

AI Tools Life Sciences Companies Are Using

May 1, 2026 | Opinion | By Ayesha Siddiqui

Artificial Intelligence (AI) has steadily permeated every aspect of drug discovery and the life sciences industry. From discovering new molecules and accelerating clinical research to supporting Contract Development and Manufacturing Organisation (CDMOs) and improving day-to-day operations, AI is transforming how work gets done across the value chain. Let's explore some of the AI tools being leveraged by the life sciences companies.



AI is now firmly embedded across the pharmaceutical value chain, from drug discovery to clinical research and manufacturing. Around 80 per cent of pharmaceutical and life sciences professionals use AI in drug discovery, and 79 per cent of pharmaceutical executives, according to PwC, expect intelligent automation to have a significant impact on the industry over the next five years. Beyond core functions, AI is also being used across organisations to improve productivity and reduce manual work.

“We use Microsoft Copilot across our office productivity tools, and have also built internal AI agents on an enterprise agentic workflow platform (Dify.ai). Across our commercial organisation and corporate functions—including finance, legal, human resources, and IT. AI is streamlining routine work and freeing our teams to focus on higher-value activities. From contract review and financial reporting to recruitment and employee support, AI reduces manual effort while improving the quality and speed of our work,” said a spokesperson from Zai Lab.

AI for drug discovery

AI is widely used across the drug discovery process, from literature search and target identification to molecule design and validation. In day-to-day R&D, it is already being used to improve speed and efficiency. “In daily R&D operations, we leverage AI to make our processes more efficient, including the use of intelligent search to quickly find information across scientific literature and regulatory materials, assisting our teams with medical and scientific writing, and streamlining document review for quality and compliance workflows,” said a spokesperson from Zai Lab.

One of the key tools being used is AlphaFold 3, developed by Isomorphic Labs in partnership with Google DeepMind. The model can predict the structures and interactions of molecules and is being used by large pharmaceutical companies to discover small molecules for undisclosed targets. The broader AlphaFold ecosystem has also scaled rapidly. The freely available AlphaFold Protein Database has been used by over 3 million researchers across more than 190 countries, including over 1 million users in low- and middle-income countries. The impact of this work was recognised in 2024 with the Nobel Prize

in Chemistry.

Another major player in this space is XtalPi, which builds AI-driven and automated platforms for drug discovery. Its systems are used by major pharmaceutical companies and smaller biotech firms. The company works with 80+ partners across academia, pharma, and biotech. Its CSP platform has shown industry-leading accuracy in a blind test by Pfizer, contributing to growth and supporting collaborations such as work linked to the development of Paxlovid during COVID-19.

Insilico Medicine's AI platform is also widely used by pharmaceutical companies, including Eli Lilly, Menarini Group, Qilu Pharmaceutical, and Servier. Its Pharma.AI platform, including PandaOmics and Chemistry42, is used to accelerate preclinical candidate identification for diseases such as IPF and cancer, often reducing timelines to under 18 months.

Some companies such as Zai Lab are also developing their own tools for R&D, using custom-designed AI built for specific purposes.

Nanyang Biologics is taking a similar approach. Built as an AI-first drug discovery company, AI sits at the core of its day-to-day compound discovery processes.

"We built the Vecura compound discovery platform first to support our own internal discovery operations. As our work expanded across screening, docking, protein structure prediction, bioactivity scoring, ADMET profiling, and molecular design, we needed a practical system that could integrate multiple AI tools into a single workflow, reduce manual handoffs, and help our team move faster from hypothesis to candidate prioritization," said **Duy Trieu, Director of Engineering, Nanyang Biologics**.

As the platform scaled internally, it was extended to external users. The company is currently working with 10–20 pilot partners.

Clinical Research

AI is also being applied to clinical research, where timelines, documentation, and compliance processes create delays and operational complexity. Companies are building AI-driven platforms to reduce manual work and improve trial execution.

Medable is developing agentic AI systems designed for clinical trials. Its Agent Studio automates repetitive, compliance-heavy tasks such as document validation and trial file management, reducing manual workload. These systems integrate with existing clinical tools and maintain audit trails and human oversight. Its Clinical Monitoring and TMF agents can improve operational efficiency by 70–80 per cent. Medable's eCOA platform captures patient data remotely and on-site, with AI used to speed up study build and translation. Its AI PI Summary Agent monitors participant data and surfaces insights for investigators. The platform reports over 90 per cent participant adherence, a 43 per cent reduction in translation timelines, and faster trial setup. It has been deployed in nearly 400 trials across 70 countries and 120 languages, covering more than one million patients.

Owkin, a French-American artificial intelligence and biotech company that aims to identify new treatments, optimise clinical trials and develop AI diagnostics, is applying AI to clinical trials and biomarker discovery. Its tools analyse pathology data to identify cell types, gene expression, and biomarkers, trained on datasets from over 800 hospitals. Eight of the top 10 global pharmaceutical companies use its systems.

ICON plc, an Irish headquartered multinational healthcare intelligence and clinical research organisation, is also integrating AI into trial operations. Its Meridian platform brings together data from multiple systems into a single interface, highlighting site-level risks and reducing administrative burden.

"Meridian is a next-generation monitoring environment designed specifically for CRAs and operational teams. Meridian brings together information from multiple systems into a single workspace, surfaces protocol guidance in context, and highlights emerging site-level risk signals. This reduces administrative burden and helps experienced monitors focus on oversight, quality, and proactive intervention rather than system navigation," said **Tony Clarke, Senior Vice President, Enterprise AI at ICON**.

These capabilities are supported by Orbis, ICON's agentic AI platform, which connects workflows across trial initiation, execution, and closeout, enabling coordination across systems under human oversight.

Medidata, part of Dassault Systèmes, provides cloud platforms to 2,200+ life sciences organisations, including pharma, biotech, medtech, and CROs. Its offerings include Medidata Rave (Electronic Data Capture), Clinical Data Studio (AI-driven data management), patient tools like myMedidata and eCOA (electronic clinical outcome assessments), and analytics such as synthetic control arms and trial feasibility. Today, 18 of the world's top 25 pharmaceutical companies use Medidata.

Manufacturing

AI is being used in pharmaceutical manufacturing to improve efficiency, quality, and compliance across production and supply chains.

Aizon provides tools for anomaly detection, batch optimisation, and performance management. Its platforms support batch execution, real-time monitoring, and yield optimisation, and are used by CDMOs, large biopharma, and smaller biotech firms.

Veeva Systems supports quality and regulatory workflows through products like Vault QMS, Vault LIMS, Batch Release, and Vault RIM, helping streamline processes from development to distribution. The company serves over 1,500 customers across pharma and biotech.

Aragen Life Sciences, a leading partner offering R&D and Manufacturing solutions to the global life sciences industries from India is also embedding AI across its CRDMO value chain through a structured framework aligned with business outcomes. Its applications include an AI-powered lead optimisation platform to predict pharmacokinetic properties and accelerate compound development, and Golden Batch Analytics using machine learning to improve yield, quality, and production efficiency.

“The company also uses an AI-enabled sourcing platform for supplier discovery and pricing, a GenAI-powered electronic lab notebook to structure and analyse experimental data, a literature discovery engine to extract insights from global research, and an AI-driven proposal management system to speed up RFI and RFP responses,” said **Swapnil Wadhwa, Chief Digital Officer at Aragen Life Sciences.**

These are just a few of the tools used by life sciences companies today. A growing number of startups are emerging to address bottlenecks across the pharma value chain, and estimates suggest AI could save the industry over \$50 billion annually in R&D costs. Now it's a wait-and-watch on how far and how fast this scales.

Ayesha Siddiqui