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AI in the cloud: The dawn of a new era for pharma and life sciences

AI and generative AI are helping revolutionize operations, from drug discovery and trials to supply chain, production, and workplace productivity.

CIO

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Many of today's pharmaceutical and life sciences organizations are poised to help address the world's most urgent healthcare needs. And thanks to recent innovations in analytics and artificial intelligence (AI), they are on the cusp of achieving significant breakthroughs.

But their success relies on gathering meaningful insights from vast and growing volumes of data, all while adhering to strict compliance regulations. It's a task companies have struggled with for years, held back by burdensome procedures, poor coordination, and outdated processes. Outdated technology has a negative impact on nearly every aspect of the business, from drug discovery and trials to supply chain, production, and workplace productivity.

But there's good news: Experienced cloud-based partners can help pharma companies unlock the full potential of their data. Cutting-edge AI tools, for example, can help organizations obtain deeper insights into the genetic characteristics of drug proteins. As a result, they can speed drug discovery and trials, lower costs and, ultimately, deliver better medical outcomes for patients.

Profiting from the cloud

With the power of the cloud behind them, AI algorithms can rapidly combine and analyze high-volume data from research studies, labs, patient records, and other sources. They can then use that data to produce complex medical simulations in minutes — work that might take days or weeks to perform on-premises.

These capabilities are also more affordable than you might think. By moving to the Amazon Web Services (AWS) cloud, pharma companies can lower compute and storage costs. Scaling and adding or changing services is easy, in turn providing the flexibility to bring complex competitive solutions to market.

The AWS and ZS partnership combines the power of tech and AI with pharma and healthcare industry expertise for solutions that deliver real results. Expert partners help you focus on putting the right data, people, and AWS technologies in the right place at the right time, all with the goal of tangible results — whether that's increasing revenue, improving efficiency, or enhancing customer or patient outcomes.

Streamlining clinical trials

One area where pharma companies can particularly benefit from the ZS and AWS partnership is drug development. Although results vary widely among pharmaceutical firms, a recent evaluation found the median cost of drug development to be $708 million, with some companies spending well over $1 billion. The largest part of expenses goes to clinical trials, which over time have become lengthier and more complex.

ZS can help companies leverage AI to reduce costs, speed up trials, and improve outcomes. It starts with helping companies find the information they need faster. For example, when a biotech company was struggling to extract useful information from more than three million documents it held across systems, ZS created a universal search platform and virtual assistant. The chatbot answered questions with 85% accuracy, vastly reducing the time employees spent on information retrieval. Another company reduced the time it took to extract relevant information from 25,000 medical article abstracts from 260 days to just two.

AI can also help companies identify the right patients for clinical trials, a lengthy process that involves evaluating demographics, medical history, test results, comorbidities, and genetic profiles. AI can rapidly comb through all this data to pinpoint patients who meet eligibility requirements. In addition, it improves communication with patients as trials proceed, predicting who is likely to drop out and alerting managers to help them prevent that outcome.

Revolutionizing drug discovery

Deep learning and generative AI models are opening the door to a new world where researchers can glimpse the intricate dance between genes, diseases, and proteins, helping them design therapies that sync with their rhythms. For example, three researchers won the 2024 Nobel Prize in chemistry by using generative AI to achieve the "almost impossible feat of building entirely new kinds of proteins" which are the basis of all biological processes and the drugs that regulate them.

Scientists at ZS have been working for over a decade to extend knowledge of the body's interconnected systems, building biological maps to help researchers better comprehend single-cell data. As the research progresses, the maps will scale to unlock further insights, laying the groundwork for the development of new cures.

Improving efficiency, security, and transparency

In addition to speeding trials and drug discovery, AI can improve productivity and strengthen coordination among teams throughout the organization.

Executives are particularly interested in applying it to supply chains, where they must protect margins amid periodic irregularities and geopolitical threats. In a recent ZS survey, more than 85% of biopharma executives said they are investing in data, AI, and digital tools to build supply chain resiliency.

AI solutions can quickly alert managers to impending ingredient and product shortages and suggest solutions. Algorithms can then create new pathways pre-embedded with automated security and compliance protocols to protect vital company data.

The bottom line

As impressive as today's AI's achievements are, the technology is just beginning to unlock the secrets of human biology, disease progression, and drug therapies. Working with experts at ZS, pharma companies will be contributing to the advancement of science as they develop faster processes and targeted treatments offering new hope to patients.

Click here to learn more about genAI insights, technology, and applications from ZS.