

CUSTOMER STORY



How Javelin is using DrugBank data to revolutionize tissue engineering



ABOUT JAVELIN BIOTECH

Javelin is an early-stage startup that is combining tissue engineering and computational biology to accelerate drug discovery. By using machine learning and data, they accelerate the lead optimization phase of drug discovery from two years to one year.

WEBSITE

javelinbiotech.com

SOLUTION

Dataset downloads

USE CASE

Drug Discovery



THE CHALLENGE

About 50-100 million animals ranging from mice to non-human primates are used in pharmaceutical experimentation every year. These animals serve as models to study disease and help pharmaceutical companies develop and test potential new medicines and therapies.

Not only does this practice cost a great deal of money and require a lot of time, but there are concerns about the actual relevance of the results to humans.

Even though there remains a failure rate of nearly 90 percent of drugs that make it to clinical trial, the industry still relies on animal testing as a vital part of drug discovery.

This is mostly because studies in living animals are currently one of the only ways to understand whether a drug works the same way inside a body as it does in the artificial environment of a laboratory.



Javelin knew that there had to be a better way, so they set out to build predictive platforms combining human tissue chips and AI algorithms that could provide better clinical insights for pharmaceutical companies.

The goal was to deliver results faster and cheaper than animal studies and reduce the reliance on animal studies for drug optimization.

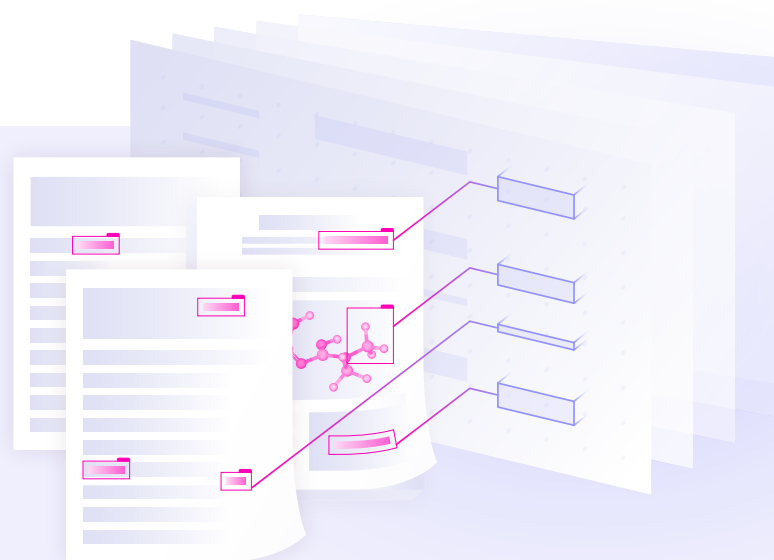
In their journey to develop their platform, they came up against a number of roadblocks. The largest and most challenging proved to be their need for easily accessible, accurate, curated drug data that included vital information such as FDA labels. Without the highest quality data that could be readily integrated into their technology, they would never be able to accurately train their machine learning models. [Q](#)



THE SOLUTION

Javelin has combined its team's deep understanding of human tissue models with data analytics to help speed up more accurate insights into how drugs will behave in humans. Their platform is designed for complex tissue constructs using human primary cells and stem cells to predict drug-biology interaction at the organ level. These models make it possible for researchers to analyze and assess new drug interactions leading to valuable takeaways.

Javelin turned to DrugBank for the high-quality drug data they needed to create this trustworthy platform. Specifically, they relied on data that included enzymes, targets, transporters, and interactions to develop and train their machine learning models.



Now, with DrugBank's data integrated into their computational workflow they can translate *in vitro* data into accurate pre-clinical *in vivo* predictions.

DrugBank's data has also helped Javelin determine which machine learning models to use and has improved the speed and accuracy of each model once it has been selected. These models help Javelin's clients efficiently optimize their drug candidates, which is an important function of their platform. [Q](#)




THE RESULTS

As a result of integrating DrugBank data, Javelin is now able to equip pharmaceutical companies with the tools they need to quickly identify promising drug leads as well as identify ones that are likely to fail earlier on. This makes it possible for patients around the world to get potentially life-saving treatments faster and cheaper.

By using machine learning and reliable drug data, Javelin has been able to accelerate the lead optimization phase of drug discovery from two years to one year.

By taking advantage of DrugBank's synonyms list and external identifiers, Javelin has been able to use automation to map drug information across multiple external databases.

This has saved them weeks of manual work and allowed them to focus on building out their platform.

Now, not only do they have an extremely reliable platform that can speed up more accurate drug development and drastically reduce the time spent in lead optimization, their work will dramatically reduce the need for animal testing across the pharmaceutical industry. 

“We’ve been able to build faster and more accurate models using DrugBank data.”

— Jason Sherfey, *Director of Computational Biology at Javelin Biotech*



Discover more

Request a data sample today!

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