



Data Solutions

HOW BENEVOLENTAI USES SPRINGER NATURE'S JOURNAL CONTENT AND TEXT AND DATA MINING API TO ASSIST ITS ARTIFICIAL INTELLIGENCE-ASSISTED DRUG DISCOVERY PROCESS

A Text and Data Mining Case Study

ADVANCING
DISCOVERY

BenevolentAI is a leading, clinical-stage AI-enabled drug discovery company. Through the combined capabilities of its AI platform, scientific expertise, and wet-lab facilities, BenevolentAI is well-positioned to deliver novel drug candidates with a higher probability of clinical success than those developed using traditional methods. BenevolentAI has a consistently proven track record of scientifically validated discoveries. The BenevolentAI Platform™ powers a growing in-house pipeline of over 20 drug programmes, spanning from target discovery to clinical studies, and it maintains successful collaborations with AstraZeneca, as well as leading research and charitable institutions. BenevolentAI is headquartered in London, with a research facility in Cambridge (UK) and a further office in New York.

Mark Davies serves as BenevolentAI's Senior Vice President of Informatics and Data and is responsible for ensuring BenevolentAI has the right data in the right format to create the foundation that enables the drug discovery capabilities that its platform delivers. This includes patent data, data from partners, and STM journal content from leading publishers.

By bringing together information from tens of millions of published research papers, patents, clinical trials, and other key sources into its platform, BenevolentAI's researchers and scientists have a comprehensive data set—supported by underlying tools and technologies—from which they can ask questions to validate hypotheses and quickly identify new targets and design drugs that might be useful for treating diseases.

At the start of the global pandemic, BenevolentAI's research team identified Eli Lilly's baricitinib as a repurposing drug candidate for COVID-19. It brought this information to Eli Lilly, and following clinical trials, baricitinib was authorized for emergency use by the FDA in combination with remdesivir for ventilated COVID-19 patients. The COV-Barrier trial showed baricitinib reduced deaths in hospitalised patients by 38%, and data from the UK RECOVERY trial also reaffirmed the life-saving benefits of baricitinib. This work to identify baricitinib as a potentially effective treatment for COVID-19 took BenevolentAI just two days.

BenevolentAI is unique in the industry because of its AI-enabled, hypothesis-driven approach to drug discovery that allows it to succeed—or fail—faster and earlier in the process than traditional drug discovery organizations. This is because it is able to zero in on ideal drug targets at the outset of the process, avoiding bad investments and later stage failures.

The Springer Nature Connection

Since 2018, BenevolentAI has partnered with Springer Nature, one of the largest research publishers in the world, with a vast amount of highly sought out peer-reviewed research articles in industry-leading journals. Utilizing Springer Nature's text and data mining (TDM) API, BenevolentAI ingests its subscribed Springer Nature journal content into its platform in a consistent, machine-readable, industry-standard format, which is key according to Davies.

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“Our team wants access to the highest quality scientific literature and that sets the expectation that we'll work to ensure that we have access to the content that Springer Nature publishes,” explained Davies. “So that really drives why we engaged with Springer Nature in the first place, but in terms of continuing that relationship that we started in 2018, we quickly recognized that Springer Nature has put in place the right supporting technical and data delivery capabilities that allow us to easily work with its content. It flows immediately into our existing pipeline and allows us to rapidly create the proprietary view that supports our discovery process.”

Reflecting on his company's work to identify a drug candidate for COVID-19 patients, Davies noted: “What really allowed our discovery early in the pandemic was having data at our researchers' fingertips -- access to our knowledge, our system -- which had a very complete view of biological mechanisms, disease systems, and how these can potentially be perturbed, understood, and, ultimately lead to the development of a potential therapeutic that could elicit the desired responses.”

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“We want to reduce the time it takes to deliver novel therapy interventions to patients and improve the lives of those people affected by disease,” concluded Davies. “Our teams need access to the right data at the right time. This starts at the very beginning with text and data mining, the output from publishers, and how this is being rapidly surfaced and delivered to the researchers that can understand this is absolutely critical.

We'll continue working with publishers like Springer Nature and employing natural language processing (NLP) approaches on top of the content ensures that we have this view that contributes to the knowledge foundation, enabling hypothesis generation and validation. This is foundational for us and the industry as a whole, and we look forward to doing more of this going forward.”

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Senior Vice President of
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Text and Data Mining

Text and Data Mining (TDM) is the automated process of selecting and analyzing large amounts of text or data resources in a way that can provide valuable information needed for studies and research projects. This includes purposes such as searching for content, finding patterns, discovering relationships, semantic analysis, and learning how content relates to ideas and needs.

To find out more about Data Solutions and how TDM could work for your organization visit :

springernature.com/librarians/TDM

or email tdm@springernature.com

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