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ASIA EDITION

AI & Biotech- Transforming each other!

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AI in biotechnology can not only speed up drug discovery, but accurately diagnose medical conditions



Rapid developments are taking place across the fields of artificial intelligence (AI) and biotechnology, and applications arising from the convergence of these two fields are likely to offer immense opportunities in the years to come.

For instance, AI in biotechnology can speed up drug discovery, deliver analytics, accurately diagnose medical conditions, edit gene structures, and develop personalised medicine, to name a few.

Just a few weeks ago, Google Cloud unveiled two groundbreaking AI-driven solutions for the life sciences industry, designed to expedite the process of drug discovery and enhance precision medicine for a wide range of stakeholders, including pharmaceutical firms, biotech companies, and public sector organisations.

Particularly for drug discovery and development, AI can analyse large amounts of data to identify patterns and relationships that may not be apparent to humans. This can be used to help identify new drugs and drug targets, as well as to optimise existing therapies.

While North America holds the largest share of the global drug discovery market, multiple new players are entering this space, carrying new AI-based tools. Taking one example, Insilico Medicine, a US and Hong Kong-based startup, is combining two rapidly developing technologies, i.e. quantum computing and generative AI, to explore lead candidate discovery in drug development and successfully demonstrate the potential advantages of quantum generative adversarial networks in generative chemistry.

On the other hand, researchers at the University of Toronto used an AI-powered protein structure database to uncover a novel treatment pathway for liver cancer. Apparently, the creation of the potential drug was accomplished in just 30 days!

Likewise, Indian startup Molecule AI, based in New Delhi, is developing an innovative AI-based software platform for drug discovery, with a strong focus on data engineering and generative AI models. Their AI-driven Molecule GEN platform provides modules for drug-target screening, de-novo molecule design, investigation of drug pathways, and drug toxicity/ side effect evaluation. Molecule AI researchers are currently working on drug discovery for neurodegenerative diseases, drug

repurposing for optic diseases and drug optimisation and side-effect mitigation for pain relief.

The presence of such players in India is of utmost significance since the country has not yet made its mark in the field of drug discovery, as compared to its global counterparts in the USA, China or Japan.

Backing up with full support, the Indian Council of Medical Research (ICMR) has recently released ethical guidelines for applying AI in biomedical research and healthcare to provide a framework for ethical decision-making in medical AI during the development, deployment, and adoption of AI-based solutions.

In India, AI and biotechnology are both rapidly growing fields, to the extent that a twin play of digital economy and bio-economy is anticipated to achieve India's economy target of $30 trillion by 2047.

While the convergence of AI and biotechnology will offer new opportunities, new risks will also run in parallel. Understanding the current and emerging risks and rewards at the intersection of AI and biotechnology is crucial for the entire ecosystem because combining AI and biotech allows different players in the industry to share information and work together, irrespective of geographical restrictions, with a single, stronger purpose.

Dr Manbeena Chawla

(manbeena.chawla@mmactiv.com)