NTxBio
A New Paradigm in Drug Development

Despite a raft of new biological methods sweeping over pharmaceutical R&D, developing a new class of prescription medicine costs drug makers a whopping $2.6 billion today. Time-consuming trial failures, limitations in reproducibility, and reliable access to materials from the discovery phase through clinical trials, continue to plague biotech and pharmaceutical research and manufacturing companies and result in staggering drug invention costs.

Setting a new benchmark in drug development with their novel approach is NTxBio, a Santa Fe-based biomanufacturing startup company that is turning heads with their bioinformatics and biomanufacturing platform. "Our platform is the first of its kind that enables high-throughput screenings including prediction, identification, and production of biological materials in predefined qualities," begins Dr. Alexander Koglin, co-founder, NTxBio. Compared to traditional fermentation-based production, NTxBio currently stands out in the industry with its state-of-the-art and patented in vitro methods, which significantly reduce the cost and space footprints, offers high flexibility, and accelerates the time frame required to screen new biological compounds. "Our technology capitalizes on natural products and mines genomic data using bioinformatic tools to predict and select desired traits of bioactive molecules. Our initial focus is on molecules to counter infections, which present a public health threat," adds Dr. Michael Humbert, co-founder, NTxBio.

It all started when Koglin and Humbert, both biotech veterans, were working on a genome discovery engine for high-throughput identification of enzymatic machineries that produce previously undescribed bioactive small molecules. "This is when we discovered a chemically novel class of compounds with broad range anti-bacterial activity," mentions Koglin. The company built on their work and to improve the quality of the discovery pipeline, debunked fermentation-based production and invented the first industrial thermostable recombinant cell-free system that delivers high specificity, reliability, and efficiency while being scalable and reducing manufacturing footprint in a continuous-flow setting.

To throw better light, NTxBio's platform allows rapid screenings of available genetic data to identify encoded enzymes involved in the biosynthesis of metabolites. These metabolites are then analyzed for drug leads. Truly, the platform is a breakthrough to quicken characterization of novel materials, accelerating preclinical drug discovery efforts for any medically relevant compound. Today, the company's pipeline of novel bioactive compounds is continuously expanding by cutting the time effort for basic development from an average of 5-6 years to below 18 months, and by reducing necessary investments from $40-45Mn by at least 40 percent per compound.

What's further remarkable is their evaluation of a novel class of compounds for multiple and extended drug-resistant Mycobacterium tuberculosis and identification of a new class of anti-TB leads. An estimated 2.3 billion people are infected with TB, yet there are no new and effective TB drugs. Currently, NTxBio is analyzing sequenced genomes for potential anti-TB candidates and their initial development portfolio for antibacterials consist 75 new chemical entities to be explored in a currently negotiated co-development.

"To demonstrate the strength of our system, we develop the only technology that produces ultra-pure vaccines fast enough to be fully deployable in areas that are hit by medical crises, without the need of specialized storage conditions and with response times of hours," says Koglin.

The market for antibacterials is estimated at $41b annual revenue worldwide while the number of competing drugs is declining. Amidst inherent shortcomings, NTxBio's cell-free production is clearly the next phase in drug development. In partnership with CROs, NTxBio's work is expanded toward compound validation and full preclinical trials. "In the coming days, we are looking to innovate and fully implement our platform technology, and seek partnerships for pharmaceutical companies looking to advance their drug discovery and production capabilities," affirms Anthony Chilton, CSO, NTxBio. Ph