efficacy: it improves our understanding of the underlying disease biology and opens up new therapeutic doors for clearly defined patient populations that would otherwise have not responded to the conventional treatment regimen. The key to understanding the need for data-driven approaches is that we already have the technologies and also much of the raw data, to take the overall drug efficacy rate up to 70, 80, or even 90% simply by defining the patient populations more clearly. The answers to this lack of efficacy are hidden in the data, and we are determined to find them. In fact, at Evotec we have built our entire platform around this paradigm.

Data-driven approaches impact the diagnostics side of medicine, too. This, however, does not mean taking the focus away from the patient as an individual. On the contrary, in the future, medicine will be more personalised than it is today. But a visit to the doctor will have less to do with "does it hurt when you do this?" and more "let's take a look at your TP53 gene, TGF- β signalling, and DNA mismatch repair." Medical professionals will no longer rely solely on diagnosing their way back from a patient's symptoms. Instead, they will take into account multi-omics data at the start, in order to identify disease drivers and target a condition from its causes. Consequently, this will enable a doctor to engage with a patient on a more informed basis, allowing for better decision making through the entire healing process. This will also create multiple opportunities to monitor the efficacy of a treatment in real time. Thus, data-driven approaches will in many cases help to redefine health and disease as a continuum.

To deliver on the promise of data-driven personalised medicine, a drug discovery and development organisation of the future has to take account for this changing reality. This is why at Evotec we have taken a holistic approach

to drug discovery and development with an integrated R&D platform. This platform has several elements. The engine behind the R&D platform is our data generation and analytics activities, which generate disease-relevant data on an industrialised high-throughput multi-omics platform. This data is fully exploited using an advanced data analysis and prediction platform. The data-induced starting points for drug discovery are then translated into a fully modality-agnostic research and development R&D platform which includes capacities for generating cell and gene therapies, biologics and of course small molecule drugs. The gene therapy platform was founded in 2020, while the biologics platform dates from the acquisition of Just – Evotec Biologics in 2019. Evotec has also built up an industrialised induced pluripotent stem (iPS) cell platform, both for disease modelling and cell therapy approaches.

However, higher efficacy must not be traded for lower efficiency. Taking an unbiased approach to R&D does not have to contradict accelerated development or accessibility to these therapeutics. We call our approach an 'autobahn' because like the German highway after which it was named, the platform is the fastest and most direct way to translate early innovation into highly effective therapeutics. Importantly, our autobahn is also easily and universally accessible. Truly personalised medicine will only ever become a reality if it is scalable to the global level without being unreasonably burdensome to the health systems. Modality agnosticism has to stretch all the way through the value chain to achieve flexible and scalable cGMP production processes of the most effective therapies. The biggest efficiency gain, however, comes from the efficacy itself. Turning the situation of a patient from a chronic state with permanent but ineffective medical attention into one that is effectively treatable is just about the biggest achievement there is – both to the patient and to society.

Our business model

Within Evotec, all of these activities are coming together into a business model with our co-owned equity and royalty platforms. On these platforms, we leverage our own R&D as well as complementary technologies and partnerships to generate long-term optionality for the company in the mid- to long-term future to become the sharing economy of drug discovery and development.

Today, we are just at the beginning of this journey. Our data-driven R&D autobahn to cures will not only take us to the medicines of the future, but it will ultimately lead into the future of medicine.

This commentary was written by Werner Lanthaler, Chief Executive Officer of Evotec SE.