3 REASONS
TO CONSIDER TEXT MINING

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Discover Hidden Knowledge and Accelerate the Pace of Discovery

A growing number of life science companies use text mining to gather important insights from vast amounts of published information. The results of mining projects inform a wide range of business activities including drug discovery, drug interactions, clinical trial development, drug safety monitoring and competitive intelligence. Mining gives your Research and Development (R&D) team the ability to examine available literature to guide business decisions and prioritize investments. If your organization has not yet pursued text mining, here are three reasons to start:

3 REASONS

1. **ENHANCE R&D EFFICIENCY**
2. **INCREASE DISCOVERY**
3. **MONITOR DRUG SAFETY**

Enhance R&D Efficiency

The rate at which biomedical literature is published is staggering. According to a 2012 report by JISC (Joint Information Systems Committee), approximately 1.5M scientific papers are published each year.[1] MEDLINE contains over 24 million references to biomedical journal articles. It is neither feasible nor cost-effective for a researcher to read and analyze this much information. Text mining enables researchers to automatically analyze massive amounts of information quickly to extract data, assertions and facts from unstructured text sources specific to a particular research topic. The results of mining can surface important links between entities, including genes, proteins, cell lines, drugs and diseases that may not have been found otherwise. Shortening the research process enables your highly-skilled R&D team to focus on discovery and innovation, accelerating speed-to-market.

Increase Discovery

Unlike search engines, which surface documents based on keywords, text mining tools analyze documents to identify entities and extract relationships between them, unlocking hidden information to help researchers identify and develop new hypotheses, attain knowledge and improve understanding. Results obtained through conventional search methods using keywords simply identify documents that contain keywords, but do not extract entity-specific information, assertions, or relationships between those documents. Without text mining, researchers are at a loss as to which article contains the information, facts, or assertions they are looking for. In some cases, critical information contained in the footnote within an otherwise unrelated article may go unread. By mining all of a given text, including bibliographic information, researchers can gain richer results that reveal vital patterns and information in the documents.

Beyond the discovery of new therapies, text mining can be used to identify links between diseases and existing drugs to find new therapeutic uses. One example is the drug thalidomide. Widely used in the 1950s and 1960s to treat nausea in pregnant women, treatment with the drug resulted in severe birth defects in thousands of children and was taken off the market. In the early 2000s, a group of immunologists, led by Marc Weeber, PhD University of Groningen, The Netherlands, hypothesized through the process of mining that the drug might be useful for treating chronic hepatitis C and other ailments.[2]

Making connections between seemingly disparate information sources can lead to discoveries that might otherwise have been overlooked using traditional research practices. Text mining provides new avenues of exploration, greater opportunities for discovery and potentially new revenue streams.

Monitor Drug Safety

Life science companies invest heavily in resources to develop and bring new drugs to market that are effective and safe. According to a 2014 report by Pharmaceutical Research and Manufacturers of America, the average cost to develop a single drug (including failures) is $1.2 billion over 10-15 years.[3] Ensuring drug safety is not only important for the health of the consumer but it's also important in protecting the company's investment of time and money in a new therapy. Recognizing the potential for adverse effects from a particular component of the drug is vital at each stage of its pipeline as is information on drug interactions, unsafe dosage levels and safety issues related to drug target pathways.

Text mining makes it possible to analyze the full body of literature to identify potential safety issues early on in the pipeline. The results of mining help companies make the best use of their investment in R&D and avoid late stage drug development failures.

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Sources
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