



Our **output** is your **insight**



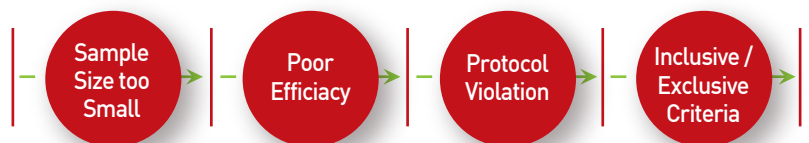
Discovering the Hidden Value in Clinical Trials

ExperiMind Technologies aims to identify the best sub-population(s) within clinical trials for whom the treatment effect is significantly greater than within the rest of the population.

ExperiMind Technologies has developed a set of unique and successfully tested data mining and machine learning algorithms that go far beyond "conventional" biostatistics to discover hidden relationships within clinical data. This new insight means ExperiMind Technologies can identify the ideal sub-population(s) for a novel therapy early in its development program and thereby improve the success of clinical trials.

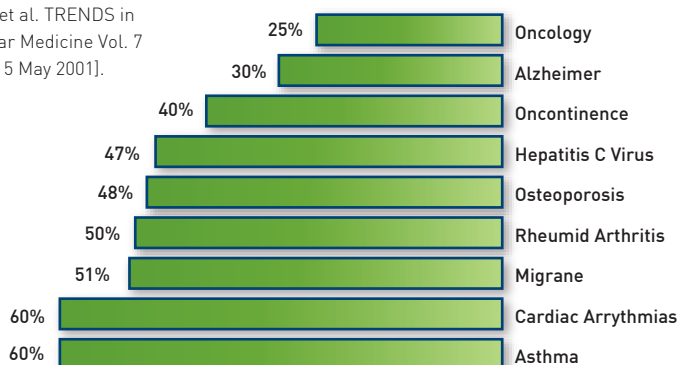
The Need for ExperiMind Technologies

Many clinical trials end without achieving statistical significance for the pre- defined end-points, mainly due to one or more of the following reasons:



Furthermore there is much heterogeneity among the individual outcomes and only a subset of patients responds to treatment. On average only about 50% of patients respond to prescribed drugs.

[Spear et al. TRENDS in Molecular Medicine Vol. 7 No. 5 May 2001].



"Doctors are men who prescribe medicines of which they know little, to cure diseases of which they know less, in human beings of whom they know nothing."

Voltaire (1694 –1778) French philosopher

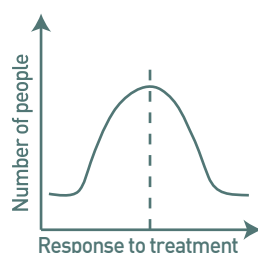
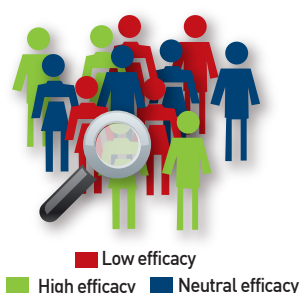
In addition research and development costs are soaring and there are increasing risks in getting a new compound to market. Research and development expenses increased from US \$2 billion in 1980 to US \$26 billion in 2000.

Pharmaceutical companies need to be able to identify which patients will respond better to treatments and by tailoring therapeutics, the right drug can be delivered to the right patient with the right dose at the right time, drastically improving individual patient outcomes. Improvements in this domain would have important implications on drug development and could provide significant benefits for patients

To achieve the above, a drug development teams must endeavor to find the most relevant factors that define the largest sub-group(s) of patients that have a clinically meaningful benefit-risk profile for any given treatment regimen.

ExperiMind's technology provides a solution to finding the best "sub-population with enhanced treatment effect".

Predictive segmentation of populations



Actually there is no "average" patient. Observed individual patient response to treatment depends on:

- Known and unknown prognostic factors and interactions
- "White noise" (e.g. measurement error, sites differences) that masks clinical observation

"There are two realities in drug discovery," says Don Frail, chief scientific officer of Pfizer's Indications Discovery Unit.

"The majority of candidates tested in development do not give the desired result, yet those drugs that do succeed typically have multiple uses." Pfizer, Washington University \$ 22.5 M collaboration - May 2010. (Pfizer Press Release - 5/17/2010)

Despite the fact that clinical trials define inclusion/exclusion criteria, there is always the possibility that significant efficacy subsets go undetected

Our Output is Your Insight

ExperiMind Technologies has developed a set of unique, and successfully tested data mining and machine learning algorithms that through identifying undetected patterns help 'salvage' clinical trials whether these trials are ongoing or the drug has been shelved or withdrawn from the market.

ExperiMind Technologies constructs a statistical model built upon several factors (genetic biomarkers, demographics, etc.) and then analyses the clinical data using its unique algorithms to discover hidden relationships that help segment the patient population into responding and non-responding sub-populations. Through information on these subpopulations, for example the patient selection criteria, ExperiMind can improve the design of subsequent clinical trials.

Overcome challenges in actual /agriculture fields.

Crop yields are rising more slowly than they were several decades ago (J. A. Foley et al. Nature 478, 337–342; 2011). This is especially evident in Europe, and has serious implications for its responsibilities in global food production.

Food production capacity is faced with an ever-growing number of challenges, including a world population expected to grow to nearly 9 billion by 2050 and a falling ratio of arable land to population. agricultural innovations focusing on seed, the most vital and critical agricultural input.

Using data mining in agriculture represents a new opportunity to improve process and plant performance. These methods which integrates machine learning, clustering and optimizations algorithms are helping to elucidate relations between traits and other markers.

experiMind's pioneering technology has proved to assist in genetic marker based breeding ; as well as analyses results of crops to identify factors that affects yield and throughput.

"With 9 billion people expected to be alive in 2050, researchers are running out of time to develop new ways to feed them sustainably." Mueller, N. D. et al. Nature <http://dx.doi.org/10.1038/nature11420> (2012).



ExperiMind Technologies Benefits

ExperiMind's solution enables **pharmaceutical, medical device companies and other entities involved in clinical trials** to:

Industry benefits:

- **Identify the patients that will derive a more pronounced benefit from a medical therapy**
- **Learn about the efficacy, safety and potential benefits of new medicines earlier in the development process, thus enabling development of safer, more effective drugs**
- **Lower costs by better planning and optimizing inclusion and exclusion criteria**
- **Increase the probability of success by optimizing protocols and endpoints**
- **Determine stopping rules to control overall costs per compound**
- **Shorten the length of clinical trials through improved planning**
- **Find new indications for existing compounds**
- **Salvage unsuccessful clinical trials by analyzing the causes of failure**

Patient benefits:

- **Improve patient outcomes and quality of life.**
- **Enable selection of optimal therapy, and increase patient compliance**

"While mining data from past clinical trials makes great sense, companies rarely take another look at such data."

Salvatore Salamone, Bio-IT World, February 2006

"We want to milk as much out of the data as possible" says Mani Lakshminarayanan, director/statistical scientist, at Pfizer. (BioIT World, Feb 2006)



Why ExperiMind Technologies?

- Led by a highly experienced and multidisciplinary team, ExperiMind has developed a set of unique algorithms specifically tailored to meet healthcare industry needs.
- ExperiMind's powerful algorithms discover hidden insights far beyond current biostatistics due to their distinctive abilities to analyse clinical data in multiple ways.
- ExperiMind's outputs provide a win-win situation for our clients. ExperiMind can not only help identify new subsets of treatment responders but also help exclude non-responders. Through developing more targeted and efficient clinical trials, ExperiMind can increase the chance of clinical success and save companies valuable time and money as the trial progresses.
- ExperiMind's unsupervised approach to data mining and ability to work in parallel to the clinical analysis also means the technology is very easy to implement, results are delivered quickly and minimal support is required from your project team.
- ExperiMind's output is a set of recommendations for the design of specific clinical trials that supports a company's senior management, clinical development, marketing and business development teams to make more informed clinical trial decisions and improve the cost-effectiveness of both in-house and acquisition/investment programs.
- ExperiMind's technology has been successfully tested on various scaled databases.

"If companies supply the data, experts will crunch them. And maybe, just maybe, the cost of clinical development will start to decline".

L. Baker, eWeek, June 2004

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