

## Drugs Discovery

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### INTRODUCTION

Drug discovery involves the identification of latest target candidates for testing in humans for efficacy and safety. Clinical testing is a component of the event process where potential new drugs are selected for clinical trials.

### RESEARCH AND DISCOVERY

Pharmaceuticals are produced as a result of activities carried out by a complex array of public and private organizations that are engaged in the development and manufacture of drugs. As a part of this process, scientists at many publicly funded institutions perform basic research in subjects like chemistry, biochemistry, physiology, microbiology, and pharmacology. Basic research is nearly always directed at developing new understanding of natural substances or physiological processes instead of being directed specifically at development of a product or invention.

The results of their studies are published in scientific and medical journals. These results facilitate the identification of potential new targets for drug discovery. The targets could be a drug receptor, an enzyme, a biological transport process, or any other process involved in body metabolism. Once a target is identified, the bulk of the remaining work involved in discovery and development of a drug is carried out or directed by pharmaceutical companies.

A drug screen (also called a drug test) is that the collection and analysis of blood, urine, hair, or saliva to detect the presence of the chemicals and contaminants left behind in the body due to drug use. A drug screen may also be used to detect performance-enhancing drugs sometimes used by professional athletes such as steroids and HGH. Many different types of drug screens exist for multiple purposes.

### 4 PHASES OF DRUG DEVELOPMENT

#### Phase Primary Goal

**Phase I:** Dose-ranging on healthy volunteers for safety

**Phase II:** Testing of drug on participants to assess efficacy and side effects

**Phase III:** Testing of drug on participants to assess efficacy, effectiveness and safety

**Phase IV:** Post marketing surveillance in public

Drug development challenges

- • Unknown Biological Mechanisms and Biomarkers of Diseases. ...
- • Translational Failures Using Animal Models. ...
- • Lack of Clinical Phenotyping and Patient Stratification. ...
- • Inability to Rely on Published Data. ...
- • Inadequate Collaboration among Academia, Industry, and Government. ...
- • Pipeline Challenges.

### CONCLUSION

Despite advances in technology and understanding of biological systems, drug discovery remains an extended process with low rate of latest therapeutic discovery. Information on the human genome, its sequence and what it encodes has been hailed as a possible windfall for drug discovery, promising to virtually eliminate the bottleneck in therapeutic targets that has been one limiting factor on the speed of therapeutic discovery. However, data indicates that "new targets" as against "established targets" are more susceptible to drug discovery project failure generally. There exists a pharmaceutical industry trend beginning at the turn of the twenty-first century and continuing today which finds more risk aversion in target selection among large pharmaceutical companies. Although combinatorial approaches have provided a replacement and effective thanks to discover drug leads, there still exists an abundance of natural organisms that haven't been screened for potentially new leads. Therefore, we feel the search for new drugs from natural sources (bioprospecting) should be continued even with the advent of combinatorial methods to drug discovery.

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