



## History, Advantages of Animal models in Drug Discovery

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### Introduction

Now a days animal model are using more to identify the diseases which are affecting to both the humans and animals, and that leads to the effective way of treating and diagnosing the symptoms and curing the disease. There are vast numbers of animal models which are using in drug discovery phase in some cases mice, rats, rabbits, guinea pigs, and cats were excluded.

Long back mice's, rats, guinea pigs, cats those species were used more for testing of new drugs. With these they are regenerating the knowledge and inventing new models and new drugs before it is going to test on humans pre-clinical trials are important for safety and security for every model there is an advantages and disadvantages and mainly on the drug discovery phase there are several of drug discovery. For these studies biomedical research has listed one table for the drugs which are going to use and for treatment of animal health.

### History

These animal models and studies were started in the 5th Century BC by the biomedical research. The truth is that the first experiment by mice was conducted in the year of 1902 by the person called French biologist Lucien Cuenot. From that time these experiments and models were using. Later on 20th century one person called Mouse fanciers started breeding the animal mice, and that breed mice was used in his first experiment and those experiments was conducted under the supervision of biomedical research.

In addition to this Genetically Engineered models was started to use on the later stage of 20th century. At that time mice, rats and other species breeds were reflected the disease pathways for the use of throughput screening techniques that means (to test the large and huge molecules or samples/biological compounds to a specific targets or biological targets). After using these techniques there is an increased rate of drug discovery process and they have many publications and papers which are used in mice.

### Advantages with these pre-clinical studies in animals

There are so many advantages for these models. Comparative to other animal models mice have more advantages

1. They are smaller in size, so for carrying and testing the drugs is easy
2. Drug solubility and drug absorption time is fast
3. They have large number of offspring, per one litter 6 to 7 inbreeds will yield.
4. Very quick drug reaction and sometimes very unique models will take place.
5. Lower the cost and more the developing studies
6. Fail of experiments is low, any model and any method we can try with that animal
7. Moreover most of the studies are conducted on mice (approximately 95%).
8. Early detection of side effects and identification of drug targets.
9. We can use high throughput screening in mice models.

### Genetic Engineering in drug discovery

From past two decades drug discovery process is very well defined, almost in all drug discovery process there is Target identification, Target validation, Hit Identification, Lead optimization, Lead identification. These studies are very effective and have safety procedure. When combined with these identifications and optimizations this mice models become more powerful to identify the disease and targets for the drug. Some of the techniques are Homologous recombination and transgenesis to generate the mice models for human diseases.

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