

# IBM Watson for Drug Discovery

## Accelerating discovery and insight generation

IBM Watson for Drug Discovery helps life science researchers to discover new drug targets and alternative drug indications across multiple therapeutic areas by allowing them to quickly understand what is known and to generate new hypotheses from hidden patterns.

IBM Watson for Drug Discovery is a cloud-based, cognitive solution that provides dynamic visualizations and ranked predictions backed by passage-level evidence drawn from a wide set of heterogeneous public and private content such as medical journal articles, textbooks, and patents.



## Value for life sciences



### Increase research and development efficiency

Drive more informed selection of potential drug candidates and optimized portfolio management, which can lead to better decision making and potential cost savings



### Accelerate insight generation

Identify hidden patterns and connections as well as develop evidence-based predictive models from diverse, unstructured data sources at a scale and speed that is beyond what humans can do today



### Increase researcher productivity

Accelerate the investigation and identification of novel patterns and connections across domains and therapeutic areas, creating potential for reduced time to market

## Core capabilities



**Aggregated, diverse content**  
Synthesizes massive public and published datasets and has the ability to ingest private content (in a private instance)



**Domain understanding**  
Knowledge of the language of life sciences, key entities (i.e., genes, proteins, drugs, diseases, etc.) and the relationships between them



**Cognitive technology**  
Leverages machine learning and natural language processing to detect connections and patterns that humans may not necessarily see

Applies predictive analytics to accelerate hypothesis generation and prioritization



**Agility/speed**  
Generates holistic network maps in real time to foster innovative research insights

Watson is regularly updated and can quickly evaluate millions of pages of text through machine curation

Adaptive and agile architecture that can change rapidly and iteratively



**Scalability**  
Combines infrastructure, big data, and machine learning at enterprise scale

## Content

### Public data

Public and licensed content, including but not limited to:

**25M+**

Medline® abstracts

**35,000+**

distinct genes

**700,000+**

scientific journal articles

**95,000+**

distinct conditions

**4M+**

patents

**20,000+**

distinct drugs

### Private data

Private, confidential data and knowledge sources, such as:

— Proprietary compounds

— Electronic lab notes

— Private Ontologies

— Clinical trial data

— Toxicology reports

— Other proprietary data

## Questions we solve for

### Target identification & lead discovery

- What is a set of targets for a given disease area?
- Which compounds may be good for which targets?
- Which biomarkers can potentially help predict patient response to a drug?

### Drug repurposing

- What are new targets for this known drug/compound?
- What other indications are there for this known target?
- What other biological pathways does this drug/compound/target impact?

## Get started with Watson Health™

Answer a scientific question to demonstrate value through an 8-10 week Proof of Concept

Deliver a prioritized set of hypotheses with supporting evidence for further study

### How to get started

- Develop testable hypotheses with confidence
- Determine high-level value to your organization
- Provide strategic roadmap to understand the cognitive journey
- Access to IBM Watson for Drug Discovery

[Learn more: watsonhealth.ibm.com/Watson-Drug-Discovery.html](http://watsonhealth.ibm.com/Watson-Drug-Discovery.html)

## Barrow Neurological Institute

### Accelerate discovery

Within months, Watson for Drug Discovery rank ordered all of the nearly 1,500 RNA-binding proteins in the human genome and proposed predictions regarding which genes might be associated with ALS. The Barrow team then examined Watson's top evidence-based predictions and found 8 of the top 10 ranked genes proved to be linked to the disease. More significantly, the study found 5 never before linked genes associated with ALS.

*“By using Watson for Drug Discovery, we can make scientific breakthroughs in a fraction of the time and cost, increasing our knowledge of diseases faster than ever before.”*

—Robert Bowser, PhD, Chairman of Neurobiology,  
Professor of Neurobiology and Neurobiology,  
Barrow Neurological Institute