Tech Mahindra

DISCOVERY RESEARCH PLATFORM

WHITEPAPER

Connected World.
Connected Experiences.

INTRODUCTION

The Pharmaceutical industry is witnessing path-breaking innovation in the form of Immunotherapy, Cell and Gene therapies for treating unmet medical needs. Biologics or Large molecules, primarily the Monoclonal Antibodies(mAbs), Antibody-Drug Conjugate (ADC), Bi-specific Antibodies, form the main stream therapeutics as they appear promising and continue to gain approvals. Global Pharma majors are committed to bring novel therapies for treating chronic life-threatening disorders like Cancer, Auto-immune disorders, Rare diseases etc. They have a rich pipeline of biotherapeutics in various phase of drug discovery and development.

The drug discovery of advanced therapeutics is extremely complicated, unlike that of small molecules which is largely standardized. It involves distinct processes and workflows. Each function or department in the company like Medicinal Chemistry, Biochemistry, Structural Biology, Molecular Biology, Protein Sciences, Antibody Engineering, Drug Metabolism and Pharmacokinetics, Pharmacology, Toxicology etc. have a specific role to play in the process of discovering new chemical entities or new biological entities. A proper handshake between each of them is required to translate the findings at each level. Checks and balances at every stage ensures that the right molecules meeting the target profile advance to the next level. Data generated would also suggest if any modifications/alterations needs to be done to attain the desired structure activity relationship, and therapeutic endpoints. As part of this laborious process, massive amount of data is generated and ability to manage and utilize it becomes crucial in discovering and developing new drugs.

DATA SILOS

Data generated during the drug discovery and development exists in disparate systems and lacks interconnectivity. This becomes a hurdle during cross-collaboration with internal and external parties. Teams work independently, without inference of data from other functions, which hampers the quality of the data generated. Valuable time is lost in locating, accessing, and analyzing the required data as the data is not FAIR- Findable, Accessible, Interoperable, and Reusable. There is a dire need to integrate, analyze and interpret trends across data silos and disciplines.

Most of the pharmaceutical companies employ homegrown, custom-developed applications to handle various tasks. Most of them are developed using outdated technologies and fail to cater to future needs. These legacy applications generally are independently designed to address the needs of specific groups and have overlapping features. Researchers/users have to duplicate the data entry and have to toggle across various applications to fetch the required data leading to loss of valuable time of the users that could have been used for high-value tasks.

NEED FOR A UNIFIED PLATFORM

Pharmaceutical industry has entered digital era of drug development with the use of new age technologies like Artificial Intelligence, Machine Learning, Blockchain, Robotic Process Automation etc. across the R&D process to simplify, streamline and fasten the drug development process with high degree of success rates. Though new age technologies are creating huge impact, need for a holistic system integrating with various applications, streamlining the end-to-end processes and providing a unified view for superior decision management exists.

Molecule registration system, Laboratory Information Management System (LIMS), Electronic Lab Notebook (ELN), Inventory management system, Scientific Data Management, Request Management System, Lab Supply Management, Vivarium management, Master data management etc. perform their respective functions. A unified "Discovery Research Platform" built with modern technologies can interface with core systems, maximize user engagement, and enable scientists to seamlessly view all the needed information. It can relate data across the R&D value chain from drug discovery and non-clinical development to clinical trials and act as a single source of truth of the information for anyone to access.

Various features like intelligent automation can eliminate manual, labor-intensive steps and repetitive data entry. The decision hub can assist in knowledge-based actions; a common collaboration space can enhance communication between the different groups, reports, and dashboards that provide up to date information, alerts, and notifications which can help in tracking the activities and provide end to end visibility of tasks and increase efficiency. Process orchestration can rejuvenate existing systems and secure data sharing can improve transparency. This proven and differentiated approach has found to be very beneficial and was successful in realizing the true value of the unified system.

CONCLUSION

As new advancements are showing up in science, technology is also witnessing the next wave. Advanced therapeutics coupled with next generation technologies can fasten the drug discovery, accelerate science and reduce the time to market.

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